Reg. No:_____

Course Code: 23PBIAL314

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Computer Science

Third Semester

ALC: Human Computer Interaction

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Define Reasoning.	(K1)
2.	Classify types of Human Memory.	(K1)
3.	List any two paradigms for interaction.	(K1)
4.	What is design?	(K1)
5.	Define Recoverability.	(K1)
6.	Interpret the type of inheritance exhibited in the X View toolkit standard hierarchy for the window class.	(K1)
7.	List any two goals of Evaluation.	(K1)
8.	Rewrite Cognitive Walkthrough.	(K1)
9.	State the types of assistance required by the User.	(K1)
10.	Discuss the purpose of Wizards.	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Explain the Text Entry Devices.	(K2)
	(Or)	
b)	Sketch the purpose and usage of the Pointing Devices.	(K3)

12. a) Explain the term "Know your Users". (K2)

(Or)

b) Explain the levels of interaction in Navigation Design. (K3)

13. a) Write about the principles affecting Learnability. (K2)

(Or)

b) Sketch the principles affecting Flexibility. (K3)

14. a) Outline Nielsen's ten heuristics of evaluation. (K2)

(Or)

b) Evaluate a design using Empirical methods. (K3)

15. a) Write about the requirements of User Support. (K2)

(Or)

b) Construct the approaches to User Support. (K3)

SECTION - C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Facilitate the most common interface styles that have different effects on the interaction. (K4)

(Or)

b) Compile the elements of WIMP Interface. (K5)

17. a) Summarize the Software life cycle. (K4)

(Or)

b) Compare the three main approaches of prototyping. (K5)

18. a) Summarize the architecture of windows system. (K4)

(Or)

b) Explain neatly about the UIMS as a conceptual architecture. (K5)

19. a) Discuss the importance of multi-modal interaction in Universal Design. (K4)

(Or)

b) Develop a Universal design for users with disabilities. (K5)

20. a) Explain the techniques for knowledge representation in Adaptive Help System and the issues involved in it. (K4)

(Or)

b) Predict the presentation issues and implementation issues involved in designing User Support Systems. (K5)

19. a) Solve 8-Queen's problem can be solved using back tracking method and explain with an example. (K4)

(Or)

b) Explain the algorithm for graph coloring. (K5)

Compulsory – Case Study

20. Illustrate traveling salesman problem using dynamic programming. (K6)

Reg.No:_____

Course Code: 23PBICT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

First Semester

Core: Analysis & Design of Algorithms

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Process of inserting an element in stack is called _____.(K1)

a) Create b) Push c) Evaluation d) All the above.

2 What is the total running time of a heap sort algorithm? (K1)

a) O(N) b) O(N2)

c) O(N log N) d) None of the above.

3 In merge sort, the file a[1:n] was devided at its _____ into sub arrays. (K1)

a) midpoint b) start point

c) End point d) None of the above.

4 How many sub arrays does the quick sort algorithm divide the entire array into? (K1)

a) 2 b) 4 c) 1 d) 5

5 Prims's algorithm is used to _____. (K1)

a) find minimum spanning tree

b) find single source shortest path

c) traverse the graph

d) All the above

6 _____ is also known as single source shortest path algorithm. (K1)

a) Kruskal's algorithm b) Prim's algorithm

c) Dijkstra algorithm d) None of the above.

7 Which of the following problems is solved using dynamic programming? (K1)

a) 0/1 knapsack problem b) Travelling salesman problem

c) All pairs shortest path d) All the above.

8 The all pairs shortest path problem can be solved using_____.

a) A spanning tree b) Dynamic programming (K1)

c) Bellman – Ford algorithm d) DFS traversal

9 Which year coined the term 'backtracking'? (K1)

a) 1949 b) 1951

c) 1950 d) None of the above

10 Branch and bound is a _____. (K1)

a) problem solving technique b) sum of subset problem

c) Both (a) & (b) d) None of the above

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the concept of asymptotic notations. (K2)

(Or)

b) Describe the various operations on stacks. (K3)

12. a) Explain a breath first search algorithm for graph traversal. (K2)

(Or)

b) Give the general procedure of divide and conquer method. (K3)

13. a) Illustrate the basic concept of kruskals algorithm. (K2)

(Or)

b) Explain the single source shortest path. (K3)

14. a) State the need of dynamic programming. (K2)

(Or)

b) Explain the requirements of 0/1 knapsack problem. (K3)

15. a) Discuss the purpose of hamiltonion circuit. (K2)

(Or)

b) Explain the use of branch and bound method. (K3)

SECTION –C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the performance analysis, space complexity and time complexity. (K4)

(Or)

b) Explain the heap sort algorithm with an example. (K5)

17. a) Explain techniques for binary trees. (K4)

(Or)

b) Find Quick sort algorithm for the following example. 25,36,12,4,5,16,58,54,24,16,9,65,78. (K5)

18. a) Distinguish the 0/1 knapsack problem using dynamic programming. (K4)

(Or)

b) Explain the Travelling salesmen problem using dynamic programming. (K5)

14. a) List out the key applications of AR and explain about scientific applications in detail. (K3)

(Or)

b) Outline the role of Augmented Reality Interfaces. (K2)

15. a) Explain the concept of AR displays. (K2)

(Or)

b) Outline the concept of user interface in AR systems. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Outline about the navigation and manipulation interfaces in a virtual reality system. (K4)

(Or)

b) Elaborate about the Haptic display in detail. (K5)

17. a) Outline about the PC Graphics architecture in virtual reality. (K4)

(Or)

b) Explain about Behavior modeling in detail. (K5)

18. a) Elaborate about Java 3D in VR programming. (K4)

(Or)

b) Outline about the VR application in Robotics in detail. (K5)

19. a) Elaborate about the Markerbased and Markerless AR in detail. (K4)

(Or)

b) Outline the concept of Khronos group in detail. (K5)

Compulsory – Case Study

20. Illustrate the augmented reality used in Medical education. (K6)

Reg. No:_____

Course Code: 23PBIET306

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Computer Science

Third Semester

Elective: Augmented Reality & Virtual Reality

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ represents a promising interface for human-computer interaction that provides users with nuanced information in virtual environments. (K1)

a) Haptic display b) Sound display

c) Wearable Haptics d) Graphic display

2. In _____,where computers use gestures of the human body, typically had movements, but in some cases other limbs can be used. (K1)

a) Navigation Interface b) Gesture Interface

c) Manipulation Interface d) Position Interface

3. In distributed virtual reality system, _____ can efficiently realize concurrency control, and easily ensure the data consistency. (K1)

a) Data centralization model b) Data re-distribution model

c) Data distribution model d) Data re-centralization model

4. A ____ is a mathematical representation of a robot's motion that overlooks the forces that affect motion and focuses on the geometrical relationship among components. (K1)

a) Physical model b) Geometric model

c) Behavioral model d) Kinematic model

5. VR programmers create immersive ____ that make it possible for users to explore virtual worlds. (K1)

a) Digital experiences b) Analog experiences

c) Digital expertise d) Analog expertise

6. VR in medical applications, the training provided includes _____, communication skills, and VR-based learning. (K1)

a) Program-oriented learning b) Problem-oriented learning

c) Phase-oriented learning d) Problem-oriented leaving

7 _____also referred to as image recognition AR which relies on a QR code or visual marker, also known as a fiducial marker, to trigger the interactive experience. (K1)

a) Superimposition-based AR

b) Projection-based AR

c) Marker-based AR

d) Location-based AR

8. Continuous improvement of User Experience is achieved through user testing and iterative design, ensuring that_____ remains user-friendly and accessible. (K1)

a) VR applications b) VAR applications

c) NAR applications d) AR applications

9. AR and VR displays face several common challenges to satisfy the demanding human vision requirements. such as FoV, eyebox, _____, dynamic range & correct depth cue, etc (K1)

a) Angular resolution b) Digital resolution

c) Voice resolution d) Image resolution

10. _____have been the first mobile terminal devices to use AR, especially the Apple iPhone 3GS. (K1)

a) Smart Glasses b) Smartphones

c) AR Headsets d) Tablets

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Summarize about the virtual reality input devices. (K2)

(Or)

b) List out the various types of graphic display and explain them. (K3)

12. a) Summarize the concept of rendering pipeline in virtual reality. (K2)

(Or)

b) Explain about the overview of modeling in virtual reality. (K3)

13. a) Summarize about the VR programming toolkits and Scene graphs. (K2)

(Or)

b) List out the differences between VR application in Robotics and healthcare. (K2)

19. a) Explain Image Compression Models with neat diagram. (K4)

(Or)

b) Explain in detail on Line Detection. (K5)

Compulsary – Case Study

20. A case study on Image Segmentation Method for Image Processing. (K6)

Reg.No:_____

Course Code: 23PBICT301

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

Third Semester

Core: Digital Image Processing

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. A _____ process is characterized by the fact that both its input and output are images. (K1)

a) Low-level b) High-level c) Normal-level d) Mid-level

2. The intensity values also must be converted into _____ quantities. (K1)

a) Logarithmic b) discrete c) sampling d) amplitude

3. The term _____ refers to the image plane itself. (K1)

a) Intensity b) Filtering

c) spatial domain d) transform domain

4. The process used to correct these power-law response phenomena is called_____. (K1)

a) Alpha correction b) beta correction

c) gamma correction d) none of these

5. Noise impulses can be _____. (K1)

a) Negative b) positive

c) negative and positive d) either negative or positive

6. _____ is an image arises typically from electrical interference during image acquisition. (K1)

a) Periodic Noise b) Filtering

c) frequency d) degradation

7. In the first stage of the encoding process _____ transforms into format designed to reduce spatial and temporal redundancy.

a) Filtering b) compression c) mapper d) encoding (K1)

8. A Motion Picture Expert Group standard for CD-ROM applications with non-interlaced video at up to _____. (K1)

a) 1 Mb/s b) 2 Mb/s c) 3 Mb/s d) 1.5 Mb/s

9. The third model of an edge is also called _____ edge. (K1)

a) Roof b) line c) mask d) pipes

10. _____ is a procedure that groups pixels are sub regions into larger regions based on predefined criteria for growth. (K1)

a) region b) region growing

c) centroid d) array

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain about Digital Image Processing. (K2)

(Or)

b) Describe the structure of human eye with neat diagram. (K3)

12. a) Write a short note on Spatial Filtering. (K2)

(Or)

b) Evaluate second derivative for image sharpening using Laplacian. (K3)

13. a) Evaluate the estimation of Noise parameters. (K2)

(Or)

b) Explain color fundamentals with neat diagram. (K3)

14. a) What is Coding Redundancy? (K2)

(Or)

b) Write a note on Arithmetic Coding. (K3)

15. a) Write short notes on Basic Edge Detection. (K2)

(Or)

b) Explain Dam Construction. (K3)

SECTION –C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the fundamental steps in Digital Image Processing with a neat diagram. (K4)

(Or)

b) Discuss in detail the components of an Image Processing system. (K5)

17. a) Explain Histogram processing in brief. (K4)

(Or)

b) Write in detail about Image Negatives and Log Transformations with neat diagram. (K5)

18. a) Describe Noise Models in detail. (K4)

(Or)

b) Write in detail Band pass filter. (K5)

18. a) Write short notes on following:

i) Online refreshing

ii) Offline refreshing (K4)

(Or)

b) Compare the reasons for keeping multiple copies of a cache. (K5)

19. a) Conclude the six stages to making up the processing of a query. (K4)

(Or)

b) Discuss the function of Virtual Data marts and Virtual Data warehouse (K5)

Compulsory – Case Study

20. Justify the use of recursive data structure in designing a business intelligence system based on data virtualization with example. (K4)

Reg.No:_____

Course Code: 23PBICT304

M.Sc Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Computer Science

Third Semester

Core: Data Virtualization

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is alternative name for information hiding_____. (K1)

a) Polymorphism b) Encapsulation

c) Abstraction d) Federation

2. Identify the name of the process where defective data values are corrected_____. (K1)

a) Data transformation b) Data joining

c) Data cleansing d) Data integration

3. Discover the expanded form of the term ReST_____. (K1)

a) Representational State Transmitter

b) Representational Static Transfer

c) Representational Source Transfer

d) Representational State Transfer

4. Observe the following and find which can be used to access virtualized data_____. (K1)

1. Enterprise service bus 2. Object-relational mapper

3. Dedicated data virtualization server

a) Only 3 can be used b) Only 1 and 3 can be used

c) Only 2 and 3 can be used d) All 1, 2 and 3 can be used

5. The contents of a cache is determined only once is called_____.
a) Manual refresh b) Constructional refresh (K1)
c) Scheduled refresh d) query driven refresh

6. Data marts have to be managed by the developers, where as caches are managed by the _____. (K1)
a) data caches b) virtualization client
c) data consumers d) virtualization server

7. Label the other name for the cached virtual table_____. (K1)
a) Materialized virtual table b) Query virtual table
c) Nested virtual table d) Load virtual table

8. The source system on which the virtual table is defined can be too slow for the performance requirements of the data consumers accessing a virtual table is called _____. (K1)
a) Load optimization b) Consistent reporting
c) Source availability d) Query performance

9. Incorrect spellings of names, such as the names of products, customers, products, and cities, are also classic examples of _____. (K1)
a) misspelled data b) False data
c) incorrect data d) Fake data

10. Identify the number of types of data profiling techniques_____.
a) two b) three c) four d) five (K1)

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) List the technical advantages of data virtualization. (K2)

(Or)

b) Describe the models of data virtualization server. (K3)

12. a) Explain the ways of creating nested virtual tables. (K2)

(Or)

b) Outline the importance of NoSQL database with examples. (K3)

13. a) Discover the importance of authentication and authorization. (K2)

(Or)

b) Compare the importance of caches and data marts. (K3)

14. a) Illustrate the relationship between data virtualization and a business intelligence system. (K2)

(Or)

b) Summarize the disadvantages of deploying data virtualization. (K3)

15. a) Discover the examples for Flagging Incorrect Data. (K2)

(Or)

b) Explain the time inconsistency of data with example. K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Evaluate the importance of business intelligence systems. (K4)

(Or)

b) Discuss the importance of data stores in business intelligence systems. (K5)

17. a) Estimate the high-level architecture of a data virtualization server with a neat diagram. (K4)

(Or)

b) Evaluate the concept of data virtual tables and mappings with examples. (K5)

Reg.No:_____

Course Code: 23PBICT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

First Semester

Core: Advanced Java Programming

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following methods is used to determine the key pressed? (K1)

   a) getKey() c) getModifier()

   b) getActionKey() d) getSource()

2. Which of these packages contains all the classes and methods required for event handling in Java? (K1)

   a) java.applet c) java.event

   b) java.awt d) java.awt.event

3. Which of the following is a utility that registers remote objects and provides naming services for locating objects? (K1)

   a) rmiregistry c) java b) rmic d) javac

4. Which packages contain the JDBC classes? (K1)

   a) java.db.sql and javax.db.sql b) java.jdbc and javax.jdbc

   c) java.db and javax.db d) java.sql and javax.sql

5. What is the number of parent nodes in the DOM tree can have?

   a) 1 b) 2 c) 3 d) 4 (K1)

6. Which of the following is used to inspect the type of a node?
a) type b) typeOfNode (K1)
c) nodeType d) getNodeType

7. Which of the following classes must your applet extend? (K1)
a) Component c) Applet b) Graphics d) AWT

8. A servlet is instantiated at_____. (K1)
a) a client makes a request for the first time
b) the web server starts up
c) the client makes a request
d) the source code is compiled

9. Which of the following handles a request first in a page-centric approach? (K1)
a) A JSP page b) A session manager
c) A servlet d) A JavaBean

10. Which of the following tags is used for Scriptlets? (K1)
a) <%= %> b) <%@ %> c) <% %> d) <%! %>

SECTION –B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Discuss any two layouts in AWT. (K2)

(Or)

b) Explain the various event classes in AWT. (K3)

12. a) What is the role of callback in RMI? Explain. (K2)

(Or)

b) Write the various JDBC classes and interfaces. (K3)

13. a) Briefly explain the properties of node interface. (K2)

(Or)

b) Outline the properties and methods of text node. (K3)

14. a) List the advantages of java servlet technology. (K2)

(Or)

b) Write short notes on cookies. (K3)

15. a) Explain the scope of JSP objects. (K2)

(Or)

b) Explain the working procedure of JSP. (K3)

SECTION –C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Summarize AWT class Hierarchy with neat explanation. (K4)

(Or)

b) Choose any five swing components and explain with examples. (K5)

17. a) Write the steps involved in developing and running RMI application. (K4)

(Or)

b) Construct the architecture of JDBC with neat explanation. (K5)

18. a) Explain the various methods of Element Node. (K4)

(Or)

b) Write a detail note on DOM nodes in with suitable examples. (K5)

19. a) Design the life cycle of servlet with neat explanation. (K4)

(Or)

b) How to pass retrieve parameters to servlet? Explain with an example. (K5)

Compulsory – Case Study

20. Implement how to track sessions in cookies? (K6)

17. a) How to construct univariate and multivariate visualization? (K4)

(Or)

b) Construct KNN Process for Irish Data set. (K5)

18. a) Substitute multiple linear regression model in the Boston Housing dataset. (K4)

(Or)

b) Summarize various stages of k-means clustering algorithm. (K5)

19. a) Elaborate about analytical architecture and drivers of Big data. (K4)

(Or)

b) Appraise the various stage in data preparation in Big data life cycle. (K5)

Compulsary – Case Study

20. Discuss the best practices to present the data insights to stake holders. (K6)

Reg.No:_____

Course Code: 23PBICT303

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

Third Semester

Core: Data Science & BDA

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____is the process of building a representative model that fits the observational data. (K1)

a) Data science b) Machine Learning

c) Data Analysis d) Reinforcement

2. To extract knowledge from these massive data assets, _____need to be employed along with standard business intelligence. (K1)

a) Raw Data b) Meta Data

c) Data Science algorithms d) Training Data

3. _____is the process of condensing the characteristics of the dataset in the form of numeric metrics. (K1)

a) Data analytics b) Descriptive statistics

c) Data Hiding d) Data Visualization

4. _____ are used for numeric prediction problems. (K1)

a) Decision tree b) Regression tree

c) classification tree d) Hierarchy tree

5. _____ is the process to come up with a function that explains and predicts the value of the target variable. (K1)

a) Classification b) Association

c) clustering d) Linear regression

6. The common method to measure similarity is the _____measurement in n-dimensional space. (K1)

a) Euclidean distance b) Cosine tangent

c) Regression d) Euclidean Value

7. _____ can be in multiple forms such as unstructured, structured data. (K1)

a) Decision Data b) BigData

c) Meta Data d) Descriptive Data

8. The Business Intelligence Analyst need a deep knowledge on _____. (K1)

a) Day key performance Indicator

b) Key metrics

c) Either a or b

d) Both a and b

9. _____ refers to representation, processing, modelling textual data. (K1)

a) Text analytics b) Text engraving

c) Text association d) Clustering text

10. _____ paradigm breaks the large task into smaller task, run the task in parallel. (K1)

a) Spam filter b) Ad-hoc model

c) Web optimizer d) Mapreduce

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Classify Data Science problems. (K2)

(Or)

b) Write an outline about the modeling phase of predictive Data Science. (K3)

12. a) Demonstrate data representation in different formats and types. (K2)

(Or)

b) Write a note on Artificial Neural Networks. (K3)

13. a) What do you mean by Logistic regression. (K2)

(Or)

b) Discuss in detail about self organizing maps. (K3)

14. a) Sketch the various categories of Big data Data type. (K2)

(Or)

b) Write about Big data Ecosystem. (K3)

15. a) List out Text Analysis steps. (K2)

(Or)

b) Discuss about Hadoop. (K3)

SECTION –C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize prior knowledge steps in the data science process to solve the problem. (K4)

(Or)

b) Evaluate the results of the data science process in various business applications. (K5)

18. a) What are effort multipliers in COCOMO II model? List the effort multipliers used at early design. (K4)

(Or)

b) What is risk evaluation? Explain the use of decision trees in risk evaluation. (K5)

19. a) Explain the Oldham-hackman job characteristic model. Give the Vroom's Expectancy theory. (K4)

(Or)

b) Explain the importance of Software Quality in detail. (K5)

Compulsory – Case Study

20. What steps can participants in a group take to encourage team members to 'pull their weight properly' to avoid social loafing? (K6)

Reg.No:_____

Course Code: 23PBICT104

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

First Semester

Core: Software Project Management & Software Engineering

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of these software engineering activities are not a part of software processes? (K1)
   a) Software dependence b) Software validation
   c) Software development d) Software specification
2. Project Planning is an _____ process. (K1)
   a) time consuming b)iteration
   c) continuous d) conventional
3. The spiral model was originally proposed by_____. (K1)
   a) IBM b) Barry Boehm
   c) Pressman d) Royce
4. RAD stands for_____. (K1)
   a) Relative Application Development
   b) Rapid Application Document
   c) Relative Application Deployment
   d) Rapid Application Development
5. The _____is not an approach to software cost estimation.
   a) Analytical b) Empirical (K1)
   c) Critical d) Heuristic

6. Which one of the following models is not suitabke for accommodating any change? (K1)

a) Build & Fix Model b) Prototyping Model

c) RAD Model d) Waterfall Model

7. The critical path in a project network is the_____. (K1)

a) Shortest path through the network

b) Network path with the most difficult activities

c) Network path using the most resources

d) Longest path through the network

8. Three categories of risks in software projects are_____. (K1)

a) management risks, technical risks,design risks

b) planning risks, technical risks ,personnel risks

c) business risks ,personnel risks ,budget risks

d) project risks ,technical risks ,business risks

9. Software safety is a quality assurance activity that focuses on hazards that_____. (K1)

a) Prevent profitable marketing of the final product

b)Affect the reliability of a software component

c) May result from user input errors

d) May cause an entire system to fail

10. According to ISO 9001, inspection and testing comes under which management responsibility? (K1)

a) Process control b) Document control

c) Control of nonconforming products d) Servicing

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Briefly explain the different phase of project management life cycle. (K2)

(Or)

b) Mention the characteristics of software projects. (K3)

12. a) Discuss the spiral software development life cycle model with diagrammatic illustration. (K2)

(Or)

b) Outline the advantages of agile unified process. (K3)

13. a) Explain the importance of forward pass in calculating the earliest dates with an example. (K2)

(Or)

b) What are effort multipliers in COCOMO II model? Describe the effort multipliers used at early design. (K3)

14. a) List out the advantages of PERT technique. (K2)

(Or)

b) Write short notes on Project Evaluation and Review Technique. (K3)

15. a) What are three important categories of stress management techniques? (K2)

(Or)

b) Differentiate Product vs Process Quality management. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain different stages in contract management. (K4)

(Or)

b) What is project portfolio management ? Explain the key aspects of project portfolio management. (K5)

17. a) Explain in brief Agile Methods. (K4)

(Or)

b) What do you understand by the term 'ceremonies' in a scrum project? Explain the different types of ceremonies that are observed in a Scrum project and their significance. (K5)

Reg.No:_____

Course Code: 23PBICT103

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Science

First Semester

Core: Advanced Database Management Systems

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. In relational model, the cardinality is termed as_____. (K1)

   A) Number of tuples b) Number of constraints

   c) Number of tables d) Number of attributes

2. In E R diagram the derived attributes are denoted as _____.

   a) Number of tuples b) ellipse (K1)

   c) diamond d) rectangle

3. All sites have identical database management system is called_____. (K1)

   a) heterogeneous database b) parallel database

   c) homogenous database d) distributed database

4. ODL supports which of the following types of association relationships? (K1)

   a) unary b) unary, binary

   c) unary, binary, ternary d) unary, binary, ternary, higher

5. _____is used to read XML documents and provide access to their content and structure. (K1)

   a) XML Processor b) XML Compiler

   c) XML Pre Processor d) XML Interpreter

6. In an XML document, a tag is a markup construct that starts with _____ and ends with _____. (K1)

a) <, > b) <!--, --> c) <#, > d) @, @

7. Dependency preservation is not guaranteed in_____. (K1)

a) BCNF b) 3NF c) PJNF d) DKNF

8. The _____can be used to ensure data integrity. (K1)

a) referential integrity b) entity integrity

c) data base constraint d) cardinality

9. The data used in multimedia database is called_____. (K1)

a) Geographic data b) Temporal data

c) Spatial data d) Continuous-media data

10. Postgre SQL is a_____. (K1)

a) DBMS b) Spatial database

c) RDBMS d) FILE SYSTEM

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe the terms: Primary Key, Candidate Key and Super Key with an example. (K2)

(Or)

b) Explain the difference between 1NF and 2CNF. (K3)

12. a) Differentiate heterogeneous and homogeneous databases. (K2)

(Or)

b) Describe the inheritance in SQL. (K3)

13. a) Discuss the structure of XML with example. (K2)

(Or)

b) Explain the XML Document Type Definition. (K3)

14. a) Discuss in detail on packing and unpacking relations. (K2)

(Or)

b) Compare and contrast active database with deductive database. (K3)

15. a) Mention the various applications of geographic data. (K2)

(Or)

b) Describe the similarity-based retrieval in multimedia database with an example. (K3)

SECTION –C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the concept of E.R model with a diagram. (K4)

(Or)

b) Write in detail on I/O parallelism. (K5)

17. a) Explain the distributed data storage in detail. (K4)

(Or)

b) Describe the concept in detail on array and multi set types. (K5)

18. a) Explain the storage of XML data. (K4)

(Or)

b) Explain the applications of XML in Database. (K5)

19. a) Interpret the Temporal Database concepts and provide a example. (K4)

(Or)

b) Describe the various applications of commercial Deductive Database System. (K5)

Compulsory – Case Study

20. Compare querying techniques in spatial database. (K6)

17. a) Write a detailed account on cloning vectors with it merits. (K4)

(Or)

b) Detailed account on phagemid, cosmid and YAC. (K5)

18. a) Describe about PCR and its applications. (K4)

(Or)

b) Summarize on DNA modifying enzymes. (K5)

19. a) Explain about different selection and screening method of recombinants. (K4)

(Or)

b) Discuss about Agarose gel electrophoresis and its applications. (K5)

Compulsory – Case Study

20. Discuss the WHO action to improve the evaluation of GM foods? (K6)

Reg.No:_____

Course Code: 23PBLET108

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biotechnology

First Semester

Elective: Molecular Tools in Biotechnology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Gene is a _____. (K1)

a) Segment of DNA

b) Segment of chromosome

c) Functional unit of DNA

d) DNA segment capable of crossing over

2. Which of the following is NOT required for a PCR reaction? (K1)

a) A thermostable DNA polymerase

b) Dideoxy-dNTPs

c) Primers

d) Template DNA

3. Western Blotting is useful to probe_____. (K1)

a) DNA b) RNA c) Protein d) Enzyme

4. The most popular and widely used engineered plasmid vector is_____. (K1)

a) pBR 322 b) pUC vectors c) pSC101 d) pUC 19

5. Who proved that DNA is basic genetic material? (K1)

a) Transcription b) Watson

c) Boveri and Sutton d) Hershy and Chase

6. In AGE techniques, agarose is used as a concentration of _____.

a) 0-1% b) 4-5 % c) 1-3% d) 5-6% (K1)

7. In Genetic engineering the a modified or new gene transfer is done to _____. (K1)

a) Make diseases resistant plant

b) To introduce new traits

c) To increase the yield of secondary metabolites

d) All

8. _____ method uses high voltage electrical impulses for gene transfer. (K1)

a) Liposome fusion b) Micoinjectile

c) Electroporation d) Silicon carbide fibers

9. Which of the following gene helps in identifying transformed cells? (K1)

a) Plasmid b) selectable marker

c) structural gene d) vector

10. A vector that can clone only a small DNA fragment is_____. (K1)

a) Cosmid

b) plasmid

c) Yeast artificial chromosome

d) Bacterial artificial chromosome

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain how DNA is confirmed as genetic material? (K2)

(Or)

b) Comment on eukaryotic genome. (K3)

12. a) Interpret on BAC vector system and its significance. (K2)

(Or)

b) Explain about calcium chloride mediated method of gene transfer with its merits. (K3)

13. a) Illustrate about restriction endonuclease enzyme and its significance. (K2)

(Or)

b) Write about the method of pulse field gel electrophoresis and its uses. (K3)

14. a) Summarize about western blotting and its uses. (K2)

(Or)

b) List and explain the markers used for the screening of recombinants. (K3)

15. a) Describe about the pros and cons of GMOs. (K2)

(Or)

b) Report the applications of rDNA technology. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elaborate in detail about role of central dogma in gene expression. (K4)

(Or)

b) Describe about the characteristics of plasmid DNA and mitochondrial DNA. (K5)

27/11/2024 – (FN)

18. a) Explain do you prepare a patient for an MRI scan. Write down the working principle of MRI to produce the image. (K4)

(Or)

b) Compile the parts of the body that can be examined through X-ray. List out the risk factors associated with X-ray scan. (K5)

19. a) Distinguish between fluorescence spectrophotometry and UV-Visible spectrophotometry. Summarize the application of fluorescence spectrophotometry. (K4)

(Or)

b) Compile the laws of absorption of light

(i) Lambert's law

(ii) Beer's law and Chromophore concept. (K5)

Compulsory – Case Study

20. In the GM TUBE does every avalanche initiate the next avalanche, if yes what is the main point behind it? (K6)

Reg.No:_____

Course Code: 23PBLCT105

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biotechnology

First Semester

Core: Bioinstrumentation

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The red blood cells can be isolated by using_____. (K1)

a) Ultra centrifuges b) Hand centrifuges

c) Clinical centrifuges d) Preparative centrifuges

2. In ion-exchange chromatography, the ion exchanger contains charged groups which are_____. (K1)

a) non-covalently linked b) linked through hydrogen bonds

c) covalently linked d) linked via Vander Waal forces

3. Components required to perform AGE experiments _____. (K1)

a) Agarose b) EtBr c) Buffer d) All the above

4. TEMED refers to_____. (K1)

a) tetraethylenediamide b) Tetraethylmethylenediamine

c) tetraethyldiamine d) Tetramethylethylenediamine

5. What is the difference between soft and hard X-rays? (K1)

a) Velocity b) Intensity c) Frequency d) Polarisation

6. Which of the following techniques uses X-rays? (K1)

a) PET b) CT-scanc c) ECG d) Sonography

7. What does UV-Vis spectrophotometry primarily measure? (K1)

a) Mass of a molecule

b) Absorption of visible light

c) Absorption of ultraviolet and visible light

d) Emission of ultraviolet and visible light

8. Fluorescence is a kind of _____. (K1)

a) Photoluminescence b) Chemiluminescence

c) Electroluminescence d) All Mentioned Above

9. The first electronic scintillation counter was invented by_____.

a) Samuel Curran b) Watson c) Griffith d) Louis (K1)

10. Modern versions of the Geiger counter use halogen quench gases, a technique invented by_____. (K1)

a) Sidney H. Liebson b) Samuel Curran

c) Griffith d) Louis

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the principle and procedure of affinity chromatography. (K2)

(Or)

b) Compare the principle of gel filtration chromatography with ion exchange chromatography. (K3)

12. a) List out the steps involved in the preparation of PAGE. (K2)

(Or)

b) Outline the applications of ELISA. (K3)

13. a) Explain the methodology and application of X-ray crystallography. (K2)

(Or)

b) Illustrate the procedure of EEG. (K3)

14. a) Examine the applications of flow cytometry. (K2)

(Or)

b) Explain the principle and instrumentation of IR spectrophotometery. (K3)

15. a) List out the applications of radioisotopes in biological and medical science. (K2)

(Or)

b) Explain the safety measures to be considered while handling the radioactive isotope. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize the different types of centrifuge and rotors. (K4)

(Or)

b) Illustrate the mechanism of separation of solutes through HPLC. (K5)

17. a) Compile the process involved in the separation of DNA using agarose gel electrophoresis. (K4)

(Or)

b) Summarize the principle, components and applications of Scanning Electron Microscope. (K5)

(Or)

b) Discuss the role of transgenic plants in quality modification of food. (K5)

19. a) Demonstrate the methods of food preservation. (K4)

(Or)

b) Prepare the significance of microbiological criteria of food. (K5)

Compulsory- Case Study

20. Botulism is a severe foodborne illness caused by Clostridium botulinum bacteria, which produces potent neurotoxins under anaerobic conditions. Canned foods, if improperly processed or stored, can harbor these bacteria and their toxins.

Conduct a root cause analysis to determine how the botulism contamination occurred. Discuss preventive measures implemented to mitigate future botulism outbreaks from canned foods. (K6)

Reg. No:_____

Course Code: 23PBLET308

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biotechnology

Third Semester

Elective: Food Biotechnology

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Enumerate the Act led to the establishment of FSSAI. (K1)

a) Food Safety Act, 2005

b) Food Standards Act, 2006

c) Food Safety and Standards Act, 2006

d) Food and Nutrition Act, 2007

2. Quote the temperature range that is referred to as the 'Danger Zone' for food safety? (K1)

a) 0°C to 5°C b) 5°C to 60°C

c) 60°C to 100°C d)100°C to 150°C

3. Recall the typical alcohol content range of most beers. (K1)

a) 2-4% b) 4-6% c) 6-8% d) 8-10%

4. Tell the type of alcoholic beverage is made by fermenting honey with water. (K1)

a) Beer b) Mead c) Cider d) Brandy

5. Omit the enzyme is commonly used in the cheese-making process to coagulate milk. (K1)

a) Amylase b) Lactase c) Rennet d) Pepsin

6. Visualize the fortified food product is often used to address vitamin A deficiency in developing countries. (K1)

a) Golden rice b) Enriched white bread

c) Fortified margarine d) Fortified yogurt

7. Identify the preservative that is commonly used in bread to prevent mold growth. (K1)

a) Sorbic acid b) Potassium sorbate

c) Calcium propionate d) Sodium nitrate

8. Locate the drying method involves the use of heated air to remove moisture from food. (K1)

a) Freeze-drying b) Spray drying

c) Air drying d) Drum drying

9. Tell, among the following practices which practice helps minimize the risk of veterinary drug residues in food animals?

a) Using drugs at higher than recommended doses (K1)

b) Following withdrawal periods before slaughter

c) Increasing the frequency of drug administration

d) Ignoring label instructions for drug use

10. Label the microorganism which is known to cause botulism in canned foods? (K1)

a) *Escherichia coli* b) *Salmonella*

c) *Clostridium botulinum* d) *Listeria monocytogenes*

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Tabulate the dietary source of food. (K2)

(Or)

b) List the carbohydrate sources of food. (K3)

12. a) Discuss about alcoholic beverages. (K2)

(Or)

b) Illustrate the importance of natural toxins in food. (K3)

13. a) Summarize the list of enzymes used in food industry. (K2)

(Or)

b) Demonstrate about the vaccines derived from plants. (K3)

14. a) Relate your views on asepsis removal of microbes. (K2)

(Or)

b) Sketch about Bio preservatives. (K3)

15. a) Discuss the contaminants in milk and milk products. (K2)

(Or)

b) Estimate the amount of fungicide residues in food. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the introduction to food safety aspects and food related hazards. (K4)

(Or)

b) Illustrate the vitamins, minerals and water as the dietary source of food. (K5)

17. a) Discuss about the microbial toxins in food. (K4)

(Or)

b) Explain your views about microbial pigments. (K5)

18. a) Relate the objective and needs for food fortification. (K4)

Compulsory – Case Study

20. Elaborate a nutritionist is counseling a client who wants to reduce their purine intake due to concerns about gout and kidney stones. Provide dietary recommendations and tips to help the client lower their purine consumption while maintaining a balanced diet. (K6)

Reg.No:_____

Course Code: 23PBLCT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biotechnology

First Semester

Core: Biochemistry

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The term _____ is defined as the negative logarithm of the hydrogen ion concentration in a solution. (K1)

   a) pH b) Buffer c) Acid d) pKa

2. The first product of Glycogenolysis is _____. (K1)

   a) Glucose 6- phosphate b) Glucose 1- phosphate

   c) Glucose 1, 6- diphosphate d) Fructose 1- phosphate

3. Amino acids are mostly synthesised from _____. (K1)

   a) Fatty acids b) Mineral salts

   c) Volatile acids d) alpha ketoglutaric acid

4. How is secondary structure of a protein stabilized? (K1)

   a) Vander walls forces b) Covalent bond

   c) Hydrogen bonding d) Hydrophobic bond

5. The enzyme minus its coenzyme known as _____. (K1)

   a) Apoenzyme b) Metallo enzyme

   c) Lysozyme d) Isoenzyme

6. The catalytic efficiency of two different enzymes can be compared by the _____. (K1)

a) Formation of the product b) pH of optimum value

c) Molecular size of the enzyme d) Km value

7. The major lipids that make up the cell membrane are_____.

a) Triglyerides b) Fatty acids (K1)

c) Phospholipids d) Sphingomyelins

8. What is the biosynthetic source of all steroid hormones? (K1)

a) Ketone bodies b) Cholesterol

c) Carbohydrate d) Protein

9. In DNA strand the nucleotide are linked together by _____.

a) Glycosidic bonds b) Peptide bonds (K1)

c) Phosphodiester bonds d) Diester bonds

10. Building blocks of nucleic acids are _____. (K1)

a) Amino acids b) Nucleosides

c) Histones d) Nucleotides

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Examine the principles of thermodynamics. (K2)

(Or)

b) Illustrate the gluconeogenesis pathway. (K3)

12. a) Recall the physic-chemical properties of Aminoacids. (K2)

(Or)

b) Discuss about protein peptide hormones. (K3)

13. a) Explain the classification and nomenclature of enzymes. (K2)

(Or)

b) Summarize the mechanism of action of enzymes. (K3)

14. a) Describe the structure of triglycerides. (K2)

(Or)

b) Point out the functions of lipoproteins. (K3)

15. a) Enumerate the biological importance of nucleotides. (K2)

(Or)

b) Classify the types of RNAs. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Illustrate the role of buffers in biochemistry. (K4)

(Or)

b) Discuss about tricarboxylic citric acid cycle. (K5)

17. a) Mention the classification and physicochemical properties of peptides. (K4)

(Or)

b) Analyze the tertiary and quaternary structure of proteins. (K5)

18. a) Explain the regulation of enzyme activity. (K4)

(Or)

b) Interpret the role of ribozymes and abyzymes. (K5)

19. a) Outline the classification and functions of lipids. (K4)

(Or)

b) Analyze the biosynthesis of fatty acids. (K5)

19. a) Elaborate about the SSO and SSP based methods in HLA typing. (K4)

(Or)

b) Clearly explain about molecular diagnosis for early detection of cerebral palsy. (K5)

Compulsory- Case Study

20. Explain the morphologic appearance of a blast and be able to distinguish acute myeloid leukemia (AML) from chronic myelogenous leukemia. (K6)

Reg. No:_____

Course Code: 23PBLCT305

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biotechnology

Third Semester

Core: Molecular Diagnostics and Clinical Testing

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is a metabolic error? (K1)

a) Hypertension b) Cystic Fibrosis

c) Phenylketonuria d) TB

2. The biomarker type most commonly used to detect the presence of a disease is_____. (K1)

a) Diagnostic b) Predictive

c) Prognostic d) Monitoring

3. What is a key feature of Real-time PCR? (K1)

a) It uses fluorescent markers to measure DNA amplification

b) It only works with RNA templates

c) It does not require a thermal cycler

d) It is less accurate than traditional PCR

4. Methylation analysis is used to study_____. (K1)

a) Protein-DNA interactions b) DNA sequence variations

c) Gene expression levels d) DNA methylation patterns

5. The SELDI-TOF MS is primarily used for_____. (K1)
a) Protein identification and profiling
b) DNA sequencing
c) RNA quantification
d) Metabolite analysis

6. i-TRAQ is for_____. (K1)
a) RNA b) DNA c) Proteins d) Lipid

7. SBT is used for_____. (K1)
a) Protein synthesis b) DNA sequencing
c) RNA transcription d) Lipid analysis

8. Amniocentesis is_____. (K1)
a) Noninvasive b) Genetic counseling
c) Ultrasonography d) Invasive

9. HER2 amplification is tested in which of the following? (K1)
a) Colon cancer b) Breast cancer
c) Lung cancer d) Melanoma

10. The primary method for diagnosing SARS-CoV-2 is_____. (K1)
a) Immunohistochemistry b) Northern Blot
c) Blood culture d) PCR

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Outline the key benefits of molecular diagnostics over conventional diagnostics. (K2)

(Or)

b) Give short notes on inherited diseases. (K3)

12. a) Give short notes on MLPA technique. (K2)

(Or)

b) Bring down the procedure and steps of ARMS-PCR. (K3)

13. a) Explain about i-TRAQ technique. (K2)

(Or)

b) Elucidate the principle and applications of SILAC. (K3)

14. a) Discuss about the diagnosis of thalassemia. (K2)

(Or)

b) Brief note on the role of molecular diagnostics in bone marrow transplantation. (K3)

15. a) Explain about molecular oncology testing in lung cancer. (K2)

(Or)

b) Write in brief about the molecular diagnosis of Dengue. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Elaborate about the national and international guidelines for the collection, transport and processing of clinical specimens. (K4)

(Or)

b) Clearly explain about personal and laboratory safety. (K5)

17. a) Describe about Allele specific PCR. (K4)

(Or)

b) Give in detail about xTAG and Luminex. (K5)

18. a) Discuss about protein microarray. (K4)

(Or)

b) Demonstrate in detail about the working principle and applications of MALDI-TOF. (K5)

17. a) IVF is gifted technique for childless couples-Justify. (K4)

(Or)

b) How will you defend that gene therapy is the best solution for people affected by genetic disorders or genetic disease with your answer? (K5)

18. a) Briefly discuss the dedifferentiation, differentiation and transdifferentiation of somatic cells with neat sketch. (K4)

(Or)

b) Discuss the method and steps involved in stem cell banking. (K5)

19. a) Collagen and chitosan is good scaffold biological material for tissue engineering-Comment. (K4)

(Or)

b) Analyse and give a solution to control the cell mobilization during tissue engineering. (K5)

Compulsory- Case Study

20. A nanoparticle-based drug delivery system designed to target and deliver chemotherapy drugs specifically to cancer cells while minimizing damage to healthy tissues. However, she faces challenges with the specificity and controlled release of the drug. How to improve the targeting specificity and controlled release of her nanoparticle-based drug delivery system, and how can she evaluate the effectiveness of these strategies in preclinical models? (K6)

Reg. No:_____

Course Code: 23PBLCT301

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 24 and onwards)

Biotechnology

Third Semester

Core: Animal Biotechnology and Stem Cell Biology

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The aminoacid L-glutamine act as a_____in animal tissue culture medium. (K1)

a) growth factor b) adherence

c) toxic d) indicator

2. HEPES buffer is a_____. (K1)

a) 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid

b) 4-2hydroethylene piperazineethanosulphate

c) Hydroxyethylenepiperazineethane sulphuric acid

d) Hydroxyethanolic sulfonic acid

3. During Invitro maturation the oocytes are maintained in_____. (K1)

a) Serum medium b) T6 medium

c) cumulus oocytes d) Earl's solution

4. Processes of separating fast moving sperm from sluggish moving sperms called_____. (K1)

a) IUI b) IVF c) AFI d) ITI

5. Neural stem cells from the brain can differentiate into which types of cell? (K1)

a) Only specialized brain cells
b) Specialized brain cells and specialized skin cells
c) All types of specialized cells
d) Only specialized blood cells

6. Stem cells can be_____. (K1)

a) Pluripotent b) Multipotent
c) Totipotent d) All of the above

7. What does pluripotent mean with respect to stem cells? (K1)

a) The same thing as progenitor
b) They only give rise to red blood cells
c) They stay the same cell for the rest of their life
d) They have the potential to become more than one kind of cell

8. Cell signaling is_____. (K1)

a) Intercellular b) Intracellular
c) Both (a) and (b) d) None of the above

9. How many types of cell signalings are there? (K1)

a) Four b) Five c) Seven d) Eight

10. Which is a synthetic tissue engineered scaffold material? (K1)

a) Collagen b) Hyaluroni acid
c) Polylactic acid d) Fibrin

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Animal cell culture media play a vital role for the growth of the cell line-Justify. (K2)

(Or)

b) Write short notes on cell synchronization and add a point on importance of FACS? (K3)

12. a) Synthetic viral vectors play vital role in gene transfer-Justify. (K2)

(Or)

b) Comprehense any two DNA based diagnosis of genetive diseases. (K3)

13. a) Give the pipeline on classification of stem cells and highlight the points on its characteristic features. (K2)

(Or)

b) Explain the method of preservation and maintenance of stem cells. (K3)

14. a) Differentiate embryonic and adult stem cell. (K2)

(Or)

b) Discuss the ethical consideration in stem cell research. (K3)

15. a) List out the properties of biomaterials in tissue engineering. (K2)

(Or)

b) Cell can communicate through various type of signalling-Explain. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Explain in detail how transgenic animals are employed for various beneficial purposes with suitable examples? (K4)

(Or)

b) Now a days zebra fish act as common animal model to enrich the research-Explain. (K5)

(Or)

b) Elaborate about allele mining and how does it contribute to the development of improved crop varieties? (K5)

18. a) Exemplify the protoplast transformation method using PEG. (K4)

(Or)

b) Describe the process of Agrobacterium-mediated genetic transformation in plant cells. (K5)

19. a) Give detailed account on CRISPR/Cas system and its application in genome editing. (K4)

(Or)

b) Discuss the role of promoters and polyA signals in designing gene constructs for plant transformation. (K5)

Compulsory- Case Study

20. Summarize key findings and insights from the case study on CRISPR-Cas9. (K6)

Reg. No:_____

Course Code: 23PBLCT304

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biotechnology

Third Semester

Core: Plant Biotechnology

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Androgenesis refers to the production of haploids from? (K1)
   a) Egg cells b) Pollen grains
   c) Root cells d) Stem cells
2. Somatic hybridization involves which of the following? (K1)
   a) Fusion of gametes b) Fusion of somatic cells
   c) DNA sequencing d) Protein synthesis
3. What do biochemical markers analyze? (K1)
   a) DNA sequences b) Plant color
   c) Chromosome structure d) Protein or enzyme levels
4. SNP markers identify_____. (K1)
   a) Single nucleotide changes
   b) Single sequence repeats
   c) Multiple nucleotide changes
   d) Multiple sequence repeats
5. What is the role of *Agrobacterium* in plant transformation? (K1)
   a) Pathogen b) Vector c) Enzyme d) Protein

6. What method uses PEG for DNA delivery? (K1)

a) Electroporation b) Bombardment

c) Protoplast transformation d) Floral dip

7. What is CRISPR/Cas primarily used for? (K1)

a) Protein synthesis b) DNA editing

c) RNA splicing d) Gene silencing

8. Which element in a gene construct enhances mRNA stability and translation? (K1)

a) Promoter b) Introns

c) PolyA signal d) Exons

9. Which gene is commonly used for pest resistance in transgenic crops? (K1)

a) Bt toxin b) ACC synthase

c) Polygalacturonase d) Vitamin E

10. Which gene modification can help in nematode resistance? (K1)

a) Cysteine b) Protease inhibitor

c) ACC synthase d) ACC oxidase

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Give the basic steps involved in the production of somatic hybrids. (K2)

(Or)

b) Explain how temperature control in a greenhouse benefits plant growth. (K3)

12. a) Justify how cytological markers can be used to detect chromosomal abnormalities in plants? (K2)

(Or)

b) Report SNP markers and explain their use in marker-assisted selection. (K3)

13. a) Comment on the binary vectors in plant transformation. (K2)

(Or)

b) Give short notes on floral dip transformation. (K3)

14. a) Explain how selectable markers are used to identify transformed plants with an example? (K2)

(Or)

b) Brief note on the principles of RNAi technology and its application in gene silencing. (K3)

15. a) Demonstrate the strategies used to enhance beta carotene content in transgenic plants and its health benefits. (K2)

(Or)

b) Outline the process and benefits of engineering transgenic plants for delayed fruit ripening. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss the process of artificial seed production and their applications in agriculture. (K4)

(Or)

b) Elucidate the techniques used in cryopreservation and their role in the conservation of plant genetic resources. (K5)

17. a) Explain the steps of RFLP technique and how it is applied to genetic mapping and identification. (K4)

17. a) Summarize the structure of mitochondria and explain their role in the cell. (K4)

(Or)

b) Explain the function of nuclear pores in the nuclear envelope and describe how they regulate the transport of molecules between the nucleus and the cytoplasm. (K5)

18. a) Explain the process and stages of mitosis. (K4)

(Or)

b) Describe how G-protein-coupled receptors (GPCRs) initiate a signal transduction cascade upon lig and binding, and explain the role of second messengers in this process? (K5)

19. a) How does the presence of lactose influence the activity of the lac operon in *E. coli*, and what role does the lac repressor play in this regulation? (K4)

(Or)

b) Explain the role of the Rho protein in the termination of transcription in prokaryotes. How does Rho-dependent termination differ from intrinsic termination? (K5)

Compulsory – Case Study

20. Discuss the concept of enhancers and silencers in transcriptional regulation. Provide an example of how these elements can influence gene expression? (K6)

Reg.No:_____

Course Code: 23PBLCT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biotechnology

First Semester

Core: Cell and Molecular Biology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The process by which water is absorbed by solids, like colloids causing them to increase in volume is called as_____. (K1)

a) diffusion b) imbibition

c) facilitated diffusion d) osmosis

2. The term cell was given by_____. (K1)

a) Robert Hooke b) Tatum c) Schwann d) De Bary

3. Inner membrane of mitochondria is rich in phospholipid _____. (K1)

a) phosphatidylserine b) phosphatidylinositol

c) phosphatidylcholine d) cardiolipin

4. This is a correctly matched pair. (K1)

a) Lysosomes – involved in synthesizing amino acids

b) Microsomes – take part in photosynthesis

c) Centrosomes – Provides enzymes essential for digestion

d) Endoplasmic reticulum – has a role in the formation of a new nuclear membrane while cell divides

5. Who proved that DNA was indeed the genetic material through experiments? (K1)

a) Alfred Hershey and Maclyn McCarty

b) Oswald Avery and Maclyn McCarty

c) Oswald Avery and Martha Chase

d) Alfred Hershey and Martha Chase

6. Cell signaling is _____. (K1)

a) Intercellular b) Intracellular

c) Both (a) and (b) d) None of the above

7. The enzyme required for transcription is_____. (K1)

a) RNAase b) DNA polymerase

c) RNA polymerase d) Restriction enzymes

8. A DNA sequence is read by an RNA polymerase that produces complementary anti parallel RNA strand known as_____. (K1)

a) Hexa transcript b) secondary transcript

c) primary transcript d) tertiary transcript

9. In protein synthesis, translocation is initiated with the movement of_____. (K1)

a) tRNA from P-site to the A-site

b) dipeptidyltRNA from A-site to P-site

c) tRNA from A-site to P-site

d) tRNA from P-site to E-site

10. In translation, this is not an essential component_____. (K1)

a) amino acid b) ligase c) mRNA d) anti codon

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe the role of cholesterol in cell membrane. (K2)

(Or)

b) Explain the three structural model of cell membrane. (K3)

12. a) Illustrate the Golgi apparatus and its function. (K2)

(Or)

b) Describe the different types of molecular motors and their specific functions. (K3)

13. a) Explain the molecular events during DNA Replication of prokaryotic. (K2)

(Or)

b) Describe the levels of Eukaryotic Chromosomal Structure and Compaction. (K3)

14. a) Compare and contrast of Prokaryotic and Eukaryotic Transcription. (K2)

(Or)

b) Explain gene regulation with suitable example. (K3)

15. a) Explain the function of RNA polymerase 1 and RNA polymerase 2 in eukaryotes? (K2)

(Or)

b) Explain the mechanism of RNA processing with neat diagram. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the structure of the sodium-potassium pump. (K4)

(Or)

b) Describe the role of clathrin in receptor-mediated endocytosis and explain how this process is vital for cellular function. (K5)

Reg. No:_____

Course Code: 23PBLAL312

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 24 and onwards)

Biotechnology

Third Semester

ALC: Regenerative Medicine

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Define regenerative medicine.	(K1)
2.	Observe the principles of tissue organization.	(K1)
3.	Relate the introduction to stem cells.	(K1)
4.	Generalize the 3D cell culture technique.	(K1)
5.	Demonstrate the cell material interaction.	(K1)
6.	Discuss about bioactive materials.	(K1)
7.	Prioritize the architecture of scaffold.	(K1)
8.	Contrast the examples for ideal scaffold.	(K1)
9.	Critique your views on bioartificial heart.	(K1)
10.	Defend any two uses of stem cells.	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Enumerate the basis of tissue renewal.	(K2)
	(Or)	
b)	Observe and explain the levels of regeneration occurrence.	(K3)
12. a)	Generalize about extracellular matrix.	(K2)
	(Or)	
b)	Express the cell reprogramming in mammals.	(K3)

13. a) Manipulate the types of biomaterials in regenerative medicine. (K2)

(Or)

b) Sketch the smart materials used in biomaterial classification. (K3)

14. a) Correlate the role of scaffold in tissue engineering. (K2)

(Or)

b) Infer about control of architecture of scaffold. (K3)

15. a) Discriminate about the tissue regeneration driven by growth hormones. (K2)

(Or)

b) Critique your views on neural tissue engineering. (K3)

SECTION - C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Reproduce the principle and organization of tissue development. (K4)

(Or)

b) Observe and describe the strategies of regenerative medicine. (K5)

17. a) Give a note on cell reprogramming and SCNT. (K4)

(Or)

b) Express about mammalian cell sources. (K5)

18. a) Describe how biomaterials plays an important role in drug delivery? (K4)

(Or)

b) Relate the bioinert and biodegradable classification of biomaterials. (K5)

19. a) Focus on scaffold design and fabrication techniques. (K4)

(Or)

b) Survey the criteria required for formulating ideal scaffold. (K5)

20. a) Editorialize about the bio artificial kidney and heart. (K4)

(Or)

b) Compare musculoskeletal and cardiovascular tissue engineering. (K5)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Illustrate isolation techniques of pure culture and preservation of bacteria. (K4)

(Or)

b) Summarize the steps involved in NGS for the study of microbial diversity. (K5)

17. a) Predict and describe a method used to determine the mass of proteins and peptides. (K4)

(Or)

b) Justify how FAME profiling is used to characterize microbial community composition – Justify? (K5)

18. a) Evaluate the role of SSCP method to identify different genomic variants in large number of samples. (K4)

(Or)

b) Examine various steps involved in construction of metagenomic library with large insert. (K5)

19. a) Explain the food preservations methods in detail. (K4)

(Or)

b) Design a protocol to prepare *Bacillus thuringiensis* based biopesticide. (K5)

Compulsory – Case Study

20. Predict and diagnose the type of infection and recommend an appropriate antifungal medication caused by *Candida* species. (K6)

Reg.No:_____
Course Code: 23PBLCT103

M. Sc. Degree Examination – November 2024
(For the candidates admitted during the year 2023 - 2024 and onwards)
Biotechnology
First Semester
Core: Microbiology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)
Answer ALL questions.
Choose the correct answer.

1. The correct order of taxonomic groups from higher to lower rank is_____. (K1)
   a) Kingdom—Order—Class—Family
   b) Order—Class—Division—Family—Genus—Species
   c) Kingdom—Order—Division—Family—Class—Genus Species
   d) Kingdom—Division—Class—Order—Family—Genus Species

2. All living organisms are linked to one another because_____.
   a) They have common genetic material of the same type (K1)
   b) They share common genetic material but to varying degrees
   c) All have common cellular organization
   d) All have common cellular function

3. Two organisms which are very closely related to each other have which of the following property? (K1)
   a) similar mol% G+C values
   b) different mol% G+C values
   c) similar mol% G+C values and heteroduplexes are formed
   d) different mol% G+C values and heteroduplexes are not formed

4. Which of the following is incorrect regarding the terminologies of phylogenetics? (K1)

a) The connecting point where two adjacent branches join is called a node

b) Node represents an inferred ancestor of extant taxa

c) At the tips of the branches are long lost species or sequences

d) The lines in the tree are called branches

5. Which of the following is not termed as hybridization? (K1)

a) DNA and cDNA

b) DNA and mRNA

c) DNA from different species

d) DNA from male and female of same species

6. Which technique is commonly used in metagenomics to study the genetic diversity of microbial communities? (K1)

a) Shotgun sequencing b) Microarray analysis

c) PCR d) Western blotting

7. What temperature does food spoil? (K1)

a) Anything over 40 degrees b) 32 degrees

c) Exactly 60 degrees d) Anything below 40 degrees

8. Mycorrhizae are_____. (K1)

a) Nitrogen fixing bacteria b) Carbon fixing bacteria

c) Nitrogen fixing fungi d) Carbon fixing fungi

9. Which of the following is not a common bacterial pathogen causing diarrhea? (K1)

a) *Shigella* spp b) *Salmonella* spp

c) *Enterococcus faecalis* d) *Campylobacter* spp

10. What does *Staphylococcus aureus* cause? (K1)

a) Boils, septicaemia, food poisoning, wound infections

b) Tonsilitis, cellulitis, scarlet fever, septicaemia

c) Pneumonia, otitis media, meningitis

d) Endocarditis, dental caries

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe in brief about fungal classification with an example. (K2)

(Or)

b) Explain the role of microbial culture collection centers in India. (K3)

12. a) Illustrate 16S rRNA gene sequencing method to construct phylogenetic tree. (K2)

(Or)

b) Write a note on DNA-DNA hybridization method. (K3)

13. a) Decipher about T-RFLP method to study the microbial communities. (K2)

(Or)

b) Explain the roll tube method in culturing of anaerobic bacteria. (K3)

14. a) Give a detail account on types of food spoilage. (K2)

(Or)

b) Outline food laws and its regulations. (K3)

15. a) Analyze the Mycobacterium infection based on pathogenecity. (K2)

(Or)

b) Infer about the pathogenecity of Malarial disease. (K3)

Reg.No:_____

Course Code: 23PBLCT104

M.Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 -2024 and onwards)

Biotechnology

First Semester

Core: Genetics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which among the following is a prokaryotic character of gene? (K1)
   a) monocistronic b) polycistronic
   c) acistronic d) promoter
2. Jumping genes affect the DNA sequence by the process of_____. (K1)
   a) transcription b) transposition
   c) translation d) transportation
3. *Mirabilis jalapa* shows genetic resemblance to_____. (K1)
   a) incomplete dominance b) co-dominance
   c) Mendelian linkage d) pleiotrphy
4. Crossing with recessive parent to detect genotype is termed_____. (K1)
   a) single cross b) double cross
   c) back cross d) test cross
5. Juvenile diabetes is a_____. (K1)
   a) Type I b) Type II
   c) Type III d) clinical symptom

6. Growth pattern of beard is a _____ trait. (K1)

a) autosomal dominant b) recessive

c) sex-linked d) sex-limited

7. Which among the following is NOT due to number anomaly? (K1)

a) Down's b) Di George

c) Klinfelter d) Patau's

8. Genetic disorders are identified through prenatal diagnosis using_____. (K1)

a) banding pattern b) fluorescent probes

c) mutation sites d) phenotype

9. A mutation can become a silent mutation with_____. (K1)

a) one base deletion b) three base deletion

c) inversion d) stop codon appears

10. Non coding RNAs in two different organisms denote. (K1)

a) sister cell origin b) same mutation

c) common ancestry d) infection

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Illustrate gene mapping by classic genetic crosses. (K3)

(Or)

b) Explain the applications of transposons in research. (K2)

12. a) Describe about lethal genes and their role. (K3)

(Or)

b) Exemplify sex determination. (K2)

13. a) Detail the principles of population genetics. (K3)

(Or)

b) Enlist the reasons for male lethality. (K2)

14. a) Distinguish the banding nomenclature for chromosomes. (K3)

(Or)

b) List out the chromosomal abnormalities in cancer cells. (K2)

15. a) Exemplify the uses of polymorphism. (K3)

(Or)

b) Criticize the effect of non coding RNAs in a cell. (K2)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) List out the various phenotypic and genotypic markers. (K4)

(Or)

b) Explain how restriction modification system acts as immunity in prokaryotes? (K5)

17. a) Detail on dihybrid cross with an example. (K4)

(Or)

b) Enlist various anomalies arising due to change in chromosomal number. (K5)

18. a) Summarize on autosomal inheritance. (K4)

(Or)

b) Exemplify multi factorial traits in concern to Diabetes mellitus. (K5)

19. a) Illustrate on karyotyping procedure. (K4)

(Or)

b) Give a detailed note on comparative genomic hybridization (CGH). (K5)

Compulsory – Case Study

20. Develop the Clinical Utility of Epigenetics. (K6)

15. a) Outline about system biology workbench and write its disadvantages. (K2)

(Or)

b) Deduce the steps involved in the simulation of the system in Python. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Classify Data mining methods for sequence analysis with short notes. (K4)

(Or)

b) Summarize the hypothesis-driven research in systems biology. (K5)

17. a) Explain translational control mechanism in bacteria. (K4)

(Or)

b) Decipher microarrays and list out their types. (K5)

18. a) Prepare a flowchart to identify the intermittent compound defect in the biochemical pathway of diseased condition. (K4)

(Or)

b) Generalize the theory and practice of the KEGG pathway. (K5)

19. a) Design a metabolomic analysis with targeted approach. (K4)

(Or)

b) SBML-PET: A parallel parameter estimation tool - Validate. (K5)

Compulsory- Case Study

20. Propose the challenges does AI face in agricultural implementation. (K6)

Reg. No:_____

Course Code: 23PBLCT303

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biotechnology

Third Semester

Core: Bioinformatics and System Biology

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)
Answer ALL questions.
Choose the correct answer.

1. What type of data does bioinformatics primarily analyze? (K1)
   a) Biological sequence and structures
   b) Ecological relationships
   c) Chemical reactions in cells
   d) Physical properties of organisms
2. Which of the following does not describe local alignment algorithm? (K1)
   a) In traceback step, beginning is with the highest score, it ends when 0 is encountered
   b) First row and first column are set to 0 in initialization step
   c) Score can be negative
   d) Negative score is set to 0
3. How does transcriptomics contribute to understanding cellular functions? (K1)
   a) By determining carbohydrate structures
   b) By analyzing gene expression patterns and regulatory mechanisms
   c) By identifying DNA mutations
   d) By studying protein structures

4. Which of the following is incorrect about Classification of microarray data? (K1)

a) For microarray data, clustering analysis identifies coexpressed and coregulated genes

b) For microarray data, clustering analysis identifies coexpressed but not coregulated genes

c) For microarray data, clustering analysis identifies and coregulated but not coexpressed genes

d) Genes within a category have more similarity in expression than genes from different categories.

5. The inborn error of amino acid metabolism, alkaptonuria is due to the lack of one of the following enzymes. (K1)

a) Fumarylacetatoacetate hydrolase

b) Alpha ketoacid decarboxylase

c) Homogentisate oxidase

d) p-hydroxyphenylpyruvate decarboxylase

6. The pancreatic enzyme not involved in protein digestion is_____. (K1)

a) Carboxypeptidase b) Trypsin

c) Lipase d) Chymotrypsin

7. What does Proteomics refer to? (K1)

a) Set of proteins in a specific region of the cell

b) Biomolecules

c) Set of proteins

d) The entire set of expressed proteins in the cell

8. Which of the following is not a solution representation in a genetic algorithm? (K1)

a) Binary valued b) Real valued

c) Permutation d) Combinations

9. What has catapulted molecular biology into the existing realms of systems biology? (K1)

a) Genomics and proteomics b) Anthropology

c) Psychology d) Physiology

10. SimTKis a_____. (K1)

a) Biotechnology computation community

b) Biomedical computation community

c) Biochemical computation community

d) Genomics computation community

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Write the definition and databases for Nucleic acid and protein sequence. (K2)

(Or)

b) Elucidate accessibility and compatibility of molecular databases. (K3)

12. a) Exemplify the evolution of transcriptional networks. (K2)

(Or)

b) List out the importance of non-coding sequences. (K3)

13. a) Relate the definition of protein metabolism pathway with suitable examples. (K2)

(Or)

b) Deduce metabolic regulation pathway as flow chart. (K3)

14. a) Discuss about proteomics and phenomics. (K2)

(Or)

b) Illustrate the Artificial Intelligence tools and outline about its uses. (K3)

Reg. No.: _____

Course Code: 23PBBCT103

M.Com. Degree Examination -- November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

First Semester

Core: Database Management System

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which type of data can be stored in the database? (K1)
   a) Image oriented data
   b) Text, files containing data
   c) Data in the form of audio or video
   d) Multi media data
2. Which of the following represents a real-world object or concept in data modeling? (K1)
   a) Primary key b) Attribute c) Entity d) Foreign key
3. Which one of the following given statements possibly contains the error? (K1)
   a) select * from emp where empid = 10003;
   b) select empid from emp where empid = 10006;
   c) select empid from emp;
   d) select empid where empid = 1009 and Lastname = 'Kumar';
4. Which of the following is/are TRUE about DDL command?(K1)
   a) Our data is stored in a table that is described by the schema, thus DDL commands deal with the schema.
   b) With the DDL commands, any structural changes can be made to the table, including creation, deletion, and alteration.
   c) Both A. and B.
   d) with the DDL, commands, any structural changes can be made to the table excluding creation, deletion and alteration

5. A relation is in 2NF if it is in 1NF and all its non-key attributes are _____? (K1)
   a) Dependent on part of the primary key
   b) Dependent on the entire primary key
   c) Independent of the primary key
   d) Independent of any other relation
6. Which of the following is a requirement of 3NF? (K1)
   a) Must contain a composite
   b) Must contain a partial dependency
   c) Must contain no partial dependencies
   d) Must contain no transitive dependencies
7. Consider the following action_____. (K1)
   TRANSACTION.....
   Commit;
   ROLLBACK;
   What does Rollback do?
   a) Undoes the transactions before commit
   b) Clears all transactions
   c) Redoes the transactions before commit
   d) No action
8. Which of the following protocols ensures conflict serializability and safety from deadlocks? (K1)
   a) Two-phase locking protocol b) Time-stamp ordering protocol
   c) Graph based protocol d) Total phase locking Protocol
9. In some cases of query processing, the operations in a single query are executed at the same time or in random order. What type of parallelism is this? Choose the most relevant one from the following_____. (K1)
   a) Intra-operation parallelism b) Pipelined parallelism
   c) Independent parallelism d) Inter-operation parallelism

10. A heterogeneous distributed database is which of the following?
    a) The same DBMS is used at each location and data are not distributed across all nodes. (K1)
    b) The same DBMS is used at each location and data are distributed across all nodes.
    c) A different DBMS is used at each location and data are not distributed across all nodes.
    d) A different DBMS is used at each location and data are distributed across all nodes.

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) What are the Component of Data dictionary? (K2)

(Or)

b) What are the relational algebra operations supported in SQL? (K3)

12. a) Discuss in detail Views and also Creating, Altering, Destroying of Views. (K2)

(Or)

b) Explain the details about embedded SQL. (K3)

13. a) Define BCNF .How does it differ from 3NF. (K2)

(Or)

b) Explain functional dependency concepts. (K3)

14. a) Explain the concepts of serializability. (K2)

(Or)

b) What is concurrency control? How is it implemented in DBMS? (K3)

15. a) What are Database Recovery Techniques? (K2)

(Or)

b) What is deadlock? Explain the various approaches used to recover from deadlock. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the Architecture of DBMS. (K4)

(Or)

b) What is Data Model? Explain all Data Model. (K5)

17. a) Explain various DML commands with neat syntax. (K4)

(Or)

b) Define trigger and explain its three parts. Compare row level and statement level triggers. (K5)

18. a) What is normalization? What are the conditions are required for a relation to be in 2NF, 3NF and BCNF explain with examples. (K4)

(Or)

b) Explain the ACID properties of a transaction. (K5)

19. a) Explain in detail about Validation-Based Protocols. (K4)

(Or)

b) Explain distributed database Architecture with neat Diagram. (K5)

Compulsory – Case Study

20. A Gift Gallery has different stores in India. Database Administrator Abhay wants to maintain database of their Salesmen in SQL to store the data.He has decided that

Name of the database: GiftGallery

Name of the table: Salesman

Attributes of the tables:

Scode – Numeric,

Sname – Character 25,

Address - Character 25,

Dojoin- Date,

Sales – Numeric and

Area – Character 10

Consider the following records in 'Salesman' table and answer the given questions:

Table: Salesman

Scode	Sname	Address	Dojoin	Sales	Area
100	Amit	Delhi	2017/09/29	5000.90	East
101	Sushant	Gurgaon	2018/01/01	7000.75	East
102	Priya	Noida	2018/04/25	3450.45	West
103	Mohit	Delhi	2018/11/03	6000.50	North
104	Priyanshi	Delhi	2019/12/15	8000.62	North

Questions:

1. State the command that will give the output as :

Sname
Sushant
Priya

2. Help Priya to display sname and sales of east and west areas.
3. What will be the output of the following command?

Select Right(Sname,3), Round(Sales) from Salesman Where Sname Like "P%"; (K6)

Compulsary – Case Study

20. Monthly Payments:

The monthly payment on a loan may be calculated by the following formula:

$$\text{Payment} = \frac{\text{Rate} \times (1+\text{Rate})^{N}}{(1+\text{Rate})^{N} - 1} \times L$$

Rate is the monthly interest rate, which is the annual interest rate divided by 12.

N is the number of payments and L is the amount of the loan.

a) Design a form to get these values.

b) Write code to get output as follows.

Loan Amount	:	Rs. 10000.00
Monthly Interest Rate	:	1%
Number of Payments	:	36
Monthly Payment	:	Rs.33.014
Amount Paid Back	:	Rs.11957.15
Interest Paid	:	Rs.1957.15

Reg. No:_____

Course Code: 23PBBCT303

M.Com. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Commerce with CA

Third Semester

Core: Visual Basic

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The _____ is show under or below the Project Explorer window. (K1)
   a) Properties Window b) Project Explorer
   c) Menu bar d) Toolbox
2. _____ in Visual Basic has characteristics such as color and size, shape, font style, background colour, width, height etc.
   a) Properties Window b) Project Explorer (K1)
   c) Object d) Object Browser
3. _____ Displays a list of items from which a user can select one. (K1)
   a) List box b) radio
   c) check box d) option button
4. Text box can handle string (text) and numeric data but not images or pictures. (K1)
   a) True b) False
   c) Both d) none of these
5. In VB , The while loop is end by _____. (K1)
   a) stop b) next c) end d) nested

6. _____ first we check the condition, if the condition is true then it execute the true statement same as while condition. (K1)

a) For loop b) do while

c) if condition d) nested

7. The function of _____ is to give a pop-up message to the user. (K1)

a) msgbox() b) inputbox()

c) print d) nested

8. An _____ function will display a message box where the user can enter a value. (K1)

a) Msgbox() b) inputbox()

c) print d) nested

9. ADODC is used to _____. (K1)

a) link to database b) Create database

c) link with window d) none of these

10. The data control s used to link _____. (K1)

a) oracle b) Ms-excel

c) Ms-access d) MySql

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) What are the types of common properties of VB form? Explain. (K2)

(Or)

b) How to add controls to a form? Explain (K2)

12. a) Describe the text box control with an example. (K3)

(Or)

b) Explain the use of Timer control in detail. (K2)

13. a) Write a program to find the biggest of three numbers using else if control. (K2)

(Or)

b) What is array? Explain with an example. (K3)

14. a) Explain the purpose of Message box in detail. (K2)

(Or)

b) Describe the Need input box control in detail. (K3)

15. a) Distinguish between the ODBC and OLEDB. (K4)

(Or)

b) What is the use of record set in ADO? Explain. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) What is Menu? How to add the menu in the form? Explain. (K4)

(Or)

b) Determine the methods and events in VB form. (K5)

17. a) Explain with example (K3)

i) Checkbox ii) Option button iii) List box

(Or)

b) Compare the Drive list box and Directory list box in detail.(K4)

18. a) Discuss the scope and lifetime of variables. (K4)

(Or)

b) Explain the control flow in Visual basic with example. (K5)

19. a) Illustrate the implementation of MDI form. (K4)

(Or)

b) Write a VB program to connect with the database. (K5)

Compulsory – Case Study

20. Marketers of pimple creams, cosmetics, record albums, movies and other product already widely used by teens do focus a lot of advertising and promotion targeted at age group between 12 and 19. But most other companies ignore it. Many of the large food concerns do not make any efforts to appeal to that group because of the belief that most food products are bought by homemakers' women who are married. Another reinforcing fact is that the post war baby boom generation is now mostly in its thirties.

However, companies with such attitude may be overlooking a key market recent survey of 1,002 teenager found that 64% do some of their family's food shopping. Of that group, more than one –third shop at least once a week. The average teen agers grocery bill is $24. It was also evident that teen-agers in the household influence the choice of brand purchased. Six out of every 10 teen-agers supermarket shoppers have a hand in making the family grocery list , four out of 10 select brand to brought.

Although the number of teens is expected to drop to 23 million in 1990 from 28.6 million in 1980, the youths have impressive spending power. This is because three out of five of them hold either full or part time job. Based on a survey of 2,000 consumers between the age of 12 and19 years, the estimated weekly earnings of U.S teen-agers amount to about $600 million. In addition , four of every 10 of them receive allowances from parents of $80 million a week. Thus the clout (garment) of teen-age market is about $35 muillion a year. Nearly all of the teen-ager income is dispensable. They don't pay recent or electric bill. It all goes to spending on consumer goods.

Question:

1. Give your suggestions on above marketing research. (K6)

Reg. No.: _____

Course Code: 23PBBCT102

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

First Semester

Core: Marketing Management

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Marketing is a process of converting the potential customers into _____. (K1)
   a) Actual customers b) Prospective customers
   c) Marketers d) None of these
2. Marketing is a _____ process. (K1)
   a) Goal oriented b) Exchange c) Social d) All of these
3. Under _____ marketing strategy, market segments are identified and a different marketing mix is developed for each of the segments. (K1)
   a) Differentiated b) Focus
   c) Customized d) Normal
4. _____ includes review of sales, profit projections and cost for a new product, to find out whether it satisfied the company objective or not. (K1)
   a) Product Development b) Business Analysis
   c) Marketing Strategy d) Test Marketing
5. When the target market views a brand as one more entry in the market, it is called_____. (K1)
   a) Over Positioning b) Confused positioning
   c) Under positioning d) Doubtful positioning

6. Which of the following is not the stage of product life cycle? (K1)
a) Introduction b) Growth
c) Market segmentation d) Decline

7. _____ is an example of a personal factor that influences consumer behavior. (K1)
a) Religion b) Reference group
c) Sub-culture d) Occupation

8. A_____ is the strong feeling, desire emotion that makes a buyer to buy a product. (K1)
a) Buying Motive b) Demand c) Price d) Quality

9. One of the features of marketing research is_____. (K1)
a) It is multi-tasking b) It is multi-purpose
c) It is multi-disciplinary d) It is multi-natured

10. _____ is the marketing of products that are regarded to be safe for the environment. (K1)
a) Green Marketing b) Social Marketing
c) Online Marketing d) Referral Marketing

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Elucidate the prospects and challenges of Marketing in Global Environment. (K2)

(Or)

b) Enumerate the internal and external factors of Marketing Environment. (K3)

12. a) Explain various key drivers of Marketing Strategies. (K2)

(Or)

b) List the various Strategic Marketing Mix Components. (K3)

13. a) What is meant by Pricing? and State the objectives of Pricing. (K2)

(Or)

b) Describe the various phases of Product Life Cycle. (K3)

14. a) Describe the factors that influencing Consumer Behaviour. (K2)

(Or)

b) List out the guidelines for successful implementation of CRM. (K3)

15. a) Define Marketing Research and sketch out the components of Marketing Research. (K2)

(Or)

b) Explain the various types of Marketing Research. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Discuss the various strategies for Industrial Marketing. (K4)

(Or)

b) Explain the various phases of Marketing Strategy Formulation. (K5)

17. a) Enumerate the steps involved in New Product Development. (K4)

(Or)

b) What are the factors influencing Market Segmentation? Discuss. (K5)

18. a) Explain the steps involved in Consumer Purchase Decision Process. (K4)

(Or)

b) What is Customer Satisfaction? How to measure customer satisfaction? Explain. (K5)

19. a) Outline the steps involved in Marketing Research Process. (K4)

(Or)

b) Write a note on the following: (K5)
a) Ambush Marketing b) Guerrilla Marketing
c) Social Media Marketing d) Ethics in Marketing

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Recall the advantages and disadvantages of derivative market. (K4)

(Or)

b) Describe the trading mechanism of derivatives followed in India. (K5)

17. a) Discuss the various types of index derivatives. (K4)

(Or)

b) Summarize the economic significance of index movements. (K5)

18. a) Write a note on forward and future contract. (K4)

(Or)

b) Interpret briefly about call option and put option. (K5)

19. a) Explain the types of swaps market. (K4)

(Or)

b) Evaluate foreign currency swaps with an example. (K5)

Compulsary – Case Study

20. Indian commodity market is one of the emerging markets in the world. With the globalization and advances in technology the commodity trading has become feasible for market participants. The recent policy changes paved way for investors to play in the commodity market and that lead the commodities to emerge as an asset class and get shares in their portfolio. The market efficiency is one of the important features that gives confidence for the investors to trade in any market. This also fits to the Indian commodity market. The precious metals such as Gold and Silver which has an emotional bonding with the Indians. Show how this plays vital role.

Reg. No:_____

Course Code: 23PBBET306

M.Com. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Commerce with CA

Third Semester

Elective: Futures and Options

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Hedging Strategy _____. (K1)
   a) Removes losses b) Helps reduce risk
   c) Helps make excess profit d) Is independent of risk
2. An open position in the options market exists only for _____. (K1)
   a) Long calls
   b) Long puts
   c) Short calls and Long puts
   d) Long position and short position in both calls and puts
3. An Index derivative is _____. (K1)
   a) A derivative based on individual stocks
   b) A derivative based on bond prices
   c) A derivative based on the value of a stock market index
   d) A derivative based on commodities
4. The primary purpose of trading index derivatives is_____. (K1)
   a) To speculate on individual stock prices
   b) To hedge against overall market risk
   c) To invest in real estate
   d) To buy commodities at a lower price

5. The main purpose of using forward and future contracts is_____. (K1)

a) To invest in real estate

b) To hedge against price fluctuations

c) To receive dividends

d) To buy commodities at a discount

6. The premium in an options contract is _____. (K1)

a) The current market price of the underlying asset

b) The price at which the option can be exercised

c) The amount paid by the buyer to the seller for the option

d) The total value of the option

7. Swap is a _____. (K1)

a) A contract to buy or sell a physical asset

b) A contract to exchange cash flows between two parties

c) A contract to buy or sell stocks

d) A contract to buy or sell options

8. The most common type of swap is _____. (K1)

a) Commodity swap b) Currency swap

c) Interest rate swap d) Equity swap

9. What is a "spot market" in commodities? (K1)

a) A market where commodities are traded for immediate delivery

b) A market for future delivery of commodities

c) A market for trading commodity options

d) A market for trading commodity swaps

10. The role of a commodity speculator is _____. (K1)

a) To produce and supply commodities

b) To regulate the commodity markets

c) To store and transport commodities

d) To buy and sell commodities for short-term profit based on price movements

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the Concept of derivative market and explain its types. (K2)

(Or)

b) List the functions of derivatives market. (K3)

12. a) Summarize the importances of index derivatives. (K2)

(Or)

b) Discuss the Derivatives in NIFTY and SENSEX. (K3)

13. a) List the assumptions of forward contract. (K2)

(Or)

b) Write the limitations of forward markets. (K3)

14. a) Outline the evolution of swap market. (K2)

(Or)

b) Explain the nature of swaps market. (K3)

15. a) List the benefits of commodity options trading. (K2)

(Or)

b) Interpret the live prices of commodity markets. (K3)

Compulsary – Case Study

20. Visions Ltd. is a renowned multiplex operator in India. Presently, it owns 234 screens in 45 properties at 20 locations in the country. Considering the fact that the there is a growing trend among the people to spend more of their disposable income on entertainment, two years back the company had decided to add more screens to its existing set up and increase facilities to enhance leisure, food chains etc. It had then floated an initial public offer of equity shares in order to raise the desired capital. The issue was fully subscribed and paid. Over the years, the sales and profits of the company have increased tremendously and it has been declaring higher dividend and the market price of its shares has increased manifolds.

Questions:

a) Name the different kinds of financial decisions taken by the company by quoting lines from the paragraph.

b) Do you think the financial management team of the company has been able to achieve its prime objective? Why or why not? Give a reason in support of your answer.

Reg. No:_____

Course Code: 23PBBCT301

M.Com. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Commerce with CA

Third Semester

Core: Financial Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____is the lifeblood of a business. (K1)

a) Finance Manager

b) Finance

c) Financial Management

d) Corporate Financial Management

2. Financial Management is concerned with_____. (K1)

a) Investment Decisions b) cost Decisions

c) Profit Decisions d) finance decision

3. The cost of equity share or debt is known as _____. (K1)

a) The specific cost of capital

b) The related cost of capital

c) The burden on the shareholder

d) The specific cost of debt

4. In weighted average cost of capital, an organization can affect its cost of capital through _____. (K1)

a) The policy of investment

b) The policy of cost structure

c) The policy of profits

d) The policy of equity

5. _____ of the following are not commonly used measures of leverage in financial analysis. (K1)

a) Operating Leverage b) Financial Leverage

c) Combined Leverage d) Matrix Leverage

6. The Capital Structure is mentioned in the company's_____.

a) Trading account b) Profit and Loss Account (K1)

c) Balance sheet d) Profit and loss appropriate account

7. Dividend constitutes the cash flow that accrues to _____. (K1)

a) Holders b) Equity holders

c) Bondholders d) Shareholders

8. As per Gordon's Model, whether the company adopts 50%, 80%, or any other payout ratio, the market price will remain the same when_____. (K1)

a) $K_e > r$ b) $K_e < r$ c) $K_e = r$ d) $K_e > R_f$

9. Working capital is also known as_____. (K1)

a) Operation capital

b) Operating capital

c) Current assets capital

d) Capital relating to main projects of the company

10%. Calculate the value of the firm and the equity capitalization rate (cost of equity) according to the Net Operating Income Approach. (b) If the debentures debit is increased to Rs.7,50,000. What will be the effect on the value of the firm and the equity capitalization rate? (K5)

19. a) The following information relates to XYZ Ltd:

Particulars	Amount (Rs.)
Paid up equity capital	20,00,000
Earnings of the company	2,00,000
Dividend Paid	1,60,000
Price -earning ratio	12.5
Number of shares outstanding	20,000

You are required to find out whether the company's dividend payout ratio is optimal, using Walter's Model. (K6)

(Or)

b) The asbestors company belongs to a risk class of which the appropriate capitalization rate is 10%.it currently has 1,00,000 shares selling at Rs.100 each. The firm is contemplating the declaration of a Rs.6 dividend at the end of the current fiscal year, which has just begun. Answer the following questions based on the MM model and the assumption of no taxes: (K6)

(a) What will be the price of the shares the end of the year if (i) dividend is not declared ;and (ii) If it is declared?

(b) Assuming that the firm pays dividend ,has net income of Rs.10,00,000 and makes new investment of Rs.20,00,000 during the period, how many new shares must be issued?

b) A company has an investment opportunity costing Rs.40,000 with the following expected net cash flow after taxes and before depreciation. (K5)

Year	Net cash flow
1	7000
2	7000
3	7000
4	7000
5	7000
6	8000
7	10,000
8	15,00
9	10.000
10	4000

Using 10% as the cost of capital ,determine the following:

(a) Pay back period

(b) Net Present value at 10% discount factor

(c) Profitability index at 10% discount factor

18. a) A company expects a net income of Rs.80,000. it has Rs.2,00,000, 8% Debentures.

The equity capitalization rate of the company is 10% calculate the value of the firm and overall capitalization rate according to the Net Income Approach (ignoring income-tax). (b) If the debenture debt is increased to Rs.3,00,000 , What shall be value of the firm and the overall capitalization rate? (K6)

(Or)

b) A company expects a net operating income of Rs.1,00,000. It has Rs.5,00,000,6% debentures. The overall capitalization rate is

10. Working capital is a highly effective barometer of a company's efficiency and effectiveness_____. (K1)

a) Operational and servicing b) Long-term capital

c) Operational and financial d) Positive and negative

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Write the objectives of financial Management. (K2)

(Or)

b) State the Relationship between risk and return. (K3)

12. a) X Ltd .issues Rs.50,000 8% debentures at par. The tax rate applicable to the company is 50%.Compute the cost of debt capital. (K3)

(Or)

b) A company issues 1,000 7% preference shares of Rs.100 each at a premium of 10% redeemable after 5 years at par. Compute the cost of preference capital. (K4)

13. a) Calculate operating leverage and financial leverage for maruthi limited from the following information: (K3)

i) Number of units produced 50,000

ii) Selling price per unit is Rs.50

iii) variable cost per unit is Rs.20

iv) Fixed cost per unit at current level of sales is Rs.15

v) Interest on debentures Rs.1,50,000

(Or)

b) AB Ltd .needs Rs.10,00,000 for expansion.The expansion is expected to yield an annual EBIT of Rs.1,60,000.In choosing a financial plan,AB Ltd.has an objective of maximizing earnings per share.It is considering the possibility of issuing equity shares and raising debt of Rs.1,00,000 or Rs.6,00,000. The current market price per share is Rs.25 and is expected to drop to Rs.20 if the funds are borrowed in excess of Rs.5,00,000.Funds can be borrowed at the rates indicated below:

(a) up to Rs.1,00,000 at 8%;

(b) over Rs.1,00,000 up to Rs.5.00.000 at 12%;

(c) over Rs.5,00,000 at 18%.Assume a tax rate 50 percent. determine the EPS for the three financing alternatives. (K4)

14. a) The current price of a company's share is Rs.75 and dividend per share is Rs.5.Calculate the dividend growth rate,If its capitalization rate is 12 percent. (K3)

(Or)

b) Explain about the forms of dividend. (K4)

15. a) A firm having an annual opportunity cost of 15 percent is contemplating installation of a lock box system at an annual cost of Rs.3,00,000.The system is expected to reduce mailing time by 4 days and reduce cheque clearing time by 3 days. If the firm collects Rs.4,00,000 per day,would you recommend the system? (K3)

(Or)

b) From the following information, find out economic order quantity. (K4)

Annual usage,10,000 units

Cost of placing and receiving one order Rs.50.

Cost of materials per unit Rs.25

Annual carrying cost of one unit: 10% of inventory value.

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Write about the nature and scope of financial management. (K6)

(Or)

b) Estimate the functions of financial management. (K5)

17. a) X Ltd.is producing articles mostly by manual labour and is considering to replace it by a new machine.There are two alternative models M and N of the new machine.Prepare a statement of profitability showing the pay-back period from the following information: (K6)

Particulars	Machine M	Machine N
Estimated life of machine	4 years	5 years
Cost of machine	Rs.90,000	Rs.1,80,000
Estimated savings in scrap	5000	8000
Estimated savings in direct wages	60,000	80,000
Additional cost of maintenance	8000	10,000
Additional cost of supervision	12000	18000

(Or)

Question:

1. Ascertain purchase consideration.
2. Pass Journal Entries in the books of Divya Ltd.
3. Draft the Balance Sheet after the Merger in the books of Divya Ltd., under the 'pooling of Interests Method' of amalgamation.

Reg. No.: _____

Course Code: 23PBBCT201

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

Second Semester

Core: Advanced Corporate Accounting

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Profits made by a subsidiary company after the date of purchase of shares by the holding company are known as_____. (K1)
   a) Revaluation profits b) Realization profits
   c) Capital profits d) Revenue profits
2. Unrealized profit included in stock is_____. (K1)
   a) Deducted from stock in combined Balance Sheet
   b) Deducted from P& L a/c balance in combined Balance Sheet liabilities sides
   c) Deducted from stock and P&L a/c balance in combined Balance Sheet
   d) Shown separately in assets side of CBS.
3. Accounting standard for Amalgamations is_____. (K1)
   a) AS-8 b) AS-20 c) AS-14 d) AS-3
4. Pooling of Interests method is used to account for Amalgamations in the Nature of_____. (K1)
   a) Purchase b) Sale c) Merger d) Hire purchase system
5. A Non – banking asset is_____. (K1)
   a) an investment
   b) Any Asset acquired from the debtors in satisfaction of claim.
   c) an item of office appliances
   d) Money at call and short notice.

6. The heading other assets does not include_____. (K1)
   a) Stationery and Stamps b) Interest accrued
   c) Gold d) Silver
7. Insurance business in India is now regulated by the provision of_____. (K1)
   a) The insurance act 1938
   b) The IRDA act 1999
   c) The banking regulation act 1949
   d) The Indian companies act 1956
8. Preliminary expenses incurred by life insurance companies is treated as_____. (K1)
   a) Miscellaneous expenditure
   b) A deduction from paid up share capital
   c) A fixed asset
   d) An operating expense
9. Measurement of the value of human resource is based on the_____. (K1)
   a) 'stock' concept in accounting b) Future profit concept
   c) Ownership concept of an asset d) Capital costs
10. The prominent among the value-based models is the_____.(K1)
   a) Flamholtx model b) Lev and Schwarz model
   c) Lee and Resenbloom model d) Rensis Likert modeloption

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Balance sheet as on 31.12.1990.

Liabilities	Y Ltd. Rs.	Z Ltd. Rs.	Assets	Y Ltd Rs.	Z Ltd Rs.
Share capital	20,000	10,000	Fixed Assets	20,000	10,000
General Reserves	5,000	3,000	Current Assets	13,000	12,000
P & L A/c	3,000	2,000	Shares in Z Ltd.	10,000	---
10% debentures	10,000	5,000			
Sundry Creditors	5,000	2,000			
	43,000	22,000		43,000	22,000

You are required to provide for additional reserve for unexpired risk at 1% of net premium in addition to the opening balance.

(Or)

b) Explain "Practical difficulties in inflation accounting". (K5)

Compulsory - Case Study

20. Divya Ltd agreed to take over Pranav Ltd. Divya Ltd., was to pay the debentures and Liabilities of Pranav Ltd. And take over the assets, the consideration being the issue by Divya Ltd., of 4,00,000 fully paid shares of Rs.10 each and the payment of Rs.3,00,000 in Cash to Pranav Ltd. In addition to paying its Liquidation expenses of Rs.1,40,000. The Balance Sheets of the Co.'s were as under:

Liabilities	Divya Ltd.Rs.	Pranav Ltd.Rs.	Assests	Divya Ltd.Rs.	Pranav Ltd.Rs.
Share Capital(Rs.10 each)	1,50,00,000	50,00,000	Goodwill	30,00,000	5,00,000
10%Debentures	50,00,000	10,00,000	Fixed Assets	1,03,33,000	35,68,200
Creditors	8,34,200	4,36,200,	Machinery	38,76,800	16,43,900
P&L A/c.	9,88,500	2,69,500	Debtors	7,24,000	3,98,400
Bank O.D	---	2,00,000	Stock	17,92,600	7,85,200
			Bills Payable	3,62,100	---
			Bank Balance	16,84,200	---
			Calls in arrears	50,000	10,000
	2,18,22,700	69,05,700		2,18,22,700	69,05,700

Calls in arrears and Debtors to the extent of Rs. 40,000 of Pranav Ltd. Are considered to be uncollectible.

Additional information:

Rebate on bills discounted Rs.30,000; Salary of MDRs.30,000; Bad debts Rs.30,000

Provision for IT is to be made @ 55% (rounded off to nearest 1000);Interest of Rs.4,000 on doubtful debts was wrongly credited to interest on loans account. (K4)

(Or)

b) From the following particulars, prepare the P&L a/c of Chennai bank Ltd for the year ending 31.3.2022. (K5)

Particulars	Rs.	Particulars	Rs.
Interest on deposits	3200	Discount on bills discounted	1490
Commission (Cr)	100	Interest on OD	1600
Interest on loans	2490	Interest on cash credit	2320
Sundry charges	100	Auditor's fees	35
Rent and taxes	200	Director's fees	16
Establishment charges	500	Bad debts written off	300

19. a) From the following particulars relation to Aviva general Insurance Co. Ltd., Prepare fire revenue account for the year ending 31.3.2015. Rs. ('000) (K4)

Claim paid	4,80,000
Claims outstanding on 1.4.14	40,000
Claims intimated but not paid on 31.3.15	10,000
Claims accepted but not paid on 31.3.15	60,000
Commission on reinsurance accepted	5,000
Expenses of management	305,000
Bonus in reduction of premium	12,000
Premium received	12,00,000
Reinsurance premium paid	1,20,000
Commission	2,00,000
Commission on reinsurance ceded	10,000
Provision for unexpired risk on 1.4.14	4,00,000
Additional provision for unexpired risk on 1.4.14.	20,000

Y Ltd. acquires ¾ of the share capital of Z Ltd. On 31.12.90, when the balance sheets of the two companies are as above. You are required to prepare the consolidated Balance sheet as on 31.12.90. (K2)

(Or)

b) Consolidate the following Balance Sheet:

Liabilities	H Ltd. Rs.	S Ltd. Rs.	Assets	H Ltd Rs.	S Ltd Rs.
Capital Re.1	1,400	1,000	900 shares in S	1,200	---
Shares	---	500	at Cost		
Creditors	---	300	Sundry assets	200	1,800
P & L A/c	1,400	1,800		1,400	1,800

When H Ltd., acquired the shares in S, the profit and loss A/c of the latter had a credit Balance of Rs.200. (K3)

12. a) Raj Ltd. and Jani Ltd. have agreed to amalgamate. A new company called Nithish Ltd. has been formed to take over the combined concern as on 31.12.2016. after negotiations, the assets of the two companies have been agreed upon as shown below:

Balance sheet as on 31.12.2016

Liabilities	Raj Ltd. Rs.	Jani Ltd. Rs.	Assets	Raj Ltd. Rs.	Jani Ltd. Rs.
Share capital:			Land & building	5,00,000	3,00,000
Shares of Rs.10 each	10,00,000	5,00,000	Machinery		
Reserve fund	Nil	50,000	Goodwill	2,00,000	2,50,000
P & L A/c	50,000	50,000	Furniture	Nil	50,000
Sundry Creditors	80,000	50,000	Stock	1,10,000	Nil
			Debtors	1,50,000	20,000
			Bank	1,20,000	20,000
				50,000	10,000
	11,30,000	6,50,000		11,30,000	6,50,000

Pass journal entries in the books of Nithish Ltd. assuming: the entire purchase price is paid off in the form of equity shares of 100 each in Nithish Ltd. (K2)

(Or)

b) VT Ltd. and TT Ltd. agree to amalgamate as from 31.12.2013 on which date their respective balance sheet were as follows: (K3)

Liabilities	VT Ltd Rs.	TT Ltd Rs.	Assets	VT Ltd Rs.	TT Ltd Rs.
Share capital:			Cash in hand	100	50
Shares of Rs.1			Cash at bank	3,400	450
each	80,000	25,000	Sundry Debtors	22,500	6,000
SundryCreditors	3,000	1,000	Plant	12,000	4,500
Reserve fund	7,500	4,000	Stock	15,000	7,000
P & L A/c	2,500	1,000	Premises	30,000	10,000
			Patents	10,000	3,000
	93,000	31,000		93,000	31,000

13. a) The following balances are extracted from the books of Aadhar bank Ltd., as on 31.3.2016 (K2)

Particulars	Debit (Rs)	Credit (Rs)
Bills discounted	15,90,000	----
Rebate on bills discounted on 31st March, 2015	----	35,176
Discount on bills discounted	----	2,34,128
Interest earned	----	6,76,342

An analysis of the bills discounted is as follows:

Amount Rs.	Due date	Rate of discount
i) 1,85,000	May 20,2016	11%
ii) 2,40,000	June 18, 2016	12%
iii) 5,30,000	June 6, 2016	12%
iv) 6,10,000	July 14, 2016	14%

Calculate rebate on bills discounted and show necessary journal entries.

(Or)

Balane sheet as on 31.12.98

Liabilities	Sun Ltd Rs.	Moon Ltd Rs.	Assets	Sun Ltd Rs..	Moon Ltd Rs.
Share capital:			Land&buildig	1,00,000	Nil
Shares of			Machinery	7,00,000	
Rs.10 each	6,00,000	2,00,000	Investments	1,00,000	3,00,000
General			Stock	9,00,000	----
Reserve	4,00,000	2,00,000	Debtors	3,00,000	4,00,000
Secured loan	6,00,000	1,00,000	Bank	1,00,000	1,00,000
Current					1,00,000
liabilities	6,00,000	4,00,000			
	22,00,000	9,00,000		22,00,000	9,00,000

These two companies decided to amalgamate into Mars ltd. The following further information is given:

1. All assets and liabilities of the two companies are taken over.
2. Each share in Moon ltd. Is valued at □ 25 for the purpose of amalgamation.
3. Each share in Sun ltd is value at □15 for the purpose of amalgamation.
4. Shareholders of Moon ltd and Sun ltd are paid off by issue of sufficient number of equity shares of □10 each in Mars ltd as fully as paid. Show the journal entries to close the books of Mars companies. (K5)

18. a) From the following information prepare P&L a/c of Lakshmi Bank ltd., for the period ended on 31.3.2023. (₹ in '000)

Particulars	Rs.	Particulars	Rs.
Interest on loans	300	Interest on temporary OD in	
Interest on FD	275	Current a/c	30
Commission	10	Postage, telegram and stamps	10
Exchange and brokerage	20	Printing stationery	20
Salaries and allowances	150	Sundry expenses	10
Discount on bills (gross)	152	Rent	15
Interest on cash credit	240	Taxes and licenses	10
Interest on SB deposits	87	Audit fees	10

At the date of acquisition by Ltd of its holding of 40,000 shares in B Ltd., the latter company had undistributed profit and reserve amounting to Rs.1,00,000,none of which had been distributed since then. (K5)

17. a) Vijay Ltd. and Ajay Ltd. agreed to amalgamate on the basis of the following balance sheet as on 31.3.2017. (K4)

Liabilities	Vijay Ltd Rs.	Ajay Ltd Rs.	Assets	Vijay Ltd Rs.	Ajay Ltd Rs
Share capital:			Goodwill	30,000	Nil
Shares of Rs.20 each	75,000	50,000	Fixed assets	31,500	38,800
P & L A/c	7,500	2,500	Stock	15,000	12,000
Creditors	3,500	3,500	Debtors	8,000	5,200
Depreciation fund	Nil	2,500	Bank	1,500	2,500
	86,000	58,500		86,000	58,500

The assets and liabilities are to be taken over by a new company formed called Dharma ltd at book values. Dharma ltd. capital is Rs. 2,00,000 dividends into 10,000 equity shares of Rs.10 each and 10,000 9% preference shares of Rs.10 each. Dharma ltd issued the equity shares equally to the vendor companies and preference shares were issued for any balance of purchase price. Pass journal entries in the books of Dharma ltd. and prepare its balance sheet, if the amalgamate is in the nature of purchase.

(Or)

b) Sun Ltd and Moon Ltd are two companies carrying on business in the same line of activity.Their balance sheet as on 31.3.24 are:

b) Rajan Bank Ltd. discounted a bill of the face value of Rs. 2,00,000 for Rs.1,92,000 on January 11, 2018, of the discount Rs.2,893 pertain to the next accounting year. Show the journal entry that is to be made at the time of discounting the bills. Also show the opening entry. (K3)

14. a) The following figures relate to Life Insurance, Corporation for the year ended 31.3.2006.Prepare the Revenue A/c.

Particulars	(Rs.'000)	Particulars	(Rs.'000)
Claims	39	Considaration for annuities grandred	16.5
Management expenses	14	Surrenders	9
Director's fees	4	Premia received	151
Audit fees	3	Life fund(1.4.95)	1150
Medical expenses	.5	Interest received	40
Agents'Commission	5	Rent received	10
Depreciation	4	Claims cancelled	.5
Bonus in reduction of premium	1.5	Annuities	1.5

i) Premium outstanding Rs.9 Thousand

ii) Claims outstanding Rs. 3 Thousand.

(Or)

b) Prepare in the proper statutory form the Revenue account of the Super Insurance Company Ltd., for the year ended 31st March 2006 from the following figures: (K3)

Particulars	(Rs.'000)	Particulars	(Rs.'000)
Claims by death	76,140	Expenses of Management	31,920
Claims by maturity	30,110	Commission	9,574
Premiums:		Interest,dividends &	
First premiums	2,50,000	Rents	97,840
Renewal premiums	3,55,690	Income tax on interest,	
Single premiums	1,00,000	dividends etc.,	35,710
Transfer fees	129	Surrenders	13,140

Consideration for annuities grandted less re assurance	82,127	Bonus in reduction of premium	980
Annuities paid	53,461	Dividend paid to shareholders	5,500
Bonus paid in cash	2,416	Amount of life insurance fund at the beginning of the year	15,21,000

1. Bonus in reduction of premium should be shown only as an expenditure in Revenue A/c.
2. Income tax on interest, dividend etc will be shown in schedule 12 of Balance Sheet,since it is tax deducted at source.

15. a) Describe different methods of inflation accounting. (K2)

(Or)

b) List out the advantages of accounting standards. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) From the Balance sheet and information given below prepare a consolidated Balance (K4)

Liabilities	H Ltd. Rs.	S Ltd. Rs.	Assets	H Ltd Rs.	S Ltd Rs.
Share capital:			Sundry assets	80,000	12,000
(Rs.10 per share			Stock-in-trade	61,000	24,000
fully paid)	1,00,00	20,000	Debtors	13,000	17,000
Profit& Loss A/c	40,000	12,000	Bills Receivable	1,000	-----
Reserves	10,000	6,000	Shares in H Ltd.		
Creditors	20,000	12,000	1,500 shares at		
Bills Payable	-----	3,000	cost.	15,000	-----
	1,70,000	53,000		1,70,000	53,000

Additional information:

1. All profits of S Ltd. Have been earned since the shares were acquired by H Co Ltd. But the reserve of Rs.6,000 was already there at the time.
2. Bills accepted by S Co Ltd., are all in favour of H Co Ltd.,which has discounted Rs.2,000 of them.
3. Sundry assets of S Co Ltd., undervalued by Rs.2,000.
4. The stock-in-trade of H Co Ltd., includes Rs.5,000 bought from S Co. Ltd., at a profit to the latter of 25% on cost.

(Or)

b) From the balance sheet given below prepare a consolidated balance sheet of A Ltd. And its subsidiary company B Ltd.

Balance Sheet as at 30th June 1994 (K5)

Liabilities	A Ltd.Rs.	B Ltd Rs.	Assets	ALtd Rs.	B Ltd Rs.
Share capital:			Land&Buildings	6,40,000	2,00,000
Shares of			Machinery	12,60,00	3,40,000
Rs.10 each	25,00,000	6,00,000	Furniture	1,40,000	60,000
General			40,000 shares in		
Reserve	3,60,000	1,20,000	B Ltd.	5,00,000	------
Profit &			Stock	4,10,000	2,50,000
Loss A/c	2,40,000	1,80,000	Debtors	3,80,000	1,00,000
Trade			Bank balance	1,20,000	50,000
Creditors	3,50,000	1,00,000			
	34,50,000	10,00,000		34,50,000	10,00,000

Reg. No:_____

Course Code: 21PBBCT402

M.Com. Degree Examination - November 2024

(For the candidates admitted during the year 2021- 22 only)

Commerce with CA

Fourth Semester

Core: Direct Taxes

Time: 3 Hours Maximum marks: 50

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The Income Tax Act came into force from _____. (K1)

   a) 1st March, 1971 b) 1st April, 1971

   c) 1st March, 1961 d) 1st April, 1961

2. Exempted incomes have been mentioned in_____of the Income Tax Act. (K1)

   a) Sec10 b) Sec.80C c) Sec.13 d) Sec.2

3. House rent allowance is_____. (K1)

   a) Fully Exempted

   b) Exempted to a certain limit

   c) Exempted in big cities

   d) Exempted for Government Employees

4. A standard deduction of _____% of the net annual value is allowed as deduction U/S 24. (K1)

   a) 23% b) 13% c) 30% d) 33%

5. Grouping of assets which fall under the same category is called_____. (K1)

a) Tangible assets b) Block of assets

c) Intangible assets d) Fixed assets

6. A short term capital asset except financial asset is an asset held for not more than_____. (K1)

a) 12 months b) 24months

c) 36 months d) 48months

7. Loss incurred from activity of owning and maintaining race horses can be carried forward for a period of _____. (K1)

a) Four years b) Eight years

c) Six years d) two years

8. Alternate Minimum Tax is calculated on_____. (K1)

a) Gross Total income b) Total income

c) Adjusted Total income d) Taxable income

9. Due date for filing Return of income in case of an individual is_____. (K1)

a) 30th June b) 31st July

c) 31st August d) 30th September

10. For an individual, having income from salary or family pension and interest, the prescribed form is_____. (K1)

a) ITR-1 b) ITR-2 c) ITR-3 d) ITR-4

Compulsory- Case Study

20. Section -5 of Income Tax Act, 1961 provides Scope of total Income in case of person who is a resident, in the case of a person not ordinarily resident in India and person who is a non-resident which includes. Income can be Income from any source which (a) is received or is deemed to be received in India in such year by or on behalf of such person; or (b) accrues or arises or is deemed to accrue or arises to him in India during such year; or (c) accrues or arises to him outside India during such year.

Questions:

1. Draw a table explaining Scope of total income under section 5 of Income Tax Act, 1961. (K6)

SECTION - B (5 X 3 = 15 Marks)

Answer ALL questions.

11. a) Write Short notes on a) Assessment year b) Previous year. (K2)

(Or)

b) Distinguish between Gross total income and Total income. (K3)

12. a) Mr. X , a resident of Madurai, received Rs.1,60,000 p.a as basic salary for the assessment year 2024-2025. In addition, he gets Rs.30,000 per annum as dearness allowance (60% forming part of basic salary), 10 per cent commission on sales made by him(sales made by X during the relevant Previous year 2023-2024 is Rs.1,00,000) and Rs.25,000 per annum as house rent allowance. He however, pays Rs.21,000 p.a as house rent. Determine the quantum of house rent allowance exempt from tax. (K2)

(Or)

b) Determine the Annual Value of the house in the following cases. (K3)

	House I (Rs.)	House II (Rs.)
Municipal value	1,00,000	1,00,000
Fair Rent	1,20,000	1,20,000
Standard Rent	90,000	1,40,000
Actual Rent	1,32,000	96,000
Municipal tax 10% of M.V.	Paidby owner	Paid by Tenant

13. a) Compute the business income from the following (K2)

	Rs.
Commission earned	20,000
Sales	1,20,000
Purchase	20,000
Staff salary	11,000
Purchase of Typewriter	8,000

(Or)

b) Calculate income from other sources from the following

i) Winning from Lotteries (Net amount) Rs.21,000

ii) Income from letting of building and furniture Rs.12, 500. (Expenses towards repairs of furniture Rs.500 and depreciation towards building Rs.1,000. The assessee owns the building.)

iii) Dividend declared by an Indian company Rs.8,000. Collection charges Rs.100.

iv) Rs.5,000 received as interest on government securities.

v) Rs.4,000 received as interest on debentures of local authority.

vi) Rs.3,000 received as interest on debentures from ABI Ltd.,(Non-listed)

vii) Interest on 7 year post office NSC @7% Rs.10,000. (K3)

14. a) What is the new income tax slab for 2024-25? (K2)

(Or)

b) From the following data provided by an individual, you are required to work out the total income chargeable to tax for the AY 2024-2025. (K3)

19. a) From the following particulars, calculate taxable income and tax liability of Mr. Sri for the previous year 2023-2024. (K4)

Particulars	Rs.
Income from salary (Computed)	6,00,000
Income from house property	60,000
Income from other sources	1,20,000
Donation to National Defense fund	10,000

(Or)

b) Mr.Ram submits the following information relevant for the AY-2024-25.

Particulars	Income (Rs.)	Loss (Rs.)
Taxable income from salary	2,42,000	-------
Taxable income from House Property		
House-A	1,15,000	
House-B		3,30,000
Taxable profit from business		
Business-A	2,28,000	-------
Business-B	----------	10,000
Business-C (Speculative)	11,000	-------
Business-D (Speculative)	---------	23,000
Taxable capital Gains:		
Short-term capital gains	6,000	--------
Short term capital loss	-------	28,000
Long term capital gains	12,500	--------
Taxable income from other sources:		
Income from Card games	13,000	
Loss from card games	-------	7,010
Loss on Maintenance of race horses	-------	6,000
Interest on securities	4,000	

Determine the gross total income of Mr. Ram for the A.Y. 2024-25. (K5)

property			
To Loan from bank for profession	1,50,000	By Income tax	15,000
To Operation charges	90,000	By LIC premium	10,000
To Sale of medicines	32,500	By Repayment of loan	35,000
		By Municipal tax on house property	5,000
		By Interest on loan	7,500
		By Closing balance(c/d)	56,500
	5,48,000		5,48,000

Additional Information:-

i) 25% of car expenses relate to personal use.

ii) Rate of depreciation on professional books 100%, Car 15%, and computer 60%.

iii) A cash gift of Rs.2, 500 received from a patient was not recorded in the books. (K4)

(Or)

b) Kumar submits the following particulars about the sale of assets during the year 2022-2024.

Particulars	Jewelery (Rs.)	Land (Rs.)	Silver (Rs.)
Selling Price	14,00,000	36,48,000	10,00,000
Selling expenses	Nil	48,000	Nil
Cost of Acquisition	2,58,000	4,52,000	2,00,000
Year of Acquisition	2007-08	2004-05	2001-02

Kumar has purchased a house for Rs.40 lakh on 01-01-2024. Compute the amount of taxable capital gains.

Cost inflation index: 2001-02 -100, 2004-05 -113, 2007-08 - 129, 2023 -24 -348. (K5)

Particulars	Rs.
Business loss	50,00,000
Proper income	45,00,000
Income from Other sources	1,00,000
STCG	3,00,000
LTCG	11,00,000

15. a) What is compulsory filing of return? (K2)

(Or)

b) What is meant by TDS? (K3)

SECTION - C (5 X 5 = 25 Marks)

Answer ALL questions.

16. a) Enumerate any ten items of income which are totally exempted. (K4)

(Or)

b) The following are the particulars of Mr. Ram's income during the previous year 2023-24. (K5)

i) Income from business in Kolkata, managed from U.S.A Rs.50,000

ii) Interest on German Development Bonds (1/3 received in India) Rs.51,000

iii) Income From agriculture in Punjab, received in Chennai Rs.30, 000.

iv) Income from business in Kuwait, business being controlled from Mumbai (Rs.25, 000 is received in India) Rs.65,000.

v) Profit from business in Pakistan deposited in a bank there. This business is controlled from India. Rs.40,000

vi) Share of income from Indian Partnership firm Rs.15,000

vii) Income was earned in America and received there, but brought to India Rs.8,000

viii) Dividend from a foreign company received in America Rs.10, 000.

ix) Income from Sale of house property in Gwalior Rs.30,000.

x) Income from profession in Kenya received there, the profession was set-up in India Rs.15, 000.

Compute the Gross Total income for the assessment year 2024-25 if he is: a) Resident, b) Not ordinarily resident and c) Non-resident. (K5)

17. a) Compute taxable income under the head salary of Mr. X (an employee of a company) for the assessment year 2024-2025:

i) Salary Rs. 5000 p.m.

ii) D. A. Rs.3500 p.m.

iii) Entertainment Allowances Rs.1000 p.m.

iv) Employer's Contribution to Recognized Provident Fund Rs.7400. His own contribution was Rs.7,400.

v) Interest @ 10% p.a. on credit balance of Recognized P.F. amounted to Rs.10000.

vi) City Compensatory Allowance Rs.500 p.m.

vii) Medical Allowance Rs.1200 p.m.

viii) He has been provided with a large Car for both official and use. Employer bears all expenses of the car.

He is provided an unfurnished house by the employer in a city (population 12 lakh). The fair rental value of the house is Rs.30,000 p.a. Employer charges Rs.500 from him per month as rent. (K4)

(Or)

b) Calculate the Income From House property of Mr. Arun from the following particulars for the assessment year 2024-25. (K5)

Particulars	House-I (Rs.)	House-II (Rs.)	House-III (Rs.)
Municipal Value	50,000	3,00,000	5,00,000
Fair Rent	60,000	4,00,000	4,00,000
Standard Rent	--------	4,00,000	4,20,000
Municipal Tax	10%	10%	10%
Type of House	Let-out	Let-Out	Self-Occupied
Actual Rent	72,000	4,80,000	----------
Interest on Loan	5,000	10,000	10,000
Repairs & Renewals	2,000	4,000	5,000
Collection charges	1,000	1,000	1,000

18. a) Dr. Patel submits the following particulars Calculate the income from profession for the A.Y.2024-2025.

Particulars	Rs.	Particulars	Rs.
To Opening balance b/d	25,000	By Salary to staff	36,000
To Consultation fees	75,000	By Purchase of medicines	18,000
To Visiting fees	62,500	By Professional books	10,000
To Agricultural income	40,000	By Purchase of Car	2,40,000
To Int. on bank deposits	10,000	By Car expenses	20,000
To Gift from patients	15,000	By Computer purchased	50,000
To Rent from house	48,000	By Personal Expenses	45,000

b) Elaborates the functions of National Housing Bank. (K5)

19. a) Evaluate the functions of CRISIL. (K4)

(Or)

b) Interpret the role of discount and finance house of India Ltd (DFHIL). (K5)

Compulsory – Case Study

20. Mr.Kalam an active investor from Chennai expressed that a Demat account is a necessary account to hold financial securities in a digital form and to trade shares in the share market. In India, Demat accounts are maintained by two depository organizations, the National Securities Depository Limited and the Central Depository Services Limited. Before the concept of Demat was first introduced by SEBI, physical share certificates were held and the process was quite burdensome. After purchasing the shares, investors had to safely keep the share certificates in custody and ensure that it does not get misplaced. Quite often, the transfer form got rejected because the signature in the transfer form did not match with the signature in the company's record books. To overcome all these problems dematerialization was introduced. And to ensure the process is quick and easy, depositories were introduced.

Questions:

1. What is a depositary in share trading?
2. List out the benefits of depositories in India. (K6)

Reg. No.: _____

Course Code: 23PBBET106

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

First Semester

Elective: Financial Markets and Institutions

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the meaning of financing in financial market? (K1)
   a) Advising an organization to raise charity funds
   b) Investing in securities market
   c) Sourcing of funds
   d) Sourcing of funds
2. Commercial paper can be sold_____. (K1)
   a) Directly b) As functional buyers
   c) Issued by commercial banks d) With brokers or dealers
3. What is Capital Market? (K1)
   a) Market in which securities are bought and sold.
   b) A financial market in which long-term debt or equity-backed securities are bought and sold.
   c) Entrepreneurs in one country copy an existing market.
   d) A market structure is defined by a large number of small firms competing against each other.
4. In which Market debt and stocks are traded and maturity period is more than a year? (K1)
   a) Money Market b) Share Market
   c) Short Term Market d) Capital Market
5. Which of the following are the features of money market? (K1)

a) Maturity period is more than a year
b) Highly risky
c) Unsecured instruments
d) Secured instruments

6. Commercial paper has the maturity of how many days_____.
a) 1 day to 1 year b) 10 days to 1 year (K1)
c) 15 days to 1 year d) More than 1 year

7. Discount and Finance House of India DFHI mainly deals in_____. (K1)
a) Commercial bills b) Corporate securities
c) Treasury bills d) Commercial papers

8. Treasury bill is _____. (K1)
a) Negotiable security b) Non-negotiable security
c) Not a security d) Quasi negotiable security

9. _____ are eligible to list in OTCEI. (K1)
a) Small companies
b) Large companies
c) Medium size companies
d) Small and Medium size companies which are not listed in any other stock exchange

10. The Securities and Exchange Board of India meets the needs of_____. (K1)
a) Investors b) Market intermediaries
c) Issuers of securities d) All of the above

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain the functions of the Indian financial system. (K2)

(Or)

b) Illustrate the features of Gilt-edged securities market. (K3)

12. a) Outline the functions of foreign exchange market. (K2)

(Or)

b) Explain the types of capital market. (K3)

13. a) Sketch out the functions of IDBI. (K2)

(Or)

b) Examine the role of EXIM Bank of India. (K3)

14. a) Evaluate the importance of financial services institutions. (K2)

(Or)

b) Interpret the role of Investment information and credit rating agency of India (ICRA). (K3)

15. a) Examine the feature of OTCEI. (K2)

(Or)

b) Analyze the function of National Securities Depository Limited. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Explain the structure of Indian financial system. (K4)

(Or)

b) Illustrate the types of commercial bill market. (K5)

17. a) Write an essay about recent reforms in Capital Markets. (K4)

(Or)

b) Explain the features of International Organization of Securities Commission (IOSCO). (K5)

18. a) Outline the features of Capital market institutions. (K4)

(Or)

Compulsory – Case Study

20. Maruti Udyog Ltd (MUL) enjoys monopoly in spare parts. Along with dealers, MUL is exploiting Maruti vehicle users.

Often the vehicle user has to change the clutch plate twice in six months and has to pay Rs.3,567/-. MUL chargers the price of clutch at imported cost while clutch plate is actually made by clutch auto private Ltd at Faridabad.

The replacement of a silencer costs Rs.800/-. The cost of spare parts and repairs by any reckoning is three to four times compared to Ambassador or Fiat.A random sample indicates that every eighth car has faulty clutch. In the context of defective parts and exorbitant cost of repairs, saving in fuel in Maruti as compared to other auto makers is of little consequence.Maruti vehicle users in dilemma they cannot get spare parts or get their cars repaired except through Maruti Udyog or its authorized dealers. But both charge huge amounts, not giving guarantee for a single day. MUL is thus, indifferent to the genuine grievances of its customers.

Questions:

a) Define a monopoly and stage its main features.

b) Why MUL is called a monopoly? Does it enjoy monopoly in car manufacture?

c) In what way do customers suffer from monopoly practices of MUL.

d) What do you suggest to remedy the situation? (K6)

Reg. No.: _____

Course Code: 23PBBCT101

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

First Semester

Core: Managerial Economics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Managerial economics is a_____. (K1)
   a) Positive science b) Normative science
   c) Both (a) and (b) d) Decision science
2. Managerial economist is an _____ to a firm. (K1)
   a) Economic agent b) Economic adviser
   c) Economic planner d) Decision maker
3. The excess satisfaction derived from a commodity by a consumer is called_____. (K1)
   a) Producer's surplus b) Consumer's equilibrium
   c) Producer's equilibrium d) Consumer's surplus
4. The slope of an indifference curve is measured by_____.
   a) Marginal rate of substitution (K1)
   b) Marginal utility
   c) Marginal price
   d) Marginal rate of technical substitution
5. _____ is also known as decrease in quantity demanded.
   a) Expansion in demand b) Contraction in demand (K1)
   c) Competitive demand d) Joint demand

6. A shift in the supply curve towards the right shows_____. (K1)

a) Decrease in supply b) Increase in supply

c) Unchanged supply d) fluctuation in supply

7. Total cost is equal to_____. (K1)

a) TFC + MC b) MC + AC

c) TFC + TVC d) AFC + AVC

8. Break-even point refers to_____. (K1)

a) Marginal revenue = Marginal cost

b) Total revenue > Total cost

c) Total revenue < Total cost

d) Total revenue = Total cost

9. A firm is a price taker under_____ market. (K1)

a) Perfect competition b) Monopoly

c) Oligopoly d) Monopolistic competition

10. Monetary policy is controlled by_____. (K1)

a) SEBI b) Government of India

c) RBI d) Finance Commission

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) What are the significance of managerial economics? (K2)

(Or)

b) Explain briefly the goals of corporate enterprises. (K3)

12. a) Distinguish between Cardinal utility and Ordinal utility. (K2)

(Or)

b) Write a note on Marginal Rate of Technical Substitution. (K3)

13. a) What do you understand by change in demand? (K2)

(Or)

b) Identify the factors determining supply. (K3)

14. a) State the assumptions of break-even analysis. (K2)

(Or)

b) Bring out the internal and external economies of scale. (K3)

15. a) Narrate the objectives of monetary policy. (K2)

(Or)

b) Identify the causes of inflation. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the nature and scope of managerial economics. (K4)

(Or)

b) Trace the role and responsibilities of a managerial economist. (K5)

17. a) Evaluate the law of diminishing marginal utility theory. (K4)

(Or)

b) Explain consumer equilibrium through the technique of indifference curve. (K5)

18. a) State law of demand. Explain the determinants of demand. (K4)

(Or)

b) Explain the various types of elasticity of demand. (K5)

19. a) Discuss the shape of the short-run and long-run cost curves of a firm. (K4)

(Or)

b) Differentiate cost function from production function. (K5)

Reg.No_____

Course Code: 23PBBAL311

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Commerce with CA

Third Semester

ALC: Data Mining for Business Intelligence

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	What is Data Mining?	(K1)
2.	What do you meant by Text Mining?	(K1)
3.	Define data warehouse.	(K1)
4.	Expand OLTP.	(K1)
5.	What is Link Analysis?	(K1)
6.	What are genetic algorithms?	(K1)
7.	What is business intelligence?	(K1)
8.	What is Industrial espionage?	(K1)
9.	Give one application of data mining in genetics.	(K1)
10.	How does data mining helps stock pricing?	(K1)

SECTION – B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Show the features of Data mining.	(K2)
	(Or)	
b)	List out the merits of private and public intelligence.	(K3)

12. a) Explain the concept of OLTP and OLAP. (K2)

(Or)

b) Bring out the metal data model. (K3)

13. a) Explain Neural Networks. (K2)

(Or)

b) Describe the merits of Market basket analysis. (K3)

14. a) State the process of business intelligence software. (K2)

(Or)

b) Point out the merits of Business intelligence. (K3)

15. a) State the merits of CRM. (K2)

(Or)

b) List out the characteristics of Data mining in pharma sector. (K3)

SECTION – C (5 X 10= 50 Marks)
Answer ALL questions.

16. a) Summarize the strategic assessment of implementing Business Intelligence. (K4)

(Or)

b) Explain the process of Business Intelligence. (K5)

17. a) Describe the characteristics of data warehouse. (K4)

(Or)

b) Narrate the design and development of data warehouse. (K5)

18. a) Discuss about decision trees. (K4)

(Or)

b) Describe the classification of correlation. (K5)

19. a) Explain the modern techniques of crypto analysis. (K4)

(Or)

b) Enumerate the ethical and legal limits of Business intelligence. (K5)

20. a) Describe the applications of business intelligence in banking sector. (K4)

(Or)

b) How does data mining helps retailing? (K5)

Reg.No_____

Course Code: 23PBBAL312

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Commerce with CA

Third Semester

ALC: Labour Legislations

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Define Health.	(K1)
2.	Who is young person?	(K1)
3.	What is social security?	(K1)
4.	List out the occupational diseases.	(K1)
5.	Who is inspectors?	(K1)
6.	State the penalities to paynment of wages act.	(K1)
7.	Give the meaning of strikes.	(K1)
8.	Write a short note on lockout.	(K1)
9.	What is meant by personal injury?	(K1)
10.	List out the factory manufactiong process.	(K1)

SECTION – B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Mention the Working hours of adult.	(K2)
	(Or)	
b)	Explain the meaning of 'Employemnt of women'.	(K3)

12. a) Describe the Law relating to social security. (K2)

(Or)

b) State the merits of workmen's compensation act. (K3)

13. a) Name the deductions from wages. (K2)

(Or)

b) Show the maintenance of registers and recods. (K3)

14. a) Point out the law relating to labour relations. (K2)

(Or)

b) Explain the concept of 'Retrenchment'. (K3)

15. a) Specify the objects of employee's state insurance. (K2)

(Or)

b) List out the standing committee of ESI corporation. (K3)

SECTION – C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Ennumerate the Law relating to factories act. (K4)

(Or)

b) Point out the Annual leave with wages of employees under the factories act. (K5)

17. a) Explin the rules regarding workmen's compensation. (K4)

(Or)

b) Summarize the employer's liability for competition. (K5)

18. a) Discuss the law relating to Monetary benefits. (K4)

(Or)

b) Describe the rules for payment of wages. (K5)

19. a) Examine the detections from authorities under industrial disputes act. (K4)

(Or)

b) Distinquish between strikes and lockouts. (K5)

20. a) Sketch the merits of Medical benefit council. (K4)

(Or)

b) Bringout the benefits of ESI corporation. (K5)

(Or)

b) The mean of a certain production process is known to be 50 with a standard deviation of 2.5. (K5)

The production manager may welcome any change is mean value towards higher side but would like to safeguard against decreasing values of mean. He takes a sample of 12 items that gives a mean value of 48.5. What inference should the manager take for the production process on the basis of sample results? Use 5 percent level of significance for the purpose.

Compulsory- Case Study

20. "Vijay Auto" one of the leading automobile companies in India, lost market share to its competitor Hero Honda in the late 1990's. In order to regain its market share, the company plans to find out the reason for its failure in the market. You are appointed as a research to M/s Vijay Auto. (K6)

Questions:

(a) What type of research design would you prefer? Support your answer with reasons.

(b) State the sources through which Vijay Auto can obtain primary data.

(c) How would you prepare a research support?

Reg. No.: _____

Course Code: 23PBBCT203

M.Com. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Commerce with CA

Second Semester

Core: Research Methodology

Time: 3 Hours Maximum Marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Fundamental research reflects the ability to_____. (K1)
   a) Synthesize new ideal
   b) Expound new principles
   c) Evaluate the existing material concerning research
   d) Study the existing literature regarding various topics
2. The study in which the investigators attempt to trace an effect is known as_____. (K1)
   a) Survey Research b) 'Ex-post Facto' Research
   c) Historical Research d) Summative Research
3. When a research problem is related to heterogeneous population, the most suitable sampling method is_____. (K1)
   a) Cluster Sampling b) Stratified Sampling
   c) Convenient Sampling d) Lottery Method
4. A complete list of all the sampling units is called_____.(K1)
   a) Sampling design b) Sampling frame
   c) Population frame d) Cluster
5. Data obtained by the investigator from personal experimental studies is called_____. (K1)
   a) Primary data b) Arrayed data
   c) Chronological data d) Secondary data

6. The starting point for a literature search is_____. (K1)

a) primary data b) tertiary data

c) secondary data d) some other data

7. What isthe alternative name for a repeated measures t-test? (K1)

a) unrelated t-test b) related t-test

c) a paired samples t-test d) unpaired sample t-test

8. Chi-square test was developed by_____. (K1)

a) W. S. Gosset b) Karl Pearson

c) A. R. Fisher d) Pascal

9. The first page of the research report is_____. (K1)

a) Appendix b) Bibliography

c) Index d) Title page

10. In a technical report which of these must be avoided? (K1)

a) Subjective Evaluation b) Objective Evaluation

c) Logical Conclusion d) Facts

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the need for research. (K2)

(Or)

b) Mention the essentials of a good research. (K3)

12. a) What is the necessity of defining a research problem? (K2)

(Or)

b) Bring out the components of a research problem. (K3)

13. a) Differentiate between Questionnaires and interview schedule. (K2)

(Or)

b) Compare experiment with survey. (K3)

14. a) The specimen of copper wires drawn form a large lot have the following breaking strength (in kg.weight): (K2)

578, 572, 570, 568, 572, 578, 570, 572, 596, 544 Test (using Student's *t*-statistic) whether the mean breaking strength of the lot may be taken to be 578 kg.weight (Test at 5 percent level of significance).

(Or)

b) A sample of 10 is drawn randomly from a certain population. The sum of the squared deviations from the mean of the given sample is 50. Test the hypothesis that the variance of the population is 5 at 5 per cent level of significance. (K3)

15. a) Write a brief note on the 'task of interpretation' in the context of research methodology. (K2)

(Or)

b) State the different forms in which a research work may be reported. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Draft a detailed note an case study. (K4)

(Or)

b) Examine different steps involved in a research process. (K5)

17. a) What is the need for research design? (K4)

(Or)

b) Describe some of the important research design used in experimental hypotheses-testing research study. (K5)

18. a) Examine the merits and limitations of the observation method of colleting data. (K4)

(Or)

b) What are the guiding considerations in preparing a questionnaire? (K5)

19. a) A die is thrown 132 times with following results: (K4)

Number turned up	1	2	3	4	5	6
Frequency	16	20	25	14	29	28

Is the die unbiased?

Reg. No.: _____

Course Code: 23PBCCT102

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

First Semester

Core: Psychology for Social Work Practice

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following best describes the field of psychology? (K1)
   a) The study of physical health
   b) The scientific study of behavior and mental processes
   c) The analysis of historical events
   d) The practice of medical treatments
2. Which of the following is NOT a method commonly used in psychological research? (K1)
   a) Case studies b) Experiments
   c) Surveys d) Literary criticism
3. Which stage of development is characterized by rapid physical growth and the onset of puberty? (K1)
   a) Infancy b) Childhood c) Adolescence d) Adulthood
4. What is the primary focus of the cognitive development aspect during babyhood? (K1)
   a) Developing motor skills
   b) Learning to speak and understand language
   c) Forming social relationships
   d) Developing emotional regulation

5. Which of the following best defines personality? (K1)
   a) The ability to solve complex mathematical problems
   b) The set of enduring traits and characteristics that influence behavior
   c) The capacity for emotional intelligence
   d) The cognitive processes involved in decision-making
6. Which approach to intelligence focuses on understanding how individuals process information and solve problems? (K1)
   a) Psychometric Approach
   b) Information Processing Approach
   c) Neuroscience Approach
   d) Behavioral Approach
7. Which of the following is a principle of learning? (K1)
   a) Extinction b) Reinforcement
   c) Prejudice d) Bias
8. What is the main difference between recall and recognition in memory processes? (K1)
   a) Recall involves identifying previously learned information, while recognition involves retrieving information without cues.
   b) Recall involves retrieving information without cues, while recognition involves identifying previously learned information.
   c) Recall and recognition are the same processes.
   d) Recall and recognition only apply to sensory memory.
9. Which of the following is a common cause of stress? (K1)
   a) Excessive sleep b) Financial difficulties
   c) Enjoyable hobbies d) Relaxation techniques

10. What is a primary difference between coping mechanisms and defense mechanisms? (K1)

a) Coping mechanisms are unconscious strategies, while defense mechanisms are conscious.

b) Coping mechanisms are strategies to manage stress, while defense mechanisms are unconscious processes to protect the ego.

c) Coping mechanisms and defense mechanisms are essentially the same.

d) Coping mechanisms are physical activities, while defense mechanisms are mental processes.

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe how the scientific method is applied in psychological research. Provide an example of how a psychologist might use this method to study a behavioral issue. (K2)

(Or)

b) Explain how psychology can be applied in the field of social work. (K3)

12. a) Explain how nurture influence cognitive development during childhood. (K2)

(Or)

b) Analyze the differences in social development between adolescence and adulthood. (K3)

13. a) Examine the Factors contributing to Personality Development. (K2)

(Or)

b) Compare and contrast the theories of emotion. (K3)

14. a) Describe how the principle of reinforcement can be applied to improve learning outcomes in an educational setting. (K2)

(Or)

b) Analyzehow attention influences the processes of remembering and forgetting. (K3)

15. a) Explain how a person experiencing chronic stress might use both coping and defense mechanisms to manage their situation. (K2)

(Or)

b) Analyze the impact of different types of stressors on mental and physical health. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elaborate the historical development of Psychology. (K4)

(Or)

b) Develop a model that integrates different fields of psychology. How can this integrated model enhance the practice of social work in understanding and addressing complex client needs? (K5)

17. a) Evaluate how inherited traits and early life experiences contribute to emotional regulation, attachment, and resilience throughout different life stages, providing examples to support your evaluation. (K4)

(Or)

b) Analyze the differences between two major schools of psychology: Behaviorism and Psychoanalysis. How do their approaches to understanding human behavior differ, and what are the implications of each for social work practice? (K5)

18. a) Create a comprehensive framework that includes elements from Psychometric, Information Processing and Neuroscience Approach.How does this framework enhance your understanding of intelligence measurement? (K4)

(Or)

b) Evaluate the factors that contribute to the development of Emotional Intelligence. (K5)

19. a) Elaborately examine the concepts of learning, motivation, and perception. (K4)

(Or)

b) Evaluate the effectiveness of different theories of motivation (e.g., Maslow's Hierarchy of Needs, Herzberg's Two-Factor Theory) in explaining employee performance and satisfaction in the workplace. (K5)

Compulsory – Case Study

20. You are working in an urban neighbourhood with a diverse population. There is a stigma associated with seeking mental health support in this community. How would you address this stigma and encourage residents to access mental health services? (K6)

17. a) Apply the principles of the Social Model of disability to a case study of a disabled individual seeking employment. (K4)

(Or)

b) Use the framework of Community Based Rehabilitation. (CBR) to develop a plan for a rural area with limited resources. (K5)

18. a) Analyze the impact of the Persons with Disabilities Amendment Act 2021 on current disability legislation. (K4)

(Or)

b) Compare the Rehabilitation Council of India Act, 1992 with the Rights of Persons with Disabilities Act, 2016 in terms of their impact on disability services. (K5)

19. a) Evaluate the effectiveness of government insurance policies for persons with disabilities in providing adequate support. (K4)

(Or)

b) Critically assess the role of NGOs such as AICB and NAB in the rehabilitation process. (K5)

Compulsory – Case Study

20. You are a manager at a company that is committed to diversity and inclusion, including the empowerment of employees with disabilities. Share a case study highlighting how your organization created a more inclusive workplace, where employees with disabilities not only thrive but also actively contribute to the company's success. Explain the policies, accommodations, and cultural changes that were instrumental in achieving this empowerment. (K6)

Reg. No.: _____

Course Code: 23PBCCT104

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

First Semester

Core: Social Work Perspectives for Persons with Disabilities

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following best defines disability? (K1)
   a) A temporary impairment that affects daily activities
   b) A condition that limits one or more major life activities
   c) An inconvenience that can be easily managed
   d) A condition that improves with age
2. Which of the following is NOT a primary level intervention for disability management? (K1)
   a) Early screening and diagnosis
   b) Provision of special education
   c) Preventive health care measures
   d) Support for daily living activities
3. The Social Model of disability focuses on_____. (K1)
   a) Medical treatment and cure
   b) Institutional care and charity
   c) Social barriers and inclusivity
   d) Individual responsibility for the disability
4. Which institution provides services related to vision impairment in India? (K1)
   a) NIMH b) NIVH c) NIPH d) NIOH
5. The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act was enacted in_____.(K1)
   a) 1995 b) 1992 c) 1999 d) 2006

6. Which of the following acts focuses on the protection of rights of persons with disabilities in India? (K1)
   a) National Trust Act
   b) Rights of Persons with Disabilities Act, 2016
   c) Rehabilitation Council of India Act
   d) National Policy on Persons with Disabilities
7. The ADIP Scheme aims to provide_____. (K1)
   a) Scholarships for disabled students
   b) National awards for disabled achievers
   c) Rehabilitation services for disabled individuals
   d) Financial assistance for purchasing aids and appliances
8. Which of the following is a key component of the Deendayal Disabled Rehabilitation Scheme (DDRS)? (K1)
   a) Financial assistance for medical treatment
   b) Support for the fitting of aids and appliances
   c) Educational and vocational training
   d) National awards and recognition
9. Which principle is NOT a part of the rehabilitation process?(K1)
   a) Early identification b) Vocational rehabilitation
   c) Isolation and separation d) Education and treatment
10. The All India Confederation of the Blind (AICB) focuses on_____. (K1)
   a) Providing scholarships for disabled students
   b) Vocational training and education for the blind
   c) Assisting with daily living activities
   d) Offering medical treatments for vision impairment

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the historical perspective of disability in India. (K2)

(Or)

b) Discuss the impact of societal attitudes towards disability in the UK. (K3)

12. a) Illustrate the application of the Millennium Development Goals in improving disability services. (K2)

(Or)

b) Provide an example of how referral services can benefit individuals with disabilities. (K3)

13. a) Analyze the challenges faced by Persons With Disabilities in accessing services under the Rights of Persons with Disabilities Act, 2016. (K2)

(Or)

b) Examine the role of the Rehabilitation Council of India for persons with Disability. (K3)

14. a) Evaluate the impact of the ADIP Scheme on the lives of persons with disabilities . (K2)

(Or)

b) Assess the effectiveness of the Deendayal Disabled Rehabilitation Scheme in providing support to disabled individuals. (K3)

15. a) Design a community-based program for the empowerment of persons with disabilities. (K2)

(Or)

b) Develop a framework for vocational rehabilitation of individuals with disabilities based on principles. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the various types of disabilities and their prevalence. (K4)

(Or)

b) Explain the role of Special Education in supporting differently abled individuals. (K5)

17. a) Construct the concept and purpose of job analysis in HRM?. (K4)

(Or)

b) Write a detail note on HR audit help organizations in improving their HR practices and compliance. (K5)

18. a) Conclude the difference between Human Resource Management (HRM) and Human Resource Development (HRD). (K4)

(Or)

b) Propose the different employee retention mechanisms used by organizations? (K5)

19. a) Describe the Employee Stock Ownership Plan (ESOP) serve as an incentive for employees. (K4)

(Or)

b) Explain the concept of KAIZEN and its application in HRM for continuous improvement. (K5)

Compulsory- Case Study

20. 1. A company wants to implement 5S in its research and development (R&D) department. However, the traditional 5S categories (Sort, Straighten, Shine, Standardize, Sustain) might not perfectly translate to the R&D environment. In your role as HR, how can you help the company adapt the 5S principles to fit the specific needs of an R&D department?

2. A company implements TQM within its manufacturing processes but neglects to integrate customer feedback and needs. As the HR department, how can you promote a customer-centric approach to TQM within the organization?

Reg. No:_____

Course Code: 23PBCET306

M.S.W. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Social Work

Third Semester

Elective: Human Resource Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which HRM philosophy emphasizes treating employees as valuable assets? (K1)

a) Cost minimization b) Strategic alignment

c) Employee-centric d) Innovation-driven

2. Which of the following is included in the scope of HRM? (K1)

a) Human resource planning b) Product design

c) Financial auditing d) Market analysis

3. Which term refers to the qualifications and skills required to perform a specific job? (K1)

a) Job analysis b) Job specification

c) Job design d) Job rotation

4. What does the term 'voluntary retirement scheme' (VRS) mean? (K1)

a) Mandatory retirement at a certain age

b) Compulsory resignation for underperforming employees

c) Temporary leave for employees

d) Early retirement with additional benefits

5. Which of the following is the first step in the seven steps of training? (K1)
   a) Designing the training program
   b) Implementing the training program
   c) Identifying the training needs
   d) Evaluating the training program

6. Which of the following is a key function of Human Resource Management (HRM) that differs from HRD? (K1)
   a) Employee training and development
   b) Performance appraisal
   c) Compensation and benefits administration
   d) Succession planning

7. Which of the following is a traditional method of performance appraisal? (K1)
   a) Rating scales b) 360-degree feedback
   c) Self-assessment d) Management by objectives (MBO)

8. Which component of compensation management involves determining the monetary value of a job? (K1)
   a) Wage policy b) Job evaluation
   c) Performance appraisal d) Employee benefits

9. Which concept is focused on continuous improvement and involves everyone in the organization? (K1)
   a) Total Productive Maintenance (TPM)
   b) Total Quality Management (TQM)
   c) 5S
   d) KAIZEN

10. What does the 5S methodology aim to achieve in the workplace? (K1)
    a) Increased employee benefits
    b) Enhanced workplace organization and efficiency
    c) Higher wages for employees
    d) Improved customer service

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain the concept and meaning of Human Resource Management. (K2)

(Or)

b) Write short notes on scope of Human Resource Management. (K3)

12. a) Sketch the job description and explain its key components. (K2)

(Or)

b) Outline the role of psychometric tests in talent acquisition. (K3)

13. a) Explain the primary functions of HR managers. (K2)

(Or)

b) Evaluate the seven steps involved in the training process. (K3)

14. a) Illustrate the primary methods of performance appraisal used in organizations. (K2)

(Or)

b) Wage and salary administration practices influence employee satisfaction - Justify (K3)

15. a) Discover the emerging challenges in HRM. (K2)

(Or)

b) Analyze the Total Productive Maintenance (TPM) integrate with HRM practices. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Assess the philosophical foundations of Human Resource Management. (K4)

(Or)

b) Justify the different approaches to Human Resource Management. (K5)

of challenges, such as high dropout rates and poor quality of education. (K6)

Questions:

a) What are the challenges facing the Indian education system?

b) How can education be made more accessible and equitable for all Indians?

c) What role does education play in promoting social change in India?

Reg. No.: _____

Course Code: 23PBCCT103

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

First Semester

Core: Sociology for Social Work Practice

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is the father of sociology. (K1)
   a) August Comte b) Durkheim
   c) Spencer d) Cooley
2. Which one is an Institution? (K1)
   a) Family b) Rural c) Urban d) Medical
3. _____ is the vehicle of culture. (K1)
   a) Technology b) Man c) Society d) Language
4. Who presented the idea of 'cultural lag'? (K1)
   a) Ogburn b) Malinowski c) MacIver d) Risley
5. _____is the family in which authority vested in male member. (K1)
   a) Polyandry b) Matriarchy c) Patriarchy d) Polygyny
6. _____is the family extends beyond the nuclear family. (K1)
   a) Extended family b) Nuclear family
   c) Joint family d) Neo local family
7. Social stratification means? (K1)
   a) Classification of society into castes
   b) Classification based on economic status
   c) Classification based on power
   d) Classification of group and inter-group

8. Class distinctions may not be due to _____. (K1)

a) One's birth b) Means of transport

c) Constitutions d) The policy of reservations

9. Poverty is a _____. (K1)

a) Economic problem b) Social problem

c) Political problem d) Religious problem

10. Who wrote the book Social change in modern India? (K1)

a) E.A.H. Blunt b) M.N. Sreenivas

c) Ketkar d) Risley

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) List out the characteristics of Society. (K2)

(Or)

b) Distinguish between the social group and community. (K3)

12. a) Categorize the elements of culture. (K2)

(Or)

b) Interpret the importance of cooperation. (K3)

13. a) Analyze the nature of a nuclear family. (K2)

(Or)

b) Write a short note on Types of Family. (K3)

14. a) Classify the meaning and elements of Social Stratification. (K2)

(Or)

b) Explain the characteristics of Caste System. (K3)

15. a) List out the Characteristics of Social Change. (K2)

(Or)

b) Explain the need and importance of social change. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Evaluate the various types of societies based on their characteristics and structure. (K4)

(Or)

b) Summarize the advantages and disadvantages of societal structures. (K5)

17. a) Assess the impact of cultural change on societal norms and individual behaviour. (K4)

(Or)

b) Develop a proposal for addressing the specific problems faced by adolescents on major social networking platforms. (K5)

18. a) Design a classification system for the features of modern families, considering various societal and cultural influences. (K4)

(Or)

b) Evaluate the legal, social, and cultural challenges of living in a relationship in India. (K5)

19. a) Evaluate and List the major means of social control. (K4)

(Or)

b) Design a framework to address the evolving challenges and modern trends of the caste system in India. (K5)

Compulsory – Case Study

20. Education is another important social institution in India. It is seen as a key to social mobility and economic advancement. However, the Indian education system is also facing a number

18. a) Conclude the penalties are prescribed under the Act for delays in wage payment. (K4)

(Or)

b) Propose the main purpose of the Equal Remuneration Act, 1976. (K5)

19. a) Generalize the criteria, calculation and process of claiming gratuity under the Payment of Gratuity Act, 1972. (K4)

(Or)

b) Explain the Tamil Nadu Shops and Establishment Act, 1947 for regulate working conditions in commercial establishments. (K5)

Compulsory- Case Study

20. Star Engineering Works, a manufacturing company, has been running an apprenticeship program to train young workers under the Apprentices Act, 1961. Recently, a group of apprentices has raised concerns about inadequate training, excessive working hours, and unclear pathways to full-time employment. They claim that the company is not fulfilling its obligations under the Apprentices Act, leading to dissatisfaction and a high dropout rate among apprentices.

Questions:

1. Evaluate the obligations of Star Engineering Works under the Apprentices Act, 1961. What are the legal requirements regarding training quality, working hours, and future employment prospects for apprentices, and how might the company be failing to meet these standards?
2. Recommend strategies for Star Engineering Works to enhance its apprenticeship program and ensure compliance with the Apprentices Act, 1961. How can the company improve the quality of training and provide clear career pathways to retain and develop its apprentices? (K6)

Reg. No:_____

Course Code: 23PBCET303

M.S.W. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Social Work

Third Semester

Elective: Labour Legislations

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is the primary aim of labor legislation?
   a) To regulate employer-employee relationships and ensure fair treatment of workers (K1)
   b) To promote only the interests of employers
   c) To avoid intervention in labor issues
   d) To reduce workers' rights
2. Which principle underlies labour legislation? (K1)
   a) Employer dominance b) Equality and non-discrimination
   c) Worker exploitation d) Limitation of worker rights
3. What is the primary objective of the Factories Act, 1948? (K1)
   a) To regulate the working conditions in factories
   b) To increase employer profits
   c) To limit workers' rights
   d) To promote outsourcing
4. What does the Contract Labour (Regulation and Abolition) Act, 1970 aim to achieve? (K1)
   a) To promote contract labour in all industries
   b) To reduce the rights of contract workers
   c) To eliminate permanent employment
   d) To regulate the employment of contract labour and abolish its misuse

5. According to The Payment of Wages Act, 1936, wages must be paid within how many days of the end of the wage period? (K1)
a) 10 days b) 30 days c) 7 days d) 15 days

6. Who is responsible for fixing the minimum wages under The Minimum Wages Act, 1948? (K1)
a) Employers
b) The Central and State Governments
c) Trade Unions
d) Employees

7. What is the primary objective of the ESI Act, 1948? (K1)
a) To provide health insurance and medical benefits to employees
b) To regulate working hours
c) To fix minimum wages
d) To provide educational benefits

8. According to The Payment of Gratuity Act, 1972, when is an employee eligible to receive gratuity? (K1)
a) After completing 10 years of service
b) Upon termination of employment for any reason
c) After 1 year of service
d) After completing 5 years of continuous service

9. Under The Plantation Labour Act, 1951, which of the following is a welfare provision for workers? (K1)
a) Free transport b) Unlimited working hours
c) Housing facilities d) No health checks

10. What does The Mines Act, 1952 primarily focus on? (K1)
a) The health, safety, and welfare of workers in mines
b) The regulation of motor transport workers
c) The payment of gratuity
d) The employment of apprentices

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the concept and meaning of Labour Legislation. (K2)

(Or)

b) Infer the objectives of Labour Legislation. (K3)

12. a) Sketch the Tamil Nadu Factories (Welfare Officers) Rules, 1950 to enhance worker welfare. (K2)

(Or)

b) Write the primary objectives of the Contract Labour (Regulation and Abolition) Act, 1970. (K3)

13. a) Explain the primary objectives of the Payment of Wages Act, 1936. (K2)

(Or)

b) Evaluate the eligibility criterion for receiving a bonus under the Payment of Bonus Act, 1965. (K3)

14. a) Illustrate the main objectives of the ESI Act, 1948. (K2)

(Or)

b) Interpret the key features of the Employee Pension Scheme, 1995. (K3)

15. a) Discover the Mines Act, 1952 to ensure safety and health in mines. (K2)

(Or)

b) Analyze the key provisions of the Catering Establishment Act, 1958. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the principles of Labour Legislation. (K4)

(Or)

b) Justify the historical development of Labour Legislation in India. (K5)

17. a) Construct the Sexual Harassment of Women at Workplace (Prevention, Prohibition, Redressal) Act, 2013, mandate for preventing harassment. (K4)

(Or)

b) Write a detail note on Tamil Nadu Payment of Subsistence Allowance Act, 1981, define "subsistence allowance". (K5)

b) Integrate the major components of Social Case Work and evaluate how each component contributes to the overall process of problem-solving. (K5)

18. a) Validate the Evidence-based Approach in Social Case Work. How does this approach contribute to the effectiveness of social work practice, and what are its limitations? (K4)

(Or)

b) Differentiate the key concepts of Crisis Intervention and critically evaluate how these concepts are applied in real-world situations to support individuals experiencing acute psychological distress. (K5)

19. a) Critically discuss the development of professional self in Social Case Workers. How does this development impact their effectiveness in various settings such as medical institutions, and psychiatric institutions? (K4)

(Or)

b) Design a comprehensive intervention plan using Social Case Work principles for addressing the psychosocial problems of workers in an industrial setting. (K5)

Compulsory – Case Study

20. 'A patient with a chronic illness is experiencing depression and isolation. Describe how you would collaborate with healthcare professionals to provide psychosocial support and coordinate care for this patient in a hospital or clinic setting. (K6)

Reg. No.: _____

Course Code: 23PBCCT105

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

First Semester

Core: Social Case Work

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is not a principle of Social Case Work? (K1)
   a) Empathy b) Self-disclosure
   c) Transference d) Data analysis
2. Social Case Work primarily focuses on the relationship between the client and the _____. (K1)
   a) Society b) Government
   c) Case worker d) Family
3. Which of the following is a component of Social Case Work? (K1)
   a) Policy Making b) Problem
   c) Budgeting d) Resource Allocation
4. Which tool is commonly used in the Social Case Work process for gathering information? (K1)
   a) Survey b) Case Study c) Interview d) Focus Group
5. Which of the following approaches in Social Case Work focuses on enhancing the client's strengths and resources? (K1)
   a) Psycho-social Approach b) Functional Approach
   c) Strength-based Approach d) Diagnostic Approach
6. The Crisis Intervention model in Social Case Work is primarily used to address_____. (K1)
   a) Long-term mental health issues
   b) Short-term immediate crises
   c) Employment concerns
   d) Educational challenges

7. In which setting is a Social Case Worker most likely to address issues related to substance abuse and recovery? (K1)
   a) School b) De-addiction center
   c) Industries d) Community center
8. The role of a Social Case Worker as a resource mobilizer is most crucial in which of the following settings? (K1)
   a) Family and Child Welfare b) Medical Institutions
   c) Industries d) Community development
9. Which of the following is a common limitation faced in Social Case Work practice in India? (K1)
   a) Lack of client interest
   b) High availability of resources
   c) Strong government support
   d) Inadequate training for social workers
10. Ethnography as a research method in Social Case Work primarily involves_____. (K1)
   a) Conducting large-scale surveys
   b) Statistical analysis of data
   c) In-depth study of cultural and social practices
   d) Randomized control trials

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Discuss the significance of empathy in the client-case worker relationship. How does it impact the effectiveness of Social Case Work? (K2)

(Or)

b) Explain the historical development of Social Case Work in India and compare it with its development in the West. (K3)

12. a) Elucidate the significance of initial contact in the Social Case Work process. How does it set the tone for subsequent interactions? (K2)

(Or)

b) Enumerate the importance of recording in Social Case Work. What are the different types of recordings, and why are they necessary? (K3)

13. a) Compare and contrast the Diagnostic Approach with the Functional Approach in Social Case Work. What are the key differences in their focus and methodology? (K2)

(Or)

b) Examine the role of Behaviour Modification in Social Case Work. How can this approach be effectively applied to change problematic behaviors? (K3)

14. a) Analyze the role of a Social Case Worker in correctional settings. How does the worker address the unique needs of this population? (K2)

(Or)

b) Evaluate the role of a Social Case Worker in school settings. How do they contribute to the welfare and development of students? (K3)

15. a) Assess the impact of socio-cultural factors on the practice of Social Case Work in India. (K2)

(Or)

b) Debate the use of single case evaluation in Social Case Work. What are its advantages and limitations as a research method? (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Critically analyze the concepts of transference and counter-transference in Social Case Work. How can a case worker manage these dynamics to maintain a professional and therapeutic relationship with the client? (K4)

(Or)

b) Synthesize the key principles of Social Case Work and critically assess how these principles guide the practice of case workers in addressing individual and family issues. (K5)

17. a) Analyze the process of termination and follow-up in Social Case Work. How can effective termination and follow-up enhance the outcomes of the case work intervention? (K4)

(Or)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the emergence of social work in India, including key milestones and developments. (K4)

(Or)

b) Analyze the religious foundations of social work in India and their impact on the field. (K5)

17. a) Describe the role of the NASW in the social work profession. (K4)

(Or)

b) Analyze the role of professional associations like IFSW and ISPSW in advancing global social work practice. (K5)

18. a) Compare and contrast the Clinical Model and the Radical Model of social work in terms of their approach and objectives. (K4)

(Or)

b) What are the key principles underlying the Welfare Model of social work, and how does it address social needs? (K5)

19. a) Describe the process and significance of community development in social work. (K4)

(Or)

b) Analyze the role of state social welfare boards in India and their impact on local welfare services. (K5)

Compulsory – Case Study

20. You are working with a client struggling with substance abuse. How would you conduct an assessment, develop a treatment plan, and provide ongoing support to help them overcome addiction? (K6)

Reg. No.: _____

Course Code: 23PBCCT101

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

First Semester

Core: Introduction to Social Work Profession

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which principle of social work emphasizes the importance of respecting and working with clients to understand their needs and strengths? (K1)

a) Integrity b) Self-determination

c) Confidentiality d) Competence

2. In which country did the formal profession of social work first emerge in the late 19th century, particularly influenced by the Charity Organization Society and the settlement house movement? (K1)

a) India b) United Kingdom

c) United States d) Canada

3. Which of the following is a core value in social work? (K1)

a) Profit Maximization

b) Importance of Human Relationships

c) Individual Achievement

d) Personal Gain

4. What is the primary goal of social work? (K1)

a) Maximizing Revenue

b) Enhancing Personal Fame

c) Improving Well-being and Social Justice

d) Increasing Market Share

5. Which model of social work emphasizes the importance of addressing systemic issues and social injustices to bring about social change? (K1)

a) Relief Model b) Clinical Model

c) Radical Model d) Systems Model

6. Which model of social work is characterized by its focus on treating individuals' emotional and psychological issues through therapy? (K1)

a) Development Model b) Relief Model

c) Clinical Model d) Systems Model

7. Which of the following is a primary focus of family and child welfare social work? (K1)

a) Corporate policy development

b) Rehabilitation of offenders

c) Support for families and children at risk

d) Management of industrial labor relations

8. Which board is responsible for implementing social welfare schemes at the central level in India? (K1)

a) National Board for Social Welfare

b) Central Social Welfare Board

c) State Social Welfare Board

d) National Human Rights Commission

9. What is a primary focus of international social work? (K1)

a) Local community development

b) Global social justice and human rights

c) Corporate management

d) National economic policy

10. Which of the following is a Sustainable Development Goal (SDG)? (K1)

a) Promote industrial growth b) Reduce income inequality

c) Enhance military capabilities d) Increase fossil fuel usage

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the scope of social work and how it addresses various aspects of human needs. (K2)

(Or)

b) Focus the historical development of social work in the United Kingdom. (K3)

12. a) Explain the concept of Indianization of social work and its importance. (K2)

(Or)

b) Illustrate the key elements of the Social Work Code of Ethics and their significance in professional practice. (K3)

13. a) Explain the primary focus of the Systems Model in social work. (K2)

(Or)

b) Priortize the main goal of the Development Model in social work. (K3)

14. a) Outline the role of a school social worker in supporting students with special needs. (K2)

(Or)

b) Explain the primary responsibilities of industrial social workers. (K3)

15. a) Illustrate the role that international social work plays in addressing environmental protection. (K2)

(Or)

b) Interpret the international social work contribution to the advancement of LGBTQIA rights. (K3)

17. a) Construct the major health problems prevalent among different population groups in India. (K4)

(Or)

b) Analyze the influence of cultural practices and food habits on health status of various communities in India. (K5)

18. a) Conclude the roles and responsibilities of different healthcare providers in India. (K4)

(Or)

b) Propose the contribution of private health system in India's healthcare landscape. (K5)

19. a) Describe the role of Five-Year Plans in shaping health policy and planning in India. (K4)

(Or)

b) Prepare the methods and techniques used in health education to raise awareness about communicable diseases. (K5)

Compulsory – Case Study

20. Context: The National Health Mission (NHM) in a large country has implemented several projects aimed at improving healthcare access and outcomes across various states. These projects address maternal and child health, infectious diseases, non-communicable diseases (NCDs), and healthcare infrastructure development. Despite these initiatives, there are challenges in achieving desired health outcomes uniformly across different regions. (K6)

Reg.No:_____

Course Code: 23PBCET307

M.S.W Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Social Work

Third Semester

Elective: Community Health

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the primary focus of community health? (K1)
   a) Individual treatment b) Community well-being
   c) Hospital care d) Private healthcare
2. Who is responsible for community health? (K1)
   a) The individual only
   b) The community only
   c) Individual, community and state
   d) International bodies exclusively
3. Which factor is a major influence on the health status of individuals in India? (K1)
   a) Social, economic and cultural factors
   b) Geographic location
   c) Availability of luxury goods
   d) Urbanization only
4. Which environmental issue is directly linked to health problems in India? (K1)
   a) Deforestation b) Global warming
   c) Technological advancements d) Air pollution

5. What is the first level of healthcare in the Indian healthcare system? (K1)

a) Tertiary healthcare b) Secondary healthcare

c) Primary healthcare d) Quaternary healthcare

6. Health administration at the district level in India is typically overseen by? (K1)

a) District Health Officer (DHO)

b) State Health Minister

c) National Health Authority

d) Local NGOs

7. What is the primary goal of the National Health Policy in India? (K1)

a) To promote medical tourism

b) To achieve universal health coverage

c) To privatize healthcare services

d) To reduce healthcare costs

8. The National Urban Health Mission (NUHM) focuses on? (K1)

a) Urban poor and vulnerable populations

b) Rural health issues

c) High-income urban residents

d) Global health tourism

9. Which organization is primarily focused on global public health initiatives? (K1)

a) UNICEF b) CRY c) WHO d) World Vision India

10. Which sector has increasingly become a key partner in health networks for providing healthcare services? (K1)

a) Educational institutions b) Agricultural sector

c) Retail sector d) Corporate sector

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the primary objectives of Community Health. (K2)

(Or)

b) Infer the key principles of Community Health. (K3)

12. a) Sketch the current health status of the people in India. (K2)

(Or)

b) Outline the factors influencing by illiteracy on health behaviors and outcomes in India. (K3)

13. a) Explain the structure of the healthcare system in India. (K2)

(Or)

b) Evaluate the challenges faced by Primary Health Centres (PHCs) in India. (K3)

14. a) Illustrate the evolution of National Health Policy in India. (K2)

(Or)

b) Interpret the objectives and impact of the National Mental Health Programme in India. (K3)

15. a) Discover the role of the corporate sector in health care. (K2)

(Or)

b) Analyze the contributions of WHO (World Health Organization) to global health. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Assess the need for Community Health in both rural and urban settings. (K4)

(Or)

b) Justify the role of international organizations in supporting community health initiatives. (K5)

17. a) Prepare the core concepts of Gestalt Therapy and their application in therapeutic practice. (K4)

(Or)

b) Assess the concept of "reality therapy" and its application in helping clients manage personal issues. (K5)

18. a) Summarize the importance of attending skills in the counselling process and provide examples. (K4)

(Or)

b) Compose the concept of transparency in the counselling relationship and how it can impact the therapeutic process? (K5)

19. a) Criticize the challenges and strategies involved in tele-counseling during a pandemic. (K4)

(Or)

b) Predict how does supportive counseling address the needs of patients with chronic illnesses such as HIV or TB? (K5)

Compulsory- Case Study

20. Jordan, a 12th-grade student, has been exhibiting signs of severe distress and recently confided in a friend about having suicidal thoughts. The friend reported this to a teacher,

a) who has now referred Jordan to the school counselor for immediate intervention.

b) What immediate steps would you take to ensure Jordan's safety? (K6)

Reg.No:_____

Course Code: 23PBCCT301

M.S.W Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Social Work

Third Semester

Core: Counselling And Guidance

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is NOT a type of guidance? (K1)
   a) Educational Guidance b) Vocational Guidance
   c) Psychological Guidance d) Financial Guidance
2. What is a key characteristic of a good counselor? (K1)
   a) Strictness b) Empathy
   c) Impatience d) Detachment
3. Which of the following is NOT a key component of Freud's psychoanalytic theory? (K1)
   a) Id b) Ego
   c) Superego d) Self-Actualization
4. In Transactional Analysis, which ego state represents a nurturing and protective part of the personality? (K1)
   a) Parent b) Adult c) Child d) Ego
5. What is a key component of establishing respect in the counselling relationship? (K1)
   a) Sharing personal experiences
   b) Adhering to strict rules
   c) Active listening
   d) Providing solutions immediately

6. Which of the following is NOT a characteristic of genuineness in the counselling process? (K1)

a) Being authentic b) Showing warmth

c) Faking interest d) Being open and honest

7. Which of the following is a primary focus of school counseling? (K1)

a) Career development

b) Financial planning

c) Crisis management

d) Academic achievement

8. What is a key objective of career counseling with adolescents? (K1)

a) Resolving marital conflicts

b) Enhancing relationship skills

c) Exploring career interests and options

d) Addressing substance abuse issues

9. What is the primary purpose of standardized measures in assessments? (K1)

a) To assess typical performance

b) To compare individual performance to a norm group

c) To provide a subjective analysis

d) To observe behavior in natural settings

10. Which type of test evaluates an individual's general intellectual capabilities? (K1)

a) Achievement test b) Aptitude test

C) Personality test d) Self-assessment tool

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Illustrate the basic principles of guidance. (K2)

(Or)

b) Analyze e the stages of counseling. (K3)

12. a) Discover the main difference between psychoanalysis and Adlerian therapy. (K2)

(Or)

b) Illustrate how Transactional Analysis (TA) define the 'Parent' ego state, and what role does it play in therapy? (K3)

13. a) Discover the role of empathy in the counselling relationship. (K2)

(Or)

b) Summarization an important skill in the counselling process- Explain (K3)

14. a) Explain the role of family counseling in addressing marital conflicts. (K2)

(Or)

b) Focus the significance of resilience counseling in helping individuals recover from trauma. (K3)

15. a) Discover the difference between an aptitude test and an achievement test. (K2)

(Or)

b) Focus on the role of self-assessment in the assessment process. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize the guidance and explain its importance in educational settings. (K4)

(Or)

b) Criticize the characteristics and qualities of an effective counselor. (K5)

Reg. No.: _____

Course Code: 23PBCET304

M.S.W. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Social Work

Third Semester

Elective: Mental Health

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the primary focus of the ICD-11? (K1)
   a) Psychiatric Diagnosis Only
   b) General Medical Conditions Only
   c) Classification of Diseases and Health-Related Conditions
   d) Legal Aspects of Mental Health
2. Which manual is published by the American Psychiatric Association? (K1)
   a) ICD-11 b) DSM-5 c) DSM-IV d) ICD-10
3. Which of the following is a common clinical manifestation of anxiety disorders? (K1)
   a) Delusions b) Hallucinations
   c) Excessive worry and tension d) Memory loss
4. What is a primary symptom of dissociative disorders? (K1)
   a) Frequent headaches b) Memory lapses or dissociation
   c) Persistent sadness d) Irrational fears
5. Which of the following is a common feature of delirium? (K1)
   a) Gradual onset and progressive memory loss
   b) Sudden onset with fluctuating levels of consciousness
   c) Persistent and fixed delusions
   d) Chronic and pervasive mood disturbances

6. In the management of schizophrenia, which approach is commonly used to help patients understand and manage their symptoms? (K1)
   a) Cognitive-Behavioral Therapy (CBT)
   b) Electroconvulsive Therapy (ECT)
   c) Psychoanalysis
   d) Nutritional Therapy
7. Which of the following is considered a pervasive developmental disorder? (K1)
   a) Conduct Disorder b) ADHD
   c) Autism Spectrum Disorder d) Intellectual Disability
8. In which edition of DSM is Internet Addiction Disorder discussed under potential conditions for further study? (K1)
   a) DSM IV b) DSM V c) ICD-10 d) DSM III
9. Personality Disorders are grouped into how many clusters in the DSM-5? (K1)
   a) One b) Two c) Three d) Four
10. What is the key characteristic of Cluster B personality disorders? (K1)
    a) Odd and eccentric behavior
    b) Dramatic, emotional, or erratic behavior
    c) Anxious and fearful behavior
    d) Cognitive distortions

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss how the characteristics of mentally healthy individuals can be applied to improve overall mental health in a community setting. (K2)

(Or)

b) Explainthe role of resilience in mental health and how it can be promoted through therapeutic interventions. (K3)

4. Prognosis:

a) What is the expected prognosis for Jane with the most likely diagnosis?

b) How might her condition affect her daily life and future development?

5. Family Support and Education:

a) What advice and resources should be provided to Jane's family to support them in understanding and managing her condition? (K6)

12. a) Elucidate minor mental disorders and provide examples of such conditions. (K2)

(Or)

b) Describe the main types of phobias and their typical features. (K3)

13. a) Examine the role of pharmacotherapy in managing schizophrenia and its impact on patient outcomes. (K2)

(Or)

b) Explain how cognitive-behavioral therapy (CBT) can be used to address symptoms of major depressive disorder. (K3)

14. a) Elucidate the clinical features of Autism Spectrum Disorder. (K2)

(Or)

b) Analyze the psychosocial challenges faced by children with Intellectual Disability (ID) and propose strategies for social integration. (K3)

15. a) Evaluate the key symptoms of Cluster A personality disorders and suggest appropriate treatment modalities. (K2)

(Or)

b) Explore the treatment approaches for sexual dysfunctions in Psycho-Sexual Disorders and their cultural context. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Critically evaluate the strengths and limitations of using DSM-5 and ICD-11 classification systems in diagnosing mental disorders. (K4)

(Or)

b) Elaborate how the historical development of psychiatry has influenced current psychiatric practices and theories. (K5)

17. a) Critically analyze the effectiveness of different treatment approaches for Obsessive-Compulsive Disorder (OCD) and discuss their implications for patient care. (K4)

(Or)

b) Discuss the interplay between biological, psychological, and social factors in the development and management of psychosomatic disorders. (K5)

18. a) Discuss the challenges and strategies in differentiating between Delirium and Dementia in clinical practice. (K4)

(Or)

b) Assess the impact of bipolar disorder on personal relationships and discuss strategies to mitigate these effects. (K5)

19. a) Design a comprehensive intervention program for managing Habit Disorder in school-aged children. (K4)

(Or)

b) Critically evaluate the current treatment approaches for ADHD (K5)

Compulsary – Case Study

20. Patient Profile:

a) Name: Jane Doe

b) Age: 28

c) Gender: Female

d) Marital Status: Single

e) Occupation: Freelance writer

f) Medical History: History of anxiety and depression

g) Family History: Mother with Borderline Personality Disorder (BPD)

Presenting Complaints: Jane presents to the mental health clinic with complaints of intense and unstable relationships, feelings of emptiness, and difficulty controlling her anger. She describes

a pattern of intense, unstable relationships where she rapidly alternates between idealizing and devaluing people. She has a history of self-harm and has had several suicide attempts, especially during times of perceived rejection or abandonment. Jane reports that she often feels empty and unsure of her identity and struggles with chronic feelings of loneliness and boredom.

Examination Findings:

a) Mental Status Examination: Jane appears anxious and agitated. She has a labile mood, with rapid shifts between tearfulness and anger during the interview. Her thought content reveals a pervasive fear of abandonment and fluctuating self-image.

b) Physical Examination: Several healed scars on her forearms.

c) Psychological Assessment: High scores on measures of impulsivity and emotional instability.

Question: Based on Jane's case, address the following questions:

1. Diagnosis and Differential Diagnosis:
   a) What is the most likely diagnosis for Jane? Explain your reasoning.
   b) What other conditions should be considered in the differential diagnosis?
2. Pathophysiology:
   a) Discuss the neurobiological, genetic, and psychosocial factors associated with the most likely diagnosis.
3. Management and Treatment:
   a) Outline a comprehensive management plan for Jane, including psychotherapeutic and pharmacological interventions.
   b) Discuss potential challenges in managing her condition.

29/11/2024 (FN)

19. a) Formulate the development of the theme of religious redemption over the course of the Novel *Crime and Punishment*. (K4)

(Or)

b) Justify the reader's role in constructing the textual meaning in the novel *Tristram Shandy*. (K5)

Compulsory – Case Study

20. Life is a Digression – Substantiate in accordance with the novel Tristram Shandy. (K6)

Reg.No:_____

Course Code: 23PBAET107

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Elective: Literature and Psychology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The title word "Invictus" most likely mean _____. (K1)

a) careless b) lucky c)unfortunate d) undefeated

2. Edmund Vance Cooke was a 19th and 20th century _____ poet. (K1)

a) Canadian b) American c) Russian d) Australian.

3. When is the woman most visible in the wallpaper? (K1)

a) In the sunlight b) In the moonlight

c) Afternoon d) At noon.

4. The boss flick ink down at the fly _____ times. (K1)

a) 2 b) 1 c) 3 d) 4

5. *The Glass Menagerie* takes place in _____. (K1)

a) Washington b) New York c) California d) St. Louis.

6. _____ is the person whom. Willy holds up as a symbol of successful salesman. (K1)

a) Charley b) Dave Single man

c) Howard Wagner d) Moscow.

7. Crime and Punishment was initially published in the year_____.
a) 1862 b) 1864 c) 1866 d) 1868. (K1)

8. Walter Shandy selects _____ name for his son. (K1)
a) Toby b) Thomas c) Trismegistus d) Tristram.

9. Carl Gustav Jung's mentor was _____. (K1)
a) Heinz Hartmann b) Alfred Adler
c) Sigmund Freud d) Karen Horney.

10. The two major attitudes according to Jung was _____. (K1)
a) Pessimism and Optimism b) Introversion and Extroversion
c) Logic and Emotion d) Aggression and Passivity.

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Sketch the central idea of the poem "Invictus" by William Ernest Henley. (K2)

(Or)

b) Explain the benefits of not quitting as suggested in the poem "Don't' Quit." (K3)

12. a) Write the main conflict in the short story *The Yellow Wallpaper*. (K2)

(Or)

b) Interpret the importance of the boss being unnamed in the short story *The Fly*. (K3)

13. a) List the significance of Laura's unicorn. (K2)

(Or)

b) Write about Biff's tendency to steal, what compels him to steal and how do his actions shape his future? (K3)

14. a) Classify the importance of the city to the plot and of Raskolnikov's state of mind. (K2)

(Or)

b) Explain how the novel *Tristram Shandy* ends and what are its implications? (K3)

15. a) Illustrate the two most important archetypes in Jung's view. (K2)

(Or)

b) Differentiate the relationship between psychology and literature as analysed by Jung. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Discriminate the problems of life as viewed in the poem "How did you die." (K4)

(Or)

b) Evaluate the themes used by Robert Lowell Alusion in his poem "Water." (K5)

17. a) Summarise the importance and contribution of images in the short story *The Yellow Wallpaper*. (K4)

(Or)

b) Simulate the connection between the World War I and Mansfield's *The Fly*. (K5)

18. a) Validate the symbol of the glass menagerie. What does it represent? Does it represent the same things throughout the play, or does its meaning change? (K4)

(Or)

b) Compare and contrast Willy's death with Dave Single man's death. What does it mean to die "the death of a salesman" and did Willy achieve that? (K5)

19. a) Assess the contribution of the novelists of post-independence period. (K4)

(Or)

b) Discuss the seven elements of Fiction style. (K5)

Compulsary – Case Study

20. Discuss the Post – Independence development of novels. (K6)

Reg.No:_____

Course Code: 23PBACT303

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

Third Semester

Core: English Literature for Competitive Examinations II

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. *Look Back in Anger* is a play by_____. (K1)

a) Sir Laurence b) John Osborne

c) Luther d) T.S.Eliot

2. A _____ Novel is a type of fiction that uses dialogue, or conversations between characters, as the main way to advance the story. (K1)

a) Campus b) Gothic c) Dialogue d) Epistolary

3. _____fiction is a type of novel that has a more main stream, populist appeal than literary fiction. (K1)

a) Mysteries b) Science c) Fantasy. d) Genre

4. _____used the phrase 'A novel in Rotten English' as a sub-title to his novel. (K1)

a) Benjamin Zephaniah b) Ken saro-wiwa

c) Grace Nicholas d) Fred D'Aguiar

5. The First Book written by an Indian in English was 'The Travels of Dean Mahomet', a travel narrative by _____. (K1)

a) Sake Dean Mahomed, b) Toru Dutt

c) Rabindranath Tagore, d) Chittaranjan Das

6. Translation from one language to another is called _____translation. (K1)

a) Intralingual b) Intersemiotic

c) Pronunciation d) Interlingual

7. In "The Asoka pillar : Independence and After" Naik discusses the literature produced_____. (K1)

a) before independence b) for independence

c) after independence d) during the freedom struggle

8. _____categorized fictional characters into flat and round. (K1)

a) E. M. Foster b) Charles Dickens

c) William Thackery d) Jonathan Culler

9. Patrick White became the First Australian to be awarded the Nobel Prize in literature in _____. (K1)

a) 1963 b) 1973 c) 1983 d) 1993

10. _____ is regarded as "Australia's most important nineteenth century poet. (K1)

a) Charles Harpur b) Henry Lawson

c) Banjo Paterson d) Mary Gilmore

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain the impact of World War II on poetry. (K2)

(Or)

b) Explain the features of Campus Novel. (K3)

12. a) How is paranoia explored in '*How To Be Both*'? (K2)

(Or)

b) Write a note on the 21st century poetry. (K3)

13. a) Explain the themes of early Indian English literature. (K2)

(Or)

b) What is the difference between Literal translation and Free translation? (K3)

14. a) Summarise Naik's observations on the post-independence poetry and poets. (K2)

(Or)

b) What are the facts about Fiction? (K3)

15. a) Write a brief note on the pioneers of Australian Literature. (K2)

(Or)

b) Mention some of the limitations and possibilities of using the term 'Australian Literature'. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Explain the trends in modern 20th century poetry. (K4)

(Or)

b) Explain the features of the post-modern Drama. (K5)

17. a) Trace the development of the Novel Since 1945. (K4)

(Or)

b) Discuss the development of poetry since 2000. (K5)

18. a) What role did Indian nationalism play in the development of Indian English literature? (K4)

(Or)

b) Analyze the role of cultural context in translation. (K5)

18. a) Justify the Marxist interpretation of Ideology. (K4)

(Or)

b) Consider Wilson's arguments that a revolutionary age may not be suitable for great works of art. (K5)

19. a) Assess Baudrillard's four stage model. (K4)

(Or)

b) Simulate Roland Barthes's philosophy in *Criticism as Language*. (K5)

Compulsory – Case Study

20. Illustrate one Indian novel of your own choice in the light of Marxism. (K6)

Reg.No:_____

Course Code: 23PBACT105

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Core: Critical Theories I

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Aristotle's *Poetics* is all about the_____. (K1)
   a) Poems of literature b) Of Tragedy
   c) Nature of Literature d) Characters
2. No poet, no artist of any art has his/her complete meaning alone – said by_____. (K1)
   a) Aristotle b) Sir Philip Sydney
   c) T.S. Eliot d) Coleridge
3. _____ criticism seeks evidence for unresolved emotions, psychological conflicts, guilts and ambivalences. (K1)
   a) Psychoanalysis b) New
   c) Reader-Response d) Archetypal.
4. The basis of Freud's essay, "Creative Writing and Daydreaming is _____. (K1)
   a) To understand how writing and dreaming manifested
   b) To daydream
   c) To have the opportunity to write.
   d) To better understand the creative process.
5. Karl Marx and Friedrich Engels called their economic theories as _____. (K1)
   a) Marxism b) Communist Manifesto
   c) Materialism d) Communism

6. Wilson's *Marxism and Literature* was published in the year _____. (K1)

a) 1938 b) 1972 c) 1895 d) 1978

7. A new liking for fragmented forms, discontinuous narrative, and random-seeming collages of disparate materials is _____ criticism. (K1)

a) Structural b) Psychoanalysis

c) Modernism d) Post modernism

8. _____ applied the structuralist method to the general field of modern culture. (K1)

a) Claude Levi-Strauss b) Greta Garbo

c) Frank Kermode c) Roland Barthes

9. A _____critical approach generally uncovers or identifies manifestations of mythology in a literary work. (K1)

a) Myth b) Historical c) Psychological d) Archetypal

10. _____ criticism dissects and analyses symbols, images and mythologies used by a writer in his works. (K1)

a) Mythical b) Archetypal c) Historical d) Psychological

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the opinion of Aristotle about three unities in the play. (K2)

(Or)

b) Prioritize T.S Eliot's Concept Tradition and how it can be acquired? (K3)

12. a) Illustrate your understanding on Psychoanalytical criticism.(K2)

(Or)

b) Demonstrate the difference between night and day dreams, according to Freud. (K3)

13. a) Experiment how Marxist critics explore the link between ideology and literature? (K2)

(Or)

b) Sketch the impact of Marxism on art and literature through the words of Edmund Wilson. (K3)

14. a) Classify the difference between Modernism and Postmodernism. (K2)

(Or)

b) How Roland Barthes defines the reader's role in constructing a text's meaning? (K3)

15. a) Illustrate the three types of imageries clarified by Northrop Fyre. (K2)

(Or)

b) How does Myth Criticism relate to the recurrence of archetypal patterns? (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Criticize the remark of Aristotle that there can be a tragedy without character but not without plot? (K4)

(Or)

b) What is T.S.Eliot view on how tradition influences the development of individual creativity in "Tradition and the Individual Talent"? (K5)

17. a) How does Sigmund Freud describe the relationship between creative writing and day dreaming? (K4)

(Or)

b) Formulate the similarities and dissimilarities of Freudian and Lacanian's psychoanalytical criticism. (K5)

17. a) Elaborate on the salient features of Old English. (K4)

(Or)

b) Comment on the contribution of Middle English literature in the development of the English language. (K5)

18. a) How do you justify the contribution of Greek and Latin in the development of English? (K4)

(Or)

b) "Old English heavily borrows vocabulary from other languages". Justify with illustrations. (K5)

19. a) "Borrowed words are even more likely to be changed in form, since they do not readily suggest any meaning"- Discuss. (K4)

(Or)

b) Explain what was the main factor in the evolution of the English language? (K5)

Compulsory – Case Study

20. Compile an essay on the period of Renaissance and its features. (K6)

Reg.No:_____

Course Code: 23PBACT104

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Core: The Study of English Language

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. According to Saussure, the relation between sign and signifier is _____. (K1)

a) Functional b) Grammatical c) Structural d) Arbitrary

2. The Indo-European Family of Languages were formerly known as _____languages. (K1)

a) Aryan b) Indo-Germanic

c) Indo-Sino d) Proto- Greek

3. Who did bring great reform in the schools and a great literary revival? (K1)

a) Alfred b) James c) Victor d) Stephen.

4. Who is the father of Middle English period? (K1)

a) Geoffrey Chaucer b) Wordsworth

c) I.A. Richards d) T.S.Eliot

5. Who invented the first printing machine? (K1)

a) William Caxton b) Langland

c) James Watt d) Charles Darwin

6. During the reign of Alfred the Great which language became the standard literary language of England? (K1)

a) Saxon b) Norman c) West Saxon d) Northumbrian

7. Life-like replaced new word _____. (K1)

a) Lively b) Norman c) life d) live

8. Identify which of the following is an appropriate statement_____. (K1)

a) The word 'chair' and its association with 'an object for sitting' is determined by social agreement.

b) The word 'chair' and its association with 'an object for sitting' is natural.

c) The word 'chair' and its association with 'an object for sitting' is mandated.

d) The word 'chair' and its association with 'an object for sitting' is regional.

9. Choose the best example of a metaphor. (K1)

a) Tybalt, you rat-catcher, will you walk?

b) Peace you mumbling fool!

c) O, speak again, bright angel!

d) How silver-sweet sound lovers' tongues by night, Like softest music to attending ears!

10. Identify the meaning for the Idiom "Like a sitting duck"

a) Lazy b) Fat c) Sleepy d) Ignorant (K1)

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Define 'displacement' as a design feature of language. (K2)

(Or)

b) Discuss Satem and Centum languages in detail. (K3)

12. a) Briefly explain how do Dialects play vital role in Old English Period? (K2)

(Or)

b) Comment on the development of English vocabulary during the Middle English period. (K3)

13. a) Analyse the nuances of The Renaissance and English Language. (K2)

(Or)

b) Explain Albanian's unique vocabulary. (K3)

14. a) How does analogy change the meaning of a word? (K2)

(Or)

b) Expound is the evolution of the Standard English language. (K3)

15. a) Explain the use of idiom in language teaching. (K2)

(Or)

b) The contribution of native writers to English language. (K3)

SECTION – B (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss the characteristic features of language and provide examples on the basis of work done by linguists. (K4)

(Or)

b) Write a full-length essay on the Eastern group of Indo-European Family of Languages. (K5)

20. a) Prepare an essay on how Amit Chaudhuri's analyzes comparative literary approach in 'The English Writings of Rabindranath Tagore'. (K4)

(Or)

b) Identify the themes that Amit Chaudhuri identifies in Tagore's English writings. How do these themes reflect Tagore's philosophical and cultural beliefs? (K5)

Reg. No:_____

Course Code: 23PBAAL309

M.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

English Literature

Third Semester

ALC: Essay on a Writer (Tagore)

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1. Show how Tagore expresses his desire for divine presence in the second verse. (K1)
2. Recall Tagore's attitude towards material wealth in the fifth verse. (K1)
3. Emphasize as a key difference between city life and village life from Tagore's essay. (K1)
4. Identify the essence of true creation as believed by Tagore. (K1)
5. What is the main challenge faced by Subha in Tagore's story "Subha"? (K1)
6. Recall the characteristic traits of Rahmat in Tagore's "Kabuliwala". (K1)
7. List out the thems depicted in *Red Oleanders.* (K1)
8. What transformation does Chitra undergo in the play *Chitra?* (K1)
9. Give short note on Amit Chaudhuri. (K1)
10. State how Amit Chaudhuri describes Rabindranath Tagore's influence on English literature? (K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a) Explain how Tagore conveys his spiritual yearning and connection with the divine in *Gitanjali*? Provide specific examples from the text to support your analysis. (K2)

(Or)

b) Examine the concept of self-surrender in the first ten verses of *Gitanjali*. (K2)

12. a) Write down the key ideas of "City and Village" by Tagore. (K3)

(Or)

b) Give the sum and substance of "Construction Vs Creation" by Tagore. (K3)

13. a) Describe the relationship between Mini and the Kabuliwala.(K2)

(Or)

b) Depict the relationship between the Postmaster and Ratan in the story "The Postmaster". (K2)

14. a) Sketch the character of Nandhini in *Red Oleander*. (K3)

(Or)

b) Show the character traits of Arjuna in *Chitra*. (K3)

15. a) Explain how Amit Chaudhuri contextualizes Tagore's English writings within the broader cultural and historical milieu of colonial India? (K2)

(Or)

b) Briefly discuss the impact of Rabindranath Tagore's bilingualism on his literary works. (K3)

SECTION - C (5 X 10 = 50 Marks)

Answer ALL questions.

16. a) Analyze the use of symbolism and imagery in the prescribed Verses of *Gitanjali*. (K4)

(Or)

b) Evaluate how joy and sorrow are intertwined in Tagore's quest for divine connection in *Gitanjali?* (K5)

17. a) Can construction ever hold spiritual or emotional significance in Tagore's philosophy? Why or why not? (K4)

(Or)

b) 'Villages are closer to nature than towns and meet the elemental needs of food and joy'-Analyze this statement with special reference to 'City and Village' by Tagore. (K5)

18. a) Interpret the significance of silence in the character of Subha. (K4)

(Or)

b) Examine the socio-economic context of 'Kabuliwala'. (K5)

19. a) Comment on the theme of Materialism in Tagore's *Red Oleander*. (K4)

(Or)

b) Examine the themes of love and deception portrayed in *Chitra*. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Assess 'Prologue to the Canterbury tales' as a social satire. (K4)

(Or)

b) Explain 'The Garden' by Andrew Marvell which presents the beauty of a garden wonderfully. (K5)

17. a) Evaluate the relevance of Bacon's essay of "Honour and Reputation" in today's world. (K4)

(Or)

b) Discuss the use of satire in Addison and Steele's essays regarding town and country life. How do they use humuor and irony to critique or highlight social behaviours and manners? (K5)

18. a) Analyse the theme of resurrection in 'A Tale of Two Cities'. (K4)

(Or)

b) Consider 'Ivanhoe' as a historical novel. (K5)

19. a) Examine Faustus is the protagonist and tragic hero in Christopher Marlowe's play 'Doctor Faustus'. (K4)

(Or)

b) Critically analyse 'All for love' as a classical tragedy. (K5)

Compulsory – Case Study

20. Thematically Analysis A Tale of Two Cities. (K6)

Reg.No:_____

Course Code: 23PBACT101

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Core: British Literature I (Age of Chaucer to Age of Pope)

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. In which month does the pilgrimage described in the "Prologue" take place? (K1)

a) March b) April c) May d) June

2. Who are the inhabitants of "The Garden" in the Marvel Universe? (K1)

a) The X-Men b) The Builders and their creations

c) The Inhumans d) The Guardians of the Galaxy

3. How is Sir Roger de Coverley described in the essay? (K1)

a) As a young, energetic man

b) As a witty and sarcastic individual

c) As a kind, elderly gentleman

d) As a strict and harsh landlord

4. In the essay, what does Bacon argue is a key advantage of youth in leadership? (K1)

a) Prudence b) Physical endurance

c) Ability to take risks d) Knowledge

5. What is the fate of Madame Defarge by the end of the novel 'A Tales of two cities'? (K1)
   a) She is executed by the revolutionary government
   b) She is killed in a confrontation with Miss Pross
   c) She flees to England
   d) She is arrested and imprisoned
6. What is the primary conflict in 'Ivanhoe'? (K1)
   a) The struggle between the Saxons and Normans
   b) The battle between England and France
   c) The conflict between the Crusaders and the Saracens
   d) The rivalry between Robin Hood and the Sheriff of Nottingham
7. What is the name of the scholar who warns Faustus about the dangers of his pact with the devil? (K1)
   a) Wagner b) Cornelius c) Valdes d) The Good Angel
8. What significant event does the play 'All for Love' depict? (K1)
   a) The assassination of Julius Caesar
   b) The fall of Troy
   c) The defeat of Mark Antony and Cleopatra
   d) The rise of Augustus Caesar
9. Sidney writes 'An Apology for Poetry' in the form of a judicial oration for the _____. (K1)
   a) comedy b) defence c) tragedy d) sacrifice
10. According to Pope in 'An Essay on Criticism', what role does the critic play in relation to the poet? (K1)
   a) The critic should compete with the poet to gain fame.
   b) The critic serves as a mediator, interpreting and evaluating the poet's work.
   c) The critic should mimic the poet's style to gain credibility.
   d) The critic has no significant role compared to the poet.

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss the 'prologue to the Canterbury tales' as a picture of contemporary society. (K2)

(Or)

b) What does 'The Garden' by Andrew Marvell symbolise? (K3)

12. a) Analyse the character of Sir Roger de Coverley as presented in "Sir Roger at Home." (K2)

(Or)

b) Compare and contrast Bacon's views on expense with contemporary perspectives on personal finance and spending. How do Bacon's recommendations align with or differ from modern financial advice? Use examples from "Of Expense" to illustrate key points. (K3)

13. a) Evaluate Sydney Carton's character and his journey toward redemption. (K2)

(Or)

b) Discuss the portrayal of female characters in 'Ivanhoe', such as Rowena and Rebecca. (K3)

14. a) Discuss the role of the supernatural elements in 'Doctor Faustus'. (K2)

(Or)

b) Analyse the character of Mark Antony as a tragic hero in 'All for Love'. (K3)

15. a) Interpret the chief arguments of Sidney in 'Apology for Poetry'. (K2)

(Or)

b) Explore the effectiveness of Pope's satire in highlighting the shortcomings of contemporary critics and promoting his vision of ideal criticism. (K3)

17. a) Discuss End Game as an absurd play. (K4)

(Or)

b) Sketch the character of Mrs. Breydon and Ayamonn Breydon. (K5)

18. a) Explain supernatural elements in *Riders to the Sea*. (K4)

(Or)

b) Analyse how do the cultural shifts occurring in 18th-century Britain impact class identity in *She Stoops to Conquer*?

19. a) Discuss the concept of the Byronic hero in *Prometheus Unbound*. (K4)

(Or)

b) Sketch the character of Francis Morris in *The Golden Age*. (K5)

Compulsary – Case Study

20. Compare the characters of Chris and Joe in All My Sons considering their education, moral values, and idealism. (K6)

Reg.No_____

Course Code: 23PBAET307

M.A Degree Examination – November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

English Literature

Third Semester

Elective: World Drama

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

1. Why is Oliva unwilling to receive any visitors? (K1)

a) She is hideously deformed

b) She is terribly shy

c) She cannot speak

d) She is in mourning for her dead brother

2. Mahesh Dattani's play *Tara* starts with _____. (K1)

a) a card game b) an operation

c) a deal d) a surgery

3. Nell thinks that nothing is funnier than_____. (K1)

a) Unhappiness b) Happiness

c) Samul becket d) Adam Sandier

4. *Red Roses for Me* was published in _____. (K1)

a)1946 b) 1947 c) 1945 d) 1944

5. *Riders to the Sea* is _____. (K1)

a) a more a tragedy of fate than a tragedy of character.

b) a great tragedy having Greek dramatic qualities.

c) a great tragedy having Latin dramatic qualities

d) a and b correct

6. Which literary movement does *She Stoops to Conquer* belong to? (K1)

a) Neoclassicism b) Modernism

c) Realism d) Romanticism

7. What is Demogorgon's role in *Prometheus Unbound*? (K1)

a) a spirit from the underworld.

b) a live from the underworld.

c) a life from the unbound.

d) a vengeance from the unbound

8. *The Golden Age* was inspired by the true story of a group of people who were discovered in the wilds of Tasmania in _____. (K1)

a) 1939 b) 1938 c) 1940 d) 1937

9. Who is the eldest son of Kate Keller? (K1)

a) Joe Keller b) Larry Keller

c) Chris Keller d) Ann Deever

10. Where is Sidley Park located? (K1)

a) Derbyshire b) Norfolk

c) Paris d) Stamboul

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Disguises and changes of clothing are central to the plot of *Twelfth Night*. Which characters in the play spend time in disguise, and how is this thematically important? (K2)

(Or)

b) *Tara* is a play about a dysfunctional family. Discuss. (K3)

12. a) Explain Beckett's metaphors in *Endgame* and their uniqueness within the context of his era. (K2)

(Or)

b) Justify *Red Roses for Me* as semiautobiographical play. (K3)

13. a) Illustrate the symbols in *Riders to the Sea.* (K2)

(Or)

b) Briefly explain the main conflict and climax in *She Stoops to Conquer.* (K3)

14. a) Describe the background of Prometheus in *Prometheus Unbound.* (K2)

(Or)

b) Elucidate how Louis Nowra explores Australian culture in *The Golden Age*. (K3)

15. a) Explain Arthur Miller's Views on money and family versus moral integrity. (K2)

(Or)

b) Compare the romantic and classic element of *Arcadia.* How does the Garden reflect romanticism? (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss the role of the explicitly comic characters, Sir Toby, Sir Andrew, Feste and Maria. (K4)

(Or)

b) Write an essay on the significance of the stage design in Mahesh Dattani's*Tara*. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Assess the structure of language. (K4)

(Or)

b) Appraise the significance of Psycholinguistics. (K5)

17. a) Compare and contrast Phonetics and Phonology. (K4)

(Or)

b) Estimate Neutralization in phonology. (K5)

18. a) Construct the concept of phonological conditioning in morphology. (K4)

(Or)

b) Organize the syntactic rules. (K5)

19. a) Evaluate the grammatical units of the Phrase and the Clause. (K4)

(Or)

b) Compare and contrast Traditional Grammar and Structural Grammar. (K5)

Compulsary – Case Study

20. Write a report for a journal and mark the sentences with grammatical categories (K6)

Reg.No:_____

Course Code: 23PBACT304

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

Third Semester

Core: Linguistics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which subfield of linguistics examines how language is processed in the human brain? (K1)

a) Sociolinguistics b) Psycholinguistics

c) Historical Linguistic d) Descriptive Linguistics

2. What is primarily concerned with the study of Linguistics? (K1)

a) Human language and its structure

b) Animal communication systems

c) Artificial intelligence

d) Historical events

3. Which of the following is a key difference between Phonetics and Phonology? (K1)

a) Phonetics focuses on abstract sound systems, while Phonology studies actual speech sounds

b) Phonology focuses on abstract sound systems, while Phonetics studies actual speech sounds

c) Both Phonetics and Phonology study abstract sound systems

d) Both Phonetics and Phonology study actual speech sounds

4. What is an Allophone? (K1)
a) A variant of a phoneme that does not change word meaning
b) A completely different phoneme
c) A variant of a phoneme that changes word meaning
d) A type of diaphone

5. Which of the following best describes a morpheme? (K1)
a) The smallest unit of sound in a language
b) A word that can stand alone
c) The smallest grammatical unit that carries meaning
d) A sentence component

6. What is an allomorph? (K1)
a) A variant form of a morpheme that has the same meaning
b) A sentence structure
c) A morpheme that can stand alone
d) A word that has multiple meanings

7. Which of the following is a misconception about grammar? (K1)
a) Grammar rules are the same in all languages
b) Grammar provides structure to language
c) Grammar helps in clear communication
d) Grammar is essential for understanding language

8. What does Structural linguistics focus on? (K1)
a) The meaning of words b) The sounds of speech
c) The structure of language d) The history of language

9. What is the meant by Lexical meaning? (K1)
a) The meaning conveyed by the grammatical structure of a sentence
b) The meaning of a word in isolation
c) The context in which a word is used
d) The relationship between words in a sentence

10. Which of the following is an example of antonymy? (K1)
a) Hot and cold b) Table and chair
c) Sun and moon d) Bright and light

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Sketch the scope of linguistics. (K2)

(Or)

b) Write a short note on Linguistics and why is it considered a scientific study of language? (K3)

12. a) Explain Phonology and its role in the study of language. (K2)

(Or)

b) Sketch and define the concepts of Phone, Allophone, and Diaphone in phonology. (K3)

13. a) Outline Morphology and its significance in the study of language. (K2)

(Or)

b) Analyze the concept of discontinuous constituents in syntax. (K3)

14. a) Infer some common misconceptions about grammar. (K2)

(Or)

b) Illustrate the concept of grammatical categories. (K3)

15. a) Survey the theories of Semantics. (K2)

(Or)

b) Describe the distributional approach to semantics. (K3)

b) Sketch the character of Baroka in *"The Lion and the Jewel"*.(K5)

19. a) In what ways does Amir Seek redemption. Why? (K4)

(Or)

b) Compare and contrast David Lutie and Lucy. (K5)

Compulsory – Case Study

20. Noble servants have absolutely no concern in their lives and their total happiness is bound entirely serving the lives of their rich masters. They never seem to possess any personal hopes, desires, triumphs, family, personal, or romantic life. (K6)

Reg.No:_____

Course Code: 23PBACT301

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

Third Semester

Core: Post – Colonial Literature

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. "Once upon a Time" is _____. (K1)

a) an elegy b) a balled c) a Satire d) an ironical poem

2. People from Kenya's Kikuya tribe, were fast and lively as _____. (K1)

a) insects b) bees c) reptiles d) files

3. "Face" is about childhood _____ and about loss. (K1)

a) enmity b) love c) memories d) illusion

4. "The Drover's Wife" is a short story written by _____.(K1)

a) Keats b) Tennyson

c) Henry Lawson d) O.Henry

5. The Central theme of the play Tughlaq is the _____ in the character of Sulthan Tughlaq. (K1)

a) Ugliness b) Complexity c) Humblenessd) Intelligence

6. The name of the School Teacher in the play *"The Lion and the Jewel" is* _____. (K1)

a) Sidi b) Baroka c) Lakunle d) Sadiku

7. *Disgrace* is a novel which tells about a man who loses everything in an affair with his _____. (K1)

a) student b) colleague c) friend d) class-mate

8. Baba and Amir Sell things at a flea market on _____. (K1)

a) Monday b) Sunday c) Friday d) Tuesday

9. "Orientalism" is a critique of Western Construction as a place of mystery and _____. (K1)

a) Marxism b) imperialism

c) exoticism d) post-colonialism

10. Decolonial perspectives understand _____ as the basis for the everyday function of imperialism and modernity. (K1)

a) Colonialism b) Post-colonialism

c) Marxism d) modernism

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the significance and meaning of the title "A Far Cry from Africa". (K2)

(Or)

b) Attempt a critical appreciation of Wole Soyinka's "Telephone Conversation". (K3)

12. a) Explain briefly the theme of death in "Garden Party". (K2)

(Or)

b) Attempt a character sketch of The Drover. (K3)

13. a) Comment on Tughlaq's sense of justice. (K2)

(Or)

b) Explain briefly the significance of marriage in "*The Lion and the Jewel*". (K3)

14. a) In *Disgrace*, what does the Lord Byron/ Teresa opera signify and how does it mirror David Lurie? (K2)

(Or)

b) Why does Amir want Hassan to leave Baba's household? (K3)

15. a) Comment on Edward Said's idea that "Orientalism creates a divide between The East and The West". (K2)

(Or)

b) Justify the significance of the title "Decolonizing the Mind" by Ngugi Wa Thiong'o. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explore the themes in the poem "To a Student". (K4)

(Or)

b) Critically analyse the poem "House and Land" (K5)

17. a) Is it likely that Tommy will keep up his promise not to go droving? – Sustantiate. (K4)

(Or)

b) Write the story of "The Garden Party" in your own words. (K5)

18. a) Bring out the symbols used by Girish Karnad in his paly *Tughlaq*. (K4)

(Or)

18. a) Attempt a character sketch of Beneatha Younger in the play *A Raisin in the Sun.* (K4)

(Or)

b) How does Fences fulfill Wilson's description of the style as a "blues aesthetic"? (K5)

19. a) Explain how Toni Morison Explores female freedom in her novel *Sula*? (K4)

(Or)

b) Analyse the central themes of the novel *The Women of Brewster Place*. How do they shape the lives of the women in the novel? (K5)

Compulsory – Case Study

20. Suggestan alternate end to the novel Sula promoting it as black woman's epic. (K6)

Reg.No:_____

Course Code: 23PBACT103

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Core: Afro – American Literature

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Du Bois says that the blacks of the South need the right to _____. (K1)

a) speak b) Vote c) justice d) equality

2. The campaign of Martin Luther King against colour and racial discrimination began in _____. (K1)

a) 1950 b) 1963 c) 1960 d) 1955

3. "The Negro Mother" depicts the capture and hardships of the_____. (K1)

a) labourers b) White people

c) black people d) Chinese

4. "If we must die" offers two options to the oppressed people that either they die like hogs or _____. (K1)

a) like men b) like animal c) like reptiles d) like insects

5. In what city is *Fences* set? (K1)

a) Pittsburg b) New Yark c) Philadelphia d) Newark

6. A Raisin in the Sun examines the effects of _____. (K1)

a) Conflicts b) dreams

c) Racial prejudice d) inequality

7. Toni Morrison's *Sula* is a novel about _____. (K1)

a) mystery b) ambiguity c) complexity d) obscurity

8. The two in *The Women of Brewster Place* are Lorraine and _____. (K1)

a) Mattie b) Teresa c) Etta Mae d) Nancy

9. Du Bois explicitly lays out his notion that freedom promised to black people after_____ is illusion. (K1)

a) Slavery b) Freedom c) Captivity d) Liability

10. Hughes says that black artists in America should stop copying the _____. (K1)

a) Chinese b) French People c) Whites d) Bhutanese

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss briefly the main characteristics of Afro-American Literature. (K2)

(Or)

b) Write a note on Martin Luther King's speech about the life of the Negroes. (K3)

12. a) Explain briefly the message conveyed in "I Too" by Hughes. (K2)

(Or)

b) Analyze briefly the poem "Sympathy" by Dunbar. (K3)

13. a) Sketch the character of Troy Maxon. (K2)

(Or)

b) Explain the internal and external conflicts in *A Raisin in the Sun.* (K3)

14. a) How is motherhood portrayed in the novel *Sula*? (K2)

(Or)

b) Discuss the symbolism of the wall and its impact on the characters in *The Women of Brewster Place*. (K3)

15. a) Du Bois characterizes black people as "a Sort of Seventh Son". – Explain. (K2)

(Or)

b) Describe the challenges that the Negro artist face from his own people. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer all questions.

16. a) Describe the significance of Martin Luther King's "I Have a Dream" in American history" (K4)

(Or)

b) Expound the themes of early African – American writings. (K5)

17. a) According to "The Negro Mother" by Langston Hughes, Why did the African Americans go through such struggle? (K4)

(Or)

b) Critically analyse the poem "If we must Die". (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss the themes of alienation and identity in R.Parthasarathy's "Under Another Sky." (K4)

(Or)

b) Explain Kamala Das deals with the theme of love, sexuality, sickness and loneliness in her poem Introduction. (K5)

17. a) Elaborate Sri Aurobindo's contribution to the Indian Renaissance and his influence on the socio-political and cultural revival of India. (K4)

(Or)

b) Discuss Ananda Coomaraswamy's interpretation of the "Dance of Shiva" and its significance in understanding the philosophical and artistic dimensions of Indian culture. (K5)

18. a) Analyze the depiction of communal tensions and religious intolerance in Mahesh Dattani's play "Final Solutions." (K4)

(Or)

b) Interpret "Larins Sahib" revolves around the tragic downfall of Henry Lawrence driven by his burgeoning hubris. (K5)

19. a) Examine the theme of existential crisis and self-discovery in Arun Joshi's "The Strange Case of Billy Biswas." (K4)

(Or)

b) Assess Rushdie's Midnight's Children remains a cornerstone of postcolonial literature. (K5)

Compulsory – Case Study

20. Discuss the theme of Final Solution by Mahesh Dattani. (K6)

Reg.No:_____

Course Code: 23PBACT102

M.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

English Literature

First Semester

Core: Indian Writing in English

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the primary reason for the nightingale's downfall in Vikram Seth's "The Frog and the Nightingale"? (K1)
   a) The nightingale was naturally a poor singer.
   b) The nightingale overestimated her abilities.
   c) The nightingale trusted the frog's advice without questioning his intentions.
   d) The nightingale was too busy to take care of her health.
2. In Kamala Das's poem "An Introduction," what does the poet primarily assert through her use of language? (K1)
   a) Her desire to be silent.
   b) Her struggle with societal expectations.
   c) Her rejection of her mother tongue.
   d) Her acceptance of traditional gender roles.
3. The Indian Renaissance is most closely associated with which of the following social and religious reform movements? (K1)
   a) The Bhakti Movement b) The Swadeshi Movement
   c) The Brahmo Samaj d) The Non-Cooperation Movement
4. According to Ananda Coomaraswamy, what does Shiva's dance symbolize in his analysis of "The Dance of Shiva"? (K1)
   a) The pursuit of material wealth
   b) The eternal cycles of creation and destruction
   c) The serenity of meditation
   d) The establishment of social order

5. In Mahesh Dattani's play "Final Solutions," what is the primary focus of the drama? (K1)
   a) The quest for personal wealth
   b) The impact of communal violence on families
   c) The struggles of a young couple in love
   d) The challenges of modern urban life

6. In the play Larin Sahib, the protagonist has a _____ personality. (K1)
   a) Reputed b) fractured c) smart d) unknown

7. In Arun Joshi's novel "The Strange Case of Billy Biswas," what is the central conflict faced by the protagonist, Billy Biswas?
   a) His struggle to reconcile his personal desires with societal expectations (K1)
   b) His battle against a political regime
   c) His pursuit of financial success in a competitive world
   d) His quest for romantic fulfillment

8. In Salman Rushdie's "Midnight's Children," what supernatural ability do the protagonists, the Midnight's Children, possess?
   a) The power to travel through time (K1)
   b) The ability to read minds
   c) The gift of telepathy and influencing events
   d) The power to control the weather

9. What key development in the novel form does Mee highlight as significant in the literature of the 1980s? (K1)
   a) The resurgence of historical fiction
   b) The use of fragmented narratives and non-linear structures
   c) The emphasis on lyrical prose and poetic language
   d) The focus on traditional realism and linear storytelling

10. Which literary trend from the 1980s and 1990s does Mee identify as a major influence on contemporary fiction? (K1)
    a) The revival of Victorian realism
    b) The exploration of postmodern techniques and narrative experimentation
    c) The resurgence of romanticism
    d) The focus on classical narrative structures

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explore the use of imagery and symbolism in A.K. Ramanujan's "A Poem on Particulars" to explore the relationship between the mundane and the profound. (K2)

(Or)

b) Examine the theme of cultural and spiritual conflict in Jayanta Mahapatra's "Dawn at Puri." (K3)

12. a) Evaluate how Sri Aurobindo's writing and activism reflect the broader goals of the Indian Renaissance and their significance in the context of India's struggle for identity and independence. (K2)

(Or)

b) How does Coomaraswamy's analysis contribute to our comprehension of Shiva's dance as a symbol of cosmic rhythm and spiritual truth? (K3)

13. a) Justify the significance of the title Final Solutions. (K2)

(Or)

b) Enumerate Gurcharan Das has presented Lawrence as a tragic hero because he struggles between personal ethics, duty and pride. (K3)

14. a) Sketch the character of Billy Biswas. (K2)

(Or)

b) Explain the theme of Midnight's children by Salman Rushdie. (K3)

15. a) In After Midnight how does Mee address the relationship between postmodernism and the novel form during the 1980s and 1990s? (K2)

(Or)

b) How does Mee examine the influence of political and cultural changes in the 1980s and 1990s on the narrative techniques and themes of novels from that period? (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) How can parameters and restrictions be integrated into sustainability planning? (K4)

(Or)

b) How can textile companies minimize their environmental and social impacts? (K3)

17. a) Compare the environmental impact of organic cotton to conventional cotton. (K4)

b) Discuss about sustainable manmade fibers. (K4)

18. a) Demonstrate the use of a green chemistry technique in waste management. (K4)

(Or)

b) Compare and contrast the energy consumption between traditional processing and eco processing. (K5)

19. a) How can a fashion brand appeal to green consumers in its marketing strategies? (K4)

(Or)

b) Analyze the challenges and opportunities for eco-fashion designers in the current market. (K5)

Compulsory – Case Study

20. Summarise the eco-labels that can be used in the textile industry that helps the consumer to handpick thesustainable organic products amongst other unsustainable brands. (K6)

Reg.No:_____

Course Code: 23PBGCT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Costume Design and Fashion

First Semester

Core: Sustainable Fashion and Textiles

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following best defines sustainability? (K1)

a) The ability to produce new materials

b) Meeting the needs of the present without compromising the ability of future generations to meet their own needs

c) The process of recycling materials

d) Increasing economic growth

2. What is the primary goal of sustainable fashion? (K1)

a) Increasing profit margins b) Reducing environmental impact

c) Following the latest trends d) Expanding market reach

3. Which of the following is a sustainable natural fiber? (K1)

a) Polyester b) Nylon c) Hemp d) Acrylic

4. What is the primary characteristic of biodegradable textiles?

a) High durability (K1)

b) Decomposes naturally in the environment

c) Water-resistant

d) Flame-retardant

5. Which statement best defines eco-finishing? (K1)

a) It uses more chemicals for a better finish

b) It aims to use environmentally friendly substances for finishes

c) It focuses on faster production times

d) It reduces the cost of production

6. What is the principle of green chemistry? (K1)

a) Maximizing chemical use

b) Designing products and processes to minimize environmental impact

c) Reducing product lifespan

d) Increasing production costs

7. Which term refers to the practice of using sustainable materials and methods in the fashion industry? (K1)

a) Fast Fashion b) Eco-fashion

c) Trendy Fashion d) Vintage Fashion

8. What is eco fashion primarily focused on? (K1)

a) High fashion trends b) Environmental sustainability

c) Celebrity endorsements d) Luxury materials

9. What does the acronym REACH stand for in the context of chemical safety regulations in textiles? (K1)

a) Regulation for Environmental and Chemical Health

b) Registration, Evaluation, Authorization, and Restriction of Chemicals

c) Regulatory Examination and Approval for Chemical Hazards

d) Resource Evaluation and Authorization for Chemical Health

10. What is the primary goal of a life cycle assessment (LCA)?

a) To calculate the cost of production (K1)

b) To evaluate the environmental impacts of a product from cradle to grave

c) To determine market demand

d) To assess social responsibility

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the importance of sustainable textiles. (K3)

(Or)

b) Why is it necessary to adopt sustainable practices? (K2)

12. a) Summarize the characteristics of eco textiles. (K3)

(Or)

b) Analyze the cost-effectiveness of using recycled textiles in manufacturing. (K2)

13. a) How can eco finishing be applied in the garment industry? (K3)

(Or)

b) What steps would you take to reduce the carbon footprint of a supply chain? (K3)

14. a) How can a retail store implement sustainable practices in its operations? (K3)

(Or)

b) Analyze the impact of eco-fashion on consumer behavior compared to conventional fashion. (K3)

15. a) How would you apply a life cycle assessment to evaluate the sustainability of a new textile product? (K2)

(Or)

b) Compare the effectiveness of different eco-textile testing methods in detecting harmful chemicals. (K3)

Reg. No:_____

Course Code: 23PBGAL310

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Costume Design and Fashion

Third Semester

ALC: Brand Management

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Recall the importance of estimating market potential for businesses.	(K1)
2.	Examine product line with an example.	(K1)
3.	Identify two opportunities that businesses can leverage in branding.	(K1)
4.	Visualise the tools to maintain brand identity.	(K1)
5.	What is brand equity measurement system?	(K1)
6.	What is non-traditional marketing?	(K1)
7.	Paraphrase brand harvesting.	(K1)
8.	Restate imitation in branding.	(K1)
9.	List the different types of fashion brands.	(K1)
10.	Review fashion tales contribution to a brand's narrative.	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Demonstrate the advantages and limitations of sales forecasting methods. How they can impact business planning?	(K2)

(Or)

b) Outline the different structures of marketing organisations. (K3)

12. a) Discuss the criteria for choosing a successful brand name. (K2)

(Or)

b) Experiment two major challenges and two significant opportunities that businesses face in branding. (K3)

13. a) Analyze the economic impact of brand advertising on a company. (K2)

(Or)

b) Discover the strategies to overcome the challenges and successfully manage a global brand. (K3)

14. a) Evaluate the role of customer experience and perception in enhancing brand loyalty. (K2)

(Or)

b) Assess the benefits and risks associated with brand extension. (K3)

15. a) Mention how fashion brands collaborate with bloggers and the benefits of the collaborations? (K2)

(Or)

b) Write the various communication strategies used by fashion brands, including advertising, public relations and events. (K3)

SECTION - C (5 X 10 = 50 Marks)

Answer ALL questions.

16. a) Order the process of new product development. Include an explanation of the major stages and discuss the importance of each stage in ensuring the success of a new product. (K4)

(Or)

b) Integrate the factors that influence estimating market potential and sales potential. How do they impact business decisions? (K5)

17. a) Predict how the concept of branding has changed from its early origins to the present day? (K4)

(Or)

b) Sketch out how brand identity is developed and maintained, and why it is crucial for a brand's success? (K5)

18. a) Generalize how brand associations are built and how they influence consumer perceptions? (K4)

(Or)

b) Produce the key legal laws related to brand protection, including trademarks and intellectual property rights. (K5)

19. a) Propose various branding strategies that companies can use to build and strengthen their brands. (K4)

(Or)

b) Infer the circumstances under which a company might decide to harvest its brand and the potential impact on the company. (K5)

20. a) Test the impact of social media on fashion branding, including the role of influencers and user-generated content. (K4)

(Or)

b) Construct and discuss major challenges and issues faced by fashion brands, such as sustainability, counterfeiting, and saturation. (K5)

Reg. No:_____

Course Code: 23PBGAL311

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Costume Design and Fashion

Third Semester

ALC: Footwear Design

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

Choose the correct answer.

1.	Which is the best type of leather?	(K2)
2.	Recall the name of the fasteners used in shoes.	(K2)
3.	Name the first type of shoes used historically.	(K2)
4.	Which is the sizing chart followed in Europe?	(K2)
5.	Name two principles of cutting leather.	(K2)
6.	What is skiving?	(K2)
7.	Justify sole preparation.	(K2)
8.	Describe sole activation.	(K2)
9.	Review good year construction.	(K2)
10.	Review welted construction.	(K2)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Identify and analyse types of insole boards.	(K3)
	(Or)	
b)	Examine about threads and reinforcement methods used in footwear.	(K4)

12. a) Illustrate five types of shoes and describe. (K3)

(Or)

b) Categorize the types of boots. (K4)

13. a) List out the distinctive features of giving topline and other edge treatments. (K3)

(Or)

b) Differentiate nesting machines used in cutting and closing. (K4)

14. a) Illustrate about quality control measures used. (K3)

(Or)

b) Evaluate about shoe and safety aspects in shoe industry. (K4)

15. a) Choose the best method for shoe construction. (K3)

(Or)

b) Evaluate the efficiency of cemented construction. (K4)

SECTION - C (5 X 10 = 50 Marks)

Answer ALL questions.

16. a) Discuss the different upper and lining leathers. (K5)

(Or)

b) Compile different types of soling materials used. (K6)

17. a) Elaborate on preparation of standards for men. (K5)

(Or)

b) Appraise on shoe sizing systems. (K6)

18. a) Compile the features of skiving, punching and gimping and its importance in shoe making. (K5)

(Or)

b) Summarize about different edge treatments. (K6)

19. a) Criticize the need for sole preparation and upper preparation. (K5)

(Or)

b) Recommend on the best technique for sole preparation and sole cementing. (K6)

20. a) Compile and discuss the two types of shoe construction. (K5)

(Or)

b) Design a shoe and describe its materials and construction. (K6)

Compulsory- Case Study

20. Textiles containing PCMs are considered as intelligent. Justify (K6)

Reg. No:_____

Course Code: 23PBGCT301

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Costume Design and Fashion

Third Semester

Core: Advanced Technical Textiles

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The fibre that dominates the textile industry is _____. (K1)

   a) Linen b) Silk c) Cotton d) Jute

2. The current value of the Indian technical textiles sector is around _____. (K1)

   a) US $8 billion b) US $7 billion

   c) US $6 billion d) US $9 billion

3. The interiors of building and transport system are made up of_____. (K1)

   a) Flame retardant b) UV- protection

   c) Water repellent d) Soil retardant

4. Thermal protection textiles are treated with_____. (K1)

   a) Root ball net b) Insect meshes

   c) Sunscreen d) Ultra violet ray stabilizers

5. Meta-Aramid is a _____ fibre. (K1)

   a) Composite fibre b) Natural fibre

   c) High performance fiber d) Manmade fibre

6. Hydrophilic fabrics are called as _____. (K1)

a) Water repellent b) Water absorbent

c) Water proof d) Water emulsion

7. Suture is a highly used in _____ tech. (K1)

a) Med tech b) Geo tech

c) Smart tech d) Eco tech

8. Embossing is called as _____ finish. (K1)

a) Chemical b) Mechanical

c) Antistatic d) Water repellent

9. A water proof material mainly includes _____ coating. (K1)

a) Glue b) Silicone c) Vinyl d) Gel

10. Easy finishing is mainly given to _____fabric.

a) Synthetic b) Silk c) Cotton d) Rayon (K1)

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Write about the scope of technical textiles. (K2)

(Or)

b) List out the high performance of fibres. (K3)

12. a) Explain the coating techniques. (K2)

(Or)

b) Explain about coating materials. (K3)

13. a) Write about the selection of fibres suitable for thermal protection. (K2)

(Or)

b) State the applications of Textile reinforced composites. (K3)

14. a) Write about wound care and bandages. (K2)

(Or)

b) Differentiate between non-implantable and implantable textiles. (K3)

15. a) Differentiate between active smart and Passive smart textiles. (K2)

(Or)

b) Write about phase change materials (PCM). (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Summarize about the development in fibres used in technical textiles. (K4)

(Or)

b) Explain the application of technical textiles in various field. (K5)

17. a) Write about the reinforced composites used in finished textiles. (K4)

(Or)

b) Explain the application of nanotechnology. (K4)

18. a) Write in detail about heat and flame protection. (K5)

(Or)

b) Explain about water proof breathable fabrics. (K3)

19. a) Summarize about extra-corporeal devices. (K4)

(Or)

b) Explain about healthcare and hygiene products. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) How would you apply the SWOT analysis to evaluate the growth potential of the Indian textile industry? (K4)

(Or)

b) Determine the contribution of the textile industry to India's GDP over the past decade. (K5)

17. a) Analyze the impact of the latest Five-Year Plan on different sectors of the economy. (K4)

(Or)

b) Analyze the impact of the South Indian Mills Association on the growth of the textile sector in South India. (K5)

18. a) How could chitosan be used to enhance the properties of a yarn for medical applications? (K4)

(Or)

b) Compare and contrast the properties of fancy yarn and textured yarn. (K5)

19. a) Develop a plan for utilizing warp knitting techniques to create a fabric that minimizes fabric distortion during wear. (K4)

(Or)

b) Analyze how the integration of CAD with other design tools affects the overall garment design workflow.? (K5)

Compulsory – Case Study

20. Elucidate the plasma treatment and ultrasonic techniques in textile processing. (K6)

Reg.No:_____

Course Code: 23PBGCT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Costume Design and Fashion

First Semester

Core: Indian Textile and Apparel Industry

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. How does the Indian textile industry contribute to the Indian economy? (K1)
   a) By being the largest source of tax revenue
   b) Through significant export earnings and employment generation
   c) By monopolizing the domestic market
   d) By being the primary source of energy production
2. What is the primary raw material used in the Indian textile industry? (K1)
   a) Silk b) Wool c) Cotton d) Polyester
3. What is the primary objective of the Export Promotion Council for Handicrafts (EPCH)? (K1)
   a) To regulate domestic textile prices
   b) To promote and increase exports of Indian handicrafts
   c) To oversee textile worker welfare
   d) To fund new textile startups
4. Which organization is responsible for the promotion and development of handlooms in India? (K1)
   a) The South Indian Mills Association (SIMA)
   b) The Khadi and Village Industries Commission (KVIC)
   c) The Handloom Export Promotion Council (HEPC)
   d) The Confederation of Indian Textile Industry (CITI)

5. How does chitosan contribute to textile applications? (K1)
a) It provides natural elasticity to fibers.
b) It has antimicrobial properties useful in medical textiles.
c) It enhances the colorfastness of dyes.
d) It increases the tensile strength of synthetic fibers.

6. What is the main advantage of using core-spun yarns in textile manufacturing? (K1)
a) Enhanced heat resistance
b) Improved durability and elasticity
c) Reduced production costs
d) Greater moisture absorption

7. What does CAD stand for in textile design? (K1)
a) Computer Automated Design
b) Computer Aided Design
c) Computer Automated Development
d) Computer Aided Development

8. Which knitting technique involves knitting horizontally, from side to side? (K1)
a) Weft knitting b) Warp knitting
c) Seamless knitting d) Flat knitting

9. What is the primary purpose of plasma treatment in textile processing? (K1)
a) To add color to fabrics
b) To modify surface properties of fibers
c) To increase fabric weight
d) To soften the fabric

10. Which of the following is a natural catalyst used in textile processing? (K1)
a) Plasma b) Enzyme
c) Ultrasonic waves d) Foam

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe the role of the Indian textile industry in the country's economy. (K2)

(Or)

b) Enhance the major sectors within the Indian textile industry. (K3)

12. a) Apply the principles of Khadi and Village industries to develop a business plan for a village-based enterprise. (K2)

(Or)

b) Apply the council's guidelines to create an export strategy for a new product. (K3)

13. a) Describe how alginate is used in the production of fibers and yarns? (K2)

(Or)

b) In what ways might core-spun yarn technology be applied to improve the durability of sportswear? (K3)

14. a) How would you select fabric types for a specific garment intended for high-performance sportswear? (K2)

(Or)

b) Apply the principles of weft knitting to design a fabric that maximizes comfort for activewear. (K3)

15. a) How can you apply enzyme technology to develop a more eco-friendly dyeing process? (K2)

(Or)

b) Compare the efficiency of ultrasonic cleaning with traditional cleaning methods in terms of time and effectiveness. (K3)

18. a) Formulate the various functions of a modern office and discuss its importance in achieving organizational objectives. (K4)

(Or)

b) Rearrange the factors that govern the effectiveness of office work. How they contribute to overall organizational performance? (K5)

19. a) Consider the essentials of a good record management policy. Explain how it supports organizational operations? (K4)

(Or)

b) Evaluate the effectiveness of each method of record maintenance in various scenarios. Explain how they impact record retrieval? (K5)

Compulsory- Case Study

20. Oasis lights Ltd. manufactures LED Bulbs. At present, it is a debt free company with an equitycapital of Rs. 50 Lakhs and general reserves of Rs. 35 Lakhs. It wants to increase itsmanufacturing capacity and needs Rs. 40 Lakhs for it. The management wants to use acombination of internal source of funds of finance this expansion programme. Specify themost appropriate source of funds suitable for the company to finance its expansion programme. (K6)

Reg. No:_____

Course Code: 23PBGET306

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Costume Design and Fashion

Third Semester

Elective: Business Organization and Office Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the primary objective of a business? (K1)
   a) Environmental protection b) Profit earning
   c) Providing employment d) Social welfare
2. In a cooperative society, the principle followed is_____. (K1)
   a) One share, one vote
   b) One person, one vote
   c) One member, multiple votes
   d) Multiple shares, multiple votes
3. What is a key factor in deciding the location of a business? (K1)
   a) Proximity to the owner's residence
   b) Availability of raw materials
   c) Number of employees
   d) Color of the building
4. What is a debenture? (K1)
   a) A type of equity share
   b) A short-term loan
   c) A long-term debt instrument
   d) A government bond

5. Which of the following best describes a primary role of a modern office? (K1)
a) Hosting social events b) Processing information
c) Providing entertainment d) Organizing community services

6. _____is a key consideration in office accommodation. (K1)
a) Office color scheme
b) Proximity to leisure facilities
c) Availability of workspaces and necessary equipment
d) Employee dress code

7. Which of the following is a common filing method? (K1)
a) Geographical Filing b) Chronological Indexing
c) Alphabetical Indexing d) Digital Storage Systems

8. _____ is an advantage of using a digital index. (K1)
a) Increased physical storage space
b) Easy navigation and searchability
c) Requires more manual input
d) Reduces need for backup

9. Which office equipment is used to destroy sensitive documents to prevent unauthorized access? (K1)
a) Printer b) Shredder c) Scanner d) Projector

10. Which type of office furniture is typically used for meetings and collaborative work? (K1)
a) Executive Desk b) Reception Chair
c) Conference Table d) Filing Cabinet

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Show the primary objectives of a business. (K2)

(Or)

b) State the advantages and disadvantages of a joint-stock company. (K3)

12. a) Sketch the strategy of choosing the right size for a business. (K2)

(Or)

b) Summarize the features and limitations of debentures as a source of finance. (K3)

13. a) Infer the factors that influence the effectiveness of office work. How they impact overall performance? (K2)

(Or)

b) Evaluate the significance of office layout. How it affects the efficiency of office work? (K3)

14. a) Discover the key functions of record management. (K2)

(Or)

b) Discuss the advantages and disadvantages of filing methods. (K3)

15. a) Analyse different types of office machines. Explain how they

(Or)

b) Explain how selecting office furniture affects employee comfort. productivity and office aesthetics? (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Compare the advantages and disadvantages of sole proprietorship and partnership (K4)

(Or)

b) Integrate the functioning of Co-Operative societies in India. (K5)

17. a) Predict the importance of understanding the need for location analysis and how businesses can utilize the resources available. (K4)

(Or)

b) Recommend a comparative analysis on the different source of short term finance. (K5)

19. a) Validate the need for programme booklet and monitoring checklist. (K4)

(Or)

b) Compile the various requirements to conduct a fashion event. (K5)

Compulsory – Case Study

20. If you are a designer, how will you select a model for cat walk presentation. (K6)

Reg.No:_____

Course Code: 23PBGET106

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Costume Design and Fashion

First Semester

Elective: Fashion Event Management

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Identify the type of event in which a product is announced in market. (K1)

a) Fairs b) Trade show

c) Product launch d) Fashion show

2. Name the "W" in SWOT analysis. (K1)

a) Work b) Wages c) Welfare d) Weakness

3. Identify the first process in arrangement of a fashion show. (K1)

a) Venue booking b) Theme selection

c) Model booking d) Schedule planning

4. Which is not a source of income for a fashion show? (K1)

a) Model payments b) Ticket sale

c) Merchandise sale d) Sponsorship

5. What is the most preferred seating arrangement for a fashion show? (K1)

a) High Galleries b) U Shaped

c) Banquet d) Round tables

6. Name the permission required for background score of the show. (K1)

a) Trade mark b) Music licence

c) Copyright d) Agreement

7. Which process ensures the garment is suitable for the model selected? (K1)

a) Contract b) Commission c) Fitting trials d) Payments

8. Who are responsible for model co-ordination on stage? (K1)

a) Wardrobe assistants b) Choreographers

c) DJ d) Planners

9. Identify the person suitable for fashion promotion. (K1)

a) Food blogger b) Fitness guru

c) Travel blogger d) Influencer

10. Name the equipment which should be present for safety in shows. (K1)

a) Audio system b) Stereos

c) Fire Extinguisher d) Lights

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) List out types of fashion events and compare them. (K2)

(Or)

b) Outline the process of creating an event plan. (K3)

12. a) Explain about theme creation for an event. (K2)

(Or)

b) Outline about budget planning for event. (K3)

13. a) Classify about licenses and permissions required for conducting an event. (K2)

(Or)

b) Compare lighting types used in fashion events. (K3)

14. a) Summarize on the criteria to be checked during final show rehearsals. (K2)

(Or)

b) Recommend the criteria for model selection. (K3)

15. a) Prepare a press release for a fashion show with a celebrity show stopper. (K2)

(Or)

b) Devise a plan for security of people and merchandise. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Assess the need for SWOT analysis in event management. (K4)

(Or)

b) Summarize on the principle and purpose of event management. (K5)

17. a) Evaluate the role of different committees in event management. (K4)

(Or)

b) Distinguish on the different sources of finance for conducting a fashion event. (K5)

18. a) Recommend on different stage and booth designs for fashion events. (K4)

(Or)

b) Criticise the need for different visual effects and lightings. (K5)

18. a) Illustrate the Syntak of while and for statements in Python. (K4)

(Or)

b) Explain the importance of continue and pass statement in Python. (K5)

19. a) Elaborate the inheritance concept with suitable example. (K4)

(Or)

b) 'Executing non-Python programs from within Python', Justify. (K5)

Compulsary – Case Study

20. Develop Python code to implement Label widget and Button widget in TkinterApplication. (K6)

Reg.No:_____

Course Code: 23PBKCT303

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Third Semester

Core: Python Programming

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. In Python, a _____ is a blueprint for how something should be defined, but it does not contain any data. (K1)

   a) object b) instance c) class d) method

2. Which data type in Python is used to store sequence of characters? (K1)

   a) Integer b) Float c) Boolean d) String

3. Which of the following is a Python tuple? (K1)

   a) (1, 2, 3) b) [1, 2, 3] c) {1, 2, 3} d) {}

4. Which of the following data types can consist of alphabets, numbers and symbols? (K1)

   a) char b) float c) int d) str

5. A dictionary consist of _____ pairs. (K1)

   a) input-output b) key-value

   c) problem-solution d) data-info

6. Which of the following is not a control statement in loops? (K1)

   a) break b) continue c) end d) none

7. Which of the following is the correct way to define a class in Python? (K1)

a) class MyClass: b) class MyClass {}

c) class MyClass(): d) MyClass class()

8. Which keyword is used to achieve method overloading in Python? (K1)

a) Overload

b) Method

c) Override

d) Python does not support method overloading

9. Which language is commonly used to interact with relational databases? (K1)

a) Python b) HTML c) SQL d) Java

10. In a relational database, what is the purpose of a primary key?

a) To ensure data consistency (K1)

b) To improve query performance

c) To uniquely identify each record in a table

d) To create relationships between tables

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Outline the features of Python. (K2)

(Or)

b) Explain the basic data types in Python with suitable examples. (K3)

12. a) Write short note on string operations in Python. (K2)

(Or)

b) Interpret the method to create a tuple and to access its elements. (K3)

13. a) List down the restrictions in dictionary keys. (K2)

(Or)

b) Write a Python program to display the Fibonacci series. (K3)

14. a) Write short note on classes, instances, and methods. (K2)

(Or)

b) List some of the executable object's methods and its use. (K3)

15. a) Write short note on Uniform Resource Locator and its components. (K2)

(Or)

b) Interpret the Database Application Programmer's Interface. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss in detail about the types of operators in Python. (K4)

(Or)

b) Summarize the Python objects and its characteristics. (K5)

17. a) Discuss the procedure to create the list and explain that the lists are mutable. (K4)

(Or)

b) Illustrate the various tuple operators and its built-in functions. (K5)

5/12/2024 (FN)

19. a) Recall about special string operations in Java. (K4)

(Or)

b) Write about File Input Stream, File Output Stream usage in Java with an example. (K5)

Compulsory – Case Study

20. Write a Java program to read text from file from a specified index using File Input stream. (K6)

Reg.No:_____

Course Code: 23PBKCT104

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

First Semester

Core: Java Programming

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____is the mechanism which binds code and data, keep safe from outside interface. (K1)

a) Abstraction b) Encapsulation

c) Polymorphism d) Inheritance

2. The range of short data type is _____. (K1)

a) -32768 to 32767 b) -32768 to 32766

c) -32767 to 32767 d) -32777 to 32767

3. Write the output for the following y=x%10, where x=42. (K1)

a) 4 b) 4.2 c) 2 d) 2.5

4. Using _____ can force immediately terminate a loop statement. (K1)

a) break b) Exit c) continue d) Either (b) or (a)

5. A subclass can call a constructor method defined by its super class using _____. (K1)

a) Super() b) Super(parameter-list)

c) Returntype(super) d) super

6. The access specifier use in java are _____. (K1)

a) Public b) private c) protected d) All the above

7. The string and String Buffer classes are defined in _____.

a) Java.io b) Java.lang c) Java.lan d) java.string (K1)

8. _____ return the name of the file. (K1)

a) getName() b) getnm() c) Getfile() d) filename()

9. Applet class extends AWT class_____. (K1)

a) Container b) Canvas c) appletinfo d) Panel

10. Images are manipulated using the classes found in _____ package. (K1)

a) Java.awt.image b) Java.awt.img

c) Java.image d) Java.awt.

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Illustrate about for loop in Java. (K2)

(Or)

b) Write an outline about variable declarations, dynamic initialization. (K3)

12. a) Demonstrate about bitwise, relational operators in Java. (K2)

(Or)

b) How to define a class, object and describe with an example.(K3)

13. a) Explain how to use multilevel hierarchy in Java? (K2)

(Or)

b) Analyze the usage of multiple catch clause in Java. (K3)

14. a) Sketch the various process in Character Extraction with an example. (K2)

(Or)

b) Explain about various constructors use to create File object.(K3)

15. a) Demonstrate about Applet Architecture, Applet Skeleton. (K2)

(Or)

b) Compare the usage of image consumer and image filter in applet. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize the role of object oriented programming in Java. (K4)

(Or)

b) Distinguish the types array with respective examples. (K5)

17. a) Write a Java program to display seasons of month in a year . (K4)

(Or)

b) Summarize about method, constructor differentiate its process. (K5)

18. a) Explain the usage of Abstract class, final keyword in Inheritace. (K4)

(Or)

b) Elaborate about package access protection, importing package. (K5)

6/12/24 (FN)

Reg.No:_____

Course Code: 23PBKET105

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

First Semester

Elective: Cloud Computing

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____is organization that provides or delivers and maintains or manages cloud service. (K1)

   a) Cloud service provider b) Cloud ecosystem

   c) Multitenancy d) Cloud computing

2. Elasticity can be defined as the degree to which a system is able to adapt to the _____ changes. (K1)

   a) network b) workload c) hierarchical d) resources

3. _____ can implement an SOA. (K1)

   a) SOAP b) RPC c) Web services d) REST

4. _____hides the complexity of maintaining the development platform and the hardware. (K1)

   a) IaaS b) SaaS c) BaaS d) PaaS

5. _____is a software tool that enables virtualization. (K1)

   a) VMM b) WebCLI c) Web UI d) RESTAPIs

6. The SaaS development company can make use of those monitoring tools to reduce the overhead. (K1)

a) Service b) overhead c) violation d) monitor

7. The lost packets are retransmitted only after the _____. (K1)

a) retransmit timeout b) trigger

c) overflow d) bottleneck

8. _____is the provider of Azure platform. (K1)

a) Amazon b) Google c) NoSQL d) Microsoft

9. _____ is not an open source Tool. (K1)

a) Libre office b) Microsoft office

c) MySQL d) GNU image manipulation

10. As the data are stored in cloud out of the territory of the user, it is recommended that users store data in _____form. (K1)

a) encrypted d) decrypted c) paintext d) metadata

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) What is cloud computing? Why is it needed? (K2)

(Or)

b) What is public cloud access networking? (K3)

12. a) Explain about virtualization. (K2)

(Or)

b) What are the latest technological developments to meet the storage requirements in cloud? (K3)

13. a) What is virtualization? List its benefits and drawbacks. (K2)

(Or)

b) What is Software as a Service (SaaS)? How is it different from traditional software? (K3)

14. a) What are the different ways to classify data centers? (K2)

(Or)

b) What do you mean by cloud service provider? Which are the major cloud service providers? (K3)

15. a) Explain the main components of Eucalyptus. (K2)

(Or)

b) What are the security issues in SaaS? Explain. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain how a cloud application is being accessed? (K4)

(Or)

b) Describe several approaches of cloud migration. (K5)

17. a) Explain the suitability of different cloud service models. (K4)

(Or)

b) Explain in detail about programming models. (K5)

18. a) Differentiate full virtualization, paravirtualization, and hardware assisted virtualization techniques. (K4)

(Or)

b) What is the role of hypervisor in virtualization? Briefly explain the different types of hypervisors with a neat diagram. (K5)

19. a) Explain the services provided by IBM Smart Cloud. (K4)

(Or)

b) Overview on Cloud Sim. (K5)

Compulsory – Case Study

20. Recommend some of the best practices to avoid or prevent the attacks on hypervisors. (K6)

2/12/2024 (FN)

19. a) Summarize the stack organization and its types. (K4)

(Or)

b) Distinguish the RISC characteristics and CISC characteristics. (K5)

Compulsory – Case Study

20. A computer has 32 bit instructions and 12 bit addresses. If there are 250 two-address instructions, how many one-address instructions can be formulated? (K6)

Reg.No:_____

Course Code: 23PBKCT101

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

First Semester

Core: Computer Architecture

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the one's complement for the binary number 011001?

a) 000111 b) 100110 c) 111001 d) 110001 (K1)

2. The minterm of any expression is denoted by _____. (K1)

a) Mt b) m c) M d) min

3. What does ASCII stand for? (K1)

a) American Standard Code for Information Interchange

b) American Scientific Code for Information Interchange

c) American Scientific Code for Interchanging Information

d) American Standard Code for Interchanging Information

4. Which gates are ideal for checking the parity bits? (K1)

a) AND b) NAND c) EX-OR d) EX-NOR

5. CPU has built-in ability to execute a particular set of machine instructions, called as _____. (K1)

a) Instruction Set b) Registers

c) Sequence Set d) User instructions

6. In a program using subroutine call instruction, it is necessary to_____. (K1)

a) Initialize program counter b) Clear the accumulator

c) Reset the microprocessor d) Clear the instruction register

7. The floating-point operation is also called_____. (K1)

a) Exception b) Error c) Interrupt d) Overflow

8. Which addressing mode executes its instructions within CPU without the necessity of reference memory for operands? (K1)

a) Implied Mode b) Immediate Mode

c) Direct Mode d) Register Mode

9. The read and write operations usually start at _____ of the sector. (K1)

a) Center b) Middle

c) From the last used point d) Boundaries

10. The fastest data access is provided using _____. (K1)

a) Caches b) DRAM's c) SRAM's d) Registers

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the logic gates with examples. (K2)

(Or)

b) Write a note on multiplexers with diagram. (K3)

12. a) Illustrate on Gray codes with an example. (K2)

(Or)

b) Distinguish arithmetic addition and arithmetic subtraction. (K3)

13. a) Summarize the concept of Three-State Bus buffers. (K2)

(Or)

b) Evaluate the hardware implementation of shift micro-operations. (K3)

14. a) Elucidate the details of addressing modes with examples. (K2)

(Or)

b) Classify the term arithmetic instruction and shift instructions. (K3)

15. a) Distinguish Associative mapping and Set-associative mapping. (K2)

(Or)

b) Illustrate on address space and memory space in virtual memory. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Illustrate about Decoders and Encoders with neat diagram. (K4)

(Or)

b) Analyze the entire concepts of Flip Flops with its types. (K5)

17. a) Describe the details of (r-1)'s complement and (r)'s complement. (K4)

(Or)

b) Explain in detail about Error Detection Codes. (K5)

18. a) Elaborate the concept of Arithmetic Logic Shift Unit. (K4)

(Or)

b) Draw the diagram of 4-bit arithmetic circuit and discuss. (K5)

Reg.No:_____

Course Code: 23PBKAL313

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Third Semester

ALC: Mobile Application Development

Time: 3 Hours Maximum marks: 100

SECTION – A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	List out the features of android.	(K1)
2.	What is Android Code Completion?	(K1)
3.	Define views with examples.	(K1)
4.	What is the purpose of on Pause()method?	(K1)
5.	List the uses of option menu.	(K1)
6.	Differentiate file and database.	(K1)
7.	List out the various content providers.	(K1)
8.	Name the two ways where you can send SMS messages in your Android application.	(K1)
9.	Trace out the four arguments that are taken by the request Location Updates()method.	(K1)
10.	Differentiate geocoding and reverse geocoding.	(K1)

SECTION – B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Discover the five sections of the android architecture and explain each in detail.	(K2)

(Or)

b) Explain the concept of linking activity using intents with an example. (K3)

12. a) How do you add action items to the Action Bar? Discuss with suitable example. (K2)

(Or)

b) Compare the concept of ListView with the SpinnerView views with suitable example. (K3)

13. a) Demonstrate the concept of option menu with views in detail. (K2)

(Or)

b) Describe the concept of creation of database with suitable example. (K3)

14. a) How do you create your own content provider in android? Demonstrate with an example. (K2)

(Or)

b) How do you send email messages from your application? Illustrate with suitable example. (K3)

15. a) Compare the concept of getting location data with monitoring location with example. (K2)

(Or)

b) Explain the concept of creating own services in detail. (K3)

SECTION – C (5 X 10 = 50 Marks)

Answer ALL questions.

16. a) How do you debug and publish your android application? Design with an example. (K4)

(Or)

b) Create the Fragments in android studio with suitable example. (K5)

17. a) Distinguish the table layout with the frame layout with suitable examples. (K4)

(Or)

b) Summarize the various commonly used basic views in Android to design user interface. (K5)

18. a) Explain any two image views to display pictures in android with examples. (K4)

(Or)

b) Discuss the concept of saving data into internal and external storage in detail. (K5)

19. a) Compare the method of projection with the method of Sorting with example and write the query to retrieve all contacts from the Contacts application that contain the word "Dhilip". (K4)

(Or)

b) Justify the working mechanism of sending and receiving SMS messages with examples. (K5)

20. a) Design the working principles of the following with examples.

1) Displaying the zoom control (K4)

2) Changing the views

3) Navigating to a specific Location

(Or)

b) Design and explain the impact of consuming the JSON services with suitable examples. (K5)

Reg.No:_____

Course Code: 23PBKAL314

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Third Semester

ALC: BlockChain Technology

Time: 3 Hours Maximum marks: 100

SECTION – A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Who is the inventor of block chain technology.	(K1)
2.	Explain Block chain with an example.	(K1)
3.	Define Crypto currency with an example.	(K1)
4.	Describe Cryptography Hash Function	(K1)
5.	Name the smallest unit of a transaction in Bitcoin.	(K1)
6.	Summarize any two operations that are performed on a Bitcoin.	(K1)
7.	List out the advantages of Crypto currency.	(K1)
8.	Describe the context of Ethereum in dApps.	(K1)
9.	Tell the meaning of EVM.	(K1)
10.	Mention the language that is commonly used to write smart contracts that run on the EVM.	(K1)

SECTION – B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Illustrate block chain concept with the help of a suitable example.	(K2)

(Or)

b)	Relate the Centralized and Decentralized systems in detail.	(K3)

12. a) Classify the role of cryptographic hash functions in block chain technology and provide an example of their application. (K2)

(Or)

b) Explain the properties of block chain solutions in detail. (K3)

13. a) Show the two broader categories of Bitcoin transactions with a diagram. (K2)

(Or)

b) Demonstrate the Bitcoin scripts, and how do they define the conditions for spending Bitcoin transactions? (K3)

14. a) Classify the Simple Payment Verification (SPV) node in the Bitcoin network. How does it differ from a full node? (K2)

(Or)

b) Explain the primary components of the Ethereum ecosystem in detail. (K3)

15. a) Write the concept of using writing loops in solidity programming. (K2)

(Or)

b) List the importance of formal proofs. (K3)

SECTION – C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Summarize the layers of Block chain in detail. (K4)

(Or)

b) Distinguish the decentralized and peer to peer system with neat diagram. (K5)

17. a) Discuss in detail about the distributed consensus mechanism in block chain. (K4)

(Or)

b) Write in detail about the Block chain Transactions. (K5)

18. a) Assess the block structure of the Bitcoin block chain and explain how it ensures decentralization and security. (K4)

(Or)

b) Discriminate the processes of consensus and block mining in the Bitcoin network, and how do they work together to validate transactions in block chain. (K5)

19. a) Develop the Ethereum Block chain from traditional block chain networks, and how does it facilitate decentralized applications (dApps). (K4)

(Or)

b) Write about the Ethereum transaction and message structure with example and diagram. (K5)

20. a) Criticize the statements and expressions in solidity programming with suitable example. (K4)

(Or)

b) Summarize the reasons for experimenting with Solidity for learning to program on the Ethereum Virtual Machine (EVM). (K5)

15/11/24 (FN)

Reg.No:_____

Course Code: 23PBKET305

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Third Semester

Elective: Data Science

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What defines Big Data? (K1)

a) Data that is large in volume, high in velocity, and diverse in variety

b) Data that is stored in a traditional relational database system

c) Data that is processed using a single-threaded approach

d) Data that is small in volume but highly structured

2. Which process involves transforming raw data into a more suitable format for analysis? (K1)

a) Data visualization b) Data preprocessing

c) Data warehousing d) Data querying

3. _____ is fed with data it learns the patterns hidden in the data. (K1)

a) Model selection b) Model Training

c) Data Modeling d) None

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Reframe the facets of Data in Data Science. (K4)

(Or)

b) Explain the six steps of the Data Science Process. (K5)

17. a) Evaluate the modeling process in Machine Learning. (K4)

(Or)

b) Decide how to choose the data structures for handling larger volume of data? (K5)

18. a) Examine the process of distributed data storage in big data. (K4)

(Or)

b) Construct the procers of connected data in graph databases. (K5)

19. a) Create a Graph Database using Neo4j. (K4)

(Or)

b) Develop a steps to create an interactive dashboard with dc.js. (K5)

Compulsary – Case Study

20. Illustrate how to create an interactive dash board with dc.js? (K6)

4. _____ technique is used when only a small portion of the data is labeled. (K1)

a) Supervised b) Unsupervised

c) Semi Supervised d) Reinforcement

5. _____ is a framework that enables you to store files and distribute calculations amongst many computers. (K1)

a) Spark b) Hive c) Hadoop d) None

6. Which of the following is a type of NoSQL database that stores data in key-Value pairs? (K1)

a) MongDB b) Cassandra c) Redis d) DynamoDB

7. Which of the following statements is true about Cypher? (K1)

a) Cypher is a programming language used for building web applications.

b) Cypher is a query language for relational databases.

c) Cypher is a declarative query language for graph databases.

d) Cypher is primarily used for numerical computations.

8. _____ is process of bringing words back to their root form. (K1)

a) Stemming b) Tokenization

c) Localization d) None

9. Which of the following best describes the primary benefit of cross-filtering in interactive dashboards? (K1)

a) It reduces the size of the dataset

b) It enhances the aesthetic appeal of the dashboard

c) It allows users to dynamically filter and explore data across multiple visualizations

d) It automates the data cleaning process

10. What is the primary purpose of the Map Reduce Framework? (K1)

a) To provide a graphical interface for data visualization

b) To process large datasets in a distributed and parallel manner

c) To store large amounts of unstructured data

d) To perform real-time data analytics

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe the purpose of Distributed File Systems. (K2)

(Or)

b) How to detect outliers using Distribution plot? Explain. (K3)

12. a) Elaborate the applications for Machine Learning in data science. (K2)

(Or)

b) Illustrate the problems while using large Dataset. (K3)

13. a) Discuss the process of semi- supervised learning. (K2)

(Or)

b) Sketch NoSQL and NewSQL database. (K3)

14. a) Construct the following terminologies. (K2)

i) Entities iv) Labels

ii) Properties v) Graph.

iii) Relationships

(Or)

b) Manipulate the decision tree classifier with neat diagram. (K3)

15. a) Explain the text mining in the real world. (K2)

(Or)

b) Describe about the concept of cross-filtering in data visualization with an example. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elaborate about the various types of Network Software. (K4)

(Or)

b) Explain neatly about twisted pair and fiber optic in guided transmission media. (K5)

17. a) List out the types of errors in error detection and explain them in detail. (K4)

(Or)

b) Discuss about the types of Sliding window protocol. (K5)

18. a) Elaborate about Distance Vector routing algorithm in detail. (K4)

(Or)

b) Discuss about the network layer in the internet in detail. (K5)

19. a) Elaborate about the addressing concept in transport layer. (K4)

(Or)

b) Illustrate the User Datagram protocol in detail. (K5)

Compulsory – Case Study

20. Illustrate IPv4 Internet Protocol Header. (K6)

Reg. No.: _____

Course Code: 23PBKCT203

M.C.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Application

Second Semester

Core: Computer Networks

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is defined as a set of physical or network devices that are essential for interaction and communication between hard ware units operational on a computer network. (K1)

a) Network hardware b) Network software

c) Network firmware d) Network middleware

2. _____ involves no physical link established between two or more devices, communicating wirelessly. (K1)

a) Wired communication b) Wireless communication

c) Guided Transmission d) Non-guided Transmission

3. _____ layer controls the flow and multiplexing for transmission medium. (K1)

a) Application Layer

b) Presentation Layer

c) Medium Access Control Sub-layer

d) Logical Link Control Sub-layer

4. _____ are used where reliable in-order delivery of packets is required, such as in the data link layer as well as in the Transmission Control Protocol. (K1)

a) Transmission Control Protocol

b) User Datagram Protocol

c) Hyper-Text Transfer Protocol

d) Sliding window protocols

5. The Services like guaranteed delivery, guaranteed delivery with bounded delay, in-order packets, guaranteed max jitter and security services are provided by the _____. (K1)

a) Network Layer b) Presentation Layer

c) Application Layer d) Data Link Layer

6. A state occurring in network layer when the message traffic is so heavy that it slows down network response time is termed as _____. (K1)

a) Collision b) Congestio c) Deadlock d) Mutual Exclusion

7. The transport layer uses the _____ to improve transmission efficiency. (K1)

a) Error Control b) Loss Control

c) Multiplexing d) Sequence Control

8. TCP implements an _____ mechanism for reliable data transfer. (K1)

a) Full Duplex

b) Connection Oriented

c) Segment Numbering System

d) Error control

9. _____ protocol allows remote hosts to mount files over a network and interact with those file systems as though they are mounted locally. (K1)

a) Network File System

b) Simple Network Management Protocol

c) Hyper Text Transfer Protocol

d) File Transfer Protocol

10. _____ is basically a standard used for specifying any kind of information on the Internet in order to access any page the client generally needs an address & facilitate the access of the documents throughout the world HTTP generally makes use of Locators. (K1)

a) Interpreter b) Uniform Resource Locator

c) Controller d) Host Computer

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss about the components of network software. (K2)

(Or)

b) Explain about the communication satellite and list its needs. (K3)

12. a) Illustrate the functionality of Data link layer. (K2)

(Or)

b) Illustrate about Hamming code Error correction in detail. (K3)

13. a) Explain neatly about the functions and services provided by Network layer. (K2)

(Or)

b) List out the differences between Adaptive and Non-adaptive Routing algorithm. (K3)

14. a) List the services provided by the transport layer, explain them in brief. (K2)

(Or)

b) Illustrate the features of TCP protocol. (K3)

15. a) Explain the various functions of Application layer. (K2)

(Or)

b) Write the concept of Domain Name System. (K3)

19. a) Explore the ASP.NET WebPages. (K3)

(Or)

b) Explain about the application structure and state in detail. (K4)

Compulsory – Case Study

20. Create a web Application to display all the product name and product id of the products from the database using SQL source control and bind it to Grid View. (K6)

Reg. No.: _____

Course Code: 23PBKCT202

M.C.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Second Semester

Core: .Net Programming

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is a valid identifier in .NET? (K1)

a) 123Identifier b) _variable Name

c) break d) first name

2. Who developed Visual Basic? (K1)

a) Symantec b) Ashton-Tatec) Microsoft d) Sybase

3. Which among the following is a .NET namespace? (K1)

a) System.Web b) System.Process

c) System.Drawing.2D d) System.Drawing3D

4. What is a class in C#? (K1)

a) A data type b) A collection of methods

c) A blueprint for creating objects d) A predefined function

5. What is the purpose of a Data Adapter in ASP.NET? (K1)

a) To define database schema b) To execute SQL queries

c) To read data from a database d) To update database records

6. What does ASP.NET stand for? (K1)

a) Active Server Pages Network

b) Advanced Software Programming Network

c) Application Service Provider Network

d) Active Server Pages .NET

7. What is the role of the Global.asax file in an ASP.NET application? (K1)

a) Define global CSS styles

b) Configure routing rules

c) Handle application-level events

d) Manage client-side scripts

8. The programming languages can be used for server-side scripting in ASP.NET? (K1)

a) C# and Java b) JavaScript and VBScript

c) C# and VB)NET d) HTML and CSS

9. Which file type is used to define the layout and behavior of a Web Form in ASP.NET are _____and_____. (K1)

a) .html file b) .css file c) .aspx file d) .cs file

10. The _____ directive is used to register the user defined controls on a web page_____. (K1)

a) @Page Language b) @ReferencePage

c) @Attribute Page d) @Register

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Sketch about the architecture of .Net Framework. (K2)

(Or)

b) State what is Expressions and Operators in .Net? (K3)

12. a) Summarize Delegates in Namespaces. (K2)

(Or)

b) State the features of classes and objects with an example. (K3)

13. a) Explain the key methods provided by a data adapter in ADO.NET. (K2)

(Or)

b) State what is data reader and it's function in ADO.NET. (K3)

14. a) Sketch about the coding models. (K2)

(Or)

b) Explain about file types in ASP.NET. (K3)

15. a) Discuss standard controls. (K2)

(Or)

b) Elucidate about the Sql Data Source Control and Grid View Control. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Evaluate the identifiers and keywords in .NET. (K3)

(Or)

b) Explain data types, variables and constants in .NET with examples. (K4)

17. a) Explain about the constructors and destructors in .NET. (K3)

(Or)

b) Explain the exception handling with an example. (K4)

18. a) Explain about theASP.NET Life cycle. (K3)

(Or)

b) Elucidate the data access in ADO.NET in detail. (K4)

6/11/2024 (AN)

SECTION – B (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Evaluate the Multiprocessor system. (K4)

(Or)

b) Discuss about Real-Time system. (K5)

17. a) Explain about Inter-process communication. (K4)

(Or)

b) Explain the Round Robin and algorithms. (K5)

18. a) Explain about the Semaphores in detail. (K4)

(Or)

b) Describe – How to avoid Dead lock? (K5)

19. a) Write detail notes on types if memory. (K4)

(Or)

b) Explain about the Page replacement algorithm. (K5)

Compulsory – Case Study

20. Calculate the average waiting time under the FCFS policy for the following set of processes that arrive at time 0, with the length of the CPU-burst time given in milliseconds: (K6)

Process	Burst Time
P1	24
P2	3
P3	3

Reg. No.: _____

Course Code: 23PBKCT201

M.C.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Second Semester

Core: Operating Systems

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer

1. What is the purpose of the "fork" system call in Unix-like operating systems? (K1)

a) Create a new process b) Terminate the current process

c) Allocate memory d) Print output to the console

2. Which storage component is non-volatile and used for long-term data storage? (K1)

a) RAM b) Cache memory

c) Hard Disk Drive (HDD) d) CPU registers

3. In a producer-consumer scenario, which IPC mechanism is often used to synchronize the producer and consumer processes? (K1)

a) Shared Memory b) Message Passing

c) Semaphore d) Pipes

4. Which scheduling algorithm is designed to minimize the average waiting time? (K1)

a) Priority Scheduling b) Round Robin

c) Shortest Job Next (SJN) d) Multilevel Queue Scheduling

5. Which approach to deadlock recovery involves killing one or more processes to break the deadlock? (K1)

a) Abort-and-Wait b) Wait-and-Kill

c) Resource Pre-emption d) Timeouts

6. What is the primary goal of using semaphores in concurrent programming? (K1)

a) To increase process execution time

b) To improve system stability

c) To manage access to shared resources and prevent race conditions

d) To increase the size of the main memory

7. Which policy is used to determine which process to swap out when the system needs to free up space in the main memory? (K1)

a) LRU (Least Recently Used)

b) FIFO (First-In-First-Out)

c) SJF (Shortest Job First)

d) Round Robin

8. What is the goal of the Optimal Page Replacement algorithm? (K1)

a) To replace the page that will be used farthest in the future

b) To replace the page that has been used least recently

c) To replace the page that is currently in the middle of the main memory

d) To replace the page that has been used most frequently

9. In a networked environment, what is a common protocol used for file sharing? (K1)

a) HTTP b) FTP c) TCP d) SMTP

10. Which file access method allows for reading and writing at any position within the file without the need to read or write the entire file? (K1)

a) Sequential access b) Direct access

c) Indexed access d) Random access

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Write a note on desktop systems. (K2)

(Or)

b) Summarizes about the components of a system. (K3)

12. a) Discuss about scheduling algorithms. (K2)

(Or)

b) Explain about real-time scheduling. (K3)

13. a) What is critical region?- Explain. (K2)

(Or)

b) Summarizes process synchronisation. (K3)

14. a) Discuss about contiguous memory allocation. (K2)

(Or)

b) Explain paging & segmentation. (K3)

15. a) Discuss about file access methods. (K2)

(Or)

b) Explain about file system structure. (K3)

15. a) Compare Agglomerative versus Divisive Hierarchical Clustering. (K2)

(Or)

b) Explain k-Means using a Centroid-Based Technique. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Illustrate briefly about major Issues in Data Mining. (K4)

(Or)

b) Analyze the major tasks in Data Preprocessing. (K5)

17. a) Explain the Schemas for Multidimensional Data Models. (K4)

(Or)

b) Briefly explain with examples of typical OLAP operations on multidimensional data. (K5)

18. a) List down the Apriori algorithm, explain any one method. (K4)

(Or)

b) How does detection can be done using outlier? (K5)

19. a) List down the Navies Bayesian Classification, explain any one method. (K4)

(Or)

b) Discuss unpruned decision tree and a pruned version of it. (K5)

Compulsory- Case Study

20. Analyse the Idea behind boosting algorithm with an example. (K6)

Reg. No:_____

Course Code: 23PBKCT301

M.C.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Computer Applications

Third Semester

Core: Data Mining

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)
Answer ALL questions.
Choose the correct answer.

1. Which of the following are types of data that can be mined for insights and patterns? (K1)

a) Structured data b) Unstructured data

c) Text data d) All of the above

2. Multiple data sources may be combined is called as _____.(K1)

a) Data Reduction b) Data Cleaning

c) Data Integration d) Data Transformation

3. OLAP stands for_____. (K1)

a) Online analytical processing

b) Online analysis processing

c) Online transaction processing

d) Online aggregate processing

4. Data that can be modeled as dimension attributes and measure attributes are called _____ data. (K1)

a) Multidimensional b) Singledimensional

c) Measured d) Dimensional

5. _____ is called as the relation between a candidate and frequent itemsets.

a) A candidate itemset is always a frequent itemset (K1)

b) A frequent itemset must be a candidate itemset

c) No relation between these two

d) Strong relation with transactions

6. _____ statement about outliers is true. (K1)

a) Outliers should be part of the training dataset but should not be present in the test data.

b) Outliers should be identified and removed from a dataset.

c) The nature of the problem determines how outliers are used.

d) Outliers should be part of the test dataset but should not be present in the training data.

7. Pruning a decision tree always_____. (K1)

a) Increases the error rate

b) Reduces the size of the tree

c) Provides the partitions with lower entropy

d) Reduces classification accuracy

8. Which one of the following models is a generative model used in machine learning? (K1)

a) Linear Regression b) Logistic Regression

c) Naïve Bayes d) Support vector machines

9. _____partitions the objects into different groups. (K1)

a) Mapping b) Clustering

c) Classification d) prediction

10. Which clustering algorithm uses a hierarchical approach to create clusters? (K1)

a) K-Means b) DBSCAN

c) Agglomerative d) Mean-Shift

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss about Mining Frequent Patterns, Associations, and Correlations with an example. (K2)

(Or)

b) List down the classification of regression, explain Regression for Predictive Analysis. (K3)

12. a) Differences between Operational Database Systems and DataWarehouses. (K2)

(Or)

b) Illustrate a recommended approach for data warehouse development using Data Cubel. (K3)

13. a) Explain Guided Mining of Association Rules. (K2)

(Or)

b) Explain briefly about pattern evaluation methods. (K3)

14. a) Explain decision tree for the concept buys computer, indicating whether an Al l Electronics customer is likely to purchase a computer. (K2)

(Or)

b) Illustrate a Rule-Based Classification with an example. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe briefly about software process models and its various types. (K4)

(Or)

b) Elaborate about Plan-driven and agile development. (K5)

17. a) Elaborate about the software requirement document. (K4)

(Or)

b) Outline about the Interaction model in software engineering. (K5)

18. a) Elaborate about open source Development. (K4)

(Or)

b) Outline the types of design patterns and explain them in detail. (K5)

19. a) Elaborate about Release testing. (K4)

(Or)

b) Outline about types, need and challenges in software maintenance. (K5)

Compulsory – Case Study

20. Using the basic model of an information system as layered architecture, suggest the components that might be part of an information system that allows users to view information about flights arriving and departing from a particular airport. (K6)

Reg. No.: _____

Course Code: 23PBKCT204

M.C.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

Second Semester

Core: Software Engineering

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is a systematic, disciplined, quantifiable study and approach to the design, development, operation, and maintenance of a software. (K1)

a) Software Engineering b) Software Testing

c) Software Re-engineering d) Software Reverse Engineering

2. _____ is an interactive approach to manage software development which focuses on continuous releases and covers customer feedback with every iteration. (K1)

a) Agile process management b) Agile project management

c) Agent project management d) Agent process management

3. _____ describe how well the software system should do it that specifies the quality attributes of the system, such as performance, reliability, usability, and security. (K1)

a) Constraints b) Functional Requirements

c) Non-Functional Requirements d) Acceptance Criterai

4. _____ refers to a methodology used in the software development process that enables businesses to organize their operations efficiently. (K1)

a) Non-Model driven engineering
b) N-Model driven engineering
c) N*N Model driven engineering
d) Model driven engineering

5. Software _____ are key guidelines to achieve non-functional requirements of software systems in the early stages of software development. (K1)

a) architectural design decisions
b) architectural development decisions
c) architectural design decodes
d) architectural design decision authorities

6. In software engineering, a _____ is a general repeatable solution to a commonly occurring problem in software design. (K1)

a) design views b) design patterns
c) design models d) design areas

7. _____ aims to detect the errors or vulnerabilities in the software early in the development phase so that the detected bugs can be fixed before the delivery of the product. (K1)

a) Usability testing b) Software testing
c) Security testing d) Unit Testing

8. _____ is to keep the software system working correctly, efficiently, and securely, and to ensure that it continues to meet the needs of the users. (K1)

a) Software testing b) Software implementation
c) Software re-usement d) Software maintenance

9. A _____ is a small group of people with complimentary skills who are committed to a common purpose for which they hold themselves and each other accountable. (K1)

a) team b) chart c) graph d) cluster

10. _____ is a software development method which attempts to plan and develop all of the features a user might want in the final product and determines how all those features are to be developed. (K1)

a) Plan-display development b) Plan-driven development
c) Plan-driven design d) Plan-drive design

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss about software processes and its various activities. (K2)

(Or)

b) Explain about the scaling Agile methods. (K3)

12. a) Summarize the steps in requirements engineering process and explain them in brief. (K2)

(Or)

b) Write the difference between context model and structural model. (K3)

13. a) Explain about the architectural design decisions. (K2)

(Or)

b) List out the benefits of application architecture. (K3)

14. a) Summarize the various steps and importance in software testing. (K2)

(Or)

b) Explain about the program evolution dynamics. (K3)

15. a) Describe neatly about the software pricing. (K2)

(Or)

b) Write short notes on reviews & inspections. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Compare Robotic Process Automation with BPO, BPM, BPA. (K4)

(Or)

b) Write about the overview of Artificial Intelligence. (K5)

17. a) Different approaches to implement Six Sigma approaches to a process. (K4)

(Or)

b) Summarize the benefits of Consulting Firm. (K5)

18. a) Criticize about the cost of software in RPA. (K4)

(Or)

b) Explain the installation process of UiPath. (K5)

19. a) Classify different types of data in Analytics and Aritificial intelligence. (K4)

(Or)

b) Explain the standard process for Data Mining. (K5)

Compulsory- Case Study

20. Consider a tour management system and explain the workflow automation of arranging a tour using different process. (K6)

Reg. No:_____

Course Code: 23PBKCT304

M.C.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Computer Applications

Third Semester

Core: Robotic Process Automation

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is a software that helps to automate business tasks application like CRM or ERP. (K1)

a) BPA b) BPM c) IPA d) RPA

2. What is Optical Character Recognition (OCR)? (K1)

a) A method for encrypting data

b) A technique for recognizing handwritten or printed text from images

c) A process for generating 3D models

d) A type of digital art creation

3. An _____ is software that connects two applications for automation. (K1)

a) API b) SSI c) APE d) APC

4. What is the goal of measuring customer satisfaction? (K1)

a) To increase product prices

b) To improve customer loyalty and retention

c) To reduce marketing efforts

d) To enhance employee satisfaction

5. Venture funding primarily used for_____. (K1)

a) Buying real estate

b) Starting and growing new businesses

c) Purchasing stocks and bonds

d) Government projects

6. What is a key advantage of using bots in customer service?

a) They can provide personalized and instantaneous responses 24/7 (K1)

b) They replace human employees entirely

c) They reduce the need for a website

d) Increase the cost of operations

7. Which of the following components is not part of the UiPath platform? (K1)

a) UiPath Studio b) UiPath Orchestrator

c) UiPath Robot d) UiPath Designer

8. What is the primary goal of cybersecurity? (K1)

a) To design user interfaces

b) To protect systems, networks, and data from digital attacks

c) To create marketing strategies

d) To develop video games

9. Which of the following is an example of confirmation bias?

a) Seeking out information that contradicts your beliefs (K1)

b) Ignoring information that supports your beliefs

c) Favoring information that confirms your preconceptions

d) Accepting all information without evaluation

10. What is the purpose of learning algorithm? (K1)

a) To find hidden patterns in data without labeled responses

b) To predict outcomes based on training data

c) To reduce the dimensionality of data

d) To generate new data instances

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe about the Flavors of Robotic Process Automation. (K2)

(Or)

b) Explain the Web Technology concepts. (K3)

12. a) Usage of Lean Approach in RPA. (K2)

(Or)

b) Illustrate a real world example of a workshop using Cloud Storm. (K3)

13. a) Classify the types of Robotic Process Automation. (K2)

(Or)

b) Create a Bot using UiPath Platform. (K3)

14. a) Distinguish the Testing Approaches. (K2)

(Or)

b) Infer the issues in Bigdata. (K3)

15. a) Describe about the usage of Chatbots. (K2)

(Or)

b) Categorize the future of Process mining. (K3)

Reg.No:_____

Course Code: 23PBKCT103

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

First Semester

Core: Relational Database Management Systems

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Identify the one that refers to the copies of the same data (information) occupying the memory space at multiple places.
   a) Data Repository b) Data Inconsistency (K1)
   c) Data Mining d) Data Redundancy
2. The 'formatdata'to store the information in database management system is_____. (K1)
   a) Image b) Text c) Table d) Graph
3. The SQL clause that is used to filter records is_____. (K1)
   a) SELECT b) WHERE c) FROM d) ORDER BY
4. The SQL statement that is used to update data in a database is_____. (K1)
   a) MODIFY b) CHANGE c) UPDATE d) ALTER
5. The SQL clause to order the result of set of a UNION operation is_____. (K1)
   a) ORDER BY b) GROUP BY c) HAVING d) WHERE

6. _____operator that return an empty result set if the second query contains all the rows of the first query. (K1)

a) UNION b) INTERSECT c) EXCEPT d) UNION ALL

7. _____is the normal form that must not have any partial dependencies. (K1)

a)1NF b) 2NF c) 3NF d) BCNF

8. The normal form to deal the removal of transitive dependencies is_____. (K1)

a) 1NF b) 2NF c) 3NF d) 4NF

9. An example of a structured data type in SQL is_____. (K1)

a) INTEGER b) VARCHAR

c) RECORD d) BOOLEAN

10. The structured data type to encapsulate the data and behaviour in object relational databases is_____. (K1)

a) Integer b) Object c) Boolean d) Char

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) List down the advantages of DBMS. (K2)

(Or)

b) Mention the Queries in DBMS. (K3)

12. a) Explain the Foreign key constraints with an example. (K2)

(Or)

b) Illustrate how the ER diagram is translated into tables? (K3)

13. a) Explain the aggregate operators with examples. (K2)

(Or)

b) Evaluate the performance of Locking? (K3)

14. a) Demonstrate BCNF. (K2)

(Or)

b) Analyse and explain the concept of Access control. (K3)

15. a) Construct data partitioning. (K2)

(Or)

b) Correlate the ODMG Data Model and ODL. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the architecture of a DBMS with its diagram. (K4)

(Or)

b) Construct the relationships and relationship sets with suitable examples. (K5)

17. a) Measure the set operations with examples. (K4)

(Or)

b) Develop different types of Join operations. (K5)

18. a) Distinguish GROUP BY and HAVING Clauses with examples. (K4)

(Or)

b) Simulate Locking Protocol and invent strict 2PL. (K5)

19. a) List down the types of properties of decompositions. (K4)

(Or)

b) Explain Lock Management and its implementations. (K5)

Compulsory – Case Study

20. Design a database with trigger to implement various constraints to a customer table. (K6)

Reg.No:_____

Course Code: 23PBKCT102

M.C.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Computer Applications

First Semester

Core: Data Structures

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which data structure uses FIFO principle? (K1)

   a) Stack b) Queue c) Array d) Linked List

2. A binary tree in which every node in a binary tree has either 0 or 2 children is called_____. (K1)

   a) Complete Binary Tree b) Full Binary Tree

   c) AVL Tree d) Red-Black Tree

3. Which algorithm is used for sorting in O(n log n) time? (K1)

   a) Bubble Sort b) Insertion Sort

   c) Quick Sort d) Selection Sort

4. What is a hash table? (K1)

   a) A table with rows and columns

   b) A data structure with efficient search

   c) A table that stores pointers

   d) A table used for sorting

5. What is the worst-case time complexity of Quick Sort? (K1)

   a) O(n) b) O(n log n) c) O(n^2) d) O(log n)

6. Which data structure is used for implementing recursion? (K1)

a) Queue b) Stack c) Array d) Linked List

7. In a graph, the path that starts and ends at the same vertex without repeating any edges is called_____. (K1)

a) Euler Path b) Hamiltonian Path

c) Euler Circuit d) Hamiltonian Circuit

8. The height of a binary tree is the length of the longest path from_____. (K1)

a) Root to a leaf b) Root to root

c) Leaf to leaf d) None of the above

9. Which of the following is not a type of linked list? (K1)

a) Singly Linked List b) Doubly Linked List

c) Circular Linked List d) Sequential Linked List

10. Which search algorithm is best for a sorted array? (K1)

a) Linear Search b) Binary Search

c) Interpolation Search d) Exponential Search

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Summarize the overview of data structures. (K2)

(Or)

b) Describe the various types of arrays. (K3)

12. a) Explain the hash table with an example. (K2)

(Or)

b) Highlight the single linked list with its operations. (K3)

13. a) Outline the concept of stack operations. (K2)

(Or)

b) Illustrate how queues are differ from stacks? (K3)

14. a) Describe the basic terminologies used in trees. (K2)

(Or)

b) Explain the various types of binary trees. (K3)

15. a) Identify the principles of insertion sort with an example. (K2)

(Or)

b) Examine the heap sort with an example. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Compare and contrast linear and non-linear data structures. (K4)

(Or)

b) Discuss the implementation of multi-dimensional arrays. (K5)

17. a) Explain circular linked list and its operations with examples. (K4)

(Or)

b) Describe the insert an elements in double linked lists. (K5)

18. a) Analyze the working principle of quick sort with an example. (K4)

(Or)

b) Illustrate the algorithm for two-way merge sort. (K5)

19. a) Summarize the operations on a binary tree. (K4)

(Or)

b) Examine the graph terminologies and their representations. (K5)

Compulsory – Case Study

20. Explain the space saving representation in graph . (K6)

Reg. No:_____

Course Code: 23PBDAL327

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business administration

Third Semester

ALC: New Enterprise Management

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Define entrepreneur.	(K1)
2.	Outline the types of entrepreneur.	(K1)
3.	Describe entrepreneurial environment.	(K1)
4.	Identify the location issues in entrepreneurial environment.	(K1)
5.	List the steps in location analysis.	(K1)
6.	List out the criteria for selecting a site.	(K1)
7.	Explain on project report.	(K1)
8.	Summarize the need for business plan.	(K1)
9.	List out the funding agencies in India.	(K1)
10.	Examine the managerial problems of new enterprise.	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Analyze the functions of an entrepreneur.	(K2)
	(Or)	
b)	Illustrate on innovation & entrepreneur.	(K3)

12. a) Categorize the steps for starting a small enterprise. (K2)

(Or)

b) Explain on small/medium and large enterprise. (K2)

13. a) Outline the importance of business enterprise. (K3)

(Or)

b) List out the importance of readability studies. (K2)

14. a) Construct your own business plan for retail shop. (K2)

(Or)

b) "What goes into business plan?"- explain. (K3)

15. a) Explain on cluster management of micro enterprise. (K2)

(Or)

b) Analyze the financial issues in operating small enterprise. (K3)

SECTION - C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Examine the types of entrepreneurs. (K4)

(Or)

b) Compose the role of an entrepreneur in economic development. (K5)

17. a) Appraise environmental problems and provide with five suggestions. (K4)

(Or)

b) Summarize the policies governing small-scale industries. (K5)

18. a) Distinguish between market analysis and financial analysis. (K4)

(Or)

b) Design a project with its significance and size. (K5)

19. a) Create an effective business plan for your own business organisation. (K4)

(Or)

b) "Innovative helps in business?"-Justify. (K5)

20. a) Summarize the role of banks and government in reviving industries. (K4)

(Or)

b) Write the sickness in small-scale industries. (K5)

b) Apply a market-based compensation approach to a retail company and show how it would affect the company's salary structure. (K5)

17. a) Assess the effectiveness of ESOPs in improving employee morale and productivity in a manufacturing company. (K4)

(Or)

b) Analyze the benefits and challenges associated with group incentive plans. (K5)

18. a) Summarise on the need for health benefit and various health benefits plans provided to Indian employees. (K4)

(Or)

b) Prepare a set of security benefits for employees working in Mines. (K5)

19. a) Detail about the various principles pertaining to wage determination. (K4)

(Or)

b) Summarise the Internal and External Equity in compensation. (K5)

Compulsory – Case Study

20. A lot of these HR analytics case studies have focused on leveraging internal data. In the same report, we can find an analysis in which external data plays a big role.Cisco has used demographic data to identify where they can best open up new offices. By combining various data, including current usage rates of office space, cost and availability of key talent, and availability of graduates from universities allowed them to expand in areas where there were fewer larger players competing for the same talent.In addition, when selecting a new office, Cisco made use of this same data to find locations where employees with relevant qualifications were available and abundant.

Questions: Analyze the case for pay related for employee performance in global. (K6)

Reg. No:_____

Course Code: 23PBDET307

M.B.A Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business Administration

Third Semester

Elective: Compensation Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Identify the direct form of compensation. (K1)
   a) Health insurance b) Paid time off
   c) Salary d) Retirement benefits
2. Match the key component of a compensation philosophy. (K1)
   a) Employee age b) Company's profit margin
   c) Pay structure and benefits d) Number of employees
3. Select the one typically included in a group insurance plan. (K1)
   a) Paid time off b) Health insurance
   c) Performance bonuses d) Stock options
4. State the employee benefits offered through ESOPs. (K1)
   a) Providing immediate cash bonuses
   b) Giving employees' ownership stakes in the company
   c) Reducing the need for employee training
   d) Offering free healthcare benefits
5. Show why employee benefits is important to offer in addition to salaries? (K1)
   a) They reduce the amount of taxes a company pays.
   b) They help attract and retain talent by improving overall compensation.
   c) They increase the workload for HR departments.
   d) They are legally required for all companies.

6. Cite which of the following is considered as a security benefit for employees? (K1)
a) Paid holidays
b) Life insurance
d) Professional development opportunities
d) Company car

7. Select the type of compensation that is often used to incentivize executives to achieve specific performance goals. (K1)
a) Fixed salary b) Performance-based bonus
c) Health insurance d) Retirement plan

8. Show how market rates influence wage determination? (K1)
a) They are irrelevant to wage setting.
b) They provide benchmarks for competitive salary offerings.
c) They set mandatory wage levels for all companies.
d) They decrease the importance of employee performance.

9. Recall the best option that describes global compensation. (K1)
a) Uniform pay scales for all employees worldwide
b) Compensation packages adjusted for local market conditions and cost of living
c) Fixed salaries without any performance-based components
d) Benefits exclusively for senior executives

10. State the primary goal of a pay-for-performance compensation system. (K1)
a) To provide equal pay for all employees
b) To reward employees based on their job tenure
c) To link compensation with individual or company performance
d) To offer a fixed salary without bonuses

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) List out the prominent issues of compensation system design. (K2)

(Or)

b) Analyse the various institutional factors on compensation practices. (K3)

12. a) Apply the concept of incentive plans to improve employee productivity in a manufacturing company. What specific strategies would you implement? (K2)

(Or)

b) Infer the need for performance measurement in designing compensation. (K3)

13. a) List the various benefits to be provided to the employees as per the law. (K2)

(Or)

b) Explain the preliminary issues faced by employer in designing time-off benefits. (K3)

14. a) List and explain the elements of executive compensation. (K2)

(Or)

b) Outline the functions of wage boards in India. (K3)

15. a) List the components of a global compensation plan. (K2)

(Or)

b) What are the key factors influencing pay-for-performance systems in multinational corporations? (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Demonstrate how different types of compensation can be integrated into a company's compensation system. (K4)

(Or)

18. a) Summarize the nature and process controlling. (K4)

(Or)

b) "Why coordination is important for the organization?" – Justify. (K4)

19. a) Generalize the characteristics and types of group. (K5)

(Or)

b) Summarize the nature and importance of organizational behavior. (K4)

Compulsory – Case Study

20. Restructuring for Growth at Omega Electronics: Omega Electronics, a long-established consumer electronics company, has been facing challenges due to declining market share and outdated product offerings. The company's leadership believes that a significant restructuring is necessary to adapt to the changing market dynamics and ensure future growth.

Questions:

1. What are the key indicators that suggest Omega Electronics needs to undergo a restructuring for its organizational development?
2. What are the potential benefits and risks associated with the proposed restructuring? (K6)

Reg.No:_____

Course Code: 23PBDCT101

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Management Concepts and Organisational Behaviour

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is not a function of management? (K1)

a) Planning b) Controlling c) Selling d) Organizing

2. The process of determining organizational goals and the means to achieve them is called_____. (K1)

a) Controlling b) Organizing c) Planning d) Directing

3. Which management function involves assigning tasks, grouping tasks into departments, and allocating resources? (K1)

a) Planning b) Controlling c) Organizing d) Leading

4. The management function that involves evaluating performance and taking corrective actions is_____. (K1)

a) Organizing b) Controlling c) Leading d) Planning

5. Which management theory emphasizes improving efficiency and worker productivity through scientific methods? (K1)

a) Classical Management Theory

b) Behavioral Management Theory

c) Systems Management Theory

d) Contingency Management Theory

6. The study of how individuals and groups behave and interact within organizations is known as_____. (K1)

a) Management theory b) Organizational structure

c) Organizational behavior d) Corporate strategy

7. Which theory of motivation emphasizes the role of intrinsic factors in driving employee performance? (K1)

a) Maslow's Hierarchy of Needs

b) Herzberg's Two-Factor Theory

c) Expectancy Theory

d) Theory X and Theory Y

8. The concept that explains how individuals attribute causes to events or behaviors is called_____. (K1)

a) Attribution theory b) Equity theory

c) Expectancy theory d) Reinforcement theory

9. Which leadership style involves a leader who makes decisions without consulting others? (K1)

a) Democratic leadership b) Laissez-faire leadership

c) Autocratic leadership d) Transformational leadership

10. Group cohesiveness refers to_____. (K1)

a) The degree to which group members are similar to each other

b) The level of trust among group members

c) The extent to which a group achieves its goals

d) The degree to which group members are satisfied with their roles

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the levels of management. (K2)

(Or)

b) Outline the importance of decision making. (K3)

12. a) Analyze the process of organizing. (K2)

(Or)

b) Illustrate on delegation of authority. (K3)

13. a) Categorize the types and techniques of control. (K2)

(Or)

b) List out the principles and elements of directing. (K3)

14. a) Discuss the factors affecting personality. (K2)

(Or)

b) Classify the theories of motivation. (K3)

15. a) Explain the process and types of counseling. (K2)

(Or)

b) Analyze the objectives and characteristics of counseling. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) "Management a science or an art"-Justify. (K4)

(Or)

b) Analyze the nature and importance of management. (K5)

17. a) Distinguish between formal and informal organization. (K4)

(Or)

b) Write about basis of departmentation. (K5)

19. a) Innovators are rarely able to capture the full financial return associated with their innovation. Do you agree or disagree with the statement? Why? (K4)

(Or)

b) What are the difficulties that are faced by entrepreneurs in formulating a new product and promoting it – Explain your answers with day to day examples? (K5)

Compulsory- Case Study

20. Entrepreneurship and innovation are closely related but distinct concepts. While innovation involves introducing something new, such as a business model, product, idea, or service, entrepreneurship focuses on turning a great idea into a viable business opportunity. Innovation is the starting point for entrepreneurship, as it involves the creation of new and valuable ideas. However, entrepreneurship goes further by taking on the risk and responsibility of bringing those ideas to market and building a successful business. Innovative entrepreneurship is crucial for identifying emerging trends and market demands, allowing businesses to create new and appealing goods or services for their target audience. To stay relevant in a competitive landscape, businesses must continue to innovate by developing innovative products, and services, and evolving their brand. Innovation plays a central role in entrepreneurship as it involves the replacement or improvement of existing offerings, enabling entrepreneurs to meet market trends and satisfy customer demands with innovative strategies.

Questions

1. Identify the benefits of innovation entrepreneurship.
2. Suggest the business opportunities for entrepreneur in innovation transforming those opportunities into reality. (K6)

Reg. No:_____

Course Code: 23PBDET320

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 24 and onwards)

Business Administration

Third Semester

Elective: Innovation for Business

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. An identifying feature of creativity is_____. (K1)
   a) convergent thinking b) common thinking
   c) divergent thinking d) none of the above
2. The term_____ refers to the process of creating those innovative solutions Creativity. (K1)
   a) Creativity b) Innovation
   c) Discovery d)Newness
3. Innovation is both conceptual and _____. (K1)
   a) Perpetual b) Expensive
   c) Nonexistence d) None of the above
4. The most prevent barriers in creativity is_____. (K1)
   a) History b) Biological
   c) Psychological d) Sociological
5. "Angels" usually provide what type of financing_____. (K1)
   a) Debt b) Equity
   c) Stock sales d) none of the above
6. The sources of innovation includes_____. (K1)
   a) Oppurtunity b) Failure
   c) Rejection d) Execution

7. _____ is a group creativity technique by which efforts are made to find a conclusion for a specific problem by grathering a list of ideas spontaneously contributed by its members. (K1)

a) Brainstorming b) Generating

c) Invention d) Consceptualization

8. Creativity is symbolized by _____coloured hat. (K1)

a) Red hat b) Green hat

c) Yellow hat d) Blue hat

9. Outsourcing of innovation globally is more likely where_____. (K1)

a) Innovations are autonomous

b) Innovations are systematic

c) Innovations are systematic or autonomous

d) Innovations are made by service sector firms

10. Innovation is defined as_____. (K1)

a) the commercialization of a new product or process

b) the invention of new product or process

c) a new product or process idea

d) the implementation of a new production method

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) State the major hurdles to creativity. (K2)

(Or)

b) What are the four steps involved in developing personal creativity? (K3)

12. a) Write a brief note on transfer of Knowledge. (K2)

(Or)

b) Comment your views in Industry 4.0. (K3)

13. a) What is Global Innovation Index framework? (K2)

(Or)

b) What are the characteristics of Frugal Innovations? Mention any two companies that use Frugal Innovation. (K3)

14. a) Detail the steps involved in the process of innovation in practice. (K2)

(Or)

b) Highlight some of the packaging innovations adopted in food industry. (K3)

15. a) Mention few difficulties faced by organisations in innovation. (K2)

(Or)

b) Assume that you are an entrepreneur of a reputed Agri-tech startup, how would you like to formulate a set of strategies to solve the present problems of farmers of our country. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Enumerate the various phases of design thinking. (K4)

(Or)

b) Explain the major components of creative process. (K5)

17. a) Elaborate the types of Innovation with suitable examples. (K4)

(Or)

b) Outline your views on Innovation eco system in India when compared to other countries. Justify. (K5)

18. a) Describe the concepts of TQM and Business Process Reengineering. (K4)

(Or)

b) Explain how the emergence of a new market acts as a source of discontinuous innovation. Support your answer with ONE example? (K5)

18. a) Discuss the framework of fundamental analysis. (K4)

(Or)

b) List out the forecasting techniques. what are the factors you will take into account for such an analysis? (K5)

19. a) Explain life cycle of Industry with suitable example. (K4)

(Or)

b) Discuss about company analysis. Explain the Major tools and techniques used in Company analysis. (K5)

Compulsory – Case Study

20. Technical analysis is a trading discipline employed to evaluate investments and identify trading opportunities by analyzing statistical trends gathered from trading activity, such as price movement and volume. Unlike fundamental analysis, which attempts to evaluate a security's value based on business results such as sales and earnings, technical analysis focuses on the study of price and volume. Technical analysis is a trading discipline employed to evaluate investments and identify trading opportunities in price trends and patterns seen on charts. Technical analysts believe past trading activity and price changes of a security can be valuable indicators of the security's future price movements. Technical analysis may be contrasted with fundamental analysis, which focuses on a company's financials rather than historical price patterns or stock trends.

Question: Identify the tools and charts in technical analysis. (K6)

Reg. No:_____

Course Code: 23PBDET310

M.B.A. Degree Examination- November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Third Semester

Elective: Security Analysis and Portfolio Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is a common objective for investors seeking to preserve capital? (K1)
   a) High growth b) Minimal risk and stable returns
   c) High risk d) Aggressive investment strategy
2. Which of the following is not a common investment objective? (K1)
   a) Capital preservation b) Speculative gain
   c) Income generation d) Wealth distribution
3. Equity shares represent _____. (K1)
   a) A loan to the company
   b) Ownership in the company
   c) A fixed interest-bearing investment
   d) Short-term debt
4. Preference shares typically offer_____. (K1)
   a) Voting rights
   b) Fixed dividends
   c) Higher risk compared to equity shares
   d) No claim on assets in case of liquidation
5. One of the primary objectives of SEBI is to_____. (K1)
   a) Maximize profits for companies
   b) Protect the interests of investors
   c) Regulate international trade
   d) Promote foreign direct investment

6. Which of the following is NOT an objective of SEBI? (K1)
   a) Regulation of the stock market
   b) Ensuring fair practices by issuers of securities
   c) Protecting the interests of shareholders
   d) Ensuring high returns for all investors

7. Company analysis primarily focuses on_____. (K1)
   a) Macroeconomic trends
   b) The overall industry
   c) The financial health and performance of an individual company
   d) Global market conditions

8. Fundamental analysis aims to determine a stock's_____. (K1)
   a) Intrinsic value b) Short-term price movements
   c) Market trends d) Chart patterns

9. What is the primary goal of portfolio management? (K1)
   a) To minimize taxes
   b) To maximize returns for a given level of risk
   c) To select only high-risk investments
   d) To focus solely on short-term gains

10. Which of the following strategies involves adjusting the asset allocation of a portfolio based on changes in market conditions?
   a) Passive management b) Active management (K1)
   c) Buy and hold d) Dollar-cost averaging

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Describe the different sources of Investment Information. (K2)

(Or)

   b) Differentiate between Speculation and gampling with Suitable example. (K3)

12. a) Describe on equity shares. (K2)

(Or)

   b) Outline and explain its pros and cons the role and importance of securities market. (K3)

13. a) Explain about NIFTY. Discuss its need in Indian Stock Market. (K2)

(Or)

   b) Mention the SEBI Guidelines, regarding Primary Market Operations. (K3)

14. a) Mention the characteristics of industry. (K2)

(Or)

   b) Describe about industry analysis, Also explain how this is useful to the Investors. (K3)

15. a) Explain the concept of portfolio construction. (K2)

(Or)

   b) Elaborate the Capital Asset Pricing Model and explain its application in portfolio selection. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Explain the principles of investment. (K4)

(Or)

   b) Mention the stages in investment decision. (K5)

17. a) Explain the functions of stock market. (K4)

(Or)

   b) Discuss the Investor's protection measures taken by the regulatory authorities in the primary market. (K5)

b) Write the challenges associated with advertising on broadcast media. (K5)

18. a) Summarize how a media plan can help in targeting specific audiences effectively. (K4)

(Or)

b) Write the impact of mobile advertising on media planning strategies. (K5)

19. a) Summarize the effectiveness of sales promotions. (K4)

(Or)

b) Evaluate some key factors to consider for website usability and accessibility. (K5)

Compulsary – Case Study

20. Nike: ADDING FUEL TO THEGAME- This case shows that how Nike's innovations helped one of the world's most powerful brands connect digital consumers to retail.As Nike's marketing muscle shifted increasingly towards digital, it turned to AMP to help extend that transition in multiple ways. In an ongoing partnership spanning several years, AMP has helped develop initiatives for Nike ranging from CRM and social media to influencer campaigns and corporate responsibility.Here's how we helped a sprawling global brand leverage digital to build more intimate customer experiences.Every aspect of Nike's digital communication needs to balance targeted tactical goals with the awe-inspiring storytelling that defines the Nike brand. This effort demands distilling brand communication ideas generated for a global scale into more local and customized experiences that enable individual customers to engage with Nike on a one-to-one basis.Every day, consumers and local influencers broadcast their sweat and hard work on multiple channels. Each of these chroniclers represents a unique opportunity to foster an authentic consumer relationship. (K6)

Question:

1. Discuss the role of i) Digital Retail CRM to get Enhanced Customer Profiles.
2. Social Media in Turning Influencers into Heroes in Nike's case.

Reg.No:_____

Course Code: 23PBDET304

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Third Semester

Elective: Integrated Marketing Communication

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is a primary goal of IMC planning? (K1)
   a) To increase production costs
   b) To create a consistent message across all marketing channels
   c) To focus solely on digital marketing
   d) To decrease the number of marketing channels used
2. Which theory suggests that consumers make decisions based on the expected outcomes of their choices? (K1)
   a) Social learning theory b) Cognitive dissonance theory
   c) Theory of planned behaviour d) Expectancy theory
3. What is a significant advantage of web media over broadcast media? (K1)
   a) Higher resolution content
   b) More reliable delivery
   c) Ability to access content on demand
   d) Lower bandwidth requirements
4. Which of the following is the first step in developing a creative strategy? (K1)
   a) Budget allocation b) Target audience analysis
   c) Media selection d) Message testing

5. Which metric is commonly used to measure the immediate response to online advertising? (K1)
   a) Brand recall
   b) Click-through rate (CTR)
   c) Customer lifetime value (CLV)
   d) Market share

6. What is a media profile primarily used for in the context of media planning? (K1)
   a) To determine the budget for an advertising campaign
   b) To outline the demographic characteristics of a target audience
   c) To select the creative elements of an advertisement
   d) To analyze the performance of an advertising campaign

7. What is the primary objective of sales promotions? (K1)
   a) To enhance long-term brand loyalty
   b) To boost short-term sales and encourage immediate purchases
   c) To improve employee morale
   d) To increase the number of retail outlets

8. Who are considered primary participants in the web ecosystem? (K1)
   a) Advertisers, web developers, and regulators
   b) Content creators, advertisers, and users
   c) Internet service providers, hardware manufacturers, and regulators
   d) Content consumers, software developers, and product manufacturers

9. What is the primary goal of public relations (PR)? (K1)
   a) To generate sales directly
   b) To manage and improve the public image and reputation of an organization
   c) To design advertising campaigns
   d) To create content for social media platforms

10. What is the primary goal of digital advertising? (K1)
    a) To generate immediate sales
    b) To build long-term brand loyalty
    c) To increase online visibility and reach targeted audiences
    d) To improve internal communication

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) List some of the main components of an IMC plan. (K2)

(Or)

b) Analyze the purpose of setting a budget for an IMC program. (K3)

12. a) Explain some common mistakes to avoid in print copywriting. (K2)

(Or)

b) Outline the key components of a creative strategy. (K3)

13. a) Explain media profile, and its advantages. (K2)

(Or)

b) Illustrate the importance of media plan. (K3)

14. a) Outline some common methods used in direct marketing. (K2)

(Or)

b) Explain the objectives of sales promotion. (K3)

15. a) List some common activities involved in public relations. (K2)

(Or)

b) Analyze some benefits of using video ads in digital advertising. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Evaluate the key components of an Integrated Marketing Communications. (K4)

(Or)

b) Estimate the difference between short-term and long-term objectives in an IMC plan. (K5)

17. a) Summarize the main steps involved in the design process for a print advertisement. (K4)

(Or)

(Or)

b) Discuss briefly the techniques available for currency risk management. (K5)

17. a) What do you mean by 'Foreign Exchange Market'? And discuss the role played by the main participants in this market. (K4)

(Or)

b) What techniques may be adapted to forecast exchange rates? What are their limitations? (K5)

18. a) Discuss briefly the techniques available for currency risk management. (K4)

(Or)

b) Why is international cash management necessary? When is centralized cash management more useful as compared to decentralized cash management? (K5)

19. a) Explain the need for foreign exchange exposure management. Discuss the various external exposure management techniques that are used to manage the exchange rate. (K4)

(Or)

b) Explain letter of credit and discuss the different parties involved in the LoC? (K5)

Compulsory- Case Study

20. Suppose Indian exporter exports goods for £ 62,500. It fears a depreciation of pound within two months when payments are to be received. In order to avoid the risk, it buy a put option for selling the pound for a two-month maturity. Suppose the strike rate is Rs. 60.00, the premium is Rs. 0.05 and the spot rate at maturity is Rs. 59.80. Will put option increase the exporter's earning. (K6)

Reg. No :_____

Course Code:21PBDET409

MBA Degree Examination – November 2024

(For the candidates admitted during the year 2021-2022 and 2022-2023 only)

Business Administration

Fourth Semester

Elective: International Financial Management

Time:3 Hours Maximum marks:50

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Trade between two countries can be useful if costratios of good sare_____. (K1)

a) Undetermined b) Decreasing

c) Equal d) Different

2. International trade and domestic trade differ because of_____. (K1)

a) Different government policies

b) Immobility off actors

c) Trade restrictions

d) All of the above

3. An arbitrageur in foreign exchange is a person who_____. (K1)

a) earn sillegal profit by manipulating foreign exchange

b) causes differences in exchange rates indifferent geographic markets

c) Simultaneously buys large amounts of acurrency in one market and sell it in another market

d) None of the above

4. A floating exchange rate _____. (K1)

a) Is determined by the national governments involved

b) Remain sextremely stable over longperiods of time

c) Is determined by the actions of centralbanks

d) Is allowed to vary according to market forces

5. By definition, currencyappreciation occurs when? (K1)

a) The value of all currencies fall relative to gold

b) The value of all currencies rise relative to gold

c) The value of one currency rises relative to another currency

d) The value of one currency falls relative to another currency

6. Theory which considers change in exchange rate with fluctuations in inflation rates is classified as_____. (K1)

a) Liquidated power parity b) Purchasing power parity

c) Selling power parity d) Volatile power parity

7. Govt.policy about export sand imports is called_____. (K1)

a) Commercial policy b) Fiscal policy

c) Monetary policy d) Finance policy

8. Authority which intervenes directly or indirectly in foreign exchange markets by altering interest rates is considered as_____. (K1)

a) Central government b) Centralized stocks

c) Central corporations d) Centralized instruments

9. Exchange rates _____. (K1)

a) Are always fixed

b) Fluctuate to equate the quantity of foreign exchange demanded with the quantity supplied

c) Fluctuate to equate imports and exports

d) Fluctuate to equate rates of interest in various countries

10. The most widely used monetary policy tool among these is_____. (K1)

a) Open market operations b) Issuing of notes

c) Close market operations d) Discountrate

SECTION – B (5 X 3 = 15 Marks)

Answer ALL questions.

11. a) What are the various types of risks? (K2)

(Or)

b) How are inflation rates and foreign exchange rates related? Illustrate with the help of an example. (K3)

12. a) Write a note on accounting exposure. (K2)

(Or)

b) What is the basic purpose of economic exposure management? (K3)

13. a) In which countries or currencies would you like to retain a higher proportion of your earnings for reinvestment? Explain, with reasons. (K2)

(Or)

b) How do importers and exporters use currency derivatives? Explain with example. (K3)

14. a) Explain the different derivatives instruments which help to hedge the currency risks. (K2)

(Or)

b) Explain the need for foreign exchange exposure management. (K3)

15. a) Discuss the role of ADRs and GDRs. (K2)

(Or)

b) Why has the euro-currency market grown so rapidly? Explain. (K3)

SECTION – C (5 X 5 = 25 Marks)

Answer ALL questions.

16. a) What do you understand by foreign exchange risk? What are the different external exposure management techniques which are used by importers and exporters? (K4)

19. a) Analyze the role of direct marketing in contemporary marketing strategies. (K4)

(Or)

b) Examine the nature, scope, and characteristics of rural marketing. (K5)

Compulsory – Case Study

20. Nike's marketing strategy rested entirely upon a brand image which is favorable and has evolved into a great multinational enterprise over time. The brand image has been kept afloat due to the strong associated with the Nike's logo which is quite distinctive and the slogan "Just do it" which has been used in advertisements for quite some time. The targeting strategy includes, among others the sponsorship of products by professional athletic team's celebrity athletes and college athletic teams. Second strategy that Nike applies is the designing of product destination. It does this by associating success with the product. Finally, Nike targets the consumers who are likely to develop product intimacy, those who care more about the Utility and quality of the product than the price. Distribution strategies embraced by an organization can either give them an edge in market or make them lag behind the winners in the market. The more efficient the product distribution is the more sales and thus more profits. Apart from Nike selling quality products which have lead to a high degree of customer loyalty, the promotional strategies that the company employs are simply superb.

Questions:

1. Explain the pricing strategies.
2. Explain the strategies to improve the distribution of Nike's products. (K6)

Reg. No.: _____

Course Code: 23PBDCT202

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Second Semester

Core: Marketing Management

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is a function of marketing in the context of the marketing mix? (K1)
   a) Product development b) Human resources management
   c) Financial forecasting d) Supply chain logistics
2. Which element of the marketing mix is concerned with communication and promotion? (K1)
   a) Product b) Price c) Place d) Promotion
3. What psychological factor influences consumer buying behavior by creating a desire for certain products or services? (K1)
   a) Social factors b) Personal factors
   c) Cultural factors d) Motivation factors
4. Which stage in the consumer buying process involves evaluating alternatives and considering factors such as price, quality, and brand reputation? (K1)
   a) Need recognition b) Information search
   c) Evaluation of alternatives d) Purchase decision
5. Which method of setting pricing involves adding a percentage markup to the cost of production? (K1)
   a) Cost-plus pricing b) Competitive pricing
   c) Value-based pricing d) Penetration pricing
6. Which factor plays a significant role in channel selection? (K1)
   a) Cost of distribution b) Product features
   c) Brand image d) Competitor strategies

7. Which tool of sales promotion is aimed at encouraging immediate purchase through incentives such as discounts or coupons? (K1)

a) Advertising b) Public relations
c) Direct marketing d) Sales promotion

8. What is the main objective of public relations? (K1)

a) Generating immediate sales
b) Building brand awareness
c) Enhancing public image
d) Directly communicating with customers

9. What is a primary benefit of digital marketing for organizations?

a) Increased print media coverage. (K1)
b) Limited audience reach
c) Enhanced targeting capabilities
d) Higher advertising costs

10. Which marketing approach emphasizes building long-term relationships with customers to foster loyalty and repeat business? (K1)

a) Social media marketing b) Relationship marketing
c) Green marketing d) International marketing

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Analyze the external marketing environment. (K2)

(Or)

b) Explain the process of strategic marketing planning within the context of the marketing mix. (K3)

12. a) Explain the importance of understanding consumer buying behavior for marketers. (K2)

(Or)

b) Discuss the stages of the consumer buying process in detail. (K3)

13. a) Outline four factors influencing price determination in a competitive market. Provide real-world examples for each factor. (K2)

(Or)

b) Describe any three flows in a distribution channel and state its function. How do these functions contribute to the efficiency of the distribution process? (K3)

14. a) Outline the objectives of public relations in a business setting. (K2)

(Or)

b) Discuss the process of personal selling and its objectives in detail. (K3)

15. a) Describe the scope and environment of international marketing. Identify and explain three key factors that organizations need to consider when expanding into international markets. (K2)

(Or)

b) Explain the concept of relationship marketing and its significance in today's competitive business environment. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Discuss the components of the marketing mix (4Ps) and their significance in developing a comprehensive marketing strategy. (K4)

(Or)

b) Explain the role and importance of a marketing information system (MIS) in supporting marketing decision-making. (K5)

17. a) Evaluate the role of product attributes and brand perception in consumer decision-making. (K4)

(Or)

b) Analyze the impact of cultural, social, and personal factors on consumer buying behavior. (K5)

18. a) Discuss the importance of training, motivation, and evaluation of channel members in ensuring the success of distribution channels. (K4)

(Or)

b) Evaluate the role of channel selection in the overall marketing strategy of a company. (K5)

(Or)

b) Balanced score card is a superior performance measurement tool. Explain. (K5)

Compulsory- Case Study

20. Tata motors have been eyeing the Indian passenger car market for a long time. During earlier times, their brands such as Tata Sumo were well received; the company had a very low share in the Indian passenger car market due to stiff competition from Maruti.

Tata motors came up with Tata Indica, which mirrored Maruti's products and challenged Maruti's dominance in small car market. Inspired by the success of Indica Tata launched the Tata Nano. Critics were of the view it could not be possible due to the low cost of the car.

Tata Nano's modular design is one of the most innovative aspects; it can be shipped separately and assembled in any region. However the fanfare with which Nano was launched did not show much result, the car was not well accepted by the masses despite the low prices, it started selling in discounts like any other car in the Indian market.

Tata's as a company are concerned about the same and were still trying to rework out strategies for revival of the market share till 2018 and to fit into the vision of the company, but in the end of 2018 the company was forced to halt production of Nano in Sanand plant.

Questions:

1. What was the type of strategy Tata's adopted during the launch of Nano?
2. Help the company in working out a suitable strategy for the success of Tata Motors passenger car segment.
3. By using a SWOT analysis outline the failure of the Nano car in the Indian markets. (K6)

Reg. No:_____

Course Code: 23PBDCT301

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business Administration

Third Semester

Core: Strategic Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is stability strategy. (K1)
   a) Corporate level b) Functional level
   c) Strategic level d) Business level
2. "_____ is the process of managing the pursuit of organizational mission to its environment." (K1)
   a) System Management b) Strategic Management
   c) Financial Management d) Cost Management
3. The acronym SWOT stands for_____. (K1)
   a) Special Weapons for Operations Timeliness
   b) Services, Worldwide Optimization, and Transport
   c) Strengths Worldwide Overcome Threats
   d) Strengths, Weakness, Opportunities and Threats.
4. _____is a characteristic of strategic management that makes it differ from other types of management (K1)
   a) It is interdisciplinary
   b) It has an external focus
   c) It has an internal focus
   d) It concerns the present director of the organization
5. The following are considered grand strategies, except for_____. (K1)
   a) A retrenchment strategy b) Strategic business unit
   c) A growth strategy d) Related diversification

6. Retrenchment strategy means_____. (K1)
a) cutbacks to improve efficiency
b) a new strategic position for a product or service
c) The sale of the complete business, either as a single going concern.
d) Implementing the marketing functions.

7. The question mark in the BCG matrix symbolizes_____. (K1)
a) Invest b) Stable
c) Liquidate d) Remain Diversified

8. _____ is not part of the micro environment.
a) Technology b) Share holders (K1)
c) Competitors d) Public

9. _____is a key aspect of successful strategic implementation.
a) Frequent changes in objectives (K1)
b) Lack of communication among employees
c) Consistent monitoring and adjustment
d) Centralized decision-making processes

10. _____ is a benefit of strategic management for an organization? (K1)
a) Increased short term profits
b) Improved decision making
c) Reduced market demand
d) Decreased customer satisfaction.

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain the levels of strategy. (K2)

(Or)

b) Discuss the benefits of strategic management in every organization. (K3)

12. a) What is the role of entrepreneur in strategy making? (K2)

(Or)

b) What do you understand by environment? How do you classify it? (K3)

13. a) Explain the generic strategies given by Michel E. Porter with Indian examples. (K2)

(Or)

b) Explain horizontal and vertical integration strategies. (K3)

14. a) Discuss about General Electric's multi factor portfolio matrix. (K2)

(Or)

b) What are the issues involved in new product experiment? (K3)

15. a) Analyze business level strategy's influence on structure and control. (K2)

(Or)

b) How do global strategies affect structure? Explain. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Illustrate the factors influencing strategic management systems design. (K4)

(Or)

b) Identify the people responsible for strategy making at different levels in an organization. (K5)

17. a) Describe with examples the initiatives taken by corporate in India for effective strategy management. (K4)

(Or)

b) What is PESTEL? Which of the external factors are controllable? (K5)

18. a) Identify generic and grand strategies that firms adopt. (K4)

(Or)

b) Discuss in detail about BCG matrix for an Indian Company. (K5)

19. a) "Organization should be accompanied with suitable reward system to reinforce control measures". Discuss (K4)

b) Analyze how the project portfolio process contributes to balancing risk and reward across multiple projects. (K4)

17. a) Analyze how the project rating index can be used to balance risk and reward in project selection. (K4)

(Or)

b) Explore the role of emotional intelligence towards the success of project management. (K4)

18. a) Create a Work Breakdown Structure for a construction project, breaking down the project into manageable components. (K3)

(Or)

b) Explain the contents of a Detailed Project Report. (K3)

19. a) Compare and contrast PERT and CPM techniques and identify appropriate applications for each. (K4)

(Or)

b) Assess the impact of risk on project schedule and cost. (K5)

Compulsory- Case Study

20. Sharma has been employed for six months in the accounts section of a largemanufacturing company in Faridabad. You have been his supervisor for the past threemonths. Recently you have been asked by the management to find out thecontributions of each employee in the Accounts Section and monitorcarefully whetherthey are meeting the standards set by you. A few days back you have completed yourformal investigation and with the exception of Sharma, all seem to be meeting thetargets set by you. Along with numerous errors, Sharma work is characterized by lowperformance - often he does 20 percent less than the other clerks in the department.As you look into Sharma performance review sheets again, you begin to wonderwhether some sort of remedial training is needed for people like him.Question:

1) Suggest a suitable training and motivation using a case study (K6)

Reg. No:_____

Course Code: 23PBDET318

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business Administration

Third Semester

Elective: Project Management

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ type of project selection model considers uncertainty.
   a) Deterministic models b) Probabilistic models (K1)
   c) Static models d) Linear models
2. A well prepared project proposal should _____. (K1)
   a) Be vague and general
   b) Clearly define project goals and deliverables
   c) Focus only on budget
   d) Ignore potential risks
3. A project rating index is used to _____. (K1)
   a) Prioritize projects
   b) Estimate project costs
   c) Develop project schedules
   d) Identify project stakeholders
4. Scope creep refers to _____. (K1)
   a) Uncontrolled changes to project deliverables
   b) Overspending on project resources
   c) Project delays
   d) Poor project communication

5. A SWOT analysis is used to assess a company's_____. (K1)
   a) Strengths, Weaknesses, Opportunities, and Threats
   b) Sales, Wages, Opportunities, and Taxes
   c) Suppliers, Workers, Owners, and Threats
   d) Strengths, Weaknesses, Objectives, and Threats
6. A Work Breakdown Structure is a _____. (K1)
   a) Hierarchical decomposition of project deliverables
   b) Graphical representation of project schedule
   c) List of project resources
   d) Project communication plan
7. PERT stands for _____. (K1)
   a) Program Evaluation and Review Technique
   b) Project Evaluation and Review Technique
   c) Project Evaluation and Research Technique
   d) Program Evaluation and Research Technique
8. The first step in preparing a feasibility report is_____. (K1)
   a) Conducting a break-even analysis
   b) Identifying project constraints
   c) Defining project objectives
   d) Estimating project costs
9. Social cost-benefit analysis considers_____. (K1)
   a) Only financial impacts
   b) Only environmental impacts
   c) Both financial and social impacts
   d) None of the above
10. Project Management Information System (PMIS) supports project control _____. (K1)
   a) By providing real-time data on project progress
   b) By automating risk identification
   c) By eliminating project risks
   d) By ensuring project compliance with regulations

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Briefly explain the benefits of Project Management. (K3)

(Or)

b) How would you conduct an analysis under uncertainty for a proposed research project? (K4)

12. a) Outline the key competencies and skills required for the project manager (K3)

(Or)

b) Explain the different sources available for scouting project ideas. (K3)

13. a) How would you conduct a market survey to determine the demand for a new product? (K4)

(Or)

b) Describe the components of an action plan for a large-scale project. (K3)

14. a) Examine the challenges of constrained resource scheduling. (K3)

(Or)

b) Explain the advantages and disadvantages of using CPM technique in project scheduling. (K3)

15. a) How can economies of scale be applied to reduce costs in a manufacturing project? (K3)

(Or)

b) Explain the social costs and benefits of a large-scale infrastructure project? (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe the different stages involved in the Project life cycle. (K3)

(Or)

18. a) Discuss the various mutual fund schemes offered in India. (K4)

(Or)

b) Discuss the advantages of mutual fund investments. (K5)

19. a) Discuss the performance of various venture capital firms in India. (K4)

(Or)

b) Elaborate the reasons for merging. (K5)

Compulsory- Case Study

20. M, N and O* was a group of three companies involved in shipbreaking activities. The operations of these companies were largely dependent upon working capital as large letter of credits have to be openedfor buying ships. The total working capital limit of the group was Rs.1.1 billion. Due to high working capitalintensity of operations and deteriorating industry scenario, the credit rating agency downgraded rating of the 3 companies in FY17. Rating downgrade could affect the group on obtaining funds at desired rate of interest. MNO's management approached Vora Corporate Finance to help with the following financial parameters due to which the rating was downgraded:Debt Equity Ratio was over 10. High Debtors and high debt compared to peers resulting in high working capital requirement. Liquidation of Letter of Credits was slow due to historical poor practises.

Question:

1. Give your advisory to improve long term financial position and improve credit rating from Credit rating agency.

Reg. No:_____

Course Code: 23PBDET309

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business Administration

Third Semester

Elective: Financial Services

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following are the features of the money market? (K1)

a) Maturity of period is more than 1 year

b) Highly Risky

c) Unsecured Instruments

d) Has physical location

2. Formal merchant Banking activity in India was originated in _____. (K1)

a) 1978 b) 1969 c) 1769 d) 1982

3. The act of buying an asset without having to make full payment in the immediate future is known as_____. (K1)

a) Hire purchase b) Finance lease

c) Operating lease d) Sale and leaseback

4. Hire Purchase Act is passed in the year_____. (K1)

a) 1932 b) 1956 c) 1972 d) 1872

5. NAV in mutual funds stands for? (K1)

a) Newly Acquired Value b) Net Asset Value

c) Net Amount Valuation d) Net Acquired Value

6. Which is the first mutual fund established in India? (K1)

a) SBI b) Kothari Pioneer

c) UTI d) Aditya Birla Sunlife

7. Other than financial institutions, which among the following can promote offshore Venture capital funds? (K1)

a) Foreign banks b) Private banks

c) State banks d) Commercial banks

8. _____refers to the process of managing the sales register of a client by a financial services company. (K1)

a) Merchant banking b) Mutual Fund

c) Leasing d) Factoring

9. What among the following is required for developing a new product in its initial stages? (K1)

a) Horizontal merger b) Vertical merger

c) Complementary merger d) Conglomerate merger

10. Tata sons merged Air India with which of the following? (K1)

a) Air Asia b) Malaysia Airlines

c) Thai AirAsia d) AirAisa Philippines

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Draw the structure of Indian Financial System. (K2)

(Or)

b) List out any five functions of merchant bankers. (K3)

12. a) Difference between lease financing and Hire purchase financing. (K2)

(Or)

b) Sketch the benefits of leasing. (K3)

13. a) Summarize any five benefits of mutual funds. (K2)

(Or)

b) Classify the mutual fund schemes on the basis of operational classification. (K3)

14. a) What are the characteristics of Venture capital? (K2)

(Or)

b) List out the Domestic Credit Rating Agencies and list the short-term debt symbols. (K3)

15. a) Discuss the important forces of M&A in modern scenario. (K2)

(Or)

b) Explain the SEBI Takeover Regulations and its purpose. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Discuss the guidelines for merchant bankers issued by SEBI. (K4)

(Or)

b) Write the recent developments in the capital markets. (K5)

17. a) Discuss the terms and conditions of hire purchase finance agreement. (K4)

(Or)

b) Explain the different kinds of leasing. Distinguish operating lease from financial lease. (K5)

Compulsory – Case Study

20. Inflow of foreign tourists (K6)

India Tourism Development Corporation (ITDC) is an official body set-up to promote tourism in India. The number of foreign tourists visiting India has, no doubt, increased over the years. During 1996-97, approximately 2.3 million foreign tourists visited India, accounting for an increase of 7 per cent over the preceding year. This inflow of tourists enabled India to earn a little over $3000 million. There is a general feeling that India is not one of the world's top holiday destinations and it has a lot of catching upto do. It has also to remove a number of barriers which dissuade prospective foreign tourists to avoid India and visit other countries.

The ITDC is seriously considering a detailed study done on the inflow of foreign tourists in India over the past five years. The objectives of the proposed study would be:

1) To ascertain country wise in flow of foreign tourists in the last five years;
2) To prepare the profile of foreign tourists on the basis of some important characteristics;
3) To find-out what is being demanded by foreign tourists and what is being offered to them;
4) To ascertain the major difficulties and hardships faced by the tourists in India and
5) To invite their suggestions for giving a boost to tourism.

The ITDC has sponsored this study with a leading marketing research agency, which has developed expertise in this area.

Questions:

a) Design a suitable questionnaire for the field survey.
b) Assuming that the information sought has been collected through a field survey covering a large sample; give a format which you would adopt in writing the report. You should provide a brief explanation for each chapter/section to be included in the report, indicating why it should be given.

Reg.No.: _____

Course Code: 23PBDCT206

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Second Semester

Core: Research Methodology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is a blue print of the research process. (K1)
   a) Questionnaire b) Research design
   c) Sampling d) Coding
2. _____ is a subset of the population under study. (K1)
   a) Variable b) Data c) Sample d) Objective
3. The research which is exploring new facts through the study of the past is called_____. (K1)
   a) Philosophical research b) Historical research
   c) Mythological research d) Content analysis
4. "Sampling Cases" can be defined as_____. (K1)
   a) Sampling using a sampling frame
   b) Identifying people who are suitable for research
   c) Literally the researcher's brief case
   d) A sampling of people, newspapers, television programs etc.
5. The appropriate test for finding the significance of a sample mean is _____. (K1)
   a) t-test b) Chi-square test
   c) Market testing d) Product testing
6. The significance level of 5% equals to a probability of _____.
   a) 0.5 b) 0.05 c) 0.005 d) 5 (K1)
7. Bibliography _____. (K1)
   a) is found at the beginning of the report
   b) is found at the end of the report

c) has no relevance in a report
d) is otherwise called the summary

8. The F-test_____. (K1)
a) Is essentially a two-tailed test.
b) Is essentially a one-tailed test.
c) Can be one-tailed as well as two-tailed depending on the hypotheses.
d) Can never be one tailed test.

9. Marketing channel effectiveness is determined by _____.(K1)
a) Product research b) distribution research
c) media research d) promotion research

10. The format of thesis writing is the same as in_____. (K1)
a) Writing of Seminar representation
b) Preparation of research paper/article
c) A research dissertation
d) Presenting a workshop/conference paper

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) What do you mean by research? Explain its significance. (K2)

(Or)

b) Explain the research process with a suitable example. (K3)

12. a) Differentiate between exploratory research and descriptive research. (K2)

(Or)

b) Why probability sampling is generally preferred in comparison to non-probability sampling? (K3)

13. a) Differentiate between primary data and secondary data. (K2)

(Or)

b) Point out the possible sources of error in measurement. Describe the test of sound measurement. (K3)

14. a) Briefly explain the significance of data processing. What is the problem associated with data processing. (K2)

(Or)

b) Distinguish between Null and Alternative hypothesis. (K3)

15. a) "Interpretation is a fundamental component of research process", explain why so? (K2)

(Or)

b) Explain the layout of research report. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) "Task of defining the research problem is often follows a sequential pattern" Explain. (K4)

(Or)

b) "Research is much concerned with proper fact finding analysis and evaluation". Do you agree with this statement- Justify.(K5)

17. a) Under what circumstances stratified random sampling design is considered appropriate ? How would you select such sample? Explain with the help of an example. (K4)

(Or)

b) " A systematic bias results from error in sampling procedure". What do you mean by such a systematic bias? Describe the important causes responsible for such a bias. (K5)

18. a) Explain the different methods of data collection? Which one is most suitable for conducting enquiry regarding employee welfare programme in India? (K4)

(Or)

b) Explain why questionnaires are popular tools for data collection in Research. Discuss qualities of good questionnaire. (K5)

19. a) The procedure for testing hypothesis requires a researcher to adopt several steps. Describe in brief all such steps. (K4)

(Or)

b) Two samples of 100 electric bulbs each has means 1500 and 1550, standard deviation 50 and 60. Can it be concluded that two brands differ significantly at 1% level of significance in equality? (K5)

7/12/2024 (FN)

Compulsory – Case Study

20. Assume that you are the Secretary in attendance at the fifth annual meeting of the Executive Committee of the League Club, Cochin held at 7 p.m. on Wednesday, 1 June, 2016. Prepare the minutes of the meeting, assuming the agenda to be as follows:

5.01 Minutes of previous meeting

5.02 Chairman's report

5.03 Appointment of auditor for the next year

5.04 Purchase of furniture for the visitors room

5.05 Creation of one post of a full time clerk for the club

5.06 Increasing the subscription rate

5.07 Any other matter with the permission of the Chairman

(K6)

Reg.No:_____

Course Code: 23PBDCT106

M.B.A Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Corporate Communication

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Informal communication is otherwise known as _____ communication. (K1)

a) Grapevine b) Lateral c) Visual d) Horizontal

2. Physical Barriers to communication are _____. (K1)

a) Time and distance. b) Interpretation of words.

c) Denotations. d) Connotations.

3. _____ is a document sent with your resume to provide additional information on your skills and experience. (K1)

a) Hand-outs b) Curriculum vitae

c) Application letter d) Sales letter

4. A _____ is also known as a 'cover letter'. (K1)

a) Resume b) Curriculum vitae

c) Application letter d) Sales letter

5. The quality of a report is determined mainly by_____. (K1)

a) The language of the report b) The visual aspects

c) The length of the report d) The accuracy of the data

6. _____ indicates the hierarchy of topics and their sequences.

a) Appendix b) List of references (K1)

c) Bibliography d) Table of contents

7. Small cards that contain the important points of presentation is known as_____. (K1)

a) Hand-outs b) Cue-cards
c) Attention grabbers d) None of these

8. _____ is a systematic oral exchange of information, views and opinions about a topic, issue, problem or situation among members of a group who share certain common objectives. (K1)

a) Presentation b) Group discussion
c) Group interview d) All of these

9. _____ means the position in which you hold your body when standing or sitting. (K1)

a) Gestures b) Postures c) Paralanguage d) Proxemics

10. _____ refers to the amount of space that individuals naturally maintain between each other. (K1)

a) Chronemics b) Gestures c) Proxemics d) None of these.

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Elucidate the types of Communication in detail. (K2)

(Or)

b) Bring out the various principles of communication. (K3)

12. a) Outline the Social media etiquettes to be adopted by todays youth for business communication. (K2)

(Or)

b) You have received an enquiry about a past employee in your Creative profiling department. Draft an unfavourable reference in your reply. (K3)

13. a) What are the characteristics of a Business report? (K2)

(Or)

b) Highlight the types and importance of using tables and charts in report writing. (K3)

14. a) Mention the different types of interview. (K2)

(Or)

b) Elucidate the role of visual aids in effective presentation. (K3)

15. a) What are the different forms of Non Verbal Communication? (K2)

(Or)

b) Describe the significance of facial expressions and eye contact in Communication. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) How will you prepare minutes and resolutions? (K4)

(Or)

b) Prepare a resume on your own for the post of Event Manager. (K5)

17. a) Explain in detail the process and mechanics of report writing. (K4)

(Or)

b) Describe the various types of data collection. (K5)

18. a) How does Group discussion contribute to successful Business communication? (K4)

(Or)

b) As an interviewer, what suggestions would you like to give to the freshers for better interview performance. (K5)

19. a) As a sales executive, how will you read the body language of the customers. (K4)

(Or)

b) Explain with examples, the role played by Non Verbal Communication in influencing the success of an organisation. (K5)

04/12/2024 (FN)

Compulsory – Case Study

20. Jindal Pvt. Ltd. was established in 1995. The company started manufacturing of Water Geyser with a brand name of "Ganga". During initial 10 years, the company made good profits. But, its profits gradually declined due to competition from national brands. The promoters of the company had a committed team of workers who were constantly working on Research and Development. Finally, they came out in the year 2006, with an innovative product, named Maha Ganga which runs even at very low voltage and consumes less electricity. Thus, the company is monopoly manufacturer of "MahaGanga". The company is currently supplying its products in geographically separated markets of Punjab and Haryana. The company is currently charging the same price in Himachal Pradesh and Uttarakhand. The Chief Economist of the company has informed the top management that price elasticity of demand at currently-charged price is 3 in Himachal Pradesh and 5 in Uttarakhand. The top management is planning to charge two different prices in Punjab and Haryana in order to make more profits.

Questions:

a) Name the Product which is manufactured by Jindal Pvt.ltd

b) State the reason for reduces the company profits. (K6)

Reg.No:_____

Course Code: 23PBDCT103

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Managerial Economics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Managerial economics is_____. (K1)

a) Dealing only micro aspects

b) Only a normative science

c) Deals with practical aspects

d) All of the above

2. Decision making and _____ are the two important functions of executive of business firms. (K1)

a) Forward planning b) Directing

c) Supervising d) Administration

3. Demand curve slopes downwards because of _____. (K1)

a) The law of diminishing marginal utility

b) The income effect

c) Substitution effect

d) All of the above

4. Which of the following is not a method of demand forecasting

a) Trend projection method b) Substitute approach (K1)

c) Sales experience approach d) Evolutionary approach

5. The distinction between variable cost and fixed cost is relevant only in_____. (K1)

a) Long period b) Short period

c) Medium time d) Mixed period

6. Elasticity of supply is the degree of responsiveness of supply to changes in the _____of a good. (K1)

a) Production b) Profit c) Price d) Stock

7. The market with a single producer_____. (K1)

a) Perfect competition b) Monopolistic competition

c) Oligopoly d) Monopoly

8. Product differentiation is the important feature of_____.(K1)

a) Monopoly b) Perfect competition

c) Monopolistic competition d) Monophony

9. Central bank controlled inflation through _____. (K1)

a) Investment policy b) Foreign policy

c) Monetary policy d) All of the above

10. _____ is situation of severely falling prices and lowest level of economic activities. (K1)

a) Boom b) Recovery c) Recession d) Depression

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the managerial economics & its decision science. (K2)

(Or)

b) List the objectives of the firm. (K3)

12. a) Explain the various determinants of demand. (K2)

(Or)

b) List the types of elasticity demand. (K3)

13. a) Outline the cob-Douglas production function. (K2)

(Or)

b) Explain the Economies and Diseconomies of scale. (K3)

14. a) List out the features of monopolistic competition. (K2)

(Or)

b) Analyze the kinked demand curve. (K3)

15. a) Explain the methods of measurement of national income. (K2)

(Or)

b) Classify the phases of business cycle. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize the nature and scope of managerial economics. (K4)

(Or)

b) Discuss the process of managerial decision making. (K5)

17. a) Examine the elasticity of demand in managerial decision making. (K4)

(Or)

b) Summarize the various techniques of demand forecasting. (K5)

18. a) Assess the elasticity of supply & its uses of managerial economics. (K4)

(Or)

b) Explain the cost and output relation under short run. (K5)

19. a) Discuss the price and output determination under perfect competition. (K4)

(Or)

b) Explain the price under determination under monopoly. (K5)

03/12/2024 (FN)

18. a) Evaluate how can technological advancements help in reducing environmental pollution. (K4)

(Or)

b) Write some measures that can be taken to control chemical pollution. (K5)

19. a) Estimate the significance of ethical leadership in maintaining business ethics. (K4)

(Or)

b) Summarize the principles of business ethics. (K5)

Compulsory – Case Study

20. Corporate social responsibility (CSR) is how companies manage their business processes to produce an overall positive impact on society. It covers sustainability, social impact and ethics, and done correctly should be about core business, how companies make their money not just add-on extras such as philanthropy. It should be an organization's duty and responsibility to protect society and the environment via its activities. Furthermore, CSR encourages inspiration in the community which tells an organization how to run its business and also to the people on how to lead one's life and promotes social responsibility in everyone. There are many benefits to incorporating CSR into your company, and many of these positives can help to grow your business and improve your revenue, as well as improving your company's impact on the world. Explain the benefits of CSR to the society. (K6)

Reg.No:_____

Course Code: 23PBDCT102

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Business Environment

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What is the business environment? (K1)
   a) The internal factors affecting a business
   b) The external factors affecting a business
   c) Both internal and external factors affecting a business
   d) The economic policies of a country
2. What role do political factors play in the business environment? (K1)
   a) They influence the cultural values of a business
   b) They affect technological advancements in the industry
   c) They impact laws, regulations, and government policies
   d) They determine the level of competition in the market
3. Why is it important for businesses to monitor their external environment? (K1)
   a) To identify potential legal issues
   b) To maintain internal communication
   c) To stay informed about market trends and threats
   d) To manage employee performance
4. What role do employees play in the internal environment of a business? (K1)
   a) They influence market trends
   b) They impact company culture and productivity
   c) They determine the legal framework
   d) They set economic policies

5. Which of the following is a component of the political environment? (K1)
a) Technological advancements b) Customer preferences
c) Trade regulations and tariffs d) Employee productivity

6. What role do research and development (R&d) play in the technological environment? (K1)
a) They influence government policies
b) They drive innovation and the creation of new products and services
c) They determine cultural norms
d) They set economic conditions

7. Why is integrity important in business ethics? (K1)
a) It helps in reducing production costs
b) It fosters trust and credibility among stakeholders
c) It increases employee turnover
d) It ensures compliance with government regulations

8. How can businesses ensure fairness in their operations? (K1)
a) By maximizing profits at all costs
b) By treating all stakeholders with respect and equality
c) By focusing solely on customer satisfaction
d) By reducing employee benefits

9. What is corporate social responsibility (CSR)? (K1)
a) The obligation of a company to make a profit
b) The responsibility of a company to act in the best interests of society
c) The strategies used by a company to compete in the market
d) The techniques for reducing operational costs

10. Which of the following is a benefit of CSR for businesses? (K1)
a) Increased operational costs
b) Negative public image
c) Improved brand reputation and customer loyalty
d) Decreased employee morale

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain the importance of the business environment. (K2)

(Or)

b) List the factors affecting environmental analysis. (K3)

12. a) Explain PESTLE and its importance. (K2)

(Or)

b) Outline the key components of the macro environment in business. (K3)

13. a) List the primary sources of water pollution. (K2)

(Or)

b) Explain soil pollution and how it affects agriculture. (K3)

14. a) List some common ethical issues businesses might face. (K2)

(Or)

b) Outline the objectives of business ethics. (K3)

15. a) Explain the roles play by stakeholders in a business. (K2)

(Or)

b) List out the issues in CSR. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Write some challenges a business faces in managing environmental sustainability. (K4)

(Or)

b) Summarize the trends in globalization and their effects on local businesses. (K5)

17. a) Distinguish between internal business environment and external business environment. (K4)

(Or)

b) Estimate the role of a PESTLE analysis in strategic planning for a business. (K5)

Reg. No:_____

Course Code: 23PBDET306

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Business Administration

Third Semester

Elective: Staffing in Organisation

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The primary need for staffing in an organization is _____. (K1)
   a) To decrease the workforce
   b) To ensure the right person is in the right job
   c) To increase operational costs
   d) To avoid technological advancements
2. The key component of developing staffing strategies.
   a) Conducting exit interviews (K1)
   b) Forecasting future staffing requirements
   c) Performing job evaluations
   d) Managing payroll
3. The correct component for a recruitment plan is_____. (K1)
   a) Job analysis, sourcing, screening, interviewing, decision making
   b) Job analysis, decision making, screening, interviewing, sourcing
   c) Sourcing, job analysis, screening, interviewing, decision making
   d) Screening, job analysis, sourcing, interviewing, decision making

4. The recruitment metrics in the staffing process is _____. (K1)
   a) To increase operational costs
   b) To evaluate the effectiveness of recruitment strategies
   c) To limit growth opportunities
   d) To decrease employee satisfaction
5. The preliminary assessment phase of recruitment, is most important to address to avoid potential biases is_____. (K1)
   a) The candidate's prior work experience
   b) The format of the job description
   c) The consistency of evaluation criteria
   d) The salary range for the position
6. The main purpose of staffing activities within an organizationi_____. (K1)
   a) To develop new marketing strategies
   b) To ensure the organization has the right number of employees with the appropriate skills
   c) To manage the company's financial investments
   d) To create new product lines
7. The document that formally communicates the job offer to a candidate is_____. (K1)
   a) Job description b) Employment contract
   c) Offer letter d) Performance appraisal form
8. Howan effective employee orientation program benefits new hires and_____. (K1)
   a) It speeds up the recruitment process
   b) It helps them understand their job roles and the company's expectations, leading to a smoother transition
   c) It focuses on reducing employee turnover
   d) It provides detailed information about employee benefits

9. Retention management is to keep employees engaged for_____. (K1)

a) Offering competitive salaries
b) Conducting exit interviews
c) Implementing strict attendance policies
d) Reducing employee training opportunities

10. _____ is a common indicator of high employee turnover within an organization? (K1)

a) High levels of employee satisfaction
b) Frequent employee promotions
c) Low employee engagement scores
d) Increased employee training and development opportunities

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the different factors that influence staffing. (K2)

(Or)

b) Analyse the significance of Planning for Human Resource. (K3)

12. a) Outline the drawbacks for an IT company of hiring internally. (K2)

(Or)

b) Infer the need for strategy development in recruitment process. (K3)

13. a) Explain the preliminary issues faced in selection process. (K2)

(Or)

b) Analyse the methods in determining Assessment Scores. (K3)

14. a) Categorize on the different types of employment contracts. (K2)

(Or)

b) Show the various legal issues faced by the HR managers in recruitment. (K3)

15. a) List and explain the elements of administration in staffing system. (K2)

(Or)

b) Apply your knowledge of employee retention to identify an effective retention strategy for a diverse workforce. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Design a staffing model for a hypermarket. (K4)

(Or)

b) Compare the impact of monetary versus non-monetary rewards on employee motivation. (K5)

17. a) Summarise the pros and cons of the external sources of recruitment. (K4)

(Or)

b) Analyze the benefits and challenges associated with hiring freelancers compared to full-time employees. (K5)

18. a) Assess the various roles played by HR professionals in staffing decision. (K4)

(Or)

b) Prepare a set of hiring standards for a new position of HR Executive in an organization. (K5)

19. a) Write the various job offer components that influence a candidate's decision to accept or decline an offer. (K4)

(Or)

b) Summarise on the various causes of Employee turnover. (K5)

Compulsory – Case Study

20. Nishant, the director of a garment company, is planning to manufacture bags for the utilization of waste material from one of his garment's units. He has decided that his manufacturing unit will set-up in a rural area of Odisha where people have very few job opportunities and labour is available at very low rates. He also thought of giving equal opportunities to men and women. For this, he wanted four different heads for sales, accounts, purchase and production. He gave an advertisement and short listed ten candidates per post after conducting different selection tests.

Questions: Identify and state the next three steps for choosing the best candidate out of the shortlisted candidates. (K6)

Reg.No:_____

Course Code: 23PBDET303

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Third Semester

Elective: Consumer Behaviour

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Consumer behaviour is the study of _____. (K1)

a) How individuals, groups and organisations select, buy, use and dispose of goods, services, ideas or experiences.

b) How business market their products.

c) Economic needs.

d) Production processes.

2. Brand Equity is _____. (K1)

a) The total market share of a brand.

b) The cost associated with branding and marketing.

c) The monetary value of a brand's physical assets.

d) The consumers perception of a brand.

3. Which of the following best describes the perceptual process?

a) The process of producing and distributing products. (K1)

b) The process of selecting, organizing and interpreting information.

c) The process of setting prices for products.

d) The process of managing supply chains.

4. The motivational conflict in consumer behaviour is _____.
   a) The struggle between different motivations that influence consumer decisions. (K1)
   b) The agreement between different motivations that influence consumer decisions.
   c) The process of setting product prices.
   d) The method of managing supply chains.
5. Which of the following is a key characteristic of brand personality? (K1)
   a) The brand's market share
   b) The human traits associated with a brand
   c) The brand's product range
   d) The price of the brand's products
6. Which of the following is NOT a source of attitude formation?
   a) Genetic inheritance b) Direct experience (K1)
   c) Social influence d) Marketing communication
7. What is a common marketing mistake when dealing with cross-cultural differences? (K1)
   a) Using local influencers
   b) Failing to understand cultural nuances
   c) Adapting products to local tastes
   d) Segmenting markets based on psychographics
8. Cross-cultural marketing refers to_____. (K1)
   a) Marketing products to consumers in different countries
   b) Marketing products to different subcultures within a country
   c) Marketing products to a specific age group
   d) Marketing products to a specific gender

seemed to have a good knowledge of the attributes, and had a great say in the purchases and their opinions were also given weightage by the parents. Since a chain store is more interested in the sales to materialize, rather than pushing any particular brand, the salesmen are directed to satisfy the customers or the family. This should be their first consideration. (K6)

Questions:

1) What should be the role of the marketer in the above case regarding advertisement, promotion, persuasion, and closing the sales?
2) Who others could influence the purchase decisions in a family, in relevance with the above case?
3) Do you feel that group interaction helps the buyer too, in his decision-making process?

9. An opinion leader is someone who_____. (K1)
   a) Holds a formal position of authority
   b) Has expertise in a particular area and influences others
   c) Is always the first to try new products
   d) Is a member of a high-income social group
10. Which stage in the adoption process involves the consumer first becoming aware of the innovation? (K1)
    a) Interest b) Awareness c) Evaluation d) Trial

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Define Consumer Behaviour and explain its importance. (K2)

(Or)

b) How would you apply high involvement learning strategies to market a luxury car? (K3)

12. a) Compare the concept of perceptual defense to explain why certain advertisements are ineffective. (K2)

(Or)

b) How can a company use motivational research to improve customer satisfaction? (K3)

13. a) Can you explain with an example of how social relationships influence purchasing decisions? (K2)

(Or)

b) How does self-concept influence brand loyalty? (K3)

14. a) As a marketer, how can you utilize the functions of the family to create a strong brand image? (K2)

(Or)

b) Describe the nature of Family Life Cycle. (K3)

15. a) Explain the characteristic of innovation to develop a new product concept. (K2)

(Or)

b) How can a company utilize the dynamics of opinion leadership to enter into a highly competitive market? (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Apply the concept of consumer behaviour to explain why some brands are more successful than others? (K4)

(Or)

b) How can a company utilize consumer behaviour insights to identify new market opportunities? (K5)

17. a) What are some major factors that influence the Buyer's Behaviour? Explain. (K4)

(Or)

b) Can you examine the role of consumer imagery in creating brand loyalty? (K5)

18. a) Examine the influence of neo-Freudian theories on consumer behaviour in social media marketing? (K4)

(Or)

b) How would you consider the cultural differences in the market for a global product? (K5)

19. a) Examine the variables in psychographic Segmentation. (K4)

(Or)

b) Evaluate the role of opinion leadership in shaping consumer perceptions. (K5)

Compulsory – Case Study

20. A certain store was keeping a number of brands of washing machines. They had washing machines to cater to the needs of all the segments of the society. They were stocking IFB, Videocon, BPL, National, Godrej, and local made washing machines as well. They had automatic, semi-automatic and manual machines. The automatic machines were bought by the higher income group. The middle income group was content with semi-automatic machines. Manual hand operated machines were for the lower class of clientele, and also those living in the rural areas, where electrification was not complete, or the electricity went off for days together. It was observed that when customers came to buy an automatic machine, they usually came with their spouses and they looked mainly at the colour, style of functioning, electric consumption, care for handling, price factors, etc. Many customers would not buy on their first visit. They would come back after an interval of time, and purchase the machine after careful considerations of the attributes that they were. looking for. Many would lower their choice, and come back to buy semi-automatic, instead of automatic machines. The sale was observed to be highest during marriage seasons and at festival times. There was a great influence of the housewives in buying these, as they were the ultimate users. With a lot of information imparted by the media, and the children being exposed to it for several hours, in a day, they

services, including display, SEM, SEO, direct marketing, coupons, etc. to reach an increasingly online audience.

• building and continuing to enhance a strong online mobile brand presence, reaching number three in the marketplace after Google and Facebook in France. This tactic allows the firm to spend less than before on driving traffic to its sites (search engine marketing).

• leveraging analytics heavily to analyze audience traffic and patterns, to quantify for each advertising client the value and impact of products they purchase and to help clients optimize media spending. Pages Jaunes' approach built on an already strong brand, a strong network of salespeople who had existing relationships with SME clients, strong investments in content and therefore the ability to partner (vs. compete) with major search engines like Bing and Google, and with major content sources like Facebook. Within two years of this strategic shift, Pages Jaunes earned €1billion from online sales at a 50 percent net margin. Online business comprised about 50-60 percent of its total business, and the firm was well-positioned to reach its goal of 75-80 percent online business within two years.

How do you coordinate investments and activities? What is the best organizational model to coordinate digital initiatives in parallel to the business? (K6)

Reg No. :_____

Course Code: 21PBDET410

MBA Degree Examination – November 2024

(For the candidates admitted during the year 2021-2022 and 2022-2023 only)

Business Administration

Fourth Semester

Elective: Digital Finance

Time: 3 Hours Maximum marks: 50

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. What are the advantages of starting a bank from scratch? (K1)
   a) Greater flexibility in business model and product offerings
   b) Established reputation and brand recognition
   c) Access to a large customer base
   d) Reduced regulatory scrutiny
2. What are some of the key drivers of fintech evolution? (K1)
   a) Increased availability of digital technology
   b) Changes in consumer behaviour and expectations
   c) Advancements in artificial intelligence and machine learning
   d) All of the above
3. How do crypto currencies work? (K1)
   a) They are stored on a physical server owned by a central authority
   b) They are exchanged directly between users without the need for intermediaries
   c) They are backed by a physical commodity like gold or silver
   d) They are subject to government regulation and oversight

4. What is a mobile wallet? (K1)

a) A physical wallet that can be worn around the neck

b) An online wallet that stores digital currencies

c) A digital wallet that stores payment card information and enables mobile payments

d) A type of wallet that is designed to be used exclusively for online shopping

5. What is digital finance? (K1)

a) The use of digital technologies to provide financial services

b) The process of digitizing physical currency

c) The use of digital currencies to conduct financial transactions

d) The use of digital tools to manage personal finances

6. What are the different types of crowd funding? (K1)

a) Reward-based, donation-based, equity-based, and debt-based

b) Direct-to-consumer, peer-to-peer, and business-to-business

c) Traditional, alternative, and social lending

d) All of the above

7. What are the different types of AI? (K1)

a) Reactive machines, limited memory, theory of mind, and self-aware

b) Supervised learning, unsupervised learning, and reinforcement learning

c) Machine learning, deep learning, and neural networks

d) All of the above

Pages Jaunes' strategy aimed to accelerate the transformation of the business from having roughly 30 percent of its business online to 75-80 percent in 3-4 years. Elements of the transformation included:

• restructuring the organization into an SME-facing Advertising group and two consumer-facing -media groups, focused on Internet & print respectively. A second CIO was recruited to lead developments around new digital technology while keeping the first CIO in charge of the existing, and still critical, IT systems.

• recognizing the value of the relationships built over many years between the firm's salesforce and its thousands of clients. The firm committed to keeping as many salespeople as possible and helping them to learn to sell the firm's new services.

• substantial effort to change the culture of an erstwhile state-owned company by recruiting new tech-savvy employees and by instituting KPIs to retain focus on attention and performance.

• educating clients (SMEs) about how digital possibilities could impact their own business and drive revenues, without losing sight of that portion of its clients' customers who continue to rely on the print channel, building content strength online by creating and managing websites for more than 100,000 SMEs in France and Spain. The firm is experimenting with social media possibilities, 3D applications, and focusing on various other

Compulsory- Case Study

20. PAGES JAUNES: CAPITALIZING ON DIGITAL OPPORTUNITIES

Historically the market leader in local advertising based on printed directories, Pages Jaunes began to experience a digitally-induced change in its markets. Individuals looking for business providers were increasingly shifting from paper directories to alternative digital channels in their search for information. Facing a 10 percent annual decline in business as its clients (typically SMEs) switched their advertising spend, Pages Jaunes saw little opportunity for growth in the business of printed directories. Although Pages Jaunes had some significant online activity by 2009, they needed to quickly grow their online presence to counter the decline of the printed directory business, as well as the global economic and financial turmoil. New CEO Jean-Pierre Remy convinced the organization to re-envision its business. Pages Jaunes was not just a provider of directories, but was a trusted name in the relationship business. It disseminated local information to end-users (consumers) and provided local communications services to advertisers. The firm held only a 10 percent share of its newly-envisioned market, providing scope for growth. With this new vision, the company started to identify new client needs and rapidly capture opportunities to extend its relationship brokering role from paper to the Internet.

8. What is RegTech? (K1)

a) A type of financial technology focused on regulatory compliance

b) A type of crowd funding platform for regulatory agencies

c) A type of digital wallet used for government-issued IDs

d) A type of block chain technology used for secure document sharing

9. What are some examples of data protection measures? (K1)

a) Access controls, encryption, and data backup

b) Data analysis, data mining, and data visualization

c) Data storage, data retrieval, and data archiving

d) All of the above

10. What is the purpose of GDPR? (K1)

a) To harmonize data protection laws across the European Union

b) To give individuals more control over their personal data

c) To require organizations to implement appropriate security measures

d) All of the above

SECTION – B (5 X 3 = 15 Marks)

Answer ALL Questions

11. a) Illustrate some of the key technologies that have enabled the growth of fintech. (K2)

(Or)

b) Illustrate some of the key trends shaping the growth of bank start-ups in emerging markets. (K3)

12. a) List some of the potential risks associated with digital payments, and how have regulations evolved to address these risks? (K2)

(Or)

b) Explainblock chain, and how does it work? (K3)

13. a) Explain how can entrepreneurs and investors ensure that they are engaging in safe and ethical crowd funding practices? (K2)

(Or)

b) List some of the most common types of alternative finance. (K3)

14. a) List some of the key challenges facing the current financial infrastructure. (K2)

(Or)

b) List some of the potential benefits of using AI in smart regulation. (K3)

15. a) Explain data protection and why is it important for individuals. (K2)

(Or)

b) Illustrate the potential risks of not implementing proper data protection methods. (K3)

SECTION – C (5 X 5 = 25 Marks)
Answer ALL Questions

16. a) Discuss how can investors identify promising bank start-up opportunities in emerging markets, and what factors should they consider for potential investments. (K4)

(Or)

b) Evaluate how mobile wallets impacted the financial industry, and what are some of the potential benefits and risks associated with their use. (K5)

17. a) List some of the earliest examples of digital financial innovation, and how did they differ from traditional financial practices. (K4)

(Or)

b) List some of the key benefits of using AI for fraud detection, and how do they compare to traditional methods. (K5)

18. a) Evaluate how has GDPR impacted the way that consumers view and engage with companies that collect and process their personal data, and what steps can companies take to build trust and transparency in their data management practices. (K4)

(Or)

b) List some of the different types of banking cards, and how do they work. (K5)

19. a) Discuss the current trends in data analysis in the finance industry. (K4)

(Or)

b) Discuss the future developments and advancements planned for UPI. (K5)

Retailer's demand	Probability
1000 pairs	0.6
3000 pairs	0.3
5000 pairs	0.1

(i) Compute the conditional monetary and expected monetary values.

(ii) Compute the expected profit with a perfect predicting device.

(iii) Compute the EVPI (K4)

(Or)

b) Amar company is currently working with a process which after paying for materials, labour, etc., brings a profit of Rs.12,000. The following alternatives are made available to the company:

(i) The company can conduct research (R_1) which is expected to cost Rs.10,000 having 90% chance of success. If it proves a success,the company gets a gross income of Rs.25,000.

(ii) The company can conduct research (R_2) which is expected to cost Rs. 8,000 having a probability of 60% success, the gross income will be Rs. 25,000.

(iii) The company can pay Rs.6,000 as royalty for a new process which will bring a gross income Rs.20,000

(iv) The company continues the correct process

Because of limited resources, it is assumed that only one of the two types of research can be carried out at a time.

Use decision tree analysis to locate the optimal strategy for the company. (K5)

Compulsory – Case Study

20. A project consists of a series of tasks labelled A, B, … H, I with the following relationships. (K6)

With this notation construct the network diagram having the following constraints:

A<D, E; B, D<F; C<G; B, G<H; F, G<I

Find also the minimum time of completion of the project, when the time of completion of each task is as follows:

Task	A	B	C	D	E	F	G	H	I
Time	23	8	20	16	24	18	19	4	10

Reg. No.: _____

Course Code: 23PBDCT205

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Second Semester

Core: Quantitative Techniques

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Operations Research is a _____ approach to problems. (K1)
   a) Scientific b) Systematic c) Theoretic d) Common

2. A constraint in a LPP is expressed as_____. (K1)
   a) A relation with = sign b) An Inequality with ≥ sign
   c) An Inequality with ≤ sign d) Any of these

3. The solution to a transportation problem with m-sources and n-destination is feasible, if the numbers of allocations are_____.
   a) m+n-1 b) m+n+1 c) m+n d) m x n (K1)

4. The transportation problem is balanced, if _____. (K1)
   a) total demand = total supply and no.of sources = no.of destinations
   b) total demand = total supply irrespective of the no.of sources and destinations
   c) no.of sources = no.of destinations
   d) none of the routes is prohibited

5. Service rate in queueing theory follows the _____distribution.
   a) Poisson b) Exponential c) Normal d) Binomial (K1)

6. An _____is a task or item of work to be done that consumes time, effort, money or other resources. (K1)
   a) Activity b) Dummy Activity
   c) Network d) Event

7. The decision- makers knowledge and experience may influence the decision-making process when using the criterion of _____. (K1)

a) realism b) maximin c) maximax d) minimax regret

8. The minimun expected opportunity loss (EOL) is equal to (K1)

a) EMV b) EVPI c) minimum regret d) both b) and c)

9. Analytical results are taken into consideration before a simulation study so as to_____. (K1)

a) determine the optimum solution

b) identify suitable values of the system parameters

c) identify suitable values of decision variables for the specific choices of the system parameters

d) all of the above

10. In Monte-Carlo simulation_____. (K1)

a) randomness is the key requirement

b) the model of deterministic nature

c) random numbers can be used to generate the value of input variables only, if the sampled distribution is uniform

d) None of the above

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Write the steps in the Mathematical formulation of an L.P.P. (K4)

(Or)

b) A farm is engaged in breeding pigs. The pigs are fed on various products grown on the farm. In view of the need to ensure certain nutrient constituents (call them X, Y and Z), it is necessary to buy two additional products, say, A and B. One unit of product A contains 36 units of X, 3 units of Y and 20 units of Z One unit of product B contains 6 units of X, 12 units of Y and 10 units of Z The minimum requirement of X, Y and Z is 108 units, 36 units and 100 units respectively. Product A costs Rs. 20 per unit and product B Rs. 40 per unit. Formulate the above as a linear programming problem. (K5)

decrease in this average time would cost clinic Rs.10 per patient treated. How much would have to be budgeted by the clinic to decrease the average size of the queue from $1\frac{1}{3}$ patients to ½ a patient. (K5)

(Or)

b) A project is consists of eight activities with the following relevant information (K4)

(i) Draw the PERT network and find out the expected project completion time.

(ii) What duration will have 95% confidence for project completion?

(iii) If the average duration for activity F increases to 14 days, what will be its effect on the expected project completion time which will have 95% confidence?"

(For standard normal Z = 1.645, area under the standard normal curve from 0 to Z is 0.45)

Activity	Immediate Predecessor	Estimatedduration(days)		
		Optimistic	Mostlikely	Pessimistic
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D,E	3	6	15
H	F,G	1	2	3

19. a) A Wholesaler of sports goods has an opportunity to buy 5000 pairs of skiis that have been declared surplus by the government. The wholesaler will pay Rs. 50 per pair and can obtain Rs. 100 a pair by selling skiis to retailers. The price is well-established, but the wholesaler is in doubt as to just how many pairs he will be able to sell. Any skiis left over, he can sell to discount outlets at Rs.20 a pair. After a careful consideration of the historical data, the wholesaler assigns probabilities to the demand as follows:

17. a) Find the starting solution in the following transportation problem by Vogel's Approximation Method. Also obtain the optimum solution by using the best starting solution: (K5)

	D_1	D_2	D_3	D_4	Supply
S_1	3	7	6	4	5
S_2	2	4	3	2	2
S_3	4	3	8	5	3
Demand	3	3	2	2	

(Or)

b) ABC limited has three production shops supplying a product to five warehouses. The cost of production varies from shop to shop and cost of transportation from one shop to a warehouse also varies. Each shop has a specific production capacity and each warehouse has certain amount of requirement. T costs of transportation are as given below: (K5)

Shop	I	II	II	IV	V	Supply
A	6	4	4	7	5	100
B	5	6	7	4	8	125
C	3	4	6	3	4	175
Demand	6	8	8	10	70	400

The cost of manufacture of the product at different production shops is:

Shop	Variable cost	Fixed cost
A	14	7000
B	16	4000
C	15	5000

Find the optimum quantity to be supplied from each shop to different warehouses at minimum total cost.

18. a) On an average 96 patients per 24-hour day require the service of an emergency clinic. Also on an average, a patient requires 10 minutes of active attention. Assume that the facility can handle only one emergency at a time. Suppose that it costs the clinic Rs.100 per patient treated to obtain an average servicing time of 10 minutes, and that each minute of

12. a) Obtain an initial basic feasible solution to the following transportation problem using the North-west corner rule: (K4)

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Requirement	200	225	275	250	

(Or)

b) Find the IBFS to the following Transportation problem using Least-Cost Method. (K4)

	D_1	D_2	D_3	D_4	Supply
A	1	2	3	4	6
B	4	3	2	0	8
C	0	2	2	1	10
Required	4	6	8	6	24

13. a) A TV repairman finds that the time spent on his jobs has an Exponential distribution with mean 30 minutes. If he repairs sets in the order in which they come in, and if the arrival of sets is approximately Poisson with an average rate of 10 per 8-hour day, what is repairman's expected idle time each day? How many jobs are ahead of the average set just brought-in? (K5)

(Or)

b) A construction company is preparing a PERT network for laying the foundation of a new art museum. Given the following set of activities, their predecessor requirements and three time estimates of completion time. (K4)

Activity	Predecessors	Time Estimate (weeks)		
		Optimistic	Pessimistic	Most likely
A	-	2	4	3
B	-	8	8	8
C	A	7	11	9
D	B	6	6	6

E	C	9	11	10
F	C	10	18	14
G	C,D	11	11	11
H	F,G	6	14	10
I	E	4	6	5
J	I	3	5	4
K	H	1	1	1

(i) Draw the PERT network.

(ii) Compute the slack for each activity and determine the critical path.

(iii) The contract specifies a Rs. 5,000 per week penalty for each week the completion of the project extends beyond 37 weeks. What is the probability that this company will have to pay a maximum penalty of Rs. 15,000?

14. a) A businessman has three alternatives open to him, each of which can be followed by any of the four possible events. The conditional payoffs(Rs.) for each action – event combination are given below: (K5)

Alternative	Payoffs conditional on events			
	A	B	C	D
X	8	0	-10	6
Y	-4	12	18	-2
Z	14	6	0	8

Determine which alternative the businessman should choose, if he adopts the Maximin criterion.

(Or)

b) A man has the choice of running either a hot-snack stall or an ice-cream stall at a seaside resort during the summer season. If it is a fairly cool summer, he should make Rs. 5,000 by running the hot-snack stall, but if the summer is quite hot he can only expect to make Rs. 1,000. On the other hand, if he operates the ice-cream stall, his profit is estimated at Rs.6,500 if the summer is hot, but only Rs. 1000 if it is cool. There is 40% chance of the

summer being hot. Should he opt for running the hot-snack stall or the ice-cream stall? Give mathematical argument. (K6)

15. a) Explain the manual method for generation of random numbers. (K5)

(Or)

b) Customers arrive at a milk booth for the required service. Assume that inter-arrival and service times are constant and given by 1.8 and 4 time units, respectively. Simulate the system by hand computations for 14 time units. What is the average waiting time per customer? What is the percentage idle time of the facility? [Assume that the time starts at t=0] (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) A company makes two kinds of leather belts. Belt A is a high-quality belt, and belt B is of lower quality. The respective profits are Rs. 4.00 and Rs. 3.00 per belt. Each belt of type A requires twice as much time as a belt of type B, and if all belts were of type B, the company could make 1000 per day. The supply of leather is sufficient for only 800 belts per day (Both A and B combined). Belt A requires a fancy buckle and only 400 per day are available. There are only 700 buckles a day available for belt B. Determine the optimal product mix. (K5)

(Or)

b) A firm manufactures two types of products A and B and sells them at profit of Rs.3 per unit on product A and Rs. 4 per unit on product B. Each product is processed on two machines M_1 and M_2. Product A requires 1 minute of processing time on M_1 and 2 minutes on M_2. Product B requires 1 minute of processing time on M_1 and 1 minute on M_2. Machine M_1 is available for not more than 7 hours 40 minutes while machine M_2 is available for 10 hours during any working day.Find the number of units of product A and B to be manufactured to get maximum profits. (K4)

Reg. No.: _____

Course Code: 23PBDCT203

M.B.A. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

Second Semester

Core: Financial Management

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The emerging role of Finance Managers in India is _____. (K1)
   a) Limited to financial reporting
   b) Focused only on taxation
   c) Strategic decision-making and value creation
   d) Managing cash flows only

2. _____ is the main consideration in the risk-return relationship in financial management. (K1)
   a) Balancing risk and return
   b) Ignoring risk for higher returns
   c) Minimising risk at any cost
   d) Maximising return without considering risk

3. Which capital budgeting method values cash flows at their present worth? (K1)
   a) Internal Rate of Return b) Payback Period
   c) Return on Investment d) Net Present Value

4. _____ is a limitation of the Accounting Rate of Return method. (K1)
   a) Ignores the time value of money
   b) Difficult to calculate
   c) Provides the absolute measure of profitability
   d) Ignores accounting profits

5. The cost of debt is typically calculated as _____. (K1)
   a) Dividend payout ratio
   b) Average annual profit margin
   c) Interest rate on outstanding debt
   d) Book value of equity per share
6. _____ is the primary consideration in determining the cost of preference shares. (K1)
   a) Face value of the preference shares
   b) Market value of the preference shares
   c) Earnings per share
   d) Dividend paid on preference shares
7. According to the Net Operating Income (NOI) Approach, how does a change in the capital structure affect the overall cost of capital? (K1)
   a) It increases the overall cost of capital
   b) It decreases the overall cost of capital.
   c) It has no effect on the overall cost of capital.
   d) It depends on the size of the firm.
8. Which dividend policy involves paying out a constant percentage of earnings as dividends? (K1)
   a) Stable dividend policy b) Growth dividend policy
   c) Residual dividend policy d) Zero dividend policy
9. What is the primary objective of cash management in abusiness?
   a) Maximize cash inflows (K1)
   b) Minimize cash outflows
   c) Maintain a minimum cash balance
   d) Invest excess cash in long-term securities
10. Working capital essential for a company's operations _____.
   a) To maximize long-term investments (K1)
   b) To meet short-term obligations
   c) To determine the cost of debt
   d) To enhance shareholder value

You are requested to determine the weighted average cost of capital using:

i) Book value as weights and

ii) Market value as weights.

19. a) Critically examine the determinants of Capital structure of a company. (K3)

(Or)

b) Discuss the Dangers of excessive and inadequate working capital. (K3)

Compulsory – Case Study

20. Snow Ltd. Earn a profit after tax of Rs.10,00,000.The company has 1,00,000 shares outstanding and the current market price per share is Rs.80.The earnings are expected to remain stable and the payout is 100%.

(a) Calculate the cost of equity capital.

(b) What will be cost of equity if the shares are issues at aprice of Rs.32 per share and the issue expenses are Rs.2 per share.

(K6)

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the objectives of financial management (K3)

(Or)

b) How does time value of money impact investment and financing decisions? (K3)

12. a) Assess the limitations of payback period method. (K3)

(Or)

b) XYZ Ltd. is proposing to take up a project which will need an investment of Rs.50,000. The net income before depreciation and tax is estimated as follows:

YEAR	1	2	3	4	5
RS.	20,000	24,000	30,000	36,000	40,000

Depreciation is to be charged according to the Straight line method. Tax rate is 50%.

Calculate the Accounting Rate of Return. (K5)

13. a) A company issues 1000 equity shares of Rs.100 each at a premium of 10%. The company has been paying 20% dividend to equity shareholders for the past five years and expects to maintain the same in future also. Compute the cost of equity capital (K5)

(Or)

b) A company raised preference share capital of Rs.5,00,000 by issue of 10% preference shares of Rs.10 each. Calculate the cost of preference share capital when they are issued at (i) 10% premium, and (ii) at 10% discount. (K5)

14. a) Explain the considerations that will help a finance manager in achieving optimum capital structure (K3)

(Or)

b) Describe the need for a stable dividend policy? (K3)

15. a) Write a short note on Gross working capital and Net working capital. (K3)

(Or)

b) Find out the amount of working capital from the following:
Current Assets: Cash in hand Rs. 10,000, Cash at Bank Rs.50,000 , Sundry Debtors Rs.25,000, Stock Rs.80,000
Current Liabilities: Outstanding expenses 7,000, Bills Payable 2,00,000, Sundry Creditors Rs.38,000 (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Examine the challenges and opportunities faced by finance managers in the Indian business environment. (K4)

(Or)

b) Evaluate the factors that influence the choice between short-term and long-term financing. (K5)

17. a) A company proposing to expand its production can go in either for an automatic machine costing Rs.2,24,000 with an estimated life of 5 ½ years or an ordinary machine costing Rs.60,000 having an estimated life of 8 years. The annual sales and costs are estimated as follows.

Particulars	Ordinary Machine Rs.	Automatic Machine Rs.
Sales	1,50,000	1,50,000
Costs: Material	50,000	50,000
Labour	60,000	60,000
Variable Overheads	20,000	20,000

Compute the comparative profitability of the proposals under the pay-back method. Ignore Income tax. (K5)

(Or)

b) Omega company Ltd., is considering the purchase of a new machine. Two alternative machines (A and B) have been suggested, each having and initial cost of Rs.4,00,000 and

requiring Rs.20,000 as additional working capital at the end of 1st year. Earnings after taxation are expected to be as follows.

	Cash Inflows	
Year	Machine – A Rs.	Machine – B Rs.
1	40,000	1,20,000
2	1,20,000	1,60,000
3	1,60,000	2,00,000
4	2,40,000	1,20,000
5	1,60,000	80,000

The company has a target of return on capital of 10% and on this basis, you are required to compare the profitability of the machines and state which alternative you consider financially preferable.

Note: The following table gives the present value of Re.1 due in 'n' number of years: (K5)

YEAR	1	2	3	4	5
PVF @ 10%	0.91	0.83	0.75	0.68	0.62

18. a) Identify and discuss the factors that can significantly influence the cost of capital for a company operating in a dynamic business environment (K4)

(Or)

b) Following are the details regarding the capital structure of a company: (K5)

Type of capital	Book value	Market value	Specific cost
Debentures	40,000	38,000	5%
Preference Capital	10,000	11,000	8%
Equity Capital	60,000	1,20,000	13%
Retained Earnings	20,000	----	9%

Trade Creditors	42000	39000	Stock	55000	72000
Bank Over Draft	35000	25000	Land & Building	80000	100000
Outstanding Expenses	5000	6000	Furniture	15000	10000
	195000	230000		195000	230000

19. a) prepare Marginal cost statement from the following particulars (K4)

		Rs.
Variable cost:	Direct materials	4500
	Direct Wages	2500
	Factory Overhaead	1500
		8500
Fixed Cost:	Administrative Exp	1250
	Total Cost	9750
	Profit	5250
	Sales	15000

(Or)

b) Calculate Break Even Point from the following: (K5)

	Rs.
Fixed expenses	1,50,000
Variable cost per unit	10
Selling Price per unit	15

Compulsory – Case Study

20. A Company is considering its expansion. Fixed costs amount to Rs.4,20,000 and are expected to increase by Rs.1,25,000 when plant expansion is completed. The present plant capacity is 80,000 units a year. Capacity will increase by 50% with the expansion. Variable coasts,currently Rs.6.80 per unit, are expected to go down by Rs.0.40 per unit with the expansion. The current selling price is Rs. 16 per unit and is expected to remain the same under each alternative.

Question: a) What are the BEP under each alternative? (K6)
b) Which alternative is better?

Reg.No:_____

Course Code: 23PBDCT104

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Accounting for Managers

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is NOT a type of accounting? (K1)
   a) Financial accounting b) Managerial accounting
   c) Cost accounting d) Consumer accounting
2. IFRS stands for_____. (K1)
   a) International Financial Reporting Standards
   b) International Financial Regulatory Standards
   c) International Fiscal Reporting Standards
   d) International Fiscal Regulatory Standards
3. Which ratio measures a company's ability to pay its short-term obligations? (K1)
   a) Current Ratio b) Debt to Equity Ratio
   c) Return on Equity d) Price to Earnings Ratio
4. What is the main purpose of financial statement analysis? (K1)
   a) To create financial statements
   b) To understand the financial health of a company
   c) To audit the financial statements
   d) To pay dividends
5. What is the primary purpose of a fund flow statement? (K1)
   a) To show changes in cash position
   b) To highlight the sources and uses of funds

c) To measure profitability
d) To show changes in equity

6. Cash Flow Statement deals primarily with_____. (K1)
a) Cash transactions only
b) All types of financial transactions
c) Long-term financial changes
d) Equity changes

7. A cost sheet is primarily used to_____. (K1)
a) Record all financial transactions
b) Determine the cost of a product
c) Track inventory levels
d) Calculate net profit

8. The break-even point is the level of sales at which_____. (K1)
a) Total revenue equals total costs
b) Total revenue exceeds total costs
c) Total revenue is less than total costs
d) Profit is maximized

9. A budget is a financial plan that helps in_____. (K1)
a) Auditing
b) Forecasting future expenses and revenues
c) Recording daily transactions
d) Preparing tax returns

10. Which of the following budgets focuses on cash inflows and outflows to ensure sufficient liquidity? (K1)
a) Sales Budget b) Production Budget
c) Cash Budget d) Capital Expenditure Budget

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss the Accounting Concepts. (K2)

(Or)

b) Explain the specimen of Balance sheet. (K3)

Particulars	Rs	Particulars	Rs
Stock	60000	Sundry Creditors	20000
Sundry Debtors	70000	Bills Payable	15000
Cash Balance	20000	Tax Payable	18000
Bills Receivable	30000	Outstanding expenses	7000
Prepaid expenses	10000	Bank overdraft	25000
Land & Building	100000	Debentures	75000
Goodwill	50000		

18. a) From the following particulars prepare Cash Flow Statement: (K4)

Particulars	1st Jan 2023 Rs.	31st Dec 2023 Rs.
Cash	5,000	4,000
Debtors	40,000	45,000
Stock	30,000	25,000
Land	30,000	40,000
Building	50,000	55,000
Machinery	70,000	80,000
	2,25,000	2,49,000
Current Liabilities	35,000	40,000
Loan from Mrs.Sudha	0	25,000
bank Loan	40,000	30,000
Capital	1,50,000	1,54,000
	2,25,000	2,49,000

(Or)

b) From the following Balance sheet of Mr. A, prepare a Schedule of Changes in Working Capital. (K5)

Liabilities	2021 Rs.	2022 Rs.	Assets	2021 Rs.	2022 Rs
Capital	63000	100000	cash	15000	20000
Long term Borrowings	50000	60000	Debtors	30000	28000

Adjustments:

i) Closing stock on, 31st December, 2016 was Rs. 4,500

ii) Manager is entitled to receive commission @ 5% of net profit .

(Or)

b) Given below are the balances extracted from the books of Nagarajan as on 31st March, 2016. (K5)

Particulars	Rs.	Particulars	Rs.
Purchases	10,000	Sales	15,100
Wages	600	Commission	1,900
Freight inwards	750	received	600
Advertisement	500	Rent received	2,400
Carriage outwards	400	Creditors	5,000
Cash	1,200	Capital	
Machinery	8,000		
Debtors	2,250		
Bills receivable	300		
Stock on 1st Janurary,2016	1,000		
	25,000		25,000

Prepare the trading and profit and loss account for the year ended 31st March, 2016 and the balance sheet as on that date after adjusting the following:

i) Commission received in advance Rs. 400

ii) Advertisement paid in advance Rs. 150

iii) Wages outstanding Rs. 200

iv) Closing stock on 31st March 2016, Rs. 2,100

17. a) The following information is given to you

i) Current ratio 2.5 ,

ii) working capital Rs.90,000

Find out Current Asset and Current Liabilities. (K4)

(Or)

b) calculate Current ratio from the following information: (K5)

12. a) Calculate Gross Profit ratio

Total Sales Rs.5,20,000, Sales Return Rs.20,000, Cost Of Goods Sold Rs.4,00,000. (K2)

(Or)

b) 12.b. The Cost of Goods Sold of ESP Limited is Rs.5, 00,000. The Opening stock / inventory is Rs.40, 000 and the closing inventory is Rs.60, 000. Find out Inventory Turnover ratio. (K3)

13. a) BM Company presents the following information. You are required to calculate Funds From Operation: (K2)

Profit and Loss Account			
Particulars	Rs.	Particulars	Rs.
Expenses		Gross Profit	2,00,000
Operation	1,00,000	Gain on sale of plant	20,000
Depreciation	40,000		
Loss on sale of building	10,000		
Advertisement suspence a/c	5,000		
Discount allowed	500		
Discount on issue of shares	500		
Goodwill	12000		
Net Profit	52000		
	2,20,000		2,20,000

(Or)

b) Calculate cash flow from operating activities from the following information: (K3)

Particulars	2013 (Rs)	2014 (Rs)
Bills Receivable	20,000	25,000
Debtors	1,00,000	80,000
Outstanding Expenses	16,000	2,000
Creditors	50,000	40,000
Accured Income	12,000	14,000

Bills Payable	80,000	50,000
Profit made during the year	1,00,000	3,60,000

14. a) Determine the amount of fixed expenses from the following Particulars. (K2)

Particulars	Amount (Rs)
Sales	25,000
Direct material	80,000
Direct Labour	50,000
Variable overhead	20,000
Profit	60,000

(Or)

b) Calculate Breakeven Point: (K3)

Particulars	Amount (Rs)
Sales	6,00,000
Fixed Expenses	1,50,000
Variable Costs	
Direct Material	2,00,000
Direct labour	1,20,000
Other Variable Expenses	80,000

15. a) Prepare a production budget for 3 months ending 31st March 2022 for a factory producing four products on the basis of the following: (K2)

Type of Product	Estimated stock on 1st Jan 2022(Units)	Estimated sales during Jan – March 2022 (Units)	Desired closing stock 31st March 2022 (Units)
A	2000	10000	5000
B	3000	15000	4000
C	4000	13000	3000
D	5000	12000	2000

(Or)

b) From the following particulars prepare a cash Budget for the month June 2021

a) Expected Sales:

April 2,00,000
May 2,20,000
June 1,90,000

Credit allowed to customers is two months and 50% of the sale of every month is on cash basis.

b) Estimated Purchases:

May 1,20,000
June 1,10,000

The purchase of every month is on cash basis and the balance is payable in next months

c) Rs.2000 is payable as rent every month
d) Time lag in payment of overhead is ½ month
e) Depreciation for the year is Rs.12000
f) Interest receivable on investment during June & December Rs.3000 each
g) Tax payable during April 2021 is Rs.10000
h) Estimated cash balance as on 01.06.2021 is Rs.42500. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) From the following balances obtained from the books of Siva, prepare trading and profit and loss account. (K4)

Particulars	Rs.	Particulars	Rs.
Stock on 01.01.2016	9,000	Bad debts	1,200
Purchases	22,000	Sundry expenses	1,800
Sales	42,000	Discount allowed	1,700
Expenses on purchases	1,500	Expenses on sale	1,000
Bank charges paid	3,500	Repairs on office furniture	600

Reg.No:_____

Course Code: 23PBDCT105

M.B.A. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Business Administration

First Semester

Core: Quantitative Methods

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Diagrams are for _____. (K1)

   a) The use of exports b) Better quantitative picture

   c) Better mental appeal d) None of these

2.. Bar diagrams are _____ dimensional diagrams. (K1)

   a) 1 b) 2 c) 3 d) Multi

3. Which of the following is the most unstable average? (K1)

   a) Mode b) Median

   c) Geometric Mean d) Harmonic Mean

4. When an observation in the data is zero, then its geometric mean is_____. (K1)

   a) Negative b) zero c) Positive d) Cannot be determined

5. The range of the data 41, 11, 14, 65, 73, 64, 53, 35, 71, 55. (K1)

   a) 59 b) 60 c) 61 d) 62

6. The appropriate measure whenever the extreme items are to be disregarded and when the distribution contains indefinite classes at the end is_____. (K1)

   a) Median b) Mode

   c) Quartile deviation d) None of these

7. The coefficient of correlation is independent of_____. (K1)

a) Change of scale only b) Change of origin only

c) Both a and b d) Neither a nor b

8. When r is zero the regression lines cut each other making an angle of_____. (K1)

a) 30 b) 60 c) 90 d) None of these

9. If one wants to measure changes in total monetary worth, then the right choice should be_____. (K1)

a) A quantity index b) A price index

c) A value index d) None of these

10. The trend is linear if_____. (K1)

a) The growth rate is constant b) Rate of growth is positive

c) Growth is not constant d) None of these

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the role of statistics in economics. (K2)

(Or)

b) Explain briefly about the functions of statistics. (K3)

12. a) Calculate the mean from the following data: (K2)

Value	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50	Less than 60	Less than 70	Less than 80
Frequency	4	10	15	25	30	35	45	65

(Or)

b) Find out the geometric mean: (K3)

Value	7.5-10.5	10.5-13.5	13.5-16.5	16.5-19.5	19.5-22.5	22.5-25.5	25.5-28.5
Frequency	5	9	19	23	7	4	1

13. a) Explain the purpose of measuring variation. (K2)

(Or)

b) Calculate the semi inter quartile range and quartile coefficient from the following. (K3)

Age	20	30	40	50	60	70	80
No. of Members	3	61	132	153	140	51	3

14. a) Explain the types of correlation in detail. (K2)

(Or)

b) Given $b_{xy} = 0.85Y$, $b_{yx} = 0.89X$ and $\sigma_x = 3$, calculate the Correlation coefficient and standard deviation of y. (K3)

15. a) Write briefly about the characteristic of index numbers. (K2)

(Or)

b) Compute a price index for the following by

(a) simple aggregate method and

(b) average of price relative method by using both arithmetic mean and geometric mean. (K3)

Commodity	A	H	C	D	E	F
Price in 2005	20	30	10	25	40	50
Price in 2006	25	30	15	35	45	55

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Represent by a percentage bar diagram the following data on investment for the first and second five-year plans: (K4)

Item	First five-year plan	Second five-year plan
Agriculture	357	768
Irrigation	492	990
Industry	261	909

Transport	654	1485
Social services	306	945
Miscellaneous	90	300

(Or)

b) The following table gives the average yearly profits for 580 companies. (K5)

Yearly Profits	80-85	85-90	90-95	95-100	100-105	105-110	110-115	115-120
No. of Comps.	21	29	19	39	43	94	73	68
		120-125	125-130	130-135	135-140	140-145	145-150	150-155
		36	45	27	48	21	12	5

Draw less than and more than methods for the given data. Also find the number of companies whose yearly profits lie between Rs. 118 and Rs. 148.

17. a) Calculate the mode from the following series: (K4)

Size	0 – 5	5 – 10	10 - 15	15 - 20	20 – 25	25 - 30	30 – 35	35 – 40	40 – 45
Freq.	20	24	32	28	20	16	34	10	8

(Or)

b) Find the lower quartile, Median, Upper quartile, Decile seven, sixtieth percentile for the following distribution. (K5)

Wages	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	1	3	11	21	43	32	9

18. a) Compute the standard deviation and mean deviation from the following data. (K4)

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	12	17	14	9	7	4

(Or)

b) From the prices of shares X and Y, state which share is more stable in value. (K5)

X	55	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

19. a) Find out the coefficient of correlation in the following: (K4)

Height of Father	65	66	67	67	68	69	71	73
Height of Son	67	68	64	68	72	70	69	70

(Or)

b) Calculate the two regression equations of X on Y and Y on X from the following data: (K5)

Price	10	12	13	12	16	15
Amount	40	38	43	45	37	43

Compulsory – Case Study

20. From the following data calculate price index numbers for 2010 with 2015 as base by

(i) Laspeyre's method (ii) Paasche's method (iii) Fisher's Ideal method (K6)

Commodity	2010		2015	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

technology provides a method to rapidly introduce new genes into animals without cross breeding. It is a powerful technique for studying fundamental problems of mammalian development. Transgenic technology has been developed and found perfect in the laboratory on mice. The three most common gene transfer techniques namely: DNA microinjection, ES-cell mediated and Retrovirus mediated gene transfer are the most important to have enabled to produce transgenic cattle, sheep, goat, pig and other animals. Transgenic animals have the potential of agricultural applications like improved growth rate and carcass composition, improved resistance to disease, increased milk yield, improved wool production and so on. The scientific outlook of right and wrong opinions about transgenic animals is called ethics of transgenic animals. These ethical and animal welfare issues surround transgenic animal technology and be only minimized or avoided through awareness creation about the merit of this technology.

1) Which option does not indicate that humans are benefitted from transgenic animals?
   a) For study of diseases
   b) To determine vaccine safety
   c) To test safety of drugs
   d) To determine the safety of human alpha lactalbumin
2) Which of the following is a r-DNA vaccine?
   a) Cancer b) cystic fibrosis c) Hepatitis B d) Tuberculosis
3) Name the vector which is most commonly used to produce transgenic animals.
   a) Retrovirus b) Ti plasmid c) YAC d) BAC
4) Transgenic animals are
   a) Those animals whose entire genetic makeup is manipulated
   b) Those animals where a foreign gene is not incorporated
   c) Mice
   d) Those animals in which a foreign gene which is beneficial for mankind is incorporated. (K6)

Reg.No:_____

Course Code: 23PBFET107

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Elective: Animal Biotechnology and Nanotechnology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Sodium bicarbonate is added to animal cell culture media to. (K1)
   a) Keep cells stuck to the plastic
   b) Promote the uptake of CO_2 into animal cells
   c) Maintain the correct pH when CO_2 is present
   d) Keep iron soluble
2. Disaggregating of cells can be performed by_____. (K1)
   a) Physical disruption b) Enzymatic digestion
   c) Treating with chelating agents d) All of the above
3. Polyamine oxidase_____. (K1)
   a) Increase the level of polyamines
   b) Promotes cell proliferation in animal tissue culture
   c) Both a and b
   d) Decrease the level of polyamines
4. The technique of organ culture may be divided on the basis of employing_____. (K1)
   a) Solid medium b) Liquid medium
   c) Both a and b d) Semi-solid medium
5. To test the safety of polio vaccine, the organisms used are transgenic_____. (K1)
   a) Mice b) Pigs c) Monkey d) Cattle

6. Transgenic animals are those which have_____. (K1)
a) Foreign DNA in some of its cells
b) Foreign DNA in all its cells
c) Foreign RNA in all its cells
d) DNA and RNA both in the cells

7. Which one of the following is an example for thermal properties of nanostructure? (K1)
a) Melting temperature
b) Absorption and scattering of light
c) Both a and b
d) None of the above

8. Which one of the following methods is used to produce particles of silicon nanoparticles? (K1)
a) Laser ablation method b) Sputtering method
c) Scratching method d) All of the above

9. Which of the following is used for secondary electron detection in SEM? (K1)
a) Geiger Mueller counter b) Everhart – Thornley detector
c) Refractive index detector d) Neutrino detector

10. Which property of nanomaterials make them suitable to be used for elimination of pollutants? (K1)
a) High purity b) Better thermal conductivity
c) Enhanced chemical activity d) Small size

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Write a note on the buffering system for optimum cell culture conditions. (K2)

(Or)

b) Brief on the advantages and disadvantages of serum free media. (K3)

12. a) Explain on metabolic viability assay. (K2)

(Or)

b) Write a note on enzymatic method used in cell culture. (K3)

13. a) Discuss the types of embryo transfer methods. (K2)

(Or)

b) Illustrate and explain the microinjection method. (K3)

14. a) Explain about quantum dots with neat diagram. (K2)

(Or)

b) Listout briefly on the properties of nanomaterials. (K3)

15. a) Narrate on the working of scanning electron microscope with a neat labelled diagram. (K2)

(Or)

b) Outline the applications of nanomaterials in various fields. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize on the infrastructure and equipments for animal cell culture. (K4)

(Or)

b) Write in detail on the animal cell culture media and their types? (K5)

17. a) Describe in detail on cell adhesion and differentiation? (K4)

(Or)

b) Explain in detail on measurement of apoptosis in cell culture technique. (K5)

18. a) Give a detailed account on in vitro fertilization technique with a neat diagram. (K4)

(Or)

b) Detail on the applications of transgenic animals. (K5)

19. a) Discuss on the properties and applications of gold nanoparticles. (K4)

(Or)

b) Summarize the steps involved in nanoparticle synthesis using plant extracts. (K5)

Compulsory – Case Study

20. Animals with manipulated genetic material (carrying recombinant DNA) are known as transgenic animals. Transgenic

Compulsory – Case Study

20. The disease-free or "clean" sweet potato plant materials produced through tissue culture and micropropagation were distributed to 14,500 smallholders in different parts of Ghana. The sweet potato varieties reduced disease pressure and produced yields of 11-15 tonnes per ha. Plantain "seedlings" (2,000) were bought by individuals, non-governmental and religious organizations for field establishment. Banana and plantain hybrid plantlets were also evaluated by 1,000 farmers in Ghana. Reported advantages included 60 percent more, and 30 percent heavier, banana hands and 10 percent thicker plantain plants; better fruit juice was also mentioned.

Discuss the need for Micropropagation and its techniques in Agricultural fields. (K6)

Reg.No:_____

Course Code: 23PBFCT105

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Core: Plant Biochemistry and Biotechnology

Time: 3 Hours Maximum Marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is the terminal cytochrome responsible for the transfer of electrons from oxygen to other molecules? (K1)

a) Cyt a3 b) Cyt b c) Cyt c d) Cyt a1

2 _____ is the chemical formula of chlorophyll. (K1)

a) C45H72MgN4O5 b) C55H72MgN4O5

c) C55H72MnN4O5 d) C45H72MnN4O5

3 _____cycles of Calvin cycle is required to produce 6 molecules of Glucose. (K1)

a) 16 cycles b) 26 cycles c) 36 cycles d) 46 cycles

4 _____ does NOT belongs to the phytochrome gene family.

a) PHY B b) PHY B c) PHY C d) PHY F (K1)

5 _____ is a symbiotic nitrogen fixer. (K1)

a) Glomus b) Azotobacter c) Frankia d) Azolla

6 Glutathione protects cells from oxidants through recycling of _____. (K1)

a) Vitamin C and E b) Vitamin D and E

c) B-Complex vitamin d) Vitamin A and C

7 _____ is the plant part, which is free from the attack of the virus. (K1)

a) Stem b) Root c) Meristem d) Leaves

8 RAPD is a _____. (K1)

a) DNA sequencing based method

b) Restriction digestion based method

c) PCR based method

d) all of these

9 _____ is the shape of icosahedral capsid of virus? (K1)

a) Sphere b) Polyhedron c) Helical d) Shapeless

10 _____bacterium is used in the production of insulin by genetic engineering. (K1)

a) Saccharomyces b) Rhizobium

c) Escherichia d) Mycobacterium

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Distinguish the Photosystem I and II. (K2)

(Or)

b) Summarize the biosynthesis process of carotenoids. (K3)

12. a) List the biochemical changes happening during Senescence. (K2)

(Or)

b) Write note on the C4 cycle. (K3)

13. a) Demonstrate Non-symbiotic nitrogen fixation. (K2)

(Or)

b) Sketch the process of sulphur fixation in plants (K3)

14. a) Write a note on the composition and preparation of media for tissue culture. (K2)

(Or)

b) What are the functions of Molecular markers. (K3)

15. a) List the applications of transgenic plants. (K2)

(Or)

b) Discuss on Biolistics. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elaborate on the ATP synthesis pathway in chloroplast with proper diagram. (K4)

(Or)

b) Sketch the photosynthetic apparatus and explain in detail the various parts. (K5)

17. a) Review the role of phytochromes in the flowering of plants. (K4)

(Or)

b) Outline the biosynthesis and degradation of starch in plants. (K5)

18. a) Comment on the role of glutathione during stress condition. (K4)

(Or)

b) Enumerate the process of nitrogen fixation by Rhizobia. (K5)

19. a) Analyse the nature of plant genome and add a note on the structure development of chloroplast. (K4)

(Or)

b) Comment on Somaclonal variation. (K5)

process involves the cell membrane directly incorporating the exogenous genetic material from its surroundings, which then becomes a permanent part of the host genome. This process can result in the expression of foreign genes in the host organism. Genetic transformation is a change in a cell through which the insertion then integration of the introduced DNA into the host genome happens and the DNA becomes a permanent addition to the genome.

1. What is gene transformation?
   a) A process that involves the replication of DNA within the same organism
   b)The transfer of foreign DNA from one organism to another
   c) A method for deleting genes from a host organism
   d) The natural mutation of DNA in an organism
2. How does the foreign DNA become a part of the host genome during gene transformation?
   a) By being temporarily incorporated into the cell membrane
   b) By directly incorporating the exogenous genetic material into the cell membrane
   c) By being inserted into and integrated into the host genome
   d) By causing the cell to replicate its own DNA
3. What happens to the introduced DNA after it is incorporated into the host cell?
   a) It remains in the cell's cytoplasm
   b) It is degraded by cellular enzymes
   c) It becomes a permanent addition to the host genome
   d) It is expelled from the cell
4. What is the result of gene transformation in a host organism?
   a) The expression of only native genes
   b) The loss of native genes
   c) The expression of foreign genes in the host organism
   d) The disruption of the host's cellular processes. (K6)

Reg. No:_____

Course Code: 23PBFCT303

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biochemistry

Third Semester

Core: Genetic Engineering

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The size of M13 phage vector is _____. (K1)
   a) 3 kb b) 6.4 kb c) 15.4 kb d) 20.4 kb
2. The host bacterium takes up a plasmid in presence of_____. (K1)
   a) Monovalent cations b) Monovalent anions
   c) Divalent cations d) Divalent anions
3. Chemicals used for gene transfer methods include _____.
   a) Poly ethylene glycol b) Calcium chloride (K1)
   c) Dextron d) All of the above
4. The main purpose of probing DNA fragments in colony hybridization is _____. (K1)
   a) To transfer DNA fragments onto a solid support
   b) To bind the DNA fragments to a labeled probe
   c) To identify the colony containing the desired DNA sequence
   d) To amplify the DNA fragments
5. _____ is commonly used for fluorescence in situ hybridization (FISH) applications. (K1)
   a) Biotin-streptavidin labelling
   b) Radioactive labeling
   c) Fluorophore-conjugated nucleotide
   d) Enzyme-linked labelling

6. Northern blotting is performed for_____. (K1)
   a) Determining the size of DNA
   b) Determining the size of RNA
   c) Quantification of RNA
   d) Sequencing of RNA

7. The primary role of molecular markers in gene cloning is_____. (K1)
   a) To identify genetic mutations
   b) To amplify DNA sequences
   c) To track specific DNA sequences
   d) To measure gene expression levels

8. Biopharmaceuticals are _____. (K1)
   a) Drugs derived from living organisms
   b) Drugs derived from isomers
   c) Drugs derived from minerals
   d) Drugs derived from synthetic chemicals

9. _____ method requires the use of X-ray radiation. (K1)
   a) Illumina sequencing b) Sanger sequencing
   c) Maxam-Gilbert sequencing d) Pyrosequencing

10. The process of expression of foreign genes in a plant is called_____. (K1)
   a) Gene expression b) Transgenesis
   c) Genetic transformation d) Cell hybridization

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Describe the basic features of pBR 322. (K2)

(Or)

   b) Write a note on cosmic vectors. (K3)

12. a) Explain insertional inactivation method in brief. (K2)

(Or)

   b) Write an account on recombinant phages. (K3)

13. a) Discuss the different types of nucleic acid probes. (K3)

(Or)

   b) List down any five applications of PCR. (K2)

14. a) Write the significance of antibiotic resistance selectable marker. (K3)

(Or)

   b) Write an account on reporter genes. (K2)

15. a) Define gene therapy. Mention its advantages. (K2)

(Or)

   b) Write a note on human Genome Project. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Enumerate the basic steps involved in gene cloning with a suitable diagram. (K4)

(Or)

   b) Compare the salient features of BAC and YAC. (K5)

17. a) Analyze various methods used for the selection of transformed cells. (K4)

(Or)

   b) Illustrate the construction of genomic library with diagram. (K5)

18. a) Elaborate the principle and techniques of Southern blotting. (K4)

(Or)

   b) Explain the steps involved and applications of DNA fingerprinting. (K5)

19. a) Demonstrate the industrial production of insulin through genetic engineering. (K4)

(Or)

   b) Summarize the cloning and expression of cloned genes in *Bacillus sphaericus*. (K5)

Compulsory- Case Study

20. Gene transformation is a biotechnological process that involves the transfer of foreign DNA from one organism to another. The

19. a) Discuss the production of bioinsecticide from fungi. (K4)

(Or)

b) Compile the sources and uses of citric acid and lactic acid. (K5)

Compulsory- Case Study

20. Industrial production of B_{12} is achieved through fermentation of selected microorganisms. Streptomyces griseus, a bacterium once thought to be a fungus, was the commercial source of vitamin B_{12} for many years. The commercial production of vitamin B12 is mainly achieved through the use of the two major industrial strains, Propionobacterium shermanii and Pseudomonas denitrificans, that involves about 30 enzymatic steps in the biosynthesis of cobalamin and completely replaces chemical synthesis. Vitamin B12 is a nutrient that helps keep your body's blood and nerve cells healthy and helps make DNA, the genetic material in all of your cells. Vitamin B12 also helps prevent megaloblastic anemia, a blood condition that makes people tired and weak.

a) Which microorganism was once thought to be a fungus but was a commercial source of vitamin B12 for many years?

b) What are the two major industrial strains used for the commercial production of vitamin B12?

c) How many enzymatic steps are involved in the biosynthesis of cobalamin during industrial production?

d) What role does vitamin B12 play in the body?

e) Which condition is prevented by vitamin B12? (K6)

Reg. No:_____

Course Code: 23PBFET307

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biochemistry

Third Semester

Elective: Microbial Biochemistry

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is used to grow bacterial culture continuously? (K1)

a) Chemostat b) Hemostat

c) Coulter-Counter d) Turbidostat

2. Which of the following pathway is common for oxidation of carbohydrates, lipids and aminoacids? (K1)

a) Calvin cycle b) Electron transport chain

c) TCA cycle d) Pentose phosphate pathway

3. The fermentation at the industrial level, the microorganism Bacillus is used to form _____. (K1)

a) ethanol b) formic acid

c) acrylic acid d) glycerol

4. Gram-negative bacteria are more resistant to antibiotics due to the presence of? (K1)

a) Thin peptidoglycan wall b) Outer lipopolysaccharide layer

c) Porin proteins d) Teichoic acid

5. Which of the following is the source of vitamin A? (K1)
   a) Streptococcus b) Rhodotorula gracilis
   c) Yeast d) Both a and b

6. The batch culture or fermentation can be used to produce_____. (K1)
   a) Organic acids b) Amino acids
   c) Single Cell Protein d) Antibiotics

7. Which vitamin is important for the formation of red blood cells and the prevention of megaloblastic anemia? (K1)
   a) Vitamin A b) Vitamin B12
   c) Vitamin D d) Vitamin E

8. First bioinsecticide developed on commercial scale was_____. (K1)
   a) Organophosphates b) Quinine
   c) DDT d) Sporeine

9. Which of the following is not an advantage of SCP? (K1)
   a) Used as a protein-rich diet
   b) Reduce environmental pollution
   c) Increase in supply of protein
   d) Increases water pollution

10. What kind of bacteria benefits the most from direct leaching? (K1)
   a) Autotrophs b) Heterotrophs
   c) Chemotrophs d) Chemolithotrophs

SECTION - B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) List the factors affecting bacterial growth. (K2)

(Or)

b) Outline Entner - Doudoroff pathway. (K3)

12. a) Explain lactic acid fermentation and its significance. (K2)

(Or)

b) Illustrate the biosynthesis of unsaturated fatty acid. (K3)

13. a) Sketch the fermenter with its parts and functions. (K2)

(Or)

b) List any five important microbes and its role in industries. (K3)

14. a) Give any five sources and uses of vitamin B12. (K2)

(Or)

b) Sketch the structure of xanthan gum and its non-food functions. (K3)

15. a) Explain the significant role of biofertilizers in modern era. (K2)

(Or)

b) Analyze the role of microbes in oil degradation. (K3)

SECTION - C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Compile the principle and process of fed batch culture with applications. (K4)

(Or)

b) Reframe tricarboxylic acid cycle and its importance. (K5)

17. a) Correlate the role of peptidoglycan and teichoic acid in cell wall. (K4)

(Or)

b) Appraise the oxidation of aromatic hydrocarbons. (K5)

18. a) Compare batch and continuous bioreactors. (K4)

(Or)

b) Assess the solid substrate fermentation and its applications. (K5)

18. a) Explain the types and biological functions of prostaglandins. (K4)

(Or)

b) Discuss the structure and biological significance of stigmasterol. (K5)

19. a) Write any two of the following. (K4)

A. Zinc finger motif

B. Leucine Zipper motif

C. Helix Loop Helix

(Or)

b) Explain the structure and importance of porphyrin. (K5)

Compulsory – Case Study

20. Saturated fats and trans fats tend to have a higher melting point than unsaturated fats. Explain the difference in their physical properties based on their differences in molecular structure. (K6)

Reg.No:_____

Course Code: 23PBFCT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Core: Biopolymers

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Sulfated iduronic acid present in_____. (K1)

a) Heparin b) Hyaluronic acid

c) Dextrin d) Chitin

2. The key element present in cell-wall outer membrane of Gram-Negative Bacteria. (K1)

a) Cellulose b) Mucopeptide

c) Lipopolysaccharide d) Braun lipoprotein

3. Pauling and Corey's studies of the peptide bond showed that_____. (K1)

a) 1° structure of all proteins is similar, although 2° and 3° structure may differ

b) peptide bond structure is extraordinarily complex

c) peptide bonds in proteins are unusual and unlike those like in small model compounds

d) peptide bonds are essentially planer with no rotation about the C-N axis

4. The structure of hemoglobin can be altered due to_____. (K1)

a) Binding of oxygen b) low affinity

c) High affinity d) Histidine residues

5. The most abundant prostaglandin produced in the body. (K1)
a) PGH b) PGF_2 c) $PGF_{2\alpha}$ d) PGE_2

6. The biological role of stigmasterol in plants. (K1)
a) Cell differentiation and proliferation
b) Cell signaling
c) Stabilize the interaction between the phospolipids
d) Key precursor

7. The formation of coiled coil structures in Leucine Zipper motifs as a result of_____. (K1)
a) Disulphide bond formation b) hydrophobic interaction
c) Electrostatic repulsion d) Loop formation

8. The presence of 2'hydoxyl groups in the RNA backbone that prevents RNA from_____. (K1)
a) binding of proteins b) adapting a B-form helix
c) nucleophillic attack d) formation of base triples

9. Secondary glycosides can be derived from primary glycosides by_____. (K1)
a) Addition of one sugar molecule
b) Removal of one sugar molecule
c) Addition of one lipid molecule
d) Removal of one lipid molecule

10. Porphyrins are synthesized in_____. (K1)
a) Cytosol b) Endoplasmic reticulam
c) Cytosol & Mitochondria d) Mitochondria

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Differentiate animal starch and plant starch with structure. (K2)

(Or)

b) Describe the characteristics and importance of lectins. (K3)

12. a) Explain the role of various bonds involved in stabilizing tertiary structure of myoglobin. (K2)

(Or)

b) Outline the super secondary structure of protein. (K3)

13. a) Write the importance of N-acyl glycine and N-arachidonyl serine in animal cell. (K2)

(Or)

b) What are statins? Explain the role of statin drugs in our body. (K3)

14. a) Explain the structure of tRNA and its importance. (K2)

(Or)

b) Write the principle, procedure and application of DNase 1 footprinting. (K3)

15. a) Classify alkaloids and discuss their importance. (K2)

(Or)

b) Explain the biosynthesis of terpenoids. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Discuss the importance of glycoprotein in biological system. (K4)

(Or)

b) Explain the structural characteristics of glycosaminoglycan with examples. (K5)

17. a) Explain Ramachandran plot with illustration. (K4)

(Or)

b) Describe different methods of isolation and purification of protein. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the step-by-step guide in selecting, designing and finalizing research problem. (K4)

(Or)

b) Describe the main classification of Research designs. (K5)

17. a) Explain in detail the standard layout of well-structured Research paper. (K4)

(Or)

b) What is meant by Shodganga Digital repository of thesis explain how to access it and what are the benefits for Researchers and Scholars? (K5)

18. a) Find the standard deviation and variance for the following data: 10, 12, 8, 14, 16. (K4)

(Or)

b) Define the Quartile deviation, give the formula and how do you calculate the quartilesfor the ungrouped and grouped data. (K5)

19. a) How to perform t test? (K4)

(Or)

b) Find the t-test value for the following two sets of values: 7, 2, 9, 8, 1, 2, 3 and 4. (K5)

Compulsory- Case Study

20. The following table gives the yields of 15 samples of plot under three varieties of seed

A	B	C
20	18	25
21	20	28
23	17	22
16	15	28
20	25	32

Test using analysis of variance whether there is a significant difference in the average yield of seeds. (K6)

Reg. No:_____

Course Code: 23PBFCT305

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biochemistry

Third Semester

Core: Research Methodology and Biostatistics

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which objective is typically associated with descriptive research? (K1)
   a) To develop new theories
   b) To predict future trends
   c) To understand the characteristics of a population or phenomenon
   d) To prove the superiority of one product over another
2. Which quality helps a researcher in effectively analysing data and drawing Conclusions? (K1)
   a) Over-reliance on subjective opinions
   b) Strong bias towards specific outcomes
   c) Critical thinking and analytical skills
   d) Avoidance of feedback from peers
3. Which of the following represents a correct sequence of steps in the process of report Writing? (K1)
   a) Editing, drafting, outlining, revising
   b) Outlining, revising, drafting, editing
   c) Drafting, outlining, revising, editing
   d) Revising, drafting, editing, outlining

4. Which of the following is an ethical concern in publishing academic or research work? (K1)
   a) Self-plagiarism
   b) Increasing the impact factor
   c) Limiting peer reviews
   d) Publishing in multiple journals simultaneously
5. Find the arithmetic mean of the numbers 7, 13, 18, and 22. (K1)
   a) 15 b) 17 c) 16 d) 19
6. What is the primary purpose of using rank correlation? (K1)
   a) To measure the difference in means between two groups
   b) To determine the variance of two datasets
   c) To assess the relationship between the ranks of two variables
   d) To calculate the difference between the maximum and minimum values in a dataset
7. Why is the concept of sampling distribution important in statistics?
   a) It helps in understanding the population distribution (K1)
   b) It provides a framework for making inferences about the population from the Sample data
   c) It is used to calculate the population standard deviation
   d) It is used to collect data from the entire population
8. What happens to the standard error of the mean as the sample size increases? (K1)
   a) It increases b) It decreases
   c) It remains constant d) It becomes negative
9. What type of t-test would be used to compare the mean scores of two independent Groups on a test? (K1)
   a) Paired t-test b) Independent samples t-test
   c) One-sample t-test d) Two-way ANOVA

10. Which type of data is appropriate for analysis using the Chi-Square test? (K1)
    a) Continuous data b) Ordinal data
    c) Categorical data d) Ratio data

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Write a short note on the Significance of research. (K2)

(Or)

b) How does the research design provide a framework for conducting a study? (K3)

12. a) Write a short note on Bibliography. (K2)

(Or)

b) How is the Impact factor of a Journal is calculated? (K3)

13. a) Explain the measures of central tendency mean, median and mode with formula. (K2)

(Or)

b) Find the range and coefficient of range of the following data: 25, 67, 48, 53, 18, 39, 44. (K3)

14. a) Describe the key characteristics of a sampling distribution. (K2)

(Or)

b) Find the standard error of mean of given observations, x= 10, 20,30,40,50. (K3)

15. a) Define t-Test give the formula and also add a note on the calculation steps. (K2)

(Or)

b) What are the uses of the t-Test? (K3)

(Or)

b) Explain the genetic basis, clinical features, and diagnostic methods for sickle cell anemia. (K5)

18. a) Describe the assay method for Gamma-glutamyl transferase and its clinical relevance. (K4)

(Or)

b) Write detailed account on the clinical significance of enzyme markers in myocardial infarction. (K5)

19. a) Explain the process and clinical significance of measuring circulating T3 levels. (K4)

(Or)

b) Discuss the biochemical markers used in liver function tests for hepatitis. (K5)

Compulsory – Case Study

20. David Carter presented with chronic fatigue, muscle aches, and frequent infections. He has a history of type 2 diabetes and hypertension and has been a smoker for 30 years. Laboratory tests and physical examination revealed elevated levels of fasting glucose, high blood pressure, and signs of oxidative stress. His doctor suspected that oxidative free radicals might be contributing to his symptoms and overall health issues.

Questions:

a) What are oxidative free radicals?

b) How do they impact cellular function?

c) What is common biomarker enzymes used to assess oxidative stress in clinical practice? (K6)

Reg.No:_____

Course Code: 23PBFCT301

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

Third Semester

Core: Advanced Clinical Biochemistry

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which condition can be diagnosed by analyzing the composition of CSF? (K1)

a) Hyperglycemia b) Meningitis

c) Hepatitis d) Nephritis

2. What is a common immunological test for pregnancy? (K1)

a) ELISA for HCG b) ESR test

c) CRP test d) RF test

3. Which laboratory finding is typical in patients with thalassemia?

a) Elevated hemoglobin A1c b) Microcytic hypochromic anemia

c) Increased serum ferritin d) Hyperglycemia (K1)

4. Which enzyme deficiency is associated with acute intermittent porphyria? (K1)

a) Uroporphyrinogen decarboxylase

b) Porphobilinogen deaminase

c) Ferrochelatase

d) ALA synthase

5. Alkaline Phosphatase is mainly associated with which organ system? (K1)

a) Nervous System b) Digestive System

c) Hepato Biliary System d) Respiratory System

6. Which enzyme assay is crucial in the diagnosis of muscle diseases? (K1)

a) Gamma-glutamyl transferase

b) Creatine Kinase

c) Lipase

d) Alkaline Phosphatase

7. Which condition is associated with elevated T3 and T4 levels?

a) Hypothyroidism b) Hyperthyroidism (K1)

c) Addison's disease d) Cushing's syndrome

8. Which of the following tests is used to diagnose cirrhosis? (K1)

a) T3 test b) ALT test c) Creatinine test d) Urea test

9. CEA is commonly used as a marker for which type of cancer?

a) Ovarian cancer b) Colon cancer (K1)

c) Skin cancer d) Brain cancer

10. Which of the following is an enzymatic antioxidant? (K1)

a) Vitamin E b) Superoxide Dismutase

c) Beta-carotene d) Ascorbic acid

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe the procedure and importance of skin puncture in clinical biochemistry. (K2)

(Or)

b) Illustrate the clinical significance of the erythrocyte sedimentation rate. (K3)

12. a) Explain the biochemical basis of diabetic ketoacidosis. (K2)

(Or)

b) Write short notes on the clinical manifestations of beta-thalassemia. (K3)

13. a) Discuss the clinical implications of elevated isocitrate dehydrogenase levels. (K2)

(Or)

b) Explain the role of acid phosphatases in cancer diagnosis. (K3)

14. a) Illustrate the formation and clinical implications of renal calculi. (K2)

(Or)

b) Explain the interpretation of thyroid function test results. (K3)

15. a) Discuss the enzymatic function of Catalase in cellular defense mechanisms. (K2)

(Or)

b) Give a note on the role of AFP as a tumor marker in cancer diagnosis. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the different types of anticoagulants used in bloodsample collection and their mechanisms of action. (K4)

(Or)

b) Describe the methods of cerebrospinal fluid (CSF) collection and clinical significance of its analysis in diagnosing neurological conditions. (K5)

17. a) Discuss the pathophysiology, risk factors, and clinical implications of atherosclerosis. (K4)

showed very low certainty evidence on mortality among adults and children. The effects of NSAIDs on the risk for ischemic and haemorrhagic stroke and myocardial infarction in adults with acute respiratory infections are unclear. Most studies report that no severe adverse events occurred, or that only mild or moderate adverse events were observed.

a) What are NslADs?

b) Illustrate the mode of action of NSAIDs.

c) Write the Adverse effect of NSAIDs.

d) Give examples for NSDIDs. (K6)

Reg. No:_____

Course Code: 23PBFCT304

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Biochemistry

Third Semester

Core: Pharmaceutical Biochemistry

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Liquid paraffin is found in_____. (K1)

   a) soil b) plant c) animal d) from rDNA

2. Iron absorption is accelerated by _____. (K1)

   a) glycine b) vitamin-D c) vitamin-C d) calcium

3. The ligand which gives no respons when it bind to receptor is_____. (K1)

   a) agonist b)antagonist c) regulator d) modifier

4. Which of the following drug bind cytoplasmic receptor? (K1)

   a) insulin b) antibiotics c) antacids d) thyroxin

5. Pencillin is an inhibitor of _____synthesis. (K1)

   a) protein b)folate c) cell wall d) DNA

6. Famciclovir is an analogue of_____. (K1)

   a) uridine b) cytidine c) adeninosine d) guanosine

7. Diabetes insipidus is caused by_____. (K1)

   a) vasopressin b) oxytocin c) insulin d) altosterone

8. Find the suitable example of xanthine diuretics_____. (K1)

a) nicotin b)theobromine c) mannitol d)chlorthalidone

9. Which is and universal antitode? (K1)

a) Milk of megnesia b) NaCO3

c) CaCO3 d) activated charcoal

10. Inflammation is caused by_____. (K1)

a) throxine b)prostaglandin

c)immunoglobulin d) tyrosine

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Evident the drug structural activity relationship. (K2)

(Or)

b) Out line the sources and classification of drug. (K3)

12. a) Summarise on the immunological assay of drug efficacy. (K2)

(Or)

b) List the binding forces of drug-receptor interaction. (K3)

13. a) Discuss on the structure and mode of action of acyclovir. (K2)

(Or)

b) Analyse the mode of action of sulfonamide. (K3)

14. a) Explain the mechanism of urine formation and regulation. (K2)

(Or)

b) List the drug induced nephrotoxicities. (K3)

15. a) What are the side effect casued by treatment of inflammation using steroids? Explain. (K2)

(Or)

b) Demonstrate the cause and treatment of Alzheimers's disease. (K3)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elaborate the drug absorption and factors influencing absorption from small intestine. (K4)

(Or)

b) Describe the mechanisms of drug metabolism. (K5)

17. a) Explain the mode of action of GABA and G-protein coupled receptor. (K4)

(Or)

b) Demonstrate the adverse drug reactions. (K5)

18. a) Outline the ctreatment of pulmonary tuberculosis. (K4)

(Or)

b) Illustrate the role of antimetabolites in the treatment of cancer. (K5)

19. a) Explain the role of carbonic anhydrase inhibitors in the diuritic effect. (K4)

(Or)

b) What are thiazide diuritics? Explain their pharmacodynamics. (K5)

Compulsory- Case Study

20. Non-steroidal anti-inflammatory drugs (NSAIDs) are among the most commonly used drugs and have a wide range of uses. NSAIDs include nonselective cyclooxygenase inhibitors as well as selective COX2 inhibitors. A total of 73 studies were included (27 studies in adults, 46 studies in children. All studies were concerned with acute viral respiratory infections or conditions commonly caused by respiratory viruses. The review

19. a) Summarize the various composite biological databases used in bioinformatics. (K4)

(Or)

b) Illustrate the similarity search tools (FASTA and BLAST) with suitable examples. (K5)

Compulsory – Case Study

20. Sequence Similarity Searching is a method of searching sequence databases by using alignment to a query sequence. By statistically assessing how well database and query sequences match one can infer homology and transfer information to the query sequence.Sequence alignment is considered the most essential step in comparing biological sequences. Sequence alignment arranges two or more nucleotide or amino acid sequences to identify regions of similarity between the sequences. These regions of similarity are helpful in understanding the functional, structural, and evolutionary relationships between the sequences.

a) Name the most commonly used Sequence similarity search tools.

b) What type of sequences are been searched in this method?

c) How do you retrieve the sequences used for sequence alignment.

d) Listout the types of sequence alignments. (K6)

Reg.No:_____

Course Code: 23PBFCT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Core: Advanced Bioanalytical Techniques and Bioinformatics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. In chromatography, the stationary phase can be _____ supported on a solid. (K1)

a) Solid or liquid b) Liquid or gas

c) Solid only d) Liquid only

2. The purpose of the gel used in gel electrophoresis is _____. (K1)

a) To provide nutrients for the charged particles

b) To create a barrier between the positive and negative electrodes

c) To slow down the movement of the charged particles

d) To separate the charged particles based on size

3. _____ force is not used in centrifugation. (K1)

a) Electrostatic b) Gravitational

c) Centripetal d) Centrifugal

4. The wavelength range of the UV spectrum is _____. (K1)

a) 100 nm to 500 nm b) 200 nm to 800 nm

c) 300 nm to 1000 nm d) 400 nm to 1600 nm

5. The atomic number is not changed by _____ type of radioactive decay. (K1)

a) Beta b) Gamma c) Alpha d) Delta

6. _____ is used for labeling the cellular entities in the autoradiography technique. (K1)

a) Glycoprotein b) Radioisotope

c) Stereoisomer d) Enantiomer

7. Smith–Waterman first described the algorithm for local sequence alignment in _____. (K1)

a) 1950 b) 1970 c) 1981 d) 1925

8. _____ is a free computational phylogenetics package of programs for inferring evolutionary trees. (K1)

a) PHYLM b) PHYLIP c) PHYLUM d) PAM

9. _____ is used for the prediction of turn, prediction of surface exposure of amino acids and prediction of disulfide bonding in protein structure. (K1)

a) Chou-Fasman method b) Nearest neighbour method

c) Threading method d) Neural network method

10. _____ is used to predict the protein structure without using homolog (or analog). (K1)

a) Ab initio method b) Threading method

c) Homology modeling d) Nearest neighbour method

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Write any five applications of KASPar assay. (K2)

(Or)

b) State the principle and types of flow cytometer. (K3)

12. a) Write a brief account on differential centrifugation. (K2)

(Or)

b) List out any five applications of X-Ray diffraction technique. (K3)

13. a) Summarize the applications of radioactive isotopes in biology. (K2)

(Or)

b) Describe the steps involved in MTT assay. (K3)

14. a) Discuss the scope of Bioinformatics. (K2)

(Or)

b) Write short notes on multiple sequence alignment. (K3)

15. a) Explain Ab initio structure prediction method in brief. (K2)

(Or)

b) Write any five applications of ExPASy in proteomics. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Describe the principle, instrumentation and applications of thin layer chromatography. (K4)

(Or)

b) Explain the steps involved in SDS-PAGE with suitable diagram. (K5)

17. a) Enumerate the instrument design and methods of UV- visible spectrometer. (K4)

(Or)

b) Illustrate the principle and techniques of fluorimeter. (K5)

18. a) Write a detailed account on different types of radioactive decay. (K4)

(Or)

b) Discuss the principle and techniques of scintillation counter. (K5)

Reg.No:_____

Course Code: 23PBFAL311

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

Third Semester

ALC: Industrial Biochemistry

Time: 3 Hours Maximum marks: 100

SECTION – A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	How is Inoculum prepared?	(K1)
2.	Name four industrially important microbes	(K1)
3.	What are monoclonal antibodies.	(K1)
4.	Sketch the process of vaccine development.	(K1)
5.	Retell what is food spoilage.	(K1)
6.	Name any one food preservation technique.	(K1)
7.	Reproduce the applications of proteases.	(K1)
8.	Write the principle behind rDNA technology.	(K1)
9.	What is Biosorption?	(K1)
10.	Define patenting.	(K1)

SECTION – B (5 X 6 = 30Marks)

Answer ALL questions.

11. a)	Distinguish the bioprocess and Chemical process in Fermentation.	(K2)
	(Or)	
b)	How will you isolate the industrially important microbes.	(K3)
12. a)	Sketch the ways by which the mechanism of action of a drug is elucidated.	(K2)

(Or)

b) Narrate the production of Monoclonal antibodies in large quantities. (K3)

13. a) Classify food products based on their constituents. (K2)

(Or)

b) Describe on the toxicity of food particles. (K3)

14. a) What is the purpose of using seed oils in industry. (K2)

(Or)

b) List the applications of the enzyme lipases. (K3)

15. a) Discuss on the hierarchy of Biosafety. (K2)

(Or)

b) Explain the role of microbes in mineral recovery. (K3)

SECTION – C (5 X 10 = 50Marks)
Answer ALL questions.

16. a) Elaborate on the assay of fermented products. (K4)

(Or)

b) Describe the screening methods used in fermentation technology. (K5)

17. a) Discuss on the process of vaccine development. (K4)

(Or)

b) Explain the various phases involved in clinical trials. (K5)

18. a) Comment on the chemical food processing techniques. (K4)

(Or)

b) Write an essay on Food preservation techniques. (K5)

19. a) How are proteins produced by rDNA technology. (K4)

(Or)

b) How enzymes are produced from GEOs. (K5)

20. a) How petroleum byproducts are recovered using microbes. (K4)

(Or)

b) Discuss on the impact of IPR to science and development. (K5)

Compulsory – Case Study

20. The study of the cell cycle focuses on mechanisms that regulate the timing and frequency of DNA duplication and cell division. As a biological concept, the cell cycle is defined as the period between successive divisions of a cell. During this period, the contents of the cell must be accurately replicated. Microscopists had known about cell division for more than one hundred years, but not until the 1950s, through the pioneering work of Alma Howard and Stephen Pelc, did they become aware that DNA replication took place only at a specific phase of the cell cycle and that this phase was clearly separated from mitosis. Howard and Pelc's work in the broad bean, *Vicia faba*, revealed that the cell goes through many discrete phases before and after cell division. From this understanding, scientists then identified the four characteristic phases of the cell cycle.. The study of these phases, the proteins that regulate them, and the complex biochemical interactions that stop or start DNA replication and cell division (cytokinesis) are the primary concerns of cell cycle biologists. (K6)

Questions:

i) Find the phases in cell cycle?

ii) Define Cell cycle.

iii) Which phase of the cell cycle involved in the DNA synthesis ?

iv) Indicate the phases involved in the inter phase nucleus.

Reg.No:_____

Course Code: 23PBFCT104

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Core: Cellular Biochemistry

Time: 3 Hours Maximum Marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The elasticity of red blood cells helps them to _____. (K1)
   a) pass through capillaries easily
   b) absorb oxygen easily
   c) release carbon dioxide easily
   d) move in the veins easily
2. Which of the following molecules affects the mobility of fatty acyl chains in the plasma membrane? (K1)
   a) starch b) glycogen c) cholesterol d) carbohydrates
3. When the amount of water in a cell is higher than the amount of solute in a cell it is _____. (K1)
   a) hypertonic b) hypotonic c) Isotonic d) Concentrated
4. The term MDR1 also referred to as _____. (K1)
   a) p- glycoprotein b) conjugated protein
   c) globular protein d) phospholipid
5. Which of the following feature differentiate cilia from flagella?
   a) Cells are shorter than flagella (K1)
   b) flagella are less in number than cilia
   c) Cilia are distributed throughout the cell surface
   d) All of these

6. Which of the following electron carriers is not able to transfer one electron at a time? (K1)

a) NADH b) Heme c) FAD d) FMN

7. All the following statements about fibronectin are true except _____. (K1)

a) It is glycoprotein

b) It is present in extra cellular matrix

c) It is a triple helix

d) It bind with integrin receptors of cell

8. Protein kinases and phosphatase act by altering _____ of the signaling proteins. (K1)

a) basicity b) conformation c) acidity d) size

9. Which of these processes is not a part of the cell cycle? (K1)

a) Duplication of genome b) Division into daughter cells

c) Synthesis of cell organelles d) Degeneration of centrosome

10. The immortality exhibited by the cancer cells is due to presence of_____. (K1)

a) telomerase b) nuclease c) kinase d) protease

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Compare unit membrane model and fluid mosaic model. (K2)

(Or)

b) Evaluate the role of bacteriorhodopsin. (K3)

12. a) Classify symporters and antiporters. (K2)

(Or)

b) Analyze the physiological role of drug transporters. (K3)

13. a) Sketch the structure of myosin and its physiological role. (K2)

(Or)

b) Explain the structure and functions of striated muscle. (K3)

14. a) Appraise the G protein coupled receptors. (K2)

(Or)

b) Evaluate the molecular interaction of collagen with cell receptors. (K3)

15. a) Outline the types of carcinogens. (K2)

(Or)

b) Explain the role of regulators in apoptosis. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Appraise the structural classification of liposomes and its functions. (K4)

(Or)

b) Evaluate the structure and functions of lipid anchored proteins. (K5)

17. a) Summarize diffusion and its types with biological significance. (K4)

(Or)

b) Evaluate the structure and functions of calcium ion pump. (K5)

18. a) Sketch the electron transport chain. (K4)

(Or)

b) Outline the mechanism of ATP Synthase. (K5)

19. a) Summarize the role of MAP kinases in signaling. (K4)

(Or)

b) Compile the assembly and functions of GAP junctions. (K5)

22/11/2024 (FN)

18. a) Derive steady state enzyme kinetics and add a note on double reciprocal plot. (K4)

(Or)

b) Brief on the allosteric enzymes. (K5)

19. a) Discuss on the role of any two enzymes used in food industry. (K4)

(Or)

b) Elaborate on the role of any two enzymes used in Medical field for diagnosis. (K5)

Compulsory – Case Study

20. Starch is the principal food reserves polysaccharide in the plants kingdom and semi- crystallizes form in consists two hydrolyses enzymes Amylose and Amylopectin at (1-4) and (1-6) glycosidase bonds use in food and drink industries of baking of bread, brewing . (K6)

1) List out the bacteria can involved the production of starch.
2) Name the enzyme involved in glycosidic bond hydrolysis of starch.
3) What types of fermenters used to those enzyme?
4) Find the mineral which stabilization of the enzyme production.

Reg.No:_____

Course Code: 23PBFCT103

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Biochemistry

First Semester

Core: Advanced Enzymology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. _____ is an example of pro-enzyme. (K1)
   a) Pepsinogen b) Trypsin c) Chymotrypsin d) Lysine
2. Which is wrong about the lock-and-key model? (K1)
   a) It is used to describe the binding process
   b) The active site of the enzyme is complementary to the substrate
   c) It demonstrates enzyme-substrate complex
   d) The binding of the substrate produces a conformational change in enzyme
3. _____ enzyme catalyzes the oxidation-reduction reaction.
   a) Transaminase b) Glutamine synthetase (K1)
   c) Phosphofructokinase d) Oxidoreductase
4. Zinc ions bound to apoenzyme part of _____ holoenzyme.
   a) hexokinase b) catalase (K1)
   c) carbonic anhydrase d) pyruvic kinase
5. In competitive inhibition, _____. (K1)
   a) Km is decreased and Vmax is increased
   b) Km is increased and Vmax is increased
   c) Km is decreased and Vmax is normal
   d) Km is increased and Vmax is normal

6. Blocking of enzyme action by blocking its active site is _____.
a) Allosteric inhibition b) Feedback inhibition (K1)
c) Competitive inhibition d) Non-competitive inhibition

7. Fungal cellulase is used in detergents for _____. (K1)
a) washing cotton fabrics b) bleaching fabrics
c) softening water d) liquid preparations

8 Enzyme complex involved in alcoholic fermentation is _____.
a) Lipase b) Invertase c) Zymase d) Amylase (K1)

9 _____ use the principle of heat released or absorbed by a reaction. (K1)
a) Potentiometric biosensor b) Optical biosensors
c) Piezo-electric biosensors d) Calorimetric biosensors

10. _____ is a disadvantage of an immobilized enzyme. (K1)
a) Immobilization allows continuous process
b) Additional cost
c) Increase productivity
d) Loss of activity

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) List out and explain the factors affecting enzyme activity with proper diagram. (K2)

(Or)

b) Describe about isoenzyme with one example. (K3)

12. a) Differentiate the role of coenzymes and cofactors. (K2)

(Or)

b) Discuss on the role of metal ion in mechanism of superoxide dismutase. (K3)

13. a) Explain the concept of Abzyme with an example. (K2)

(Or)

b) Distinguish Competitive and Non competitive inhibtion with an example. (K3)

14. a) What is the role of enzymes in textile industry? (K2)

(Or)

b) Sketch on the purification process of enzymes. (K3)

15. a) What are biosensors? Elaborate on the applications of biosensors. (K2)

(Or)

b) Brief the applications of enzymes used in protein engineering. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Sketch the nature of multi enzyme complex with an example. (K4)

(Or)

b) What is an Active site? How will you investigate the structure of active site. (K5)

17. a) Write an essay on the role of coenzymes with any two examples. (K4)

(Or)

b) Enumerate on the enzyme catalysis process with Chymotrypsin as example. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Compare and contrast the rotational spectra of symmetric top and asymmetric top molecules. Explain the differences in their spectra due to their distinct moments of inertia and symmetry. (K4)

(Or)

b) Explain the concept of a non-rigid rotator and how it differs from a rigid rotator model in rotational spectroscopy? (K5)

17. a) Explain the principle, experimental setup and working of IR spectrophotometer. (K4)

(Or)

b) With a neat block diagram explain the principle, construction and working of FT Raman Spectrometer. (K5)

18. a) State and explain Frank-Condon principle and explain intensity distribution in electronic spectra. (K4)

(Or)

b) Explain the principle, experimental setup and working of Photoelectron spectroscopy. (K5)

19. a) Describe the principle and working of high resolution NMR spectrometer. (K4)

(Or)

b) Explain the principle, experimental setup and working of NQR spectroscopy method. (K5)

Compulsory – Case Study

20. Briefly explain the use of chemical isomer shift in understanding molecular structure Also, discuss magnetic hyperfine splitting. (K6)

Reg.No:_____

Course Code: 23PBMCT103

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

First Semester

Core: Fundamentals of Molecular Spectroscopy

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The vibrations without a center of symmetry are active in_____. (K1)

a) IR but inactive in Raman b) Ramen but active in IR

c) Raman and IR d) None of the above

2. No rotational Raman effect is observed for_____. (K1)

a) Spherical top molecules b) Symmetric top molecules

c) Linear molecules d) Asymmetric top molecules

3. FT Raman spectroscopy using laser operating in near IR region overcomes_____. (K1)

a) Fluorescence

b) Inherently weak scattering by molecules

c) Strong scattering of molecules

d) both (a) and (b)

4. Which of the following cannot be conserved during Raman scattering? (K1)

a) Total Energy b) Momentum

c) Kinetic Energy d) Electronic Energy

5. Which type of electronic transition is primarily responsible for the absorption of ultraviolet and visible light in diatomic molecules? (K1)

a) Vibrational transition b) Rotational transition

c) Electronic transition d) Stretching transition

6. The Franck-Condon principle primarily explains which of the following aspects of electronic spectra? (K1)

a) The energy levels of rotational transitions

b) The intensity distribution of spectral lines

c) The temperature dependence of spectra

d) The shape of the absorption peaks

7. The value of nuclear spin depends upon_____. (K1)

a) Mass number b) Atomic number

c) Both (a) and (b) d) Shielding effect

8. The region in which NQR spectra observed is_____. (K1)

a) RF region b) Microwave region

c) IR region d) Visible region

9. Mossbauer Effect is greater at lower temperatures because it depends on_____. (K1)

a) Recoil free fraction of the total Gamma ray emitting atoms

b) Doppler shift

c) Isomer shift

d) Electron emission

10. Which of the following sensor is used in ESR spectrometer?

a) Hall Effect sensor b) Load cell (K1)

c) Strain gauge d) Bourdon gauge

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss the isotope effect on the rotational spectra of diatomic molecules. (K2)

(Or)

b) Describe the interaction between vibrational and rotational excitations in a diatomic molecule. (K3)

12. a) Write the similarities and differences between IR and Raman spectrum. (K2)

(Or)

b) Discuss the selection rules for infrared spectroscopy in diatomic and polyatomic molecules. (K3)

13. a) Explain the concept of rotational fine structure in electronic spectra. (K2)

(Or)

b) Describe the Deslandres Table and its use in analyzing vibrational band systems. (K3)

14. a) Discuss about the NQR imaging system. (K2)

(Or)

b) Distinguish between spin lattice and spin-spin interaction. (K3)

15. a) Explain the hyperfine structure of ESR spectroscopy. (K2)

(Or)

b) Explain the recoilless emission and absorption in Mossbauer's spectroscopy. (K3)

18. a) With necessary circuit and waveforms describe the operation of a square wave generator. (Astable Multiribrator) (K4)

(Or)

b) Describe the working of a Wien bridge oscillator and obtain the condition for oscillations. (K5)

19. a) Explain JK flip flop with its logic diagram, symbol and truth table. (K4)

(Or)

b) Describe the conversion of flip flops with its suitable diagram and truth table. (K5)

Compulsory – Case Study

20. In what way JK flip-flop overcomes the short fall of R-S flip-flop? Discuss the working of JK and master slave JK flip-flop. (K6)

Reg.No:_____

Course Code: 23PBMCT104

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

First Semester

Core: Analog and Digital Electonics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. A JFET is also called as _____ transistor. (K1)

a) unipolar b) bipolar

c) unijunction d) bijunction

2. A UJT has _____ pn junctions. (K1)

a) one b) two c) three d) four

3. The algebraic difference between the base currents in the inverting and non inverting terminals of an op-amp is called as _____. (K1)

a) Input bias current b) input offset current

c) input offset voltage d) thermal drift

4. In an Op-amp, the slew rate _____ with increase in temperature. (K1)

a) decreases b) increases

c) remains constant d) increases exponentially

5. Which among the following circuit is a regenerative comparator? (K1)

a) Zero crossing detector b) window detector

c) Schmitt Trigger d) phase meter

6. Total phase shift provided by all phase shift networks in RC phase shift oscillator is_____. (K1)

a) 180° b) 60° c) 120° d) 360°

7. When R =0 and S =1, the output of the RS flip flop is _____. (K1)

a) no change b) set c) reset d) forbidden

8. _____ prevents the JK flip flop from racing. (K1)

a) preset b) clear

c) latch d) propagation delay

9. _____ is a group of flip flops that can be used to store a binary number. (K1)

a) counter b) register c) memory d) latch

10. How many flip flops are needed to construct a mod – 32 counter? (K1)

a) 3 b) 4 c) 5 d) 6

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) List down the different parameters of JFET and explain briefly. (K2)

(Or)

b) Distinguish between SCR and TRIAC. (K3)

12. a) Explain the working of an inverting summing amplifier and derive its output voltage. (K2)

(Or)

b) Explain differentiator and show that the output voltage is the derivative of the input voltage. (K3)

13. a) Define comparator and describe the working of a non inverting comparator. (K2)

(Or)

b) Describe the operation of a weighted resistor DAC and derive the expression for output voltage. (K3)

14. a) Construct an RS flip flop using NOR gates and explain it with its truth table. (K2)

(Or)

b) Explain clocked D flip flop with its logic diagram, symbol and truth table. (K3)

15. a) Describe the working of a serial in – parallel out shift register with a neat diagram. (K2)

(Or)

b) Explain the working of an asynchronous counter with necessary diagram. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Describe the characteristics of JFET with necessary diagrams. (K4)

(Or)

b) Explain MOSFET and discuss its types in detail. (K5)

17. a) Draw the circuit of a log amplifier and explain its operation. (K4)

(Or)

b) Explain electronic analog computation using op-amp. (K5)

17. a) Explain the Physical Vapor Deposition method and (PVD) give their advantages and limitations. (K4)

(Or)

b) Describe the key requirements for realizing semiconductor nanostructures. (K5)

18. a) Explain the principle of X-ray diffraction (XRD) and describe how it is used to identify the crystallographic structure of a material? (K4)

(Or)

b) Describe the Transmission Electron Microscopy (TEM) and discuss how it is used to study the internal structure of nanomaterials. (K5)

19. a) Discuss the mechanical properties of carbon nanotubes (CNTs) and describe how these properties enable their use in advanced material applications? (K4)

(Or)

b) Describe the unique structural properties of nanomaterials and their impact on their chemical and physical behavior compared to bulk materials. (K5)

Compulsory – Case Study

20. Write about the mechanical properties of nano materials. Make a genetic comparison of mechanical properties of carbon nanotubes with those of steel. (K6)

Reg.No:_____

Course Code: 23PBMET105

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

First Semester

Elective: Nanoscience and Nanotechnology

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Which of the following is an example of a 1D nanomaterial? (K1)
   a) Nanoparticle b) Nanowire
   c) Nanosheet d) Quantum do
2. The energy levels of electrons in a quantum dot are_____. (K1)
   a) Continuous and unquantized
   b) Discrete and quantized
   c) Only dependent on temperature
   d) The same as in bulk materials
3. By bottom-up synthesis technique involves the transition of a solution into a gel-like network through chemical reactions? (K1)
   a) Physical Vapor Deposition (PVD)
   b) Sol-Gel Synthesis
   c) Lithography
   d) Ball Milling
4. _____ technique is used to create patterns on a substrate using light to define areas where material will be deposited or etched? (K1)
   a) Hydrothermal Growth b) Ion-Beam Lithography
   c) Thin Film Growth d) Photolithography
5. What principle does X-ray diffraction (XRD) rely on? (K1)
   a) Scattering of electrons
   b) Absorption of light
   c) Diffraction of X-rays by crystal planes
   d) Emission of characteristic X-rays

6. _____ type of electrons is most commonly used to generate images in Scanning Electron Microscopy (SEM)? (K1)

a) Backscattered electrons b) Auger electrons

c) Secondary electrons d) Characteristic X-rays

7. Which of the following best describes the unique structural property of nanomaterials? (K1)

a) High bulk density

b) High surface-to-volume ratio

c) Low surface energy

d) Uniform atomic arrangement in bulk materials

8. What phenomenon describes the change in the electronic band gap of nanomaterials with decreasing size? (K1)

a) Superparamagnetism b) Quantum confinement

c) Surface plasmon resonance d) Photoluminescence

9. Which of the following is the primary function of a diode in a circuit? (K1)

a) Amplification b) Voltage Regulation

c) Rectification d) Switching

10. Which of the following devices stores electrical energy through electrostatic means rather than electrochemical? (K1)

a) Battery b) Supercapacitor c) Resistor d) Inductor

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Discuss the difference types of 0D, 1D, 2D, and 3D nanomaterials and provide examples of each. (K2)

(Or)

b) Explain the concept of quantum confinement and discuss its effects on the electronic properties of nanomaterials. (K3)

12. a) Describe the sol-gel synthesis method for producing nanomaterials and its advantages. (K2)

(Or)

b) Explain the principles and applications of Ball Milling as a top-down approach in nanomaterial synthesis. (K3)

13. a) Explain how Energy-Dispersive X-ray (EDX) analysis is used in conjunction with SEM to study the elemental composition of a sample? (K2)

(Or)

b) State the principle and explain Scanning Electron Microscopy (SEM) for studying nanomaterials. (K3)

14. a) Discuss the impact of high surface-to-volume ratio on the chemical reactivity and stability of nanomaterials compared to bulk materials. (K2)

(Or)

b) Describe the phenomenon of superparamagnetism in magnetic nanoparticles and its implications for data storage and biomedical applications. (K3)

15. a) State the principle and write down the operation of a Light Emitting Diode (LED). (K2)

(Or)

b) Explain the principle of operation of a solar cell. Highlight some typical applications of solar cells. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain in detail of Surface Plasmon Resonance (SPR) and its applications in biosensing. Describe how SPR sensors work and their advantages? (K4)

(Or)

b) Discuss the classification of Nanomaterials in detail. (K5)

Reg. No:_____

Course Code: 23PBMAL310

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Physics

Third Semester

ALC: Artificial Intelligence

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	AI is the need of the hour. Justify the statement.	(K1)
2.	What is an AI environment?	(K1)
3.	Define uniform cost search.	(K1)
4.	What is meant by bidirectional search?	(K1)
5.	List the data types in Python.	(K1)
6.	Write the syntax for the print statement in Python.	(K1)
7.	What is the basic RPA?	(K1)
8.	Mention any three programming language is used in RPA.	(K1)
9.	How to debug automation tests?	(K1)
10.	How does one can automatically pull data from a data table?	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Write a brief note on the fundamentals of AI.	(K2)
	(Or)	
b)	Specify the future of the AI.	(K3)
12. a)	Brief the features of Depth-first search.	(K2)

(Or)

b) Give an account on Iterative deepening search. (K3)

13. a) Outline the structure of a Python program. (K2)

(Or)

b) Write a Python program to solve the quadratic equation of the form $ax^2+bx+c=0$. (K3)

14. a) Explicate the fundamentals of RPA. (K2)

(Or)

b) Analyse the importance of RPA and emerging ecosystem. (K3)

15. a) Explain the process of image automation. Give its advantages. (K2)

(Or)

b) Enumerate the concepts of data table in RPA. (K3)

SECTION - C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Give a detailed account on AI tools. (K4)

(Or)

b) (i) Brief the challenges faced by AI. (K5)

(ii) Describe few application domains of AI. (K4)

17. a) Illustrate Breadth- First –Search with necessary algorithm. (K5)

(Or)

b) Describe A* search algorithm. (K4)

18. a) With suitable example explain various types of loops in Python. (K4)

(Or)

b) Explicate the different types of variables and operators used in Python. (K5)

19. a) Bring out the key components of RPA development methodology. (K4)

(Or)

b) Discuss the architecture of RPA. (K5)

20. a) Describe the method of extracting data from a pdf. (K4)

(Or)

b) Establish with an example, how simple automation projects are built. (K5)

Reg. No:_____

Course Code: 23PBMAL309

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Physics

Third Semester

ALC: Physics for Career Examinations

Time: 3 Hours Maximum marks: 100

SECTION - A (10 X 2 = 20 Marks)

Answer ALL questions.

1.	Write the Poisson bracket relation.	(K1)
2.	State Noether's theorem.	(K1)
3.	What is meant by spin orbit coupling?	(K1)
4.	Give the advantages of partial wave analysis.	(K1)
5.	Define Bose- Einstein condensation.	(K1)
6.	Interpret the term "Random Walk".	(K1)
7.	What are retarded potentials?	(K1)
8.	Mention any two essential features of a waveguide.	(K1)
9.	List the characteristics of spectrum of alkali atoms.	(K1)
10.	What is meant by "chemical shift" in NMR?	(K1)

SECTION - B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a)	Write a note on stability analysis.	(K2)
	(Or)	
b)	What is meant by canonical transformation? Illustrate with an example.	(K3)

12. a) Give a brief account on the validity of WKB approximation and its significance. (K3)

(Or)

b) Obtain Dirac relativistic equation for a free particle. (K2)

13. a) Brief the theory of second order phase transitions. (K2)

(Or)

b) Compare the properties para and ferro magnetic materials. (K3)

14. a) Bring out dispersion relation in plasma. (K2)

(Or)

b) How the transmission line support the TEM wave? Explain. (K2)

15. a) State and explain Frank-Condon principle. (K3)

(Or)

b) Discuss the theory of rotational spectra of diatomic molecule. (K3)

SECTION - C (5 X 10 = 50 Marks)
Answer ALL questions.

16. a) Obtain equations of motion in Hamiltonian formalism. (K4)

(Or)

b) Describe Hamilton-Jacobi theory. (K5)

17. a) Drive Klein- Gordon equation. (K4)

(Or)

b) Elaborate semi-classical theory of radiation. (K5)

18. a) Illustrate, how Ising model explains the concept of phase transition? (K4)

(Or)

b) (i) Deduce diffusion equation. (6 marks)

(ii) With a neat diagram, outline the features of Brownian motion. (4 marks) (K5)

19. a) Discuss Lorentz invariance of Maxwell's equation. (K4)

(Or)

b) Deduce the expression for retarded potentials and show that if the charges are stationary and currents are steady, these expression becomes solution of Poisson's equation. (K5)

20. a) Explicate the relativistic corrections for energy levels of hydrogen atom. (K4)

(Or)

b) Explain the following

(i) Nuclear magnetic resonance

(ii) Born – Oppenheimer approximation. (K5)

17. a) Derive the differential equation for a particle undergoing a central force motion and use it to verify Kepler's laws of planetary motion. (K4)

(Or)

b) State and explain modified Hamilton's principle. Deduce Hamilton's equations by using this principle. (K5)

18. a) Determine the values of α and β so that the equations $Q = q^{\alpha}\cos \beta p$ and $P = q^{2}\sin \beta p$ is a canonical transformation. Also find the generating function F_3 for this case. (K4)

(Or)

b) Obtain the solution of Harmonic oscillator problem by Hamilton- Jacobi method. (K5)

19. a) Discuss the vibration of a linear triatomic molecule. (K4)

(Or)

b) Deduce Euler's equation of motion for a rigid body. (K5)

Compulsory – Case Study

20. If a rocket travels with a constant velocity of 0.8 c from the earth to a star 4 light years distance. What will be (i) the time taken for the trip according to estimates made on earth,(ii) the time according to the passenger, (iii) the distance from the earth to a star according to the passenger and (iv) the velocity of the earth and star as measured by a passenger during the trip? (K6)

Reg.No:_____

Course Code: 23PBMCT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

First Semester

Core: Classical Mechanics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. A particle is constrained to move along the inner surface of a fixed hemispherical bowl. The number of degrees of freedom of the particle is_____. (K1)

a) One b) two c) three d) four

2. If the Lagrangian does not depend on time explicitly_____. (K1)

a) the Hamiltonian is constant

b) the Hamiltonian cannot be constant

c) the kinetic energy is constant

d) the potential energy is constant

3. The maximum and minimum velocities of a satellite are v_1 and v_2 respectively. The eccentricity of the orbit of the satellite is given by_____. (K1)

a) $e= v_1/v_2$ b) $e= v_1/v_2$

c) $e= v_1-v_2/v_1+v_2$ d) $e= v_1+v_2/v_1-v_2$

4. Which of the following statement is correct? (K1)

a) In δ-variation, time as well as position coordinates are allowed to vary

b) In Δ-variation, time as well as position coordinates are allowed to vary

c) β-variation does not involve time

d) Δ-variation does not involve time

5. If the generating function has the form F=F (q_k,P_k,t), then. (K1)

a) $p_i = \frac{\partial F}{\partial q_i}, Q_i = \frac{\partial F}{\partial P_i}$ b) $p_k = -\frac{\partial F}{\partial q_k}, Q_k = \frac{\partial F}{\partial P_k}$

c) $p_i = \frac{\partial F}{\partial q_i}, Q_i = -\frac{\partial F}{\partial P_i}$ d) $p_k = -\frac{\partial F}{\partial q_k}, Q_k = -\frac{\partial F}{\partial P_k}$

6. For a one dimensional harmonic oscillator, the representative point in two-dimensional phase space traces_____. (K1)

a) a parabola b) a hyperbola

c) an ellipse d) a straight line

7. An example of stable equilibrium is_____. (K1)

a) An egg standing on one end

b) A pendulum in the rest position

c) A constantly moving spring- mass system

d) A book placed flat anywhere on a table

8. In case of a rigid body, having N particles, the number of degrees of freedom is_____. (K1)

a) N b) 3N c) 3 d) 5N

9. If an object reaches the speed of light, it's length changes to_____. (K1)

a) infinite b) zero

c) double the value d) half the value

10. Space time is defined as_____. (K1)

a) Time required to process unit volume of feed

b) Time required for the reaction to occur

c) Time required to produce unit volume of product

d) Time to process the entire volume of feed entering

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the principle of virtual work and D'Alembert's principle. (K2)

(Or)

b) State and prove the conservation theorem for linear momentum, for a system of N particles. (K3)

12. a) State and prove virial theorem. (K2)

(Or)

b) Deduce Hamilton's principle from D'Alembert's principle. (K3)

13. a) For a canonical transformation, given that, $Q = \sqrt{q^2 + p^2}$ and $F = \frac{1}{2}(q^2 + p^2) + \tan^{-1}(q/p) + \frac{1}{2}qp$. Find P(q, p). (K2)

(Or)

b) What are Lagrange and Poisson brackets? Derive relation between them. (K3)

14. a) Deduce the solution eigen value equation for small oscillations. (K2)

(Or)

b) Deduce equations for principal axes and principal moment of inertia. (K3)

15. a) Write down the postulates of special theory of relativity. (K2)

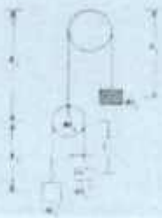
(Or)

b) Derive the Mass-Energy relation. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) A mass m_2 hangs at one end of a string which passes over a fixed frictionless non rotating pulley. At the other end of the string there is a non-rotating pulley of mass 'm' over which there is a string carrying masses m_1' and m_2'. Set up the Lagrangian of the system and find the acceleration of the mass m_2. (K4)



(Or)

b) Derive Lagrange's equation from D'Alembert's principle. (K5)

17. a) Explain how one can grow crystals using gel growth method and mention its types? (K4)

(Or)

b) Write down detailed note on the chemical vapour deposition method with appropriate diagram. (K5)

18. a) Obtain an expression for the homogeneous nucleation using the capillary model. (K4)

(Or)

b) Explain how the properties of a thin film gets affected due to the substrate effect? (K5)

19. a) With a neat sketch, explain the thermal evaporation technique. (K4)

(Or)

b) Determine the measurement of the thickness of film using interfero metric technique. (K5)

Compulsary – Case Study

20. Discuss the Reactive Sputtering deposition method and the main differences of this method over the other sputtering methods. (K6)

Reg.No:_____

Course Code: 23PBMET305

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

Third Semester

Elective: Crystal Growth and Thin Film Physics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The purpose of seed crystal in crystal growth is_____. (K1)

a) Catalyst b) solvent

c) nucleation center d) solution

2. The Gibbs–Thomson equation describes the shift of the _____for a confined fluid with respect to the bulk as a function of pore size. (K1)

a) crystallization temperature b) kinetics

c) energy d) pressure

3. The silica gel used for growing crystals is _____. (K1)

a) silicon dioxide b) sodium silicate

c) zinc acetate d) poly acrylamide

4. The horizontal Bridgman method circular cross-section crystals cannot be obtained because _____. (K1)

a) Seeding crystals is not possible

b) it causes mechanical strains in the crystal

c) the charge has a free surface and does not fill the crucible.

d) it causes differential thermal expansion

5. The nucleation of clusters for large dimensions can be predicted by_____. (K1)

a) Nuclear model b) Atomistic model

c) Capillary model d) static model

6. Dislocation in a film can arise due to_____. (K1)

a) Rotation of two islands

b) multi twinning

c) thermodynamical equilibrium condition

d) non-thermodynamical equilibrium condition

7. The simultaneous deposition process from different sources is known as_____. (K1)

a) Co-evaporation technique b) Co-deposition technique

c) Co-precipitation technique d) volatilization technique

8. Film thickness measurement can be made by _____. (K1)

a) radiation absorption b) electrical absorption

c) chemical reduction d) momentum transfer

9. The low pressure sputtering can be done by the use of radio frequency of the order of_____. (K1)

a) greater than 100 MHz b) 10kHz to 100KHz

c) 100-1000 Hz d) 10-100 Hz

10. The X-ray Photoelectron spectroscopy helps to analyze the semiconductors materials of thickness of about_____. (K1)

a) 50 to 90 Å b) 90 to 120 Å

c) 5 to 25 Å d) 25 to 50 Å

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Compare homogeneous and heterogeneous nucleation. (K2)

(Or)

b) Write briefly about the Gibb's Thomson equation for solution. (K3)

12. a) How to grow the crystals using slow cooling method? Mention its limitations. (K2)

(Or)

b) With a neat sketch brief about czochralski method. (K3)

13. a) Analyze the effects of deposition parameters on growth of the substance on a substrate. (K2)

(Or)

b) Write a note on epitaxial growth on thin film. (K3)

14. a) Discuss the flash evaporation technique for film growth. (K2)

(Or)

b) Determine the thickness of the thin film by means of crystal oscillator. (K3)

15. a) Illustrate the electron beam method with necessary diagram. (K2)

(Or)

b) Write a note on low pressure sputtering. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Elucidate the nucleation process with its theory. (K4)

(Or)

b) Describe the crystal growth mechanism based on Burton, Cabrera, Frank (BCF) theory. (K5)

Reg. No.: _____

Course Code: 23PBMCT203

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

Second Semester

Core: Condensed Matter Physics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. How many number of Bravais lattice structure exist? (K1)

   a) 14 b) 8 c) 16 d) 18

2. Discover the name of the relation which correlates the wave length and inter atomic spacing_____. (K1)

   a) Ohms law b) Braggs law c) Weiss law d) Curie law

3. What is the maximum possible frequency of a travelling wave in one dimensional lattice? (K1)

   a) √(4M/C) b) 4C/M c) √(4C/M) d) 4M/C

4. Predict that the energy levels of lattice vibrations are_____.(K1)

   a) Continuous b) infinite c) zero d) quantized

5. Which of the following relates the electrical and thermal conductivity _____. (K1)

   a) Wiedemann- Franz Law b) Curie-Weiss law

   c) Bardeen-Copper law d) Weiss law

6. Find the area under first. second and third Brillouin zones are_____. (K1)

   a) Infinite b) equal c) independent d) arbitrary

7. Which of the following relates the magnetic susceptibility and temperature_____. (K1)

a) Curie-Weiss law b) Wiedemann- Franz Law

c) Bardeen-Copper law d) Weiss law

8. Estimate the correct material in which the magnetic moments align themselves anti parallel to each other? (K1)

a) Para b) Anti ferro c) Ferro d) Dia

9. How many number of maximum possible polarization occurs?

a) 2 b) 3 c) 4 d) 5 (K1)

10. Predict the name of the dimension that a cooper pair can travel in a superconductor even in the presence of crystal defects. (K1)

a) Wave length b) Interplanar space

c) Interatomic space d) Coherent length

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Obtain Miller Indices for any one of the crystal system. (K3)

(Or)

b) Explain the concept of diffraction of electron. (K4)

12. a) Explain the Brillouin Zones. (K3)

(Or)

b) Outline the Einstein's theory of specific heat. (K4)

13. a) Explain the electrical and thermal conductivity of metals (K3)

(Or)

b) Outline the cyclotron resonance. (K4)

14. a) Explain the paramagnetic susceptibility of solid substance. (K3)

(Or)

b) Write an essay on Anti ferromagnetism. (K4)

15. a) Obtain a Local field at an atom. (K3)

(Or)

b) Write an account on Meissner effect with diagram. (K4)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Summarize the separation in SC, BCC and FCC. (K5)

(Or)

b) Elucidate the experimental method in Xray diffraction. (K6)

17. a) Summarize the inelastic scattering of photons by long wavelength phonons. (K5)

(Or)

b) Propose the Debye's model of specific heat. (K6)

18. a) Corroborate the Sommerfeld model for free electron theory. (K5)

(Or)

b) Explain the De Hass-Van Alphen effect in detail. (K6)

19. a) Reframe the Langevin theory of paramagnetism. (K5)

(Or)

b) Develop Weiss Molecular Field in detail. (K6)

Compulsory – Case Study

20. Discuss the lattice vibrations of a lattice with two atoms per primitive cell. What are optical and acoustical branches? Show that the atoms in optical branch move in opposite direction, while in acoustical branch they move in same direction. (K6)

17. a) Describe the square well potential of a finite barrier of height $V_0(E<V_0)$ and illustrate the wave function in the different regions. (K4)

(Or)

b) Describe the solution of radial equation of spherical polar coordinates of Schrodinger independent wave equation of Hydrogen atom. (K5)

18. a) Describe the effect of electric field on the ground state of Hydrogen. (K4)

(Or)

b) Describe WKB approximation method. (K5)

19. a) Describe the Einstein's A and B Coefficients and find the ratio of spontaneous and stimulated emission. (K4)

(Or)

b) Describe Rayleigh scattering for the atomic system. (K5)

Compulsory - Case Study

20. Calculate the ground state energy of helium atom by variation method and explain the choice of the wave functions. (K6)

Reg. No.: _____

Course Code: 23PBMCT202

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

Second Semester

Core: Quantum Mechanics - I

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. In_____ properties characterizes a linear operator in quantum mechanics. (K1)

a) Non-linearity b) Commutation

c) Hermiticity d) Unitarity

2. In equation of motion, both state vector & operator change with time is called_____. (K1)

a) Schrodinger representation b) Heisenberg representation

c) interaction representation d) Dirac representation

3. Any particle confined in a box must have a certain minimum energy is called _____. (K1)

a) zero point energy b) one point energy

c) two point energy d) three point energy

4. In rigid rotator, $\lambda = l(l+1)$; the energy eigen values are (E_l) (K1)

a) $\frac{l(l+1)\hbar^2}{l}$ b) $\frac{l(l+1)\hbar^2}{2l}$ C) $\frac{l}{l(l+1)\hbar^2}$ d) $\frac{2l}{l(l+1)\hbar^2}$

5. Commutate $[L_y, L_z]$ is_____. (K1)

a) zero b) iL_x c) $i\hbar L_x$ d) $\frac{L_x}{\hbar}$

6. The eigen value of J^2 is_____. (K1)

a) $(j+1)\hbar^2$ b) $-j\hbar$ c) $+j\hbar$ d) $j(j+1)\hbar$

7. The shifting of energy levels produce a splitting of spectral lines is called _____. (K1)

a) spin effect b) Alpha emission

c) Hellmann Feynman theorem d) stark effect

8. Application of WKB approximation is_____. (K1)

a) barrier incident by particles

b) barrier penetration by particles

c) barrier reflection by particles

d) none of these

9. The solution of Fermi's Golden rule is _____. (K1)

a) $\frac{1}{2\pi\hbar}|H'_{kn}|^2\rho(E_k)$ b) $2\pi\hbar|H'_{kn}|^2\rho(E_k)$

c) $\frac{2\pi}{\hbar}|H'_{kn}|^2\rho(E_k)$ d) $\frac{\hbar}{2\pi}|H'_{kn}|^2\rho(E_k)$

10. The allowed electric dipole transitions are those involving a change in parity is_____. (K1)

a) Laporte selection rule b) Rayleigh scattering

c) Raman scattering d) Harmonic scattering

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Show that any two eigen functions of a Hermitian operator belonging to different eigen values are orthogonal. (K2)

(Or)

b) Outline the Dirac's bra and ket notation. (K3)

12. a) Derive the value of Eigen function in square well potential axis. (K2)

(Or)

b) Find the time independent Schrodinger equation of two inter acting particles using Hamiltonian operator. (K3)

13. a) Explain the angular momentum operator in position representation. (K2)

(Or)

b) Show that $[J^2 J_x] = 0$. (K3)

14. a) Calculate the first order correction to the ground state energy of an an harmonic oscillator of mass m and angular frequency ω subjected to a potential. (K2)

(Or)

b) Explain the Hellmanz - Feynman theorem. (K3)

15. a) Derive the Harmonic perturbation of time dependent perturbation theory. (K2)

(Or)

b) Briefly explain about selection rules. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) State and describe the general uncertainty relation. (K4)

(Or)

b) Explain Schrodinger representation. Obtain the time derivative of the expectation value of an observable in it. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Explain the ground state and first excited state of the Helium atom. (K4)

(Or)

b) Derive an expression of Hartree – Fock equation. (K5)

17. a) Obtain the expression of scattering Amplitude using the schrodinger equation for relative motion. (K4)

(Or)

b) Derive an expression for Phase shift. (K5)

18. a) Express the Dirac's equation in a covariant form for a free particle. (K4)

(Or)

b) Describe the small and large components of plane wave solution. (K5)

19. a) State and explain the classical field equation in Hamiltonian form. (K4)

(Or)

b) Describe the Klein Gordon field of quantization. (K5)

Compulsory- Case Study

20. What are creation and annihilation operators?In the state $|n_1, n_2, n_3,.....n_k>$ for a system of bosons, show that

i) $a_k |n_1, n_2, n_3,.....n_k> = \sqrt{n_k}. |n_1, n_2, n_3,.....(n_k-1),...>$

ii) $a_k^+ |n_1, n_2, n_3,.....n_k> = \sqrt{n_k + 1}. |n_1, n_2, n_3,.....(n_k +1),...>$

(K6)

Reg.No:_____

Course Code: 23PBMCT301

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

Third Semester

Core: Quantum Mechanics - II

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Particles can be substituted each other with no change in the physical situation are called _____. (K1)

a) Identical particles b) Distinguishable particles

c) Elemental particles d) Fundamental particles

2. Spin product function $\frac{(\alpha\beta - \beta\alpha)}{\sqrt{2}}$ is_____. (K1)

a) symmetric b) Antisymmetric

c) singlet d) None of these

3. Scattering cross section 1 barn is_____. (K1)

a) 10^{-21} cm^2 b) 10^{-22} cm^2

c) 10^{-23} cm^2 d) 10^{-24} cm^2

4. The concept of scattering length is extensively used to investigate the _____. (K1)

a) scattering of thermal electron

b) scattering of light

c) scattering of thermal neutrons

d) scattering of sound

5. In non-relativistic case, the position of probability density p(r,t) is defined as _____. (K1)

a) $\Psi(r,t)$ b) $\Psi^2(r,t)$ c) $|\Psi(r,t)|$ d) $|\Psi(r,t)|^2$

6. The width of the forbidden gap of two branches E_+ and E_- is_____. (K1)

a) mc^2 b) $2mc^2$ c) $3\ mc^2$ d) $4mc^2$

7. The symbol of annihilation (or) destruction operator for the state 'k' of the field. (K1)

a) a_k b) n_k c) N_k d) A_k

8. Spin 1 – vector field has the relativistic field of _____. (K1)

a) Klein Gordon field b) Dirac field

c)electromagnetic field d) Lagrangian field

9. The abbreviation of LCAO is _____. (K1)

a) Linear Combination of Atomic Orbitals

b) Linear Combination of Antibonding Orbitals

c) Lower Combination of Atomic Orbitals

d) Lower Combination of Antibonding Orbitals

10. The other name of Heitler, London, Slater and Pauling (HSLP) method is_____. (K1)

a) Polar Bond method

b) Molecular Orbital bond method

c) Polar covalent Bond method

d) Valence Bond method

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Explain the Symmetric and Antisymmetric function from unsymmetrized function. (K2)

(Or)

b) Discuss the concept of central field Approximation. (K3)

12. a) Explain in detail about scattering cross section. (K2)

(Or)

b) Derive the scattering formula by screened coulomb potential. (K3)

13. a) Explain how Klein-Gordon equation leads to positive and negative probability density values. (K2)

(Or)

b) Obtain the expression for probability density and probability current density in the Dirac formalism. (K3)

14. a) Find the Lagrangian density of classical field equation. (K2)

(Or)

b) Briefly explain the Quantization of electromagnetic field. (K3)

15. a) Explain the electric configuration of homo nuclear diatomic molecules with three examples. (K2)

(Or)

b) Explain the Huckel MO method. (K3)

18. a) Composea MATLAB script to input a 3x3 matrix and compute its inverse and verify the result by multiplying the matrix and its inverse. (K4)

(Or)

b) Explain about arithmetic, relational & logical operations in MATLAB with an example. (K5)

19. a) Compose a MATLAB script to read a list of numbers from a file, sort them in ascending order, and write the sorted list to a new file. (K4)

(Or)

b) Describe the working of loops and branches in MATLAB. (K5)

Compulsory – Case Study

20. Explain 2D and 3D Plots and also discusstheir differencesin detail. (K6)

Reg.No:_____

Course Code: 23PBMCT304

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

Third Semester

Core: Advanced Computational Physics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Identify the primary purpose of the bisection method in numerical analysis. (K1)
   a) Solving ordinary differential equations
   b) Finding the maximum value of a function
   c) Finding the root of a polynomial equation
   d) Calculating numerical derivatives
2. Select the next iteration x_1 in Newton-Raphson method, if the initial guess is x_0. (K1)
   a) $x_1=x_0+f(x_0)$ b) $x_1= x_0-f(x_0)$
   c) $x_1= x_0-f'(x_0)/f(x_0)$ d) $x_1= x_0+f'(x_0)f(x_0)$
3. Name the numerical integration method which is known as the trapezoidal rule. (K1)
   a) Newton-Cotes formula b) Simpson's one-third rule
   c) Romberg's method d) Gaussian quadrature method
4. Relate the Gaussian quadrature method for numerical integration. (K1)
   a) Using equally spaced points
   b) Providing exact results for polynomials up to 3 degree
   c) Using optimally placed points for higher accuracy
   d) Being a simple midpoint rule extension

5. Identify the MATLAB function used to create a vector of linearly spaced elements. (K1)

a) linspace b) logspace c) meshgrid d) reshape

6. Recognize the command which loads data from a .mat file in MATLAB. (K1)

a) save b) load c) import d) read

7. Tell the statement used to define a script file in MATLAB. (K1)

a) function b) script c) run d) edit

8. Identify the keyword which defines Global variables in MATLAB. (K1)

a) global b) persistent c) static d) shared

9. Select the command to create a 3D surface plot in MATLAB.

a) plot3 b) mesh c) surf d) contour (K1)

10. Name the function which is used to add a title to a plot in MATLAB. (K1)

a) xlabel b) ylabel c) title d) legend

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Solve the given root of the polynomial $f(x)=x^3-4x-9$ in the interval [2, 3] up to three iterations using Bisection Method.(K2)

(Or)

b) Apply the Newton-Raphson method to find the root of the function $f(x)=x^2-2$ starting from $x_0=1.5$. Perform three iterations only. (K3)

12. a) Evaluate the integral of $f(x)=\sin(x)$ from $x=0$ to $x=\pi$ with four equal sub intervals using the trapezoidal rule. (K2)

(Or)

b) Apply Simpson's one-third rule to estimate the integral of $f(x)=e^x$ from x=0 to x=1 using three subintervals. (K3)

13. a) How can you save and load data in MATLAB? (K2)

(Or)

b) Construct a MATLAB function that takes a matrix as input and returns the matrix with each element squared. Include a test case to demonstrate its usage. (K3)

14. a) Discuss the function of script file in MATLAB. (K2)

(Or)

b) Write a MATLAB function file that computes the Fibonacci sequence up to the n^{th} term using recursion. (K3)

15. a) Illustrate a 2D sine wave plot in MATLAB with appropriate labels for the x and y axes. (K2)

(Or)

b) Simulate a 3D mesh plot for the function $z=\sin(x)\cdot\cos(y)$ over the range $x=-\pi$ to π and $y=-\pi$ to π. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Solve the following system of linear equations using the Gauss elimination method: $2x+3y+z=1$; $4x+y+2z=2$; $3x+2y+3z=3$. (K4)

(Or)

b) Solve the initial value problem $dx/dy=x+y$ with $(0)=1$ from $x=0$ to $x=1$ using Euler method with a step size of 0.1. (K5)

17. a) Evaluate the integral of $f(x)=\ln(x)$ from x=1 to x=2. Show the results of the first three steps using Romberg's method. (K4)

(Or)

b) Estimate the integral of $f(x) = e^{(-x2)}$ from x=-1 to x=1 by Gaussian quadrature with two points . (K5)

17. a) Discuss in detail Schmidt orthogonalisation method. (K4)

(Or)

b) State a tensor. Prove that the Kronecker symbol δ_i^k is a tensor where components are the same in the every coordinate system. (K5)

18. a) What is geometric series? Under what conditions a geometric series is convergent, divergent and oscillatory? (K4)

(Or)

b) Determine the convergence by using the cauchy's ratio test. (K5)

(i) $\sum \frac{n}{2^n}$ (ii) $\frac{(x^2+1)^n}{n!}$

19. a) What is an analytic function? Derive necessary and sufficient conditions for a function to be analytic. (K4)

(Or)

b) State and prove Cauchy integral Formula? (K5)

Compulsory – Case Study

20. Find the Taylor series expansion of a function of the complex variables $f(Z) = \frac{1}{(z-1)(Z-3)}$ about the point $z = 4$. Find the region of convergence. (K6)

Reg.No:_____

Course Code: 23PBMCT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Physics

First Semester

Core: Mathematical Physics I

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Green's theorem is useful for changing a line integral around a closed curve C into _____ over the region R enclosed by C. (K1)
   a) Line integral b) volume integral
   c) double integral d) triple integral

2. If ê is a unit vector, $[\nabla.(\hat{e}\times r)\times\hat{e}]$ is_____. (K1)
   a) 1 b) -1 c) 2 d) -2

3. Every set of ortho normal vectors are_____. (K1)
   a) Linearly dependent b) linearly independent
   c) normalized d) scalar inner product

4. A tensor of rank n in 4 dimensional space has_____. (K1)
   a) 2^4 component b) n^4 component
   c) 4^n component d) 2^n component

5. The series $\frac{1}{1^k}+\frac{1}{2^k}+\frac{1}{3^k}+\cdots$ is convergent when_____. (K1)
   a) k >1 b) k =1 c) k = 0 d) k = -1

6. The series $\sum_{n=1}^{\infty}\frac{\cos nx}{n}$ _____. (K1)
   a) Convergent in any interval
   b) oscillatory
   c) divergent
   d) uniformly convergent in interval $(0,\pi)$

7. The function $f(z)= z^3$ with $z = x+iy$ is _____. (K1)

a) At x=0,y=0 only

b) on the line y=1 only

c) In entire z-plane

d) for positive values of x and y only

8. The residue of $\frac{z}{(z-a)(z-b)}$ at infinity is _____. (K1)

a) 0 b) +1 c) -1 d) $\sqrt{ab}$

9. A second order linear differential equation of the form $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + (x^2 - n^2)y = 0$ where n is a constant is called_____.

a) Bessel's differential equation (K1)

b) Laguerre's differential equation

c) Legendre's differential equation

d) Poisson's equation

10. If either P(x) or Q(x) or both tend to infinity of $x=x_0$, then point x_0 is called_____. (K1)

a) Ordinary point b) singular point

c) roots d) variables

SECTION –B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Prove that div curl A = $\Delta.\Delta\times A$? (K2)

(Or)

b) If $x = uv\cos w, y = uv\sin w, z = \frac{1}{2}(u^2 - v^2)$; find h_1,h_2,h_3 and show that $ds^2 = (u^2 + v^2)(du^2 + dv^2) + uvdw^2$. (K3)

12. a) Construct the set of following vectors $u_1 = (1,1,0)$ $u_2 = (-1,1,0)$ $u_3 = (0,0,1)$ show that the vectors an orthogonal set in R^3 with the eucliden inner product. Also construct an ortho normal set from these vectors. (K2)

(Or)

b) Show that $\frac{\partial A_\lambda}{\partial x_\mu}$ is not a tensor although A_λ is a covariant tensor of rank one. (K3)

13. a) Write down the proof for the infinite series, its nature is unaltered by addition or removal of finite number of terms. (K2)

(Or)

b) Test the convergence of the series $x + \frac{x}{3!} + \frac{x}{5!} + \frac{x}{7!} + \cdots$ (K3)

14. a) Determine whether $f(z) = \frac{z}{z+1}, z \neq -1$ satisfies Cauchy Riemann condition. (K2)

(Or)

b) What do you mean by residue of a function? Derive the formula used for finding the residue of a function for the pole of order K. (K3)

15. a) Solve the differential equation $\frac{dy}{dx} + 2xy = 2e^{-x^2}$. (K2)

(Or)

b) Deduce a solution for second order linear differential equations with constant coefficients. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) State Gauss divergence theorem. Also mention its physical significance and proof. (K4)

(Or)

b) For spherical coordinates $x = rsin\theta\, cos\varphi, y = rsin\theta\, sin\varphi, z = rcos\theta$.

(i) Verify the mutual orthogonality of $\frac{\partial r}{\partial r}, \frac{\partial r}{\partial \theta}, \frac{\partial r}{\partial \varphi}$

(ii) Find expressions for $\nabla r, \nabla\theta, \nabla\varphi$ and then show that they constitute a set of vectors reciprocal to $\frac{\partial r}{\partial r}, \frac{\partial r}{\partial \theta}, \frac{\partial r}{\partial \varphi}$. (K5)

SECTION - C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Describe some of the basic rules of probability theory. (K4)

(Or)

b) Obtain the first and second Law thermodynamic of Maxwell relation using the internal energy and Helmholtz function. (K5)

17. a) Explain Maxwell Boltzmann distribution law and obtain an expression for it. (K4)

(Or)

b) Derive an expression for most probable speed, average speed and root mean square speed. (K5)

18. a) Explain Gibbs Paradox and discuss a method to resolve the Gibb's paradox. (K4)

(Or)

b) Describe the perfect gas in micro canonical ensemble and obtain an expression for the entropy satisfying additive property. (K5)

19. a) Derive an expression for density matrix in micro canonical, canonical and grand canonical ensemble. (K4)

(Or)

b) Explain Fermi Dirac statistics and derive Fermi Dirac distribution law. (K5)

Compulsory- Case Study

20. Analyze the process of liquid-vapour equilibrium using Clausius-Clapeyron equation. (K6)

Reg. No:_____

Course Code: 23PBMCT303

M.Sc. Degree Examination - November 2024

(For the candidates admitted during the year 2023- 24 and onwards)

Physics

Third Semester

Core: Statistical Mechanics and Thermodynamics

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The mean square deviation of the variable from its mean value is called as _____. (K1)

a) probability b) standard deviation

c) variance d) fluctuations

2. The first law of thermodynamics in an isochoric process is_____. (K1)

a) $\Delta U = Q-W$ b) $\Delta U = Q$

c) $\Delta U = W$ d) $W = Q$

3. Identical and indistinguishable particles of zero or integral spin were called as ____ particles. (K1)

a) Bose b) Fermi c) Mesons d) Quarks

4. The relation between entropy and probability is _____. (K1)

a) $S = k \log \Omega$ b) $S = k / \log \Omega$

c) $\Omega = k \log S$ d) $\Omega = k / \log S$

5. _____Parameter indicates the distribution of gas molecules among the various energy levels? (K1)

a) entropy b) Helmholtz function

c) Gibbs function d) Partition function

6. The ensemble allows the subsystems, to exchange of energy as well as number of particles with the reservoir is called as _____. (K1)

a) canonical b) micro canonical

c) grand canonical d) fluctuating

7. Fermi Dirac statistics applies to _____. (K1)

a) electrons b) molecules

c) photons d) all the above

8. Planck's radiation law can be derived by using _____ statistics (K1)

a) Maxwell Boltzmann b) Fermi Dirac

c) Bose Einstein d) all the above

9. The point at which the vapour pressure curve abruptly terminates is called as _____. (K1)

a) critical point b) triple point

c) fusion point d) sublimation point

10. ^{3}He obeys _____ statistics. (K1)

a) Maxwell Bolzmann b) Fermi Dirac

c) Bose Einstein d) both (b) and (c)

SECTION - B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Describe Binomial distribution and show that the probability satisfies the normalization condition. (K2)

(Or)

b) Explain zeroth law of thermodynamics and discuss the concept of temperature. (K3)

12. a) Explain density of distribution in the phase space. (K2)

(Or)

b) Write a note on negative temperature. (K3)

13. a) Develop the concept of partition function and obtain the expression for translational partition function for a gas molecule. (K2)

(Or)

b) Compare micro canonical and canonical ensemble. (K3)

14. a) Briefly discuss the quantum statistics of identical particles. (K2)

(Or)

b) Determine the values of α and β using Bose Einstein grand partition function and distribution law. (K3)

15. a) Write down the classification of phase transitions. (K2)

(Or)

b) Explain one dimensional Ising model and obtain the energy of the system. (K3)

6/11/2024 FN

Reg.No:_____

Course Code: 23PBECT301

M.Sc Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Mathematics

Third Semester

Core: Topology

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. If two topologies $\mathcal{T}$ and $\mathcal{T}'$ having the relation $\mathcal{T} \subset \mathcal{T}'$ then_____. (K1)

   a) $\mathcal{T}'$ is strictly finer than $\mathcal{T}$

   b) $\mathcal{T}'$ is finer than $\mathcal{T}$

   c) $\mathcal{T}'$ is strictly coarser than $\mathcal{T}$

   d) $\mathcal{T}'$ is coarser than $\mathcal{T}$

2. The subset [0,1] is a _____ set of Y = [0,1] U (2,3) (K1)

   a) Closed b) Open

   c) Both open and closed d) neither open nor closed

3. Which of the following is correct? (K1)

   a) $\prod A_\alpha = \overline{\prod A_\alpha}$ b) $\prod A_\alpha = \overline{\prod X_\alpha}$

   c) $\prod X_\alpha$ is a Hausdorff space d) None of these

4. If the sets C and D form a separation of X, and if Y is a connected subspace of X, then Y lies entirely within _____. (K1)

   a) C b) D

   c) Either C or D d) Neither C nor D

5. Let f : X → Y be a continuous map of the compact metric space (X, d_X) to the metric space (Y, d_Y). Then f is _____.

a) f^{-1} is continuous (K1)

b) Uniformly continuous

c) Discontinuity of first kind

d) Discontinuity of second kind

6. Which of the following is not a locally compact space? (K1)

a) R b) [a,b] c) R^n d) None of these

7. A space for which every open covering contains a countable sub covering is called as_____. (K1)

a) Separable space b) Lindelof space

c) Regular space d) None of the above

8. Let X be a normal space and let A be a closed subspace of X. Then which of the following is/are true? (K1)

a) Any continuous map of A into the closed interval [a, b] of R may be extended to a continuous map of all of X into [a, b].

b) Any continuous map of A into R may be extended to a continuous map of all of X into R.

c) Both a and b

d) Neither a nor b

9. Stone-Cech compactification is the study of_____. (K1)

a) One point compactification

b) Maximal compactification of a space

c) Minimal compactification of a space

d) None of these

10. Let X be a metric space. If h: X → Y is an isometric imbedding of X into a complete metric space Y , then the subspace _____ of Y is a complete metric space. (K1)

a) A b) Y_1 c) $h(X)$ d) $\overline{h(X)}$

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Let $\mathcal{B}$ and $\mathcal{B}'$ be bases for the topologies $\mathcal{T}$ and $\mathcal{T}'$, respectively, on X. Prove that the following conditions are equivalent.

i) $\mathcal{T}'$ is finer than $\mathcal{T}$

ii) For each $x \in X$ and each basis $B \in \mathcal{B}$ containing x, there exists a basis element $B' \in \mathcal{B}'$ such that $x \in B' \subset B$. (K2)

(Or)

b) Let A be a subset of the topological space X and let A' be the set of all limit points of A. Then prove that $\bar{A} = A \cup A'$. (K3)

12. a) Let $\{X_\alpha\}$ be an indexed family of spaces and let $A_\alpha \subset X_\alpha$ for each α. If $\prod X_\alpha$ is given either the product or the box topology, then prove that $\prod \overline{A_\alpha} = \overline{\prod A_\alpha}$. (K2)

(Or)

b) Prove that a space X is locally connected if and only if for every open set U of X, each component of U is open in X. (K3)

13. a) State and prove Lebesgue number lemma. (K2)

(Or)

b) Let X is a Hausdorff space. Prove that X is locally compact if and only if given x in X, and a neighborhood U of x, there is a neighborhood V of x such that $\bar{V}$ is compact and $\bar{V} \subset U$. (K3)

14. a) Prove every metrizable space is normal. (K2)

(Or)

b) State and prove Imbedding theorem. (K3)

15. a) Let X be a set and let $\mathcal{D}$ be a collection of subsets of S that is maximal with respect to the finite intersection property. Then prove that any finite intersection of elements of $\mathcal{D}$ is an element of $\mathcal{D}$. (K2)

(Or)

b) Prove that the Euclidean space $\mathscr{R}^k$ is complete in either of its usual metrics, the Euclidean metric d or the square metric ρ.(K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Prove the following.

i) If B is a basis for the topology of X and C is a basis for the topology of Y, then the collection D = {B × C | B ∈ B and C ∈ C} is a basis for the topology of X × Y.

ii) If A is a subspace of X and B is a subspace of Y, then the product topology on $A \times B$ is same as the topology $A \times B$ inherits as a subspace of $X \times Y$. (K4)

(Or)

b) Let X and Y be topological spaces and let f: X → Y. Then prove the following are equivalent:

i) f is continuous.

ii) For every subset A of X, one has $f(\bar{A}) \subset \overline{f(A)}$.

iii) For every closed set B of Y , the set $f^{-1}(B)$ is closed in X.

iv) For each x ∈ X and each neighborhood V of f (x), there is a neighborhood U of x such that $f(U) \subset V$. (K5)

17. a) Prove that the topologies on $\mathbb{R}^n$ induced by the Euclidean metric d and the square metric ρ are the same as the product topology on $\mathbb{R}^n$. (K4)

(Or)

b) Prove that it L is a linear continuum in the order topology, then L is connected, and so are intervals and rays in L. (K5)

18. a) Prove that the product of finitely many compact spaces is compact. (K4)

(Or)

b) Let X be a metrizable space. Then prove that the following are equivalent:

i) X is compact. ii) X is limit point compact.

iii) X is sequentially compact. (K5)

19. a) Prove the following

i) A subspace of a Hausdorff space is Hausdorff and a product of Hausdorff spaces is Hausdorff.

ii) A subspace of a regular space is regular and a product of regular spaces is regular. (K4)

(Or)

b) Let X be a normal space; let A and B be disjoint closed subsets of X. Let [a, b] be a closed interval in the real line. Then prove that there exists a continuous map f: X → [a, b] such that f (x) = a for every x in A, and f (x) = b for every x in B. (K5)

Compulsory- Case Study

20. Show that the open unit interval (0,1) with the usual metric $d(x, y) = |x - y|$ is not complete. (K6)

b) Let T be a spanning tree of a connected graph G, and let e be any edge of T. Then prove that

(i) The cotree $\bar{T}$ contains no bond of G.

(ii). $\bar{T} + e$ contains unique bond of G. (K5)

17. a) Prove that $k \leq k'\delta$ (K4)

(Or)

b) A nonempty connected graph is eulerian if and only if it has no vertices of odd degree. (K5)

18. a) If G is simple, then either $X' = \Delta$ or $X' = \Delta + 1$. (K4)

(Or)

b) For any two integers $k \geq 2$ *and* $l \geq 2, r(k,l) \leq r(k,l-1) + r(k-1,l)$ furthermore if $r(k,l-1)$ *and* $r(k-1,l)$ are both even, then strictly holds the inequality. (K5)

19. a) If G is a connected plane graph, then prove that $v - \varepsilon + \phi = 2$ (K4)

(Or)

b) If G is a connected simple graph and is neither an odd cycle nor a complete graph, then prove that $X \leq A$.

Compulsory- Case Study

20. Prove that the following statements are equivalent

i) Every planar graph is 4- vertex colourable.

ii) Every plane graph is 4- face colourable.

iii) Every simple 2-edge connected 3-regular planar graph is 3-edge colourable. (K6)

Reg.No:_____

Course Code: 23PBECT304

M.Sc Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Mathematics

Third Semester

Core: Graph Theory

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. If G is simple, then $\varepsilon \leq$ _____. (K1)

a) $\binom{v}{2}$ b) $\binom{v}{1}$ c) $\binom{v-1}{2}$ d) $\binom{v+}{2}$

2. If G is connected then $\varepsilon \geq$_____. (K1)

a) v-1 b) v+1 c) v d) v+2

3. A connected graph has an Euler trail if and only if it has at most_____. (K1)

a) three vertices of odd-degree

b) two vertices of odd-degree

c) two vertices of even-degree

d) three vertices of even-degree

4. Let G be a simple graph and let u and v be non-adjacent vertices in G such that_____. (K1)

a) $d(u) + d(v) \leq v$ b) $d(u) - d(v) \leq v$

c) $d(u) + d(v) \geq v$ d) $d(u) - d(v) \leq v$

5. G is k-edge-chromatic if_____. (K1)

a) $X' \neq l$ b) $X' = l$ c) $X' \neq$ k d) $X' = k$

6. Which of the following inequality is true. (K1)

a) $r(k,l) \leq \binom{k+l-2}{k-1}$

b) $r(k,l) \geq \binom{k+l-2}{k-1}$

c) $r(k,l) \leq \binom{k+l+2}{k-1}$

d) $r(k,l) \geq \binom{k+l+2}{k-1}$

7. Let G be a k-critical graph with a 2-vertex cut{u,v}, then_____. (K1)

a) d(u)+d(v) = 3k-5 b) d(u)+d(v) ≥ 3k-5

c) d(u)+d(v) ≤ 3k-5 d) d(u)+d(v) <3k-5

8. If G is simple, then $\pi_k(G) =$ _____for any edge e of G. (K1)

a) $\pi_k(G - e) + \pi_k(G \,.\, e)$

b) $\pi_k(G - e) - \pi_k(G \,.\, e)$

c) $\pi_k(G - e) - \pi_k(G + e)$

d) $\pi_k(G + e) - \pi_k(G \,.\, e)$

9. Every planar graph is 4-vertex-colourable which is equivalent to_____. (K1)

a) every planar graph is 4-face-colourable

b) every plane graph is 4-face-colourable

c) every plane graph is 3-face-colourable

d) every planar graph is 3-face-colourable

10. If G is a simple planar graph with $v \geq 3$, then_____. (K1)

a) $\varepsilon \leq 3v + 6$ b) $\varepsilon \leq 2v - 6$

c)$\varepsilon \geq 3v - 6$ d) $\varepsilon \leq 3v - 6$

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Prove that a graph is bipartite if and only if it contains no odd cycle. (K2)

(Or)

b) Show that vertex v of a tree G is a cut vertex of G if and only if d(v) > 1. (K3)

12. a) State and prove Menger's Theorem. (K2)

(Or)

b) If G is hamiltonian then, for every non empty proper subset S of V,$\omega(G - S) \leq |S|$ (K3)

13. a) If G is bipartite then X′ = Δ. (K2)

(Or)

b) If $\delta > 0, then\ \alpha' + \beta' = v.$ (K3)

14. a) In a critical graph, no vertex cut is a clique. (K2)

(Or)

b) If G is 4-chromatic, then G contains a sub division of K_4 (K3)

15. a) Prove that K_5 is nonplanar. (K2)

(Or)

b) Let v be a vertex of a planar graph G. Then G can be embedded in the plane in such a way that v is on the exterior face of the embedding. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) An edge e of G is a cut edge of G if and only if e is contained in no cycle of G. (K4)

(Or)

17. a) Prove that the sequence of functions $\{f_n\}$ defined on E converges uniformly on E if and only if for every $\in > 0$, there exists an integer N such that $m \geq N$, $n \geq N$, $x \in E$ implies$|f_n(x) - f_m(x)| \leq \in$. (K4)

(Or)

b) Suppose $\{f_n\}$ is a sequence of functions, differentiable on $[a,b]$ and such that $\{f_n(x_0)\}$ converges for some point $x_0 on$ [a,b]. If $\{f_n'\}$ converges uniformly on $[a,b]$, then prove that $\{f_n\}$ converges uniformly on $[a,b]$, to a function f and $f_n'(x) = \lim_{n\to\infty} f_n'(x)$. (K5)

18. a) Suppose E is an open set in R^n , f maps E into R^m , f is differentiable at $x_0 \in E$, g maps an open set containing $f(E)$ into R^k and g is differentiable at $f(x_0)$. Then prove that the mapping F of E into R^k defined by $F(x) = g(f(x))$ is differentiable at x_0 and $F'(x_0) = g'(f(x_0))f'(x_0)$. (K4)

(Or)

b) State and prove contraction mapping theorem. (K5)

19. a) Prove that the outer measure of an interval is its length. (K4)

(Or)

b) Let E be a measurable set of finite measure and $< f_n >$ a sequence of measurable functions defined on E. Let F be a real valued function such that for each $x \in E$, $f_n(x) \to f(x)$. Then prove that given $\in > 0$ and $\delta > 0$, there is a measurable set $A \subset E$ with $mA < \delta$ and an integer N such that for all $x \notin A$ and all $n \geq N, |f_n(x) - f(x)| < \in$. (K5)

Compulsory – Case Study

20. Show that outer measure of an empty set and singleton set are zero. (K6)

Reg.No:_____

Course Code: 23PBECT102

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathemetics

First Semester

Core: Real Analysis

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. If $a < s < b$, f is bounded on $[a,b]$, f is continuous at s and $\alpha(x) = I(x-s)$ then $\int_a^b f\, d\alpha =$_____. (K1)

   a) $f(b-a)$ b) $f(s)$ c) $f(a)$ d) $f(a)$

2. A curve γ on $[a,b]$ is said to be closed curve if _____. (K1)

   a) $\gamma(a) = \gamma(b)$ b) $\gamma(a) < \gamma(b)$

   c) $\gamma(a) > \gamma(b)$ d) none of the above

3. Suppose $\lim_{n\to\infty} f_n(x) = f(x)$, put $M_n = \sup_{x\in E}|f_n(x) - f(x)|$ Then $f_n \to f$ uniformly on E if and only if _____. (K1)

   a) $M_n \to \infty$ as $n \to \infty$ b) $M_n \to -\infty$ as $n \to \infty$

   c) $M_n \to 0$ as $n \to \infty$ d) $M_n \to 1$ as $n \to \infty$

4. If f is a continuous complex function on $[a,b]$, there exists a sequence of polynomials P_n such that $\lim_{n\to\infty} P_n(x) = f(x)$ _____. (K1)

   a) not a uniformly on $[a,b]$ b) uniformly on $[a,b]$

   c) point wise on $[a,b]$ d) not a points wise on $[a,b]$

5. Suppose X is a vector space and $\dim X = n$. A set E of n vectors in X spans X if and only if _____. (K1)

   a) E is dependent b) E is independent

   c) E is a basis d) none of these

6. Let X be a metric space, with metric d. A map $\phi: X \to X$ is said to be contraction if _____. (K1)

a) $d(\phi(x),\phi(y)) \leq d(x,y)$ b) $d(\phi(x),\phi(y)) \geq d(x,y)$

c) $d(\phi(x),\phi(y)) \leq c\, d(x,y)$ d) $d(\phi(x),\phi(y)) \geq c\, d(x,y)$

7. If A is countable then $m^*A =$ _____. (K1)

a) 0 b) 1 c) 2 d) 3

8. If E is measurable and $E \subset P$ then _____. (K1)

a) $mE \neq 0$ b) $mE = 0$ c) $mE > 0$ d) $mE < 0$

9. If $f \leq g$ $a.e$ then _____. (K1)

a) $\int_E f \leq \int_E g$ b) $\int_E f \geq \int_E g$

c) $\int_E f = \int_E g$ d) $\int_E f \neq \int_E g$

10. Let f be non negative measurable function. If $\int f = 0$, then _____. (K1)

a) $f > 0$ b) $f < 0$ c) $f = 0$ $a.e$ d) none of the above

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Prove that $\int_{-a}^{b} f\, d\alpha \leq \int_{a}^{-b} f\, d\alpha$. (K2)

(Or)

b) If $f \in \mathcal{R}(\alpha)$ and $g \in \mathcal{R}(\alpha)$ on $[a,b]$ then prove that (i) $fg \in \mathcal{R}(\alpha)$ (ii) $|f| \in \mathcal{R}(\alpha)$ and $\left|\int_a^b f\, d\alpha\right| \leq \int_a^b |f|\, d\alpha$. (K3)

12. a) Suppose K is compact and

(i) $\{f_n\}$ is a sequence of continuous function on K

(ii) $\{f_n\}$ converges pointwise to a continuous function f on K

(iii) $f_n(x) \geq f_{n+1}(x)$ for all $x \in K$, $n = 1,2,3 \ldots$,

then prove that $f_n \to f$ uniformly on K. (K2)

(Or)

b) If $\{f_n\}$ is a pointwise bounded sequence of complex functions on a countable set E then prove that $\{f_n\}$ has a subsequence $\{f_{n_k}\}$ such that $\{f_{n_k}(x)\}$ converges for every $x \in E$. (K3)

13. a) Prove that (i) if $A \in L(R^n, R^m)$ then $\|A\| < \infty$ and A is a uniformly continuous mapping of R^n into R^m (ii) If $A, B \in L(R^n, R^m)$ and c is a scalar then $\|A+B\| \leq \|A\| + \|B\|$, $\|cA\| = |c|\ \|A\|$. (K2)

(Or)

b) Suppose f maps an open set $E \subset R^n$ in to R^m and if f is differentiable at a point $x \in$. Prove that the partial derivatives $(D_j f_i)(x)$ exists, and $f'(x)e_j = \sum (D_j f_i)(x) u_i \quad (1 \leq j \leq n)$. (K3)

14. a) If E_1 and E_2 are measurable then prove that $E_1 \cup E_2$ is measurable. (K2)

(Or)

b) If f is a measurable function and $f = g$ $a.e$, then prove that g is measuralble. (K3)

15. a) Let g be integrable over E and let $< f_n >$ be a sequence of measurable functions such that $|f_n| \leq g$ on E and for almost all x in E, $f(x) = \lim\ f_n(x)$. Then prove that $\int_E f = \lim_E f_n$. (K2)

(Or)

b) State and prove monotone convergence theorem. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Suppose $f \in \mathcal{R}(\alpha)$ on $[a,b]$, $m \leq f \leq M$, ϕ is continuous on $[m,M]$ and $h(x) = \phi(f(x))$ on $[a,b]$ then prove that $h \in \mathcal{R}(\alpha)$ on $[a,b]$. (K4)

(Or)

b) If γ' is continuous on $[a,b]$ then prove that γ is rectifiable, and $\Lambda(\gamma) = \int_a^b |\gamma'(t)| dt$. (K5)

b) Find the third approximation of the solution of the equation $\frac{dy}{dx} = z, \frac{dz}{dx} = x^3(y+z)$ by Picard's method where y=1, z=$\frac{1}{2}$ where x=0. (K5)

17. a) Solve $\frac{dx}{x(x+y)} = \frac{dy}{-y(x+y)} = \frac{dz}{-(x-y)(2x+2y+z)}$. (K4)

(Or)

b) Find the orthogonal trajectories on the cone $x^2 + y^2 = z^2 tan^2\alpha$ of its intersection with the family of planes parallel to z=0. (K5)

18. a) Find the solution of the type $x(t)=a_0 + a_1 t + a_2 t^2 + \cdots = \sum_{k=0}^{\infty} a_k t^k$, t=0 for the equation $t^2 x^{11} - (1+t)x = 0$. (K4)

(Or)

b) Let $A_1, A_2 \ldots$ be the positive zeros of Bessel's function J_P then,

$$\int_0^1 t J_P(A_n(t))dt = \begin{cases} 0 & if\ m \neq n \\ \frac{1}{2} J_{P+1}(A_n)^2, & if\ m = n. \end{cases}$$ (K5)

19. a) Let $A: I \to M_n(\mathbb{R})$ be continuous in t on a closed and bounded interval I. Then there exists a solution to the initial value problem $x^1 = A(t)x, x(t_0) = x_0, (t, t_0 \in I)$ on I and in addition , this solution is unique. (K4)

(Or)

b) A solution matrix Φof $X' = A(t)X, t \in I$ on I is a fundamental matrix of $x^1 = A(t)xt, t \in I$ on I if and only if det $\Phi \neq 0$ for $t \in I$. (K5)

Compulsory – Case Study

20. Find the constant k_1 and compute the first three successive approximation for the following systems on the prescribed interval $\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} e^t & 1 \\ t & e^{-t} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}; \begin{bmatrix} x_1 & (1) \\ x_2 & (1) \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ where $I = [1,4]$ (K6)

Reg.No:_____

Course Code: 23PBECT103

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathemetics

First Semester

Core: Ordinary Differential Equations

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. Identify the n^{th} approximation of Picard's method is_____. (K1)
   a) $y_n(x) = y_0 + \int_{x_0}^{x} f(x, y_{n-1})\, dx$
   b) $y_{n-1}(x) = y_0 + \int_{x_0}^{x} f(x,y)\, dx$
   c) $y_n(x) = y_0 + \int_{x_0}^{x} f(x)\, dx$
   d) $y_n(x) = \int_{x_0}^{x} f(x, y_{n-1})\, dx$

2. Lipschitz condition is_____. (K1)
   a) $|f(x) - f(x,y_1)| \leq k|y_2|$
   b) $|f(x,y_2) - f(x,y_1)| \leq k|y_2 - y_1|$
   c) $|f(x,y_2) - f(x,y_1)| \leq |y_1|$
   d) $|f(x,y_1)| \leq k|y_2 - y_1|$

3. The general solution of $\frac{dx}{x} = \frac{dy}{0} = \frac{dz}{(-x)}$ is _____. (K1)
   a) $y_1 = 2, x^2 + y^2 = 0$ b) $y = c_1, x^2 + z^2 = c_2$
   c) $y = 0, x^2 + y^2 = c_2$ d) $y = c_1, x^2 = c_2$

4. The general solution of $\frac{dx}{-xy^2} = \frac{dy}{y^3} = \frac{dz}{axz}$_____. (K1)
   a) $x = c_1, logz + ax = c_2$ b) $y = c_2, logz = 0$
   c) $xy = c_1, logz + \left(\frac{ax}{3y^2}\right) = c_2$ d) $xy = c_1, \left(\frac{ax}{3y^2}\right) = c_2$

5. Legendre equation is _____. (K1)

a) $(1-t^2)x^{11}=0$

b) $2tx^1+P(P+1)x=0$

c) $(1-t^2)x^{11}-P(P+1)x=0$

d) $(1-t^2)x^{11}-2tx^1+P(P+1)x=0$

6. If n is even then $p_n(-1)$ is _____. (K1)

a) -1 b) 1 c) 0 d) ∞

7. Let $A: I \to M_n(\mathbb{R})$ be a _____ $n \times n$ matrix. (K1)

a) Discontinuous b) Continuous

c) Not Continuous d) None

8. The fundamental matrix of the system x^1 = A (t) x, $\Phi(t=s)$ = _____. (K1)

a) $\Phi(t)+\Phi(s)$ b) $\Phi(t)-(s)$

c) $\Phi(t)\,\Phi(s)$ d) $\Phi(-t)+\Phi(-s)$

9. Identify the non-homogeneous linear system of n equations?

a) $x' = A(t)x + b(t)$ b) $x' = A(t)$ (K1)

c) $x' = b(t)$ d) $x' = A$

10. Define exponential of a given matrix A_____. (K1)

a) $E+\sum_{P=1}^{\infty}\frac{A^P}{P!}$ b) $\sum_{P=1}^{\infty}\frac{A^P}{P!}$

c) $\exp A=\sum_{P=1}^{\infty}\frac{A^P}{P!}$ d) $\exp A=E+\sum_{P=1}^{\infty}\frac{A^P}{P!}$

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Apply Picard's method to solve the following initial value problem upto third approximation: $\frac{dy}{dx}=2y-2x^2-3$ given that y=2 when x=0. (K2)

(Or)

b) Show that $f(x,y)=xy^2$ satisfies the Lipschitz condition on the rectangle $R: |x|\le 1, |y|\le 1$ but does not satisfy a Lipschitz condition on the strip $S|x|\le 1, |y|<\infty$. (K3)

12. a) Solve $\frac{dx}{yz}=\frac{dy}{zx}=\frac{dz}{xy}$. (K2)

(Or)

b) Solve $\frac{dx}{y}=\frac{dy}{x}=\frac{dz}{xyz^2(x^2-y^2)}$. (K3)

13. a) If g is any continuous function of t defined on [-1,1] then g admits on expansion of the form $g(t)=\sum_{n=0}^{\infty}C_nP_n(t)$, $t\in[-1,1]$ where C_n are constants given by $\frac{(2n+1)}{2}\int_{-1}^{1}g(t)P_n(t)\,dt$ n=0,1,2.... (K2)

(Or)

b) If P_n is a Legendre polynomial, then $\int_{-1}^{1}P_n{}^2(t)\,dt=\frac{2}{2n+1}$. (K3)

14. a) The set of all solutions of the system $x^1=A(t)x$ on I forms an n-dimensional vector space over the field of complex numbers. (K2)

(Or)

b) Let $\Phi(t)$, $t\in I$, be a fundamental matrix of the system $x'=Ax$ such that $\Phi(0)=E$ where A is a constant matrix here, E denotes the identity matrix then, Φ satisfies $\Phi(t+s)=\Phi(t)\Phi(s)$ for all values of t and $s\in\mathbb{R}$. (K3)

15. a) Find e^{At} when $A=\begin{bmatrix}0 & 1\\ -1 & 0\end{bmatrix}$. (K2)

(Or)

b) Let f be periodic with period ω. Then a solution x of $x'=Ax+f(t)$, $t\in(-\infty,\infty)$ is periodic of the period ω if and only if $x(0)=x(\omega)$. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) State and prove Picard's theorem for existence and uniqueness. K4)

(Or)

b) Solve the following system of equations using Relaxation method. $9x-y+2z=9;\ x+10y-2z=15;\ 2x-2y-13z=-17.$ (K5)

18. a) Produce $y(0.1)$ & $y(0.2)$ by Runge - Kutta method of 4th order for the following differential equation $\frac{dy}{dx}=xy+y^2, y(0)=1.$ (K4)

(Or)

b) Solve by Adam's method, find $y(4.4)$ given $5xy'+y^2=2;\ y(4)=1,$ $y(4.1)=1.0049,\ y(4.2)=1.0097,$ and $y(4.3)=1.0143.$ (K5)

19. a) Solve by Finite – Difference method. (K4)

$y''=e^{x^2}$ with $y(0)=0, y(1)=0$ and estimate value of $y(x)$ at $x = 0.25, 0.5$ and $0.75.$

(Or)

b) The deflection of a beam is governed by the equation $y^{(IV)}+81y=\varphi(x)$. where

x	1/3	2/3	1
φ(x)	81	162	243

And the boundary condition $y(0)= y'(0)= y''(0)= y'''(0) = 0.$ Evaluate the deflection at the pivotal points of the beam using three sub-intervals. (K5)

Compulsory – Case Study

20. From the following values of x and y, obtain $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1.2.$ (K6)

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0250

Reg.No:_____

Course Code: 23PBECT104

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathematics

First Semester

Core: Numerical Analysis

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The convergence of Newton's method is_____. (K1)
   a) Linear b) Quadratic c) Cubic d) Polynomial
2. If $y(20)=0.3420,\ y(23)=0.3907,\ y(26)=0.4384,\ y(29)=0.4848,$ then tell $\nabla^3 y_n$ is _____. (K1)
   a) -0.0003 b) 0.0003 c) 0.003 d) 0.03
3. Tell inverse of a lower triangular matrix is _____. (K1)
   a) Upper Triangular Matrix b) Diagonal Matrix
   c) Lower Triangular Matrix d) Square Matrix
4. Identify which one of the following is not an iterative method?
   a) Gauss Jacobi b) Gauss Jordan (K1)
   c) Gauss Seidal d) Relaxation Method
5. Identify Euler's method is the _____. (K1)
   a) Runge – Kutta method of first order
   b) Runge – Kutta method of second order
   c) Runge – Kutta method of third order
   d) Runge – Kutta method of fourth order
6. Milne's predictor formula is _____. (K1)
   a) $y_0= y_1+\frac{h}{12}(9f_1+19f_0-5f_{-1}+f_{-2})$
   b) $y_0= y_1+\frac{h}{24}(9f_1+19f_0-5f_{-1}+f_{-2})$
   c) $y_1= y_1+\frac{h}{12}(9f_1+19f_0-5f_{-1}+f_{-2})$
   d) $y_1= y_1+\frac{h}{24}(9f_1+19f_0-5f_{-1}+f_{-2})$

7. Which of the following condition a function y'(x) may be specified in BVP? (K1)
   a) Dirichlet Boundary Condition
   b) Neumann Boundary Condition
   c) Mixed Boundary Condition
   d) Euler Boundary Condition

8. Recognize the accuracy of the Finite – difference method depends on_____. (K1)
   a) Size of the Sub interval b) Order of the Equation
   c) Degree of the equation d) Boundary Conditions

9. Identify the one-dimensional heat equation is _____. (K1)
   a) Parabolic b) Elliptic
   c) Hyperbolic d) None of the above

10. Identify∇^2 u=f (x,y)is known as_____. (K1)
   a) Laplace Equation b) Harmonic Equation
   c) Poisson equation d) Parabolic Equation

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Apply Newton's Method to the equation $x^2 = N$ to derive the algorithm for getting the square root of N is $x_{1+n}=\frac{1}{2}(x_n+\frac{N}{x_n})$. (K2)

(Or)

b) y' (*x*) Given:

X	0	1	2	3	4
f(X)	1	1	15	40	85

Hence find y' (x)at x = 0.5. (K3)

12. a) Solve the equations by Gauss Jordan method. (K2)
x + y =2; 2x+3y=5.

(Or)

b) Solve the following system of equations by Gauss Jacobi method. *28x+4y-z=32; x+3y+10z=24; 2x+17y+4z=35.* (K3)

13. a) Using Taylor's method, calculate y(0.1) correct to 3 decimal places from $\frac{dy}{dx}+2xy=1$, $y_0=0$. (K2)

(Or)

b) Sketch Milne's Predictor formula. (K3)

14. a) Solve the equation $y''= x + y$ with the boundary conditions $y(0)=y(1)=0$. (K2)

(Or)

b) Using Shooting method, solve the equation $\frac{d^2y}{dx^2}=$ 6x , $y(1)=2, y(2)=9$ in the interval (1, 2). (K3)

15. a) Classify the equation $(1+x^2)\,u_{xx}+(5+2x^2)\,u_{xt}+(4+x^2)\,u_{tt}=0$. (K2)

(Or)

b) Solve $4u_{xx}=u_{tt}$ subject to the conditions. $u(0,t)=0=u(4,t), u_t(x,0)=0$ & $u(x,0)=x(4-x)$. Take h = 1 and obtain solution up to 5 time steps. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Recommend a root between 0 and 1 for $f(x)=3x+\sin x- e^x$ by Muller's method correct to four decimal places. (K4)

(Or)

b) Evaluate $\int_0^1 dx/1+x$ by using
   a) Trapezoidal rule
   b) Simpson's one third rule
   c) Simpson's three eight rule. (K5)

17. a) Produce the inverse of the matrix $A=\begin{bmatrix}2&1&1\\3&2&3\\1&4&9\end{bmatrix}$ using Gaussian method. (K4)

(Or)

Compulsory – Case Study

20. Type the following in LaTex. (K6)

i) $$1+\frac{ab}{a+\frac{bc}{d+\frac{5c}{3xy}}}$$

ii) $$\sqrt{2+\sqrt{2+\sqrt{2+\sqrt{x+y}}}}$$

Reg.No:_____

Course Code: 23PBEET105

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathemetics

First Semester

Elective: Latex

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. A _____ is an instruction to LATEX to do something special.
   a) character b) statement c) command d) argument (K1)
2. A _____is a command that changes the values or meanings of certain parameters or commands without printing any text. T
   a) environment b) declaration (K1)
   c) argument d) distinct command
3. The basic page format is determined by the _____. (K1)
   a) page format b) document Layout
   c) document style d) page style
4. The selection of the _____determines what information is to be found in the head and foot lines. (K1)
   a) page format b) page layout
   c) page style d) document layout
5. The user may change this spacing at any time with _____.
   a) \renewcommand{baselinestretch} (K1)
   b) \renewcommand{\linestretch}{factor}
   c) \renewcommand{\linestretch}
   d) \renewcommand{\baselinestretch}{factor}

6. It is only possible to change the standard values of a limited number of the list parameters with _____ in the preamble. (K1)

a) package b) individual c) declarations d) variable

7. A box is a piece of text that TEX treats as a unit, like a _____. (K1)

a) relation b) single character

c) double character d) function

8. A rule box is a basically a filled-in _____ rectangle. (K1)

a) red b) green c) black d) blue

9. The standard positioning of the marginal notes can be switched with the command_____. (K1)

a) \reversemargin b) \reversepar

c) \marginpar d) \reversemarginpar

10. When two mathematical quantities are compared, they are connected by a _____. (K1)

a) relation b) relational symbols

c) symbols d) quantifiers

SECTION – B (5 X 5 = 25 Marks)
Answer ALL questions.

11. a) Explain about quotation marks. (K2)

(Or)

b) Explain about non-English letters. (K3)

12. a) Explain class and package versions with an example. (K2)

(Or)

b) Write about page numbering. (K3)

13. a) Write about font commands with an example. (K2)

(Or)

b) Explain nested lists. (K3)

14. a) Explain vertical shifting of LR boxes. (K2)

(Or)

b) Write about rule boxes. (K3)

15. a) Write down the list of Greek letters used in mathematical symbols. (K2)

(Or)

b) Write down the list of arrows and pointers used in mathematical symbols. (K3)

SECTION – C (5 X 8 = 40 Marks)
Answer ALL questions.

16. a) Explain fixed lengths. (K4)

(Or)

b) Write about special characters. (K5)

17. a) Write about page style. (K4)

(Or)

b) Explain heading declaration with an example. (K5)

18. a) Explain font attributes. (K4)

(Or)

b) Write about list style parameters. (K5)

19. a) How email and internet addresses are inserted in the latex document. (K4)

(Or)

b) Explain footnotes and marginal notes. (K5)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) State and prove Bayes Theorem. (K4)

(Or)

b) Let $\{A_n\}$, n = 1, 2,... be a nonincreasing sequence of events and let A be their product. Then prove that $P(A)=\lim_{n\to\infty} P(A_n)$. (K5)

17. a) State and prove Chebyshev inequality. (K4)

(Or)

b) Prove that (i) $E[g_1(x)+g_2(x)]=E[g_1(x)]+E[g_2(x)]$

(ii) $E[ax]^k=a^kE[x^k]$. (K5)

18. a) Let $F_n(x)$ (n=1, 2, ...) be the distribution function of the random variable X_n. The sequence $\{X_n\}$is stochastically converges to zero if and only if the sequence {(x)} satisfies the relation

$$\lim_{n\to\infty} F_n(x)=\begin{cases}0 & for\ x\le 0,\\ 1 & for\ x>0.\end{cases}$$ (K4)

(Or)

b) State and prove Bernoulli law of large number. (K5)

19. a) We have good and defective items in a lot and the proportion p of defective items is unknown. The hypothesis to be tested is H_0(p = 0.10); hence that 10% of the items in the lot are defective. Test the hypothesis(if n = 30). (K4)

(Or)

b) State and prove Blackwell theorem. (K5)

Compulsory- Case Study

20. Explain about the sufficiency of an estimate. (K6)

Reg.No:_____

Course Code: 23PBECT303

M.Sc Degree Examination - November 2024

(For the candidates admitted during the year 2023-2024 and onwards)

Mathematics

Third Semester

Core: Mathematical Statistics

Time: 3 Hours Maximum marks: 75

SECTION - A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The event containing all the elements of the set E of elementary events is called _____. (K1)

a) Sure event b) Impossible event

c) great event d) Least event

2. The probability of sure event is_____. (K1)

a) 0 b) 1 c) 2 d) 3

3. If X is a discrete variable then $E(x^k)$ = (K1)

a) $\sum_i x_i p_i$ b) $\sum_i x_i^k p_i$

c) $\sum_i x_i p_i^k$ d) $\sum_i x_i p_i$

4. The characteristic function $\phi(t)$ is_____. (K1)

a) $E\left[e^{-itx}\right]$ b) $E\left[e^{tx}\right]$

c) $E\left[e^{itx}\right]$ d) $E\left[e^{-tx}\right]$

5. The variance of binomial distribution is_____. (K1)

a) npq b) np c) nq d) pq

6. The sequence $\{X_n\}$ of random variable is called stochastically convergent to zero if_____. (K1)

a) $\lim_{n\to\infty} P(|X_n| > \varepsilon) = 0$ b) $\lim_{n\to\infty} P(|X_n| > \varepsilon) > 0$

c) $\lim_{n\to\infty} P(|X_n| < \varepsilon) = 0$ d) $\lim_{n\to\infty} P(|X_n| > \varepsilon) < 0$

7. A random sample is simple if the random variables are_____. (K1)

a) Dependent b) Independent

c) Variable d) constant

8. Methods of verifying statistical hypothesis are called_____.

a) Statistical tests b) Parametrical tests (K1)

c) Small test d) Large test

9. Some intervals contain the unknown parameter is called _____ estimation. (K1)

a) Interval b) Point c) variable d) consist

10. The sequence $\{U_n\}$ of estimates of the unknown parameter Q is _____ if $\{U_n\}$converges stochastically to Q as $n \to \infty$. (K1)

a) point b) Consistent

c) Inconsistent d) interval

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Prove that the sum of the probabilities of any event A and its compliment $\bar{A}$ is one. (K2)

(Or)

b) If events A and B satisfy the condition $A \subset B$ then prove that $P(A) \le P(B)$. (K3)

12. a) Find the characteristic function and moments of normal distribution. (K2)

(Or)

b) Find the characteristic function of Poisson distribution. (K3)

13. a) The random variable X has the distribution N (1 ; 2). Find the probability that X is greater than 3 in absolute value. (K2)

(Or)

b) Find the MGF of Binomial distribution. Also find its mean and variance. (K3)

14. a) Suppose we are given a simple sample of n = 150 elements. The mean and standard deviation of the sample are, respectively mean = 0.4, s = 4. We know neither the expected value nor the standard deviation of the population. Should we reject the hypothesis H_0(m =0)? (K2)

(Or)

b) From the population, where X has the normal distribution N(m:1) and m is unknown, we draw a simple sample of n = 16 elements. We observe the value mean = 0.1 and to test the hypothesis H_0(m=0). (K3)

15. a) The characteristic X of elements of a certain population has the normal distribution $N(m,\sigma)$, where the expected value m is known but the standard deviation is not known. The statistic S_0^2 is an unbiased estimate of parameter σ^2. Show that S_0 is not an unbiased estimate of σ. (K2)

(Or)

b) The characteristic X of elements of a population has normal distribution $N(m,\sigma)$with unknown expected value m. The statistic $U = \overline{X}$, determine from a simple sample, is a sufficient estimate of the parameter m of the normal distribution $N(m,\sigma)$ with known standard deviation σ. (K3)

Reg.No:_____

Course Code: 23PBEAL310

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathematics

Third Semester

ALC: Cryptography

Time: 3 Hours Maximum marks: 100

SECTION – A (10 X 2 = 20 Marks)

Answer ALL questions.

1. Write about the definition of integers and explain with an example. (K1)
2. Describe matrices in two lines and illustrate with an example. (K1)
3. Explain the process of adding two matrices in two lines. (K1)
4. Explain about multiplication of two matrices. (K1)
5. What is an additive cipher? Describe its basic concept and provide a brief example. (K1)
6. Explain the Vigenere cipher in brief and give a simple example to illustrate its encryption process. (K1)
7. What is an algebraic structure? Define it and provide a concise example. (K1)
8. Explain the concept of an irreducible polynomial and provide a brief example. (K1)
9. What is a P-box? Describe its function and list its three variations. (K1)
10. Define an S-box and explain its role in cryptography with a brief description. (K1)

SECTION – B (5 X 6 = 30 Marks)

Answer ALL questions.

11. a) Find the greatest common divisor of 2740 and 1760. (K2)

(Or)

b) Perform the following operations (the inputs come from Z_n).

a. Add 7 to 14 in Z_{15}

b. Subtract 11 from 7 in Z13.

c. Multiply 11 by 7 in Z20 (K3)

12. a) Illustrate operations and relations. (K2)

(Or)

b) Show that product of any 2 x 3 matrix by 3 x 4 matrix .The result is a 2 x 4 matrix. (K3)

13. a) Use the additive with Key =15 to decrypt the message "WTAAD". (K2)

(Or)

b) Use an affine cipher to encrypt the message "hello" with the key pair (7.2). (K3)

14. a) Prove that Lagrange's theorem. (K2)

(Or)

b) Find the result of multiplying $P_1 = (x^5 + x^2 + x)$ by $P_2 = (x^7 + x^4 + x^3 + x^2 + x)$ in GF (2^8) with irreducible polynomial $(x^8 + x^4 + x^3 + x + 1)$ using the algorithm. (K3)

15. a) Distinguish between a synchronous and a non-synchronous stream cipher. (K2)

(Or)

b) Create a linear feedback shift register with 4 cells in which $b_4 = b_1 * b_0$. Show the value of output for 20 transitions (Shifts) if the seed is $(0001)_2$. (K3)

SECTION – C (5 X 10 = 50 Marks)

Answer ALL questions.

16. a) Find all multiplicative inverse pairs in Z_{11} . (K4)

(Or)

b) Find the multiplicative inverse of 23 in Z_{100}. (K5)

(i) 2.26 (ii) 2.27

17. a) Explain about inverse matrixes and give an example. (K4)

(Or)

b) Illustrate determinant with an example. (K5)

18. a) Write short notes on playfair cipher. (K4)

(Or)

b) List out the transposition cipher with an example. (K5)

19. a) Write a note on GF(2^n) fields with an example. (K4)

(Or)

b) (i) in GF (2^4) find the inverse of $(x^2 + 1)$ modulo $(x^4 + x + 1)$.

(ii)in GF (2^8) find the inverse of (x^5) modulo $(x^8 + x^4 + x^3 + x + 1)$. (K5)

20. a) Distinguish between a modern and traditional symmetric key – Cipher. (K4)

(Or)

b) Explain elaborately about modern block ciphers. (K5)

17. a) State and prove unique factorization theorem. (K4)

(Or)

b) If p is a prime number of the form $4n+1$ then prove that $p = a^2 + b^2$ for some integers a, b. (K5)

18. a) State and prove Division Algorithm. (K4)

(Or)

b) Prove that if R is a unique factorization domain then so is $R[x]$. (K5)

19. a) If $p(x)$ is a polynomial in $F[x]$ of degree $n \geq 1$ and is irreducible over F, then prove that there exists an extension E of F such that $[E:F] = n$ in which $p(x)$ has a root. (K4)

(Or)

b) If F is of characteristic 0 and if a, b are algebraic over F then prove that there exists an element $c \in F(a,b)$ such that $F(a,b) = F(c)$. (K5)

Compulsory – Case Study

20. If K is a finite extension of F, then G(K,F) is a finite group and its order o(G(K,F)) satisfies o(G(K,F)) ≤ [K:F]. (K6)

Reg.No:_____

Course Code: 23PBECT101

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathematics

First Semester

Core: Algebra

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. A subgroup of index 2 in a group G is a _____. (K1)

a) Simple group of G b) normal subgroup of G

c) cyclic subgroup of G d) centre of G

2. The number of conjugate classes in S_4 is _____. (K1)

a) 4 b) 4! c) 5 d) 5!

3. If F is a field, then the only ideals of F are _____. (K1)

a) (0) b) F c) (0) and F d) none of these

4. If π is a prime element in the Euclidean ring R and $\pi | ab$ where $a, b \in R$ then π divides _____. (K1)

a) at most one of a or b b) both a and b

c) at least one of a or b d) none of these

5. Which of the following polynomial is reducible over the integers $mod\ 11$. (K1)

a) $x^3 - 6$ b) $x^3 - 7$ c) $x^3 - 8$ d) $x^3 - 9$

6. A polynomial is said to be integer monic if all its coefficients are integers and its highest coefficient is _____. (K1)

a) 2 b) 2 c) 1 d) none of these

7. The degree of $\sqrt{2}+\sqrt{3}$ over Q is _____. (K1)

a) 2 b) 3 c) 4 d) 5

8. The extension K of F is a simple extension of F if _____.

a) $K = F(\alpha)$ b) $K \neq F(\alpha)$ c) $K < F(\alpha)$ d) $K > F(\alpha)$ (K1)

9. If $f(x) \in F[x]$ is irreducible and the characteristic of F is 0 then $f(x)$ has _____. (K1)

a) multiple roots b) no multiple roots

c) exactly one root d) no roots

10. If $p(x) = x^n - 1$ then the Galois group of $p(x)$ over the field of rational number is _____. (K1)

a) cyclic b) abelian

c) normal extension d) none of these

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) Suppose G is a finite abelian group and $p \mid o(G)$, where p is a prime number then prove that there is an element $a \neq e \in G$ such that $a^p = e$. (K2)

(Or)

b) If $o(G) = p^2$ where p is a prime number, then prove that G is abelian. (K3)

12. a) If R is a commutative ring with unit element and M is an ideal of R then prove that M is a maximal ideal of R if and only if R/M is a field. (K2)

(Or)

b) Let R be a Euclidean ring and $a, b \in R$. If $b \neq 0$ is not a unit in R then prove that $d(a) < d(ab)$. (K3)

13. a) If $f(x), g(x)$ are two non zero elements of $F[x]$ then prove that $\deg(f(x)g(x)) = \deg f(x) + \deg g(x)$. (K2)

(Or)

b) If R is a unique factorization domain then prove that the product of two primitive polynomial in $R[x]$ is again a primitive polynomial in $R[x]$. (K3)

14. a) If L is an algebraic extension of K and if K is an algebraic extension of F then prove that L is an algebraic extension of F. (K2)

(Or)

b) State and prove Remainder theorem. (K3)

15. a) If K is a field and if $\sigma_1, \sigma_2 \ldots . \sigma_n$ are distinct automorphism of K then prove that it is impossible to find elements $a_1, a_2 \ldots a_n$ not all 0, in K such that $a_1\sigma_1(u) + a_2\sigma_2(u) + \ldots + a_n\sigma_n(u) = 0$ for all $u \in K$. (K2)

(Or)

b) Prove that the multiplicative group of non zero elements of a finite field is cyclic. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) If G is an abelian group of order $O(G)$, and if p is a prime number such that $p^\alpha \mid o(G), p^{\alpha+1} \nmid o(G)$ then prove that G has a subgroup of order p^α. (K4)

(Or)

b) Prove that the number of p-Sylow subgroups in G, for a given prime, is of the form $1 + kp$. (K5)

17. a) Using binary relation evaluate $M_1 * M_2^T$ where (K4)

$$M_1 = \begin{bmatrix} .7 & .4 & 0 & 1 \\ .7 & 0 & .6 & .2 \\ .5 & .2 & 0 & .2 \\ 0 & 0 & .6 & .3 \end{bmatrix} \; ; \; M_2 = \begin{bmatrix} 0 & .5 & .5 & .4 \\ .3 & 0 & .8 & 0 \\ 1 & 0 & .5 & 0 \\ 0 & .3 & 0 & .1 \end{bmatrix}$$

(Or)

b) Summarize fuzzy binary relations on a single set. (K5)

18. a) Summarize strong fuzzy homomorphism with an example. (K4)

(Or)

b) Given a consonant body of evidence (f ,m). prove that the associated consonant belief and plausibility measures possess the following properties. (K5)

(i) Bel (A∩B) = min {Bel(A).Bel(B)}

(ii) Pl (A∪B) = max {Pl (A), Pl(B)} for all A,B $\in \wp(X)$

19. a) A belief measure *Bel* on a finite power set $\wp(X)$ is a probability measure if and only if its basic assignment m is given by m({x}) = Bel({x}) and m(A) = 0 for all subsets of X that are not singletons. Justify the statement. (K4)

(Or)

b) How the fuzzy set theory is applied in interpersonal communication? Explain. (K5)

Compulsory – Case Study

20. Explain the concept of fuzzy set theory in traffic control. (K6)

Reg.No:_____

Course Code: 23PBEET305

M. Sc. Degree Examination – November 2024

(For the candidates admitted during the year 2023 - 2024 and onwards)

Mathemetics

Third Semester

Elective: Fuzzy Mathematics

Time: 3 Hours Maximum marks: 75

SECTION – A (10 X 1 = 10 Marks)

Answer ALL questions.

Choose the correct answer.

1. The number of elements that belong to a set A is called the _____of the set A. (K1)
   a) cardinality b) power c) characteristic d)subset
2. If C is a continuous fuzzy complement, then C has a_____. (K1)
   a) equilibrium b) heigher
   c) support d) unique equilibrium
3. The _____ of two crisp sets X and Y is denoted by X x Y. (K1)
   a) Cartesian product b) crisp relation
   c) symmetric d) equivalence relation
4. If the domain of a binary relation R is equal to the support of set X, then the relation is called_____ . (K1)
   a) subnormal b) function
   c) cylindric closure d) completely specified
5. A binary relation R(X,X) that is reflexive and symmetric is called a _____ relation. (K1)
   a) scalar b) compatibility c) fuzzy d) convex
6. Every partial ordering on a set X is conveniently represented by _____ diagram. (K1)
   a) Venn b) fuzzy c) Hasse d) ordering

7. The necessity and possibility measures are related to each other by equation _____. (K1)

a) $\eta(\bar{A}) = 1 + \pi(\bar{A})$ b) $\eta(A) = 1 + \pi(\bar{A})$

c) $\eta(A) = 1 - \pi(\bar{A})$ d) $\eta(\bar{A}) = 1 - \pi(\bar{A})$

8. Belief measures and plausibility measures are mutually _____. (K1)

a) dual b) equal c) paired d) approximate

9. The expansion of FLC is _____. (K1)

a) weighted average b) fuzzy light controller

c) fuzzy level controller d) fuzzy logic controller

10. When the knowledge of the probabilities of the outcome states is unknown, decisions must be made under conditions of _____. (K1)

a) certainty b) uncertainty c) risk d) plausibility

SECTION – B (5 X 5 = 25 Marks)

Answer ALL questions.

11. a) If C is a continuous fuzzy complement, show that C has a unique equilibrium. (K2)

(Or)

b) Prove that i(a, b) ≤ min (a,b), for all a,b ∈ [0,1]. (K3)

12. a) Discover the max-min composition and max product composition of the binary relational matrices, $M_P = \begin{bmatrix} .3 & .5 & .8 \\ 0 & .7 & 1 \\ .4 & .6 & .5 \end{bmatrix}$ and $M_Q = \begin{bmatrix} .9 & .5 & .7 & .7 \\ .3 & .2 & 0 & .9 \\ 1 & 0 & .5 & .5 \end{bmatrix}$ (K2)

(Or)

b) Define a transitive fuzzy relation R. Explain with an example of such a fuzzy relation. (K3)

13. a) Sketch the five properties of fuzzy partial ordering. (K2)

(Or)

b) Solve the following fuzzy relation equation: (K3)

$$P \circ \begin{bmatrix} .9 & .6 & 1 \\ .8 & .8 & .5 \\ .6 & .4 & .6 \end{bmatrix} = \begin{bmatrix} .6 & .6 & .5 \end{bmatrix}$$

14. a) Illustrate Bel (A) + Bel ($\bar{A}$) ≤ 1. (K2)

(Or)

b) Prove that every possibility measure π on $\wp(X)$ can be uniquely determined by a possibility distribution function $r : X \rightarrow [0,1]$ via the formula $\pi(A) = \max r(x)$ for each $A \in \wp(X)$. (K3)

15. a) Explain the four stages of the operation of fuzzy controller. (K2)

(Or)

b) Explain the importance of fuzzy set theory in decision making. (K3)

SECTION – C (5 X 8 = 40 Marks)

Answer ALL questions.

16. a) Test that $\lim_{w \to \infty} \min[1, (a^w + b^w)^{1/w}] = \max(a, b)$. (K4)

(Or)

b) Establish the result that u(a, b) = max(a, b) is the only continuous and idempotent fuzzy set union. (K5)