KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

B.Sc (Biotechnology)

KONGU ARTS AND SCIENCE COLLEGE

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2018-2019

KONGU ARTS AND SCIENCE COLLEGE, (AUTONOMOUS)
ERODE – 638 107
DEPARTMENT OF BIOTECHNOLOGY
B.Sc BIOTECHNOLOGY SCHEME OF EXAMINATION – CBCS PATTERN

(For the candidates admitted during the Academic year 2018 – 2019 batch only)

Part	Course Code	Course Title	Inst. Hrs /Week	T/P	Duration in Hours.	CIA	ESE	Total Marks	Credits
SEMESTER I									
I	17T01/17H01/ 17F01/17S01	Language I	6	T	3	25	75	100	4
II	17E01	English I	6	T	3	25	75	100	4
III	17UAQCT101	Core Paper I - Cell Biology	4	T	3	25	75	100	4
	17UAQCT102	Core Paper II - Bioanalytical Techniques	4	T	3	25	75	100	3
	-	Core Practical I – Lab in Cell Biology and Microbology	2	P	-	-	-	-	-
	17UAQAT103	Allied I - Chemistry Paper I	4	T	3	20	55	75	3
	-	Allied Practicals I – Chemistry Practicals	2	P	-	-		-	-
IV	17ES01	Foundation Course I : Environmental Studies #	2	T	3	-	50	50	2
		Total	**30**					**525**	**20**
SEMESTER II									
I	17T02/17H02/ 17F02/17S02	Language II	6	T	3	25	75	100	4
II	17E02	English II	6	T	3	25	75	100	4
III	17UAQCT201	Core Paper III – Microbiology	6	T	3	25	75	100	4
	17UAQCP202	Core Practical I – Lab in Cell Biology and Microbiology	4	P	3	40	60	100	4
	17UAQAT203	Allied II - Chemistry Paper II	4	T	3	20	55	75	3
	17UAQAP204	Allied Practicals I - Chemistry Practicals	2	P	3	20	30	50	2
IV	17VE01	Foundation Course II : Value Education #	2	T	3	-	50	50	2
		Total	**30**					**575**	**23**

SEMESTER III

	Code	Title							
I	17T03/17H03/17F03/17S03	Language III	6	T	3	25	75	100	4
II	17E03	English III	6	T	3	25	75	100	4
III	17UAQCT301	Core Paper IV – Biochemistry	5	T	3	25	75	100	4
	17UAQCT302	Core Paper V – Genetics	4	T	3	25	75	100	4
	17UAQAT303	Allied III – Biomathematics	4	T	3	20	55	75	3
IV	17UAQSP304	Skill Based Subject I – Lab in Quality control techniques	3	P	3	30	45	75	3
	17BT01	Basic Tamil @			-	75	-		
	17AT01	Advanced Tamil #	2	T	3	-	75	75	2
	17UAQNT305	Non Major Elective I ##			3	-	75		
		Total	**30**					**625**	**24**

SEMESTER IV

	Code	Title							
I	17T04/17H04/17F04/17S04	Language IV	6	T	3	25	75	100	4
II	17E04	English IV	6	T	3	25	75	100	4
III	17UAQCT401	Core Paper VI – Molecular Biology	4	T	3	25	75	100	4
	17UAQCP402	Core Practicals II – Lab in Biochemistry	3	P	3	40	60	100	4
	17UAQAT403	Allied IV- Computer and Information Technology	4	T	3	20	55	75	3
	17UAQAP404	Allied Practicals II - Computer and Information Technology Lab	2	P	3	20	30	50	2
IV	17UAQST405	Skill Based Subject II – Physiopathology for Medical Transcription	3	T	3	20	55	75	3
	17BT02	Basic Tamil @		T	-	75	-		
	17AT02	Advanced Tamil #	2	T	3	-	75	75	2
	17UAQNT406	Non Major Elective II ##		T	3	-	75		
		Total	**30**					**675**	**26**

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SEMESTER V

	Code	Title							
III	20UAQCT501	Core Paper VII – Immunology	5	T	3	25	75	100	4
	20UAQCT502	Core Paper VIII – rDNA Technology	5	T	3	25	75	100	4
	20UAQCT503	Core Paper IX – Plant Biotechnology	5	T	3	25	75	100	4
	-	Core Practicals III – Lab in Immunology and Plant Tissue Culture	4	P	-	-	-	-	-
	-	Core Practical IV – Lab in rDNA Technology and Industrial Biotechnology	4	P	-	-	-	-	-
	20UAQET504-506	Elective I	4	T	3	25	75	100	4
IV	20UAQST507	Skill Based Subject III – Biofarming	3	T	3	20	55	75	3
	20UAQIT01	Institutional Training *	-	-	Completed/ Not Completed				-
		Total	30					475	19

SEMESTER VI

	Code	Title							
III	20UAQCT601	Core Paper X - Industrial Biotechnology	5	T	3	25	75	100	4
	20UAQCT602	Core Paper XI – Animal Biotechnology, Bioethics and IPR	5	T	3	25	75	100	4
	20UAQCP603	Core Practical III – Lab in Immunology and Plant Tissue Culture	4	P	3	40	60	100	4
	20UAQCP604	Core Practical IV – Lab in rDNA Technology and Industrial Biotechnology	4	P	6	40	60	100	4
	20UAQET605-607	Elective II	4	T	3	25	75	100	4
IV	20UAQEV608	Elective III	5	P	-	20	80	100	4
	20UAQST609	Skill Based Subject IV – Medical Biotechnology	3	T	3	20	55	75	3
	20NS01	Extension Activity						50	1
		Total	30					725	28
		TOTAL	180					3600	140

@ No End Semester Examination. Only Continuous Internal Assessment (CIA)
# No Continuous Internal Assessment (CIA). Only End Semester Examination
# # Offered to other Department students. No Continuous Internal Assessment (CIA). Only End Semester Examination.
* Students should undergo institutional training at the end of II year (IV th semester) and have to submit a report in III year (V th semester)

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List of Allied Subjects

Course Code	Course
17UAQAT103	Allied I - Chemistry Paper I
17UAQAT203	Allied II - Chemistry Paper II
17UAQAP204	Allied Practicals I – Chemistry Practicals
17UAQAT303	Allied III – Biomathematics
17UAQAT403	Allied IV – Computer and Information Technology
17UAQAP404	Allied Practicals II – Computer and Information Technology Lab

List of Skill Based Subjects

Course Code	Course
17UAQSP304	Lab in Quality Control Techniques
17UAQST405	Physiopathology for Medical Transcription
20UAQST507	Biofarming
20UAQST609	Medical Biotechnology

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List of Elective Subjects

	Course Code	Course
Elective-I	20UAQET504	Environmental Biotechnology
	20UAQET505	Marine Biotechnology
	20UAQET506	Virology
Elective-II	20UAQET605	Bioinformatics
	20UAQET606	Developmental Biology
	20UAQET607	Pharmaceutical Biotechnology
Elective-III	20UAQEV608	Project

List of Advanced Learners Course (IV Semester)

Course Code	Course
17UAQAL407	Enzyme Technology
17UAQAL408	Stem Cell Biology

List of Advanced Learners Course (V Semester)

Course Code	Course
20UAQAL508	Cancer Biology
20UAQAL509	Research Methodology

Dr.C.Deepa

Chairperson

Board of Studies in Biotechnology

Kongu Arts and Science College (Autonomous), Erode
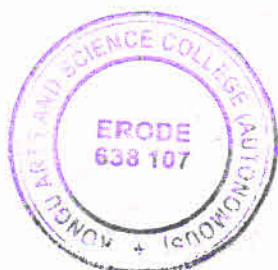
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Semester	Course Code	Core Paper IV Biochemistry	Total Marks:100		Hours Per Week	Credits
III	17UAQCT301		CIA: 25	ESE: 75	5	4

Objectives:

- To understand the structure, function and metabolism of biomolecules
- To attain knowledge about enzymes and their mechanism.

Course Outcome:

On successful completion of the course, the students will be able to:

CO1 Improve the basic knowledge of carbohydrates and lipids

CO2 Describe the fundamental organization of proteins and nucleic acids

CO3 Interpret their ideas related to enzymes

CO4 Outline the metabolic pathways of macromolecules

CO5 Summarize the metabolic pathways of macromolecules and inspect the concepts in micro elements

UNIT I

Carbohydrates: Classification, structure and functions of monosaccharides (trioses, tetroses, pentoses and hexoses), disaccharides (lactose, sucrose, maltose, cellobiose), polysaccharides (starch, glycogen, cellulose, hemicellulose, heparin and chondrotin sulphate).

Lipids: Structure, nomenclature and functions of fatty acids (saturated and unsaturated) Classification (simple, derived and compound) and uses of lipids, physical and chemical properties of lipids.

UNIT II

Amino acids and Proteins: Structure, classification and properties of amino acids. Peptides, oligopeptides and polypeptides. Classification of proteins based on structure, function and composition. Levels of organization of proteins - primary, secondary, tertiary and quaternary structures.

**Nucleic acids:** Composition and structure of nucleic acids.

UNIT III

Enzymes: General properties, IUB classification of enzymes, active site - Lock and Key model, Koshland's induced fit hypothesis. Factors affecting enzyme activity (temp, pH, substrate concentration). Enzyme kinetics: Michalis - Menton equation, Line Weaver - Burke Plot. Regulation of enzyme activity: allosteric enzymes- positive and negative cooperativity. Enzyme inhibition – reversible (competitive, noncompetitive and uncompetitive) and irreversible. Co-enzymes, cofactors and vitamins.

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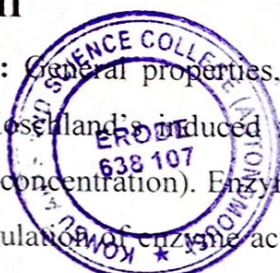
UNIT IV

Carbohydrate Metabolism: Glycolysis (including aerobic and anaerobic fermentation), TCA cycle, gluconeogenesis, glycogen breakdown, ETC and oxidative phosphorylation, Pentose-phosphate pathway (sequence of reactions & regulation).

Lipid Metabolism: Oxidation of fatty acids (alpha and beta oxidation), Biosynthesis of cholesterol.

UNIT V

Aminoacid metabolism: Amino acid deamination, Urea cycle, Outline scheme for amino acid breakdown and synthesis.

Nucleotide Metabolism: Biosynthesis of purine and pyrimidine (de novo and salvage pathway), degradation of purine and pyrimidine.

Minerals: Source, distribution, daily requirements, physiological functions and absorption of macronutrients (sodium, potassium, calcium, phosphorus) and micronutrients (iron and iodine).

TEXT BOOK

U.Satyanarayana, Biochemistry, II Edition, Arunabha Sen Publication, Kolkata, 1999.

REFERENCES

1. A.C.Deb, Fundamentals of Biochemistry, VIII Edition, New Central Book Agency, Kolkata, 2002.

2. Zubay L Geoffery, Principles of Biochemistry, III Edition, Wm.C. Brown Publishers, USA, 1993.

3. Lehninger L.Albert, Biochemistry, II Edition, Kalyani Publishers, New Delhi, 1998.

4. Voet et al., Principles of Biochemistry, IV Edition, John Wiley and Sons, Asia, 2012.

5. Dr. Rithambhara Richharia & Anil Richharia, Biotechnology and Biochemistry, Ramesh Publishing House, New Delhi, 2003.

QUESTION PAPER PATTERN

SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 10 = 30 Marks** (Answer any three Questions) One Question from each unit

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Semester	Course Code	Core Paper V Genetics	Total Marks:100		Hours Per Week	Credits
III	17UAQCT302		CIA: 25	ESE: 75	4	4

Objectives:

> ➢ To have graduates with high knowledge in the field of Genetics

> ➢ To become familiar with the advents of genetic development.

Course Outcome:

On successful completion of the course, the students will be able to :

CO1 Summarize the Basic concepts of Genetics

CO2 Generate their perception with genetic interactions

CO3 Develop their knowledge in chromosomal linkage and crossing over

CO4 Outline on various chromosomal variations

CO5 Show the deep approaching ideas in population genetics

UNIT I

Mendelian Principles: Definition, history and scope of Genetics, general areas of Genetics (Classical, Molecular and Evolutionary). Basic concept of Genetics - Allele, Locus, Gene, Genome, Haplotype, Genotype, Phenotype. Model organisms in Genetics. Mendel's Law: Law of Dominance - Monohybrid cross, Law of Independent Assortment - Dihybrid cross, Trihybrid cross, Test cross and Back cross. Allelic gene interaction: complete dominance, partial or incomplete dominance, co-dominance, Multiple Alleles (ABO blood groups and Rh factor), Lethal alleles, penetrance and expressivity, pleiotropism.

UNIT II

Gene Interactions: Non allelic gene interaction: Epistasis (Dominant, Recessive, Duplicate recessive), complementation, polygeny. Sex determination - Chromosomal, Genetic, and environmental sex determining systems. Extranuclear inheritance – mitochondrial and chloroplast genes and maternal inheritance. Genetic control in development of Drosophila and Arabidopsis.

UNIT III

Linkage and Crossing over: Linkage, Sutton's view on linkage, Morgan's view on linkage, Bateson & Punnet's Coupling and Repulsion hypothesis. Chromosome theory of linkage, kinds of linkage, linkage groups, types of Crossing over, mechanism of Meiotic Crossing over, significance of Crossing over. Haploid mapping (2 point and 3 point cross), Diploid mapping (Tetrad analysis), determination of map distance, determination of gene order.

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UNIT IV

Chromosomal variation in Number and Structure: Euploidy, Aneuploidy - Aneuploid segregation in plants, Aneuploidy in Human, Polyploidy in Plants and Animals, Induced Polyploidy, applications of Polyploidy, Chromosomal Mosaics, Deletion, Duplication, Inversion, Translocation, Position Effect, Centromeric and Non-centromeric breaks in chromosomes. Single gene disorders – Autosomal dominant (Huntington), Autosomal recessive (cystic fibrosis), X linked trait (muscular dystrophy).

UNIT V

Population Genetics: Genetic variation – Genotypic frequency, Allelic frequency, Random and Non-random mating, Hardy Weinberg law, calculating gene frequencies, changes in allelic frequency (Genetic drift, Natural Selection, Migration, Genome evolution). Pedigree Analysis – Symbols of Pedigree, Pedigrees of Autosomal recessive, Autosomal dominant, X linked recessive and X linked dominant traits. Twin studies, Genetic screening – prenatal and postnatal testing and Genetic counseling.

TEXT BOOK(S)
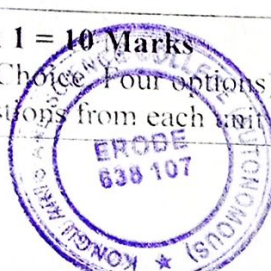
Dr. P.S. Verma and Dr. V.K. Agarwal, Cell Biology, Genetics, Molecular Biology, Evoluution and Ecology I Multicolour Edition, S.Chand and Company, New Delhi, 2014

Benjamin A.Pierce, Genetics- A conceptual Approach, II Edition, W.H.Freeman and Company, New York, 2005.

REFERENCES

1. A.V.S.S. Sambamurty, Genetics, II Edition, Narosa Publication, New Delhi, 2005

2. L.D.Vijendra Das, Genetics and Plant Breeding, Revised II Edition, Newage International Pvt.Ltd, New Delhi, 2005.

3. S.B. Basu and M.Hossain, Principles of Genetics, Books and Alied Pvt. Ltd. Kolkatta, 2006.

4. Gardnar *et al.*, Principles of Genetics, VIII edition, Wiley India, New Delhi.2008

5. D. Peter Sunstad and Michael J.Simmons, Genetics, VI Edition, John Willey and Sons Inc. Singapore, 2012.

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QUESTION PAPER PATTERN

SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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Semester	Course Code	Allied Paper – III	Total Marks: 75		Hours Per Week	Credits
III	17UAQAT303	Biomathematics	CIA:20	ESE:55	4	3

Objective:

➢ To enable the students to understand the concepts of Mathematical and Statistical results and to develop sufficient knowledge to apply in their further studies.

Course Outcome:

On successful completion of the course, the students will be able to

CO1 Apply the concepts of binomial and exponential theorems in summation of series.

CO2 Solve the problems using Matrices.

CO3 Describe different types , collection and presentation of data.

CO4 Determine the measures of central tendency and dispersion.

CO5 Apply Correlation and Regression in statistical analysis.

UNIT I

Binomial and Exponential theorems (Statement only) -Application to summation of series – Simple Problems.

UNIT II

Matrices – Types of Matrix – Operations – Matrix Multiplication - Inverse of a matrix- Rank of Matrix –Linear Equations by Matrix method – Simple Problems.

UNIT III

Statistics: Meaning and Scope- -Collection of Data-Primary and Secondary data - Methods of collecting Primary and Secondary Data-Classification and Tabulation- Presentation of data by Diagrams-Bar diagram and Pie diagram - Graphic Representation of Frequency Distribution.

UNIT IV

Measures of Central Tendency: Mean, Median and Mode - Geometric Mean and Harmonic Mean (simple problems only).

Measures of Dispersion: Range, Quartile Deviation, Standard Deviation and Co-efficient of Variation.
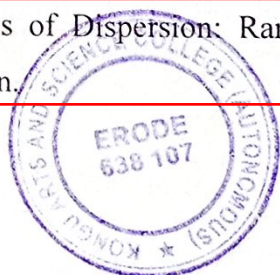
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UNIT V

Correlation: Meaning–Scatter Diagram–Karl Pearson's Co-efficient of Correlation–Spearman's Rank Correlation.

Regression Analysis: Meaning of Regression–Regression in Two Variables- Difference between Correlation and Regression.

TEXT BOOK(S)

1. P.Kandasamy and K.Thilagavathi, "Allied Mathematics", Paper- I First Semester . S.Chand and Company Ltd, New Delhi, 2003.

        UNIT I: Page No. 8-27.

        UNIT II : Page No. 72-106.

2. P.A Navnitham, "Business Mathematics & Statistics", Jai Publishers, Trichy, 2011.

      UNIT III : Chapter 1,3,5,6 : Pages 1 – 5, 9-17, 28-39,61-64, 83-91, 99-119, 131-146

      UNIT IV : Chapter 7,8 :Pages 159- 183, 196-209, 212-227, 251-260, 301 -310, 325-340

      UNIT V : Chapter 12,13 : Pages 503-508, 518-522, 540-554, 563-569

REFERENCES

1. R.S.N.Pillai and Bagavathi, " Statistics theory and practice", Jai Publishers, Trichy 21, 2013.

2. P.R.Vittal, " Allied Mathematics", Margam Publications, Chennai , 2002.
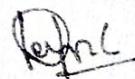
3. Jerrold H.Zar, " Biostatistical Analysis", Pearson Education, 4th Edition, 1999.

4. S.Prasad, "Elements of Biostatistics",Rastogi publications, Meerut, 2005.

5. P.Raja , " Mathematics and Biostatistics", Subash Publications, 1999.

SECTION – A	SECTION – B	SECTION – C
10x1=10 Marks (Multiple choice, Four options) Two questions from each unit	**5 x 3 = 15 Marks** (Either or choice) Two questions from each unit	**3x10 = 30 Marks** (Answer any three questions) One question from each unit

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Semester	Course Code	Skill Based Subject-I	Total Marks:75		Hours Per Week	Credits
III	17UAQSP304	Lab in Quality Control Techniques	CIA: 30	ESE: 45	3	3

Objectives:

> ➤ The student should acquire technical skills on quality analysis of various house hold products.

Course Outcome:

On successful completion of the course, the students will be able to:

CO1 Improve their knowledge in concepts of pH and microbiological methods effectively

CO2 Illustrate the knowledge in the quantitative estimations

CO3 Develop the skill in qualitative analysis of soil

CO4 Estimate the quality of household products

CO5 Expertise their knowledge in adulteration

1   Introduction to safety standards-Theory

2   Determination of acidity and alkalinity of food samples

3   Microbiological analysis of drinking water

4   Determination of iron content in water

5   Determination of chromium content in water

6   Determination of nitrogen in soil

7   Determination of potassium in soil

8   Determination of casein and calcium from milk

9   Determination of adulterant in milk products

10   Determination of iodine and saponification value of oil
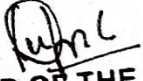
11   Determination of adulterant in oils

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REFERENCES

1. N. Kanan, Laboratory manual in General Microbiology, Panima Publishing Corporation. 2002.

2. S.Sadasivam and A.Manickam, Biochemical methods, II edition, New Age International. India, 1996

3. https://www.thebetterindia.com/114412/simple-home-tests-food-adulteration-kitchen-ingredients/

4. http://www.downtoearth.org.in/news/how-to-check-if-your-milk-is-adulterated-57584

QUESTION PAPER PATTERN					
Major Expt	Minor Expt	Set up	Spotters	Viva voce	Record
1 x 12= 12 Marks	1x8=8 Marks	1x6=6 Marks	5x2= 10 Marks	4 Marks	5 Marks

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Semester	Course Code	Core Paper VI Molecular Biology	Total Marks:100		Hours Per Week	Credits
IV	17UAQCT401		CIA: 25	ESE: 75	4	4

Objectives:

➢ To obtain adequate knowledge of genome at molecular level.

➢ On successful completion of the subject, the student should have understood the molecular aspects of replication, transcription, translation and repair mechanism.

Course Outcome:

On successful completion of the course, the students will be able to:

CO1 Interpret their knowledge about gene and its organization

CO2 Describe the mechanism of transcription

CO3 Develop their knowledge in translation and its related process

CO4 Categorize the different modes of mutation

CO5 Perceive about the DNA repair and Recombination process
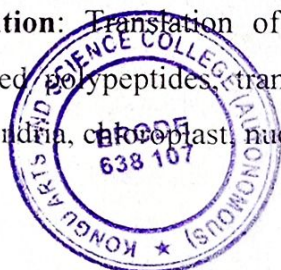
UNIT- I

Organization of Gene: Fine structure of gene, split genes, pseudogenes, overlapping genes and multigene families. Experiment to prove semiconservative mode of replication. DNA replication in prokaryotes and eukaryotes. Types - unidirectional, bidirectional and theta model replication. Enzymology of replication.

UNIT II

Transcription: Co linearity, Transcription in prokaryotes and eukaryotes, post transcriptional modifications (mRNA, tRNA, rRNA), transcriptional regulation in prokaryotes (operon concept - lac operon) and eukaryotes, inhibitors of transcription. Elucidation of genetic code.

UNIT – III

Translation: Translation of protein, post translational modifications, folding of newly assembled polypeptides, translational regulations, signal sequences and protein export to mitochondria, chloroplast, nucleus and plasma membrane.

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UNIT – IV

DNA Mutation: Biochemical basis of mutations, types of mutations (spontaneous and induced, somatic and germinal). Complementation test. DNA damage - physical and chemical mutagens. Ames test for mutation. Significance and practical applications of Mutation. DNA repair mechanisms- direct reversal. Excision repair (base excision, nucleotide excision and mismatch), recombinational repair; SOS response and SOS bypass.

UNIT – V

Transposable elements and Recombination: Transposable elements in Prokaryotes and Eukaryotes. Genetic exchange – bacterial transformation, transduction, conjugation and their mapping. Recombination - Homologous and non-homologous recombination, site-specific recombination.

TEXT BOOK

Ajoy Paul, Text Book of Cell and Molecular Biology, II Edition, Books and Allied Ltd, Kolkata, 2007.

REFERENCES

1. D.L. Hartl, Basic Genetics, Jones & Bartett publications, 1991.

2. Friefelder, Microbial Genetics, Jones & Bartnett publications, 1987.

3. Watson *et al* Molecular Biology of the gene, IV Edition, The Benjamin/ Cummings co, 2007.

4. Lodish, Molecular Cell Biology, Baltimore Scientific American Brocks, 1994.

5. Gerald Karp, Cell and Molecular Biology, Wiley International edition, 2004.

QUESTION PAPER PATTERN

SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 10 = 30 Marks** (Answer any three Questions) One Question from each unit

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Semester	Course Code	Core Practicals II - Lab in Biochemistry	Total Marks:100		Hours Per Week	Credits
IV	17UAQCP402		CIA: 40	ESE: 60	3	4

Objectives:

> On successful completion of the practical the student should have experience in handling microorganisms, identification and characterization of them.
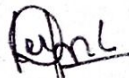
Course outcome:

On successful completion of the course, the students will be able to:

CO1 Develop the skills in qualitative analysis

CO2 Maximize their knowledge in the quantitative analysis

CO3 Can efficiently perform estimation procedures

CO4 Will be able to analyze biomolecules

CO5 Improve their knowledge in separation of biomolecules

1. Qualitative analysis of carbohydrates
2. Qualitative analysis of aminoacids
3. Estimation of Sugars by Anthrone method
4. Estimation of total free amino acids - Ninhydrin method
5. Estimation of Protein - Lowry's method
6. Estimation of DNA - DPA Method
7. Estimation of RNA - Orcinol method
8. Estimation of cholesterol - Zaks method
9. Determination of Acid Value of Fats
10. Quantification of Vitamin C by Dye method
11. Separation of biomolecules by Paper and Thin layer Chromatography

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REFERENCE

S.Sadasivam and A.Manickam, Biochemical methods, II edition, New Age International, India, 1996

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QUESTION PAPER PATTERN

Major Expt	Minor Expt	Set up	Spotters	Viva-voce	Record
1 x 15= 15 Marks	1x12=12 Marks	1x8=8 Marks	5x3= 15 Marks	5 Marks	5 Marks

Semester	Course Code	Allied IV- Computer and Information Technology	Total Marks:75		Hours Per Week	Credits
IV	17UAQAT403		CIA: 20	ESE: 55	4	3

Objective:

➢ To impart the knowledge about Windows XP and the features of MS-Office 2007.

Course Outcome:

At the end of the course, the students will be able to:

CO1 Describe the features and components of windows XP

CO2 Perform documentation with various formatting in MS-Word 2007

CO3 Compute calculations and generate charts in MS-Excel 2007

CO4 Illustrate the presentation skills in MS-PowerPoint 2007

CO5 Create Database, Table, Query, Forms and Reports

UNIT – I:

Windows XP: Introduction – Features of Windows XP - Getting started – working with windows – Start menu and the Task bar – Windows Explorer – Files and Folders – The control panel – Accessories.

UNIT – II

MS-Word2007: Introduction – MS word 2007- Getting started with MS word2007 – Microsoft office button – Quick Access Toolbars – Working with documents – Page formatting – Macros.

UNIT - III

MS-Excel 2007: Introduction – Getting started with MS Excel 2007 – Spreadsheets – Microsoft office button – Ribbon – Quick Access Toolbar – Creating a workbook – Data – Modifying a worksheet – Calculation – Relative, Absolute and Mixed references – Formatting Worksheet – Page properties and printing.

UNIT – IV

MS-PowerPoint 2007: Introduction – MS PowerPoint 2007 - Getting started – Microsoft office button – Ribbon – Quick Access toolbar – Customize – Creating a presentation – Slide effects – Transition – Animation – Printing.

UNIT – V

MS-Access 2007: Introduction – Microsoft office button – Navigation Pane – Tabbed document window Viewing – Ribbon – Quick access toolbar – Customized – Database – Creating a new database – Create a table – Data types – Manage table – Primary keys – Managing data – Query a database – Query wizard – Create a form - Generating reports – Print a report.
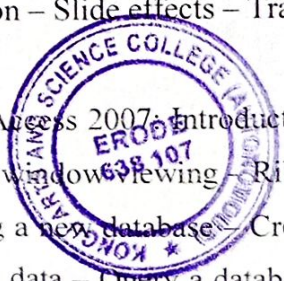
TEXT BOOKS:

Sanjay Saxena, A First Course in Computers Based on Windows and Office XP, Second Edition, 2010. (Unit – I)

Sanjay Saxena, MS- Office 2007 in a Nutshell, Vikas Publishing House Pvt Ltd., 2011 (Unit – II, III, IV, V)

REFERENCES:

1. Kogent Solutions Inc., Office 2007 in simple steps, Dreamtech publishing, 2009.

2. Joyce Cox, Cutris Frye, M. Dow Lambert III, Steve lambert, John Pierce, Joan Preppernau: 2007 Microsoft Office System Step by Step, PHI, Second edition, 2010

SECTION – A	SECTION – B	SECTION – C
10x1=10 Marks (Multiple choice, Four options) Two questions from each unit	**5 x 3 = 15 Marks** (Either or choice) Two questions from each unit	**3x10 = 30 Marks** (Answer any three questions) One question from each unit

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Semester	Course Code	Allied Practicals II- Computer and Information Technology Lab	Total Marks:50		Hours Per Week	Credits
IV	17UAQAP404		CIA: 20	ESE: 30	2	2

Objective

➢ To impart the knowledge about MS-Office 2007.

Course Outcome:

At the end of this course, the students will be able to:

CO1 - CO4   Create letter heads, resume, timetable and mail merging of letters in MS-Word

CO5 - CO7   Prepare Student Mark list and generate Charts and Reports in MS-Excel

CO8 - CO9   Demonstrate presentation with simple and animated effects in MS-Power Point

CO10 – CO12 Create Database, Tables, Query, Forms and Reports in MS-Access

I MS Word 2007

1. Create a Company letter head

2. Prepare a curriculum vitae

3. Generate Class time table using Table facilities

4. Create a letter to attend the interview using Mail merger

II MS Excel 2007

5. Create and analyze the students' marks using formulas and various charts.

6. Create a worksheet to manipulate various formatting options.

7. Create a report containing the pay details of the employee.

III MS Power Point 2007

8. Create a simple presentation.

9. Imply different animation and transition effects in presentation.

IV MS Access 2007

10. Creation of simple table and query

11. Creation a form to add, modify, delete records in a table

12. Create a table, queries and prepare reports to display the information

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Semester	Course Code	Advanced Learners Course:	Total Marks:100		Hours Per Week	Credits
IV	17UAQAL408	**Stem Cell Biology**	CIA: -	ESE: 100	-	2

Objectives:

➢ The course will provide students with knowledge of wide ranging topics related to stem cells, technological advancements and potential applications of stem cells.

Course Outcome:

On successful completion of the course, the students will be able to:

CO1 Build their knowledge about stem cells and their classification

CO2 Express their knowledge in stem cell culturing and characterization

CO3 Develop their perception in stem cell types

CO4 Interpret about the stem cell therapeutic application

CO5 Maximize their knowledge in stem cell research

UNIT- I

Introduction to stem cells: Definition, Classification, Characteristics, Differentiation, Stem cell niche, Stem cell Vs Somatic cells. Mechanism of pleuripotency in stem cells.

UNIT – II

Basic culture procedures: Isolation, culture methods, identification, stem cell markers, feeder layer, instrumentation in stem cell biology.

UNIT – III

Different kinds of stem cells: Adult stem cells, embryonic stem cells, embryonic germ cells, hematopoietic stem cell, neural stem cells, muscle stem cells. Cardiac stem cells, umbilical cord blood stem cells, cancer stem cells, mesenchymal stem cells, induced pluripotent stem cells

UNIT – IV

Therapeutic applications of Stem cells: Neurodegenerative disorders, cardiac disorders, regeneration of epidermis, bone and skin, etc. Stem cells in health care. Animal model for regeneration of stem cells.

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UNIT –V

Stem cell therapy: Stem cell banking. Current status of stem cell research and ethical issues.

REFERENCES

1. Cooper, Hausman, The cell a molecular approach, IV Edition, ASM press, Washington, 2007.

2. Campbell, Reece, Biology, VI Edition, Benjamin Cummings, Newyork, 2002.

3. Alberts, Bray, Lewis, Roberts, Ruff, Watson, Molecular biology of the cell, III Edtion, Garland publing inc, Newyork and London, 1983.

4. Dr.H.K. Das, Text book of biotechnology, II Edition, Willey India Pvt.Ltd, New Delhi, 2005.

5. Lotish, Berk, Zipursky, Derneu, Baltomote, Molecular cell biology, IV Edition, W.H. Freeman and company, England, 2000.

REFERENCE SITE

Stem cells: Scientific progress and future research directions- NIH report.

Available @ www.stemcells.nih.gov/index, www.stembook.org.

QUESTION PAPER PATTERN		
SECTION - A	**SECTION - B**	**SECTION - C**
10 x 2 = 20 Marks (Answer any 10 question out of 12 questions)	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 15 = 45 Marks** (Answer any three Questions) One question from each unit

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