
**KONGU ARTS AND SCIENCE COLLEGE**

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

**ERODE – 638 107**

# PROGRAM NAME

# B.Sc. (Biochemistry)

# KONGU ARTS AND SCIENCE COLLEGE

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**ERODE – 638 107**

# 2019-2020

# KONGU ARTS AND SCIENCE COLLEGE

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# SYLLABUS

| Sem. | Course Code | CORE BIOCHEMISTRY PRACTICALS I | Total Marks: 75 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| I & II | 19UAPCP202 | | CIA: 30 | ESE: 45 | 3 | 3 |

(EXAMINATION AT THE END OF SECOND SEMESTER)

**Objectives**

- To enable the students to learn the basic biochemical procedures of Biomolecules.

**Course Outcome:**

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

CO1 - Exhibit Knowledge on the biochemical calculations.
CO2 - Learn the pH measurement techniques for buffer.
CO3 - Acquire practical exposure with chromatographic techniques.
CO4 - Develop laboratory skills required for a qualitative analysis of Carbohydrates and Lipids.
CO5 - Get practical exposure with Amino acids and Lipid analysis qualitatively.

**I. Biochemical Calculations**

Preparation of Molar solutions, Normal solutions and Percentage solutions [v/v, w/v].

**II. Group Experiments**

a) Preparation of buffer and its pH measurements using pH meter.

**III. Demonstration Experiment**

a) Separation of Aminoacids by Paper Chromatography
b) Separation of Lipids by Thin Layer Chromatography

**IV. Qualitative Analysis**

**1. Analysis of Carbohydrates**

a) Monosaccharides - Glucose, Fructose, Xylose,
b) Disaccharides - Sucrose, Maltose and Lactose.
c) Polysaccharides - Starch and Dextrin.

**2. Analysis of Amino Acids**

a) Histidine b) Tyrosine c) Tryptophan d) Methionine e) Cysteine f) Arginine

**V. Qualitative Analysis of Lipids**

Lipids and Fats, Unsaturated fatty acids and Cholesterol

**TEXT BOOKS:**

1. David T. Plummer, An Introduction to Practical Biochemistry.
2. Pattabiraman, Laboratory Manual in Biochemistry.
3. NPTEL Online Course on „Experimental Biochemistry".
4. Shanmugam S, Sathish Kumar T, Panner Selvam K, (2010), „Laboratory Handbook on Biochemistry", Published by Asoke K. Ghose PHI Learning Private Ltd., ISBN: 978-81-203-4103-6.
5. Beedu Sashidhar Rao, Vijay Deshpande, (2005), „Experimental Biochemistry", I.K.International Private Ltd., ISBN: 81-88237-41-8.

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| Sem. | Course Code | ALLIED II: CHEMISTRY- II | Total Marks: 75 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| II | 19UAPAT203 | | CIA: 20 | ESE: 55 | 4 | 3 |

**Objectives**

- To understand the importance of Coordination Chemistry
- To understanding in chemistry of Aromatic compounds and Industrial applications.

**Course Outcome:**

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

CO1 - Learn the Laboratory principles and methods of metallurgy.
CO2 - Get familiarized with the coordination compounds.
CO3 - Understand the mechanism of aromatic compounds.
CO4 - Know the different processes of thermodynamics.
CO5 - Develop basic knowledge with the electrochemistry and Get a theoretical exposure for safety aspects of chemistry laboratory.

**UNIT I**

**Laboratory principles:** Safety and Hygiene in the Chemistry Lab: Storage and Handling of Chemicals - Acids, Ethers, Toxic and Poisonous chemicals. Antidotes and First Aid procedures, Role of Fire extinguishers.

**Metallurgy**

**Terms:** Definition of Mineral, Ore, Mining, Flux, Slag and Poling.

**General methods of extraction of metals:** Ore dressing methods. Reduction methods, Refining methods – Zone refining and Van Arkel Zones refining.

**Furnaces:** Blast and Reverberatory furnaces.

**Extraction of metals:** Extraction process of Uranium.

**UNIT II**

**Coordination Chemistry**

**Terminology:** Definition of Complex ion, Central ion, Ligand, Coordination bond, Coordination number, Coordination sphere, Chelate complex, Unidentate and Bidentate Ligands. Nomenclature of Mononuclear complexes.

**Isomerism in Coordination compounds:** Stereoisomerism and Optical isomerism.

**Theories:** Werner, Sidge Wick Effective Atomic Number and Pauling"s Valence bond theory.

**Chelation** - Haemoglobin, Chlorophyll, EDTA – Determination of Hardness of water.

Applications in quantitative and qualitative analysis of Coordination compounds.

**UNIT III**

**Aromatic Compounds:** Electrophilic substitution in benzene. Mechanism of Nitration, Halogenation, Alkylation, Acylation and Sulphonation.

Naphthalene - Structural elucidation, Preparation, Properties and Uses.

Preparation, Properties and Uses of Saccharin and Aspartame.

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UNIT IV

**Energetics:** Thermodynamics - Definition of First law of Thermodynamics. Types of systems - Reversible, Irreversible, Isothermal, Adiabatic and Spontaneous Process.
Enthalpy, Bond energy, Carnot cycle and Carnot theorem. Entropy and its significance. Free energy change.

UNIT-V

**Electrochemistry:** Kohlraush"s law and its application. Conductometric titration.
pH determination - Galvanic cells, EMF Standard electrode potentials, Reference electrodes. Electrochemical series and its applications. Principles of Electroplating.
**Phase Rule:** Definition of terms in Phase rule. Study of a simple Eutectic system: Pb-Ag.

**TEXTBOOK**


1. B.R. Puri, L.R. Sharma, K.C. Kalia, Principles of Inorganic Chemistry, 28th Edition, Vishal Publication, New Delhi.2004.
2. R.D. Madan Advanced Inorganic Chemistry, 2nd Edition. S. Chand & Company, New Delhi, 2005.
3. D. Van Samuel Glasstone, Thermodynamics- Nostrand company, Inc., 5th Edition, Eastern Wiley Publication, 2002.
4. B.S. Bahl and Arun Bahl, Advanced Organic Chemistry, 1st Edition, S.Chand and Company Ltd, New Delhi, 1998.


**REFERENCE BOOKS**


1. R.T. Morrision, and R.N. Boyd, Organic chemistry, 6th Edition, Prentice Hall Private Limited, New Delhi, 1997
2. B.R. Puri, L.R. Sharma and Madan S.Pathania, Elements of Physical chemistry, 30th Edition, Vishal publication, Jalandhar-Delhi 2007.
3. B.S. Bahl, G.D. Tuli and Arun Bahl, Essential of Physical chemistry, S.Chand publications, New Delhi, Reprint 2004.
4. Mohan Malhotra, Latest Cottage Industries, 20th Edition, Vishal publishers, Meerut, 1980.
5. Analytical chemistry: R.Gopalan, S.Chand & Co., New Delhi, 2007.


| QUESTION PAPER PATTERN | | |
|---|---|---|
| **SECTION - A** | **SECTION - B** | **SECTION - C** |
| **10 x 1 = 10 Marks**<br>(Multiple Choice, Four options)<br>Two questions from each unit | **5 x 3 = 15 Marks**<br>(Either or choice)<br>Two questions from each unit | **3 x 10 = 30 Marks**<br>(Answer any three Questions)<br>One Question from each unit |

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| Sem. | Course Code | CORE PAPER VII: HUMAN PHYSIOLOGY AND ENDOCRINOLOGY | Total Marks: 100 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| V | 17UAPCT501 | | CIA: 25 | ESE: 75 | 5 | 4 |

**Objectives:**

- Learn about the Structure and Function of different organs in the body system
- Describe the principal structural features, Functions and location of each component organ of the endocrine, Cardiovascular, Respiratory, Digestive, Renal and Reproductive system
- Able to demonstrate a basic understanding of the mechanisms of human body
- Learn more specific on the endocrinal activities

**Course Outcome:**

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

CO1 - Develop the basic knowledge of the Digestive tract and Respiratory system.
CO2 - Understand the in-depth vision of blood, skeletal muscles and heart.
CO3 - Recognize the importance of nervous system and eye.
CO4 - Tell the impacts of the endocrine system.
CO5 - Exhibit the hormone involvement in reproductive structures.

**UNIT - I**

**Digestive system:** General outlines of the Digestive tract. Composition, Function and Mechanism of Secretion of Saliva, Gastric, Pancreatic, Intestinal and Bile juice. Digestion and Absorption of Carbohydrates, Fats and Proteins.

**Respiratory system:** Structure and Function of Respiratory tract. Diffusion of Gases in lungs. Transport of Oxygen, Factors influencing the Oxygen transport. Transport of Carbondioxide, Factors influencing the $CO_2$ transport.

**UNIT - II**

**Blood and Body fluid:** Composition and Functions of blood, Haemoglobin, Blood groups and Blood transfusion, Mechanism of blood coagulation. Formation and functions of Lymph.

**Physiology of Skeletal muscle:** Structure of Skeletal muscle, Process of Muscle contraction, Chemical changes during Muscle contraction.

**Cardiovascular system:** Structure and Functions of Heart, Electrical and mechanical events in Cardiac cycle, Regulation of Heart pumping.

**UNIT - III**

**Physiology of Vision:** Structure of Eye, Receptor mechanism (Rod and Cones), Photopigments, Defects of eye and Colour adaptation.

**Nervous system:** Structure and Function of Neurons, Resting potential and Action potential, Synaptic transmission (Chemical and Electrical Transmission), Mechanism of Neuromuscular transmission, Neurotransmitters.

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UNIT - IV

**Excretory system:** Structure and Functions of kidneys, Structure of Nephron, Mechanism of formation of Urine, Micturition, Renal regulation of Acid base balance, Hormones of Kidneys.

**Endocrine system:** Definition of Hormones, Classification - Chemical nature of Hormones and Mechanism of action of hormones (Intracellular and Cell surface receptor mechanism). Structure, Functions and Deficiency symptoms of hormones of Pituitary, Thyroid, Parathyroid, Adrenal glands.

UNIT - V

**Male reproductive system**: Structure and functions of Testis, Process of Spermatogenesis, Structure and Physiological Functions of Androgen.

**Female reproductive system**: Structure and function of Ovary, Ovarian cycle, Menstrual cycle, Physiological changes and Hormones involved in Pregnancy and Lactation.

**TEXT BOOKS:**

1. Dr. C.C. Chatterjee, Human Physiology - Volume I and II, 11th edition, Medical Allied Agency, 1992.
2. Sarada Subramanyam, K.Madhavan Kutty and H.D.Singh -Text Book of Human Physiology, S.Chand & Company, 1996.

**REFERENCE BOOKS:**

1. A.C. Guyton, Textbook of Medical Physiology, 11th edition, Saunders of Elsevier Inc.2006.
2. Robert K. Murray, Harper's Biochemistry, 26th edition, Mc Graw Hill, 2003.
3. M. M. Muthiah, Lecture notes on Human Physiology Volume II, 1991.

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

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| Sem. | Course Code | CORE BIOCHEMISTRY PRACTICALS - III | Total Marks: 75 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| V | 17UAPCP504 | | CIA: 30 | ESE: 45 | 5 | 3 |

**Objective(s):**

- To understand and get familiarized with the quantification techniques.

**Course Outcome:**

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

CO1 - Analyze the NPN compounds and calcium in urine samples.
CO2 - Estimate the substances in blood.
CO3 - Get better knowledge with enzyme assay using kit.
CO4 - Acquire practical exposure with demo techniques.
CO5 - Gain expertise with the biochemical preparations of compounds from natural sources

**I. Urine Analysis**

**A) Qualitative analysis of normal and abnormal urine**

Sugar, Ketone Bodies and Urobilinogen.

**B) Quantitative analysis of urine**

1. Estimation of Creatinine by Picric acid method.
2. Estimation of Urea by DAM-TSC method
3. Estimation of Uric acid by Carraway's method
4. Estimation of Calcium by Permanganate method

**II. Blood Analysis**

1. Estimation of Urea in serum by DAM –TSC method
2. Estimation of Uric acid in serum by Carraway's method
3. Estimation of Glucose in serum by O-Toluidine method

**III. Demonstration Experiment**

1. Estimation of Alkaline phosphatase in serum
2. Estimation of Acid phosphatase in serum

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**TEXT BOOK:**

1. Dr.S.Rajan, Manual for Medical Laboratory Technology, Anjanaa Book House, First Edition, 2012.

**REFERENCE BOOKS:**

1. Ranjna Chawla, Practical Clinical Biochemistry, Third Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.
2. Alan H.Gowenlock, Janet R.McMurray and Donald M.McLauchlan, Varley's Pracical Clinical Biochemistry, CBS Publishers and Distributors, New Delhi.

| Question Paper Pattern | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Major | 15 Marks | Minor | 10 Marks | Procedure for (2 Experiments) | 10 Marks | Viva Voce | 05 Marks | Record | 05 Marks |

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| Sem. | Course Code | CORE PAPER X - MEDICINAL BIOCHEMISTRY | Total Marks: 100 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| VI | 17UAPCT601 | | CIA: 25 | ESE: 75 | 5 | 4 |

**Objectives:**

- On successful completion of the course the students should have:
- Understood the development of the traditional and modern methods used for Drug discovery; of how molecules interact.
- Learnt the fact that the pharmaceutical industry is by far the largest employer of medicine.
- Learnt and developed skills in the use of reaction mechanisms and how knowledge of reaction mechanisms can aid in understanding the mode of action of a drug and the method by which it can be synthesized and developed.

**Course Outcome:**

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

CO1 - Gain knowledge for the concepts of drug and its specified receptors.
CO2 - Knows the fundamentals about drug metabolism.
CO3 - Identify the drug for chemotherapy.
CO4 - Obtain an idea about recurring cardio vascular diseases and Diabetes Mellitus.
CO5 - Expose with the extraction methods of bioactive components.

**UNIT - I**

**Basic concepts of Drug and Receptor**

**Basic concept of Drug:** Introduction to drugs, Classification of drugs, Passage of drugs across biological membrane; Absorption and Distribution of drugs; Binding of drugs to Plasma Proteins.

**Drug Receptor:** Types of receptors, Receptor theories, Isolation of receptors, Drug receptor interaction, Binding forces in drug receptor interaction.

**UNIT - II**

**Drug Metabolism and Elimination**

**Drug Metabolism:** Microsomal drug metabolism - Metabolism via Hydroxylation, Conjugation – Glucuronic acid and Sulfate conjugation, Deamination, N-Oxidation, Azo and Nitro reduction. Non-microsomal drug metabolism - Non-microsomal oxidation, Oxidative deamination, Purine oxidation, Dehalogenation, Hydrolysis.

**Elimination of Drugs:** Elimination of drugs from the body with reference to renal system.

**UNIT - III**

**Chemotherapy**

**Antimetabolites:** Anti-metabolites of folate, purines and pyrimidines.

**Antibacterial drugs:** Mode of action and resistance to Sulfonamides, Penicillin, Streptomycin, Tetracycline and Chloramphenicol.

**Antiviral drugs:** Classification and mechanism of action of Acyclovir and Zidovudine.

**Antimalarial drugs:** Classification, Life cycle of malarial parasites in man and Mechanism of action of antimalarial drugs.

UNIT - IV

**Drugs acting on Cardio-vascular system and Diabetes Mellitus**

**Cardio-vascular system:** Cardio-vascular disease. Structure and mode of action of Cardiac glycosides. Heparin and Coumarin.

**Diabetes Mellitus:** Insulin: Oral hypoglycemic agents - Sulphonylureas, Biguanides, Thiazolidinodiones and Alpha - glucosidase inhibitors.

UNIT - V

**Bioactive components and its separation techniques**

Drugs from Plant origin, Definition of drug dependence and Drug abuse. Methods of Extraction. Isolation, Separation, Identification, Analysis and Applications of Bioactive components.

**TEXT BOOKS**

1. Salil K Bhattacharya, Parantapa Sen and Arunabha Ray. Pharmacology 2 nd Edition, Elsevier Publication.New Delhi.2004.
2. K.D.Tripathi.Essentials of Medical Pharmacology 5 th Edition ,Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.2003.

**REFERENCE BOOKS:**

1. Satoskar R.S.Bhandarkar, S.D and S.S. Ainapure, 14th edition, 1995. Pharmcology and pharamacotherapeutics. Popular Prakashnan Bombay.
2. William Foye (1986), 3rd edition, Principles of Medicinal chemistry.
3. Patrick.L.Graham (1995), An introduction to Medicinal chemistry, Oxford University Press.
4. Grahame D.G.Smith and Aronson, J.K. Oxford T.B of Clinical Pharmacology and Drug therapy.
5. Harborne . A.J, Phytochemical Methods A Guide to Modern Techniques of Plant Analysis, Chapman and Hall publication.

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

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| Sem. | Course Code | CORE PAPER XI - PLANT BIOCHEMISTRY AND PLANT THERAPEUTICS | Total Marks: 100 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| VI | 17UAPCT602 | | CIA: 25 | ESE: 75 | 5 | 4 |

**Objectives:**

- To gain knowledge on basic physiological aspects of transpiration, respiration and photosynthesis
- To acquire knowledge on the applied aspects of plant
- To gain a holistic approach on research related to plant genetic manipulation and Plant-Environment interaction.

**Course Outcome:**

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

CO1 - Know basic physiological aspects of transpiration, respiration.
CO2 - Gain the fundamentals idea about photosynthesis machinery in plants.
CO3 - Recognize and understand the importance of nutrition for plant growth.
CO4 - Describe the practical applications of plant growth regulators.
CO5 - Learn about the functions of secondary metabolites.

**UNIT - I**

**Absorption of Water and Transpiration**

**Plant Cell:** Structure and Functions.

**Water absorption by plants:** Mechanism of water absorption and factors affecting the rate of water absorption.

**Transpiration:** Types of transpiration, Mechanism of transpiration, Opening and closing of stomata. Factors affecting the rate of transpiration.

**UNIT - II**

**Photosynthesis:** Definition, Photosynthetic apparatus, Photosynthetic pigment – Chlorophyll, Carotenoids and Phycobilins, Mechanism of Photosynthesis.

**Lightreaction:** Red drop Emerson enhancement effect, Iwo pigment systems, Photooxidation of Water. Cyclic and Non – Cyclic Photophosphorylation.

**Dark reaction:** Calvin cycle ($C_3$ Plants)

Hatch Slack cycle ($C_4$ Plants) and CAM Plants, Photorespiration ($C_2$ Plants)

**UNIT - III**

**Cycle of elements**

**Nitrogen cycle:** Ammonification, Nitrification, Nitrate reduction and Denitrification.

**Nitrogen fixation:** Symbiotic and Non Symbiotic nitrogen fixation.

Sulphur cycle, Phosphorous cycle and Carbon cycle.

**Plant Nutrition:** Specific roles of essential elements and their deficiency symptoms in plants.

**Micronutrients:** Manganese, Boron, Copper, Zinc, Molybdenum and Chlorine

**Macronutrients:** Carbon, Hydrogen, Oxygen, Nitrogen, Sulphur, Phosphorous, Calcium, Potassium, Magnesium and Iron.

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UNIT - IV

**Plant growth regulators**

Chemistry, Biosynthesis, Mode of action and Practical applications of Auxin, Gibberellin, Cytokinin, Absicic acid and Ethylene.

Photo morphogenesis: Phytochrome and its function.

UNIT - V

**Life cycle of plants and its biochemical changes**

Seed Dormancy - Causes, Methods of breaking Dormancy; Seed Germination and Senescence - biochemical changes.

**Secondary metabolites**

Nature, Distribution and biological functions of Alkaloids, Flavonoids and Terpenes.

**TEXT BOOK:**

1. S.K.Verma, A Textbook of Plant physiology and Biochemistry, S. Chand & Company Ltd, First Edition, 1995.

**REFERENCE BOOKS:**

1. Devlin N. Robert and Francis H. Witham, Plant physiology, CBS Publications, 1997.
2. Bob, Buchannan "Biochemistry and Molecular biology of plants" I.K International Pvt. Ltd, 2000.
3. Lea and Lea wood, Plant Biochemistry and Molecular Biology, John wiley and sons, First Edition, 1997.

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| Sem. | Course Code | CORE PAPER XII - IMMUNOLOGY AND IMMUNOTECHNIQUES | Total Marks: 100 | | Hours Per Week | Credits |
|---|---|---|---|---|---|---|
| VI | 17UAPCT603 | | CIA: 25 | ESE: 75 | 4 | 4 |

**Objectives:**

On successful completion of the course the students should have:

- Understood the foundation for the future subjects in microbiology and Immunology.
- Learnt the basic terminology and techniques in microbiology and immunology.
- Learnt on how much immune system is important to the humans.

**Course Outcome:**

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

CO1 - Understand the immune response to our body.
CO2 - Know about the interactions of antigen and antibody and complement system.
CO3 - Understand the concept of Immunotechniques with applications.
CO4 - Gain an idea about reactions of hypersensitivity.
CO5 - Clearly illustrate the criteria's of transplantation and vaccination.

**UNIT - I**

**Basic principles of Immunology:** History, Innate and Acquired immunity, Antibody mediated and Cell mediated immune response.

**Lymphoid organs:** Primary and Secondary lymphoid organs.

**Cells of the immune system:** Structure and functions of T cell, B cell, NK cell, Dendritic cell, Macrophage, Neutrophil, Eosinophil and Basophil.

**UNIT - II**

**Antigen:** Antigenicity, Immunogenicity - factors, Epitope and Paratope, Haptens, Adjuvants, Cross reactivity, Self antigens (MHC) an outline only.

**Antibodies:** Structure, Functions, Properties, Classes of Immunoglobulins, Clonal selection theory of antibody formation.

**Antigen-antibody interaction:** Precipitation and Agglutination – Definition and mechanism of formation. Complement system – Complement components and Complement pathways.

**Cytokines:** Interleukin, Interferon and TNF - Functions.

**UNIT - III**

**Precipitation in Gel:** Oudin procedure, Oahley – Fulthope procedure, Immunodiffusion, Ouchterlony procedure, Immuno electrophoresis and Electro immuno diffusion.

**Agglutination Test:** Slide agglutination - Blood Grouping, Tube agglutination - Widal test.

**Principle and applications of Immunotechniques:** RIA, ELISA, Fluorescent antibody technique and Complement fixation test.

**Hybridoma technologies:** Monoclonal antibody production.

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UNIT - IV

**Hypersensitivity:** Type I, II, III and IV and their clinical manifestations.

**Autoimmune Diseases:** Definition, Classification, Rheumatoid arthritis, Myasthenia gravis.

**Immunity to infective diseases:** Immunity to Bacterial and Viral diseases.

UNIT - V

**Transplantation:** Definition of Graft and its types, Mechanism of Allograft rejection, Graft vs Host Diseases, Immuno suppressors.

**Resistance to tumors:** Tumor antigens, NK Cells, Tumor immuno therapy, Lymphoid tumors - Burkitt's Lymphoma.

**Vaccination:** Passive and Active immunization, Recombinant vaccines - Attenuated Vaccine, DNA vaccines, Benefits and adverse effects of vaccination.

**TEXT BOOKS:**

1. Immunology – Janis Kuby, 3rd edition.
2. Immunology – An introduction, Tizzard R Jan, 1995.

**REFERENCE BOOKS:**

1. Immunology – Roitt Ivann, Jonathan Brastoff, David Male, 1993.
2. Text book of Microbiology – Ananthanarayanan. R. and Yayaraman Panikar, 1996.

| QUESTION PAPER PATTERN | | |
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# ACTIVITIES

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

## Blood Group Identification Camp (12.07.2019)

## REPORT


The Department of Biochemistry organized the Blood Group Identification Camp for all the First Year Undergraduate and Postgraduate students. This Programme was carried out by Second Year Biochemistry Students on 12.07.2019 at Biochemistry Laboratory under the guidance of Mrs.T.Radha, Assistant Professor, Department of Biochemistry, KASC.

Nearly 1650 students' blood groups were identified and reported to them. This camp might be helpful to prepare the Blood Group directory for the academic year of 2019-2020.

Every individual child should know his/her blood group so that no time is wasted during an emergency for determining blood group.

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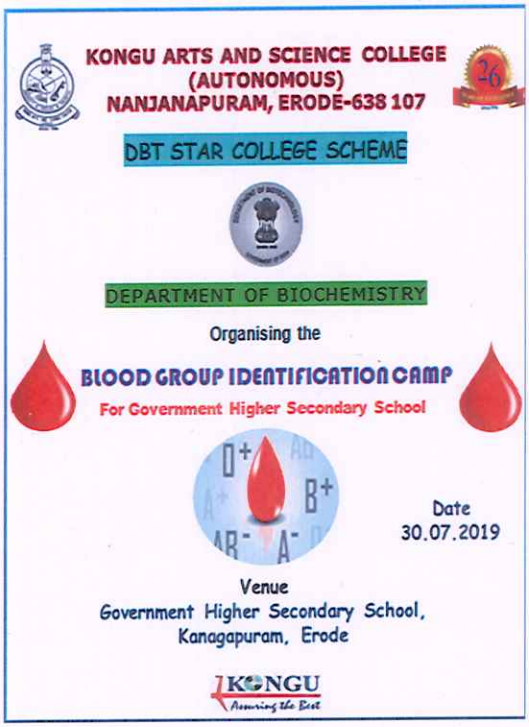
# KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### Extension Activity - Blood Group Identification Camp (30.07.2019)

### REPORT




The Department of Biochemistry organized the **Blood Group Identification Camp** at Government Higher Secondary School, Kanagapuram, Erode on 30.07.2019. This Programme was carried out by Third Year Biochemistry Students under the guidance of Mr.S.Natarajan, Assistant Professor, Department of Biochemistry, KASC.

Nearly 150 students' blood groups were identified, recorded and reported. Every individual child should know his/her blood group so that no time is wasted during an emergency for determining blood group. This Camp helped to identify Blood group of Government School Students

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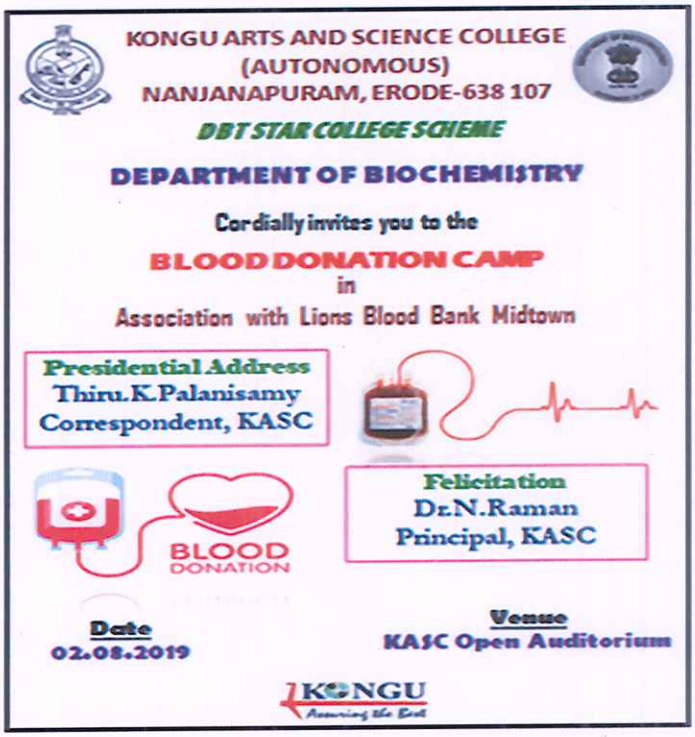
# KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### Extension Activity - Blood Donation Camp (02.08.2019)

### REPORT




The Department of Biochemistry organized the **Blood Donation Camp** in association with Lions Blood Bank Midtown on 02.08.2019 at KASC Open Auditorium. **244 students donated blood** during the drive. The drive successfully had 240 donors which included Student volunteers and Staff members

Many Student volunteers and Staff members participated to donate blood. This event was organized to create awareness about the importance of blood donation in the local communities.

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# KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### International Year of Periodic Table Competition (13.08.2019)

## REPORT


KONGU ARTS AND SCIENCE COLLEGE
(AN AUTONOMOUS INSTITUTION AFFILIATED TO BHARATHIAR UNIVERSITY, COIMBATORE)
(UNDER DBT STAR COLLEGE SCHEME)
ERODE - 638 107

DEPARTMENT OF BIOCHEMISTRY, BIOTECHNOLOGY & PHYSICS
Cordially invite you for the celebration of

INTERNATIONAL YEAR OF PERIODIC TABLE

Organized under
DBT STAR COLLEGE SCHEME

Resource Persons

Dr. N. CHANDRASEKARA
Former Associate Professor
Department of Chemistry
CBM College, Coimbatore

and

Dr. A. CHANDRAMOHAN
Associate Professor and Head
Department of Chemistry
Sri Ramakrishna Mission Vidyalaya College of Arts and Science
Coimbatore

DATE: 19.08.2019 VENUE: PG SEMINAR HALL TIME: 10.00 A.M.

KONGU

A **Guest Lecture** during the Celebration of International Year of Periodic Table was arranged for I B.Sc Biochemistry, Biotechnology and Physics students on 19.08.2019 at PG Seminar Hall. The sessions were handled by **Dr. A. Chandra Mohan**, Associate Professor and Head, Department of Chemistry, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, **Dr. N. Chandrasekara**, Former Associate Professor, Department of Chemistry, CBM College, Coimbatore.

Through this Guest lecture, the Special Guests highlighted the history of the periodic table and stimulated the curiosity of students on the subject.



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## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### Educational Tour - Mysore (23.08.2019)

### REPORT

An **Educational Tour** to **M/s. Karnataka Soap & Detergents Ltd, Mysore**, Karnataka, on 23.08.2019 under the guidance of Mr.G.Karthikeyan and Ms.A.Bhuvaneshwari, Assistant Professor, Department of Biochemistry, KASC. 54 students, 2 faculty members and 1 Non-teaching staff member benefited.

Students learnt many things such as manufacturing, packaging and coordinated functioning of all departments which is the most important skill to achieve success.


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## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

## One Day Workshop on Soil Testing (24.09.2019)

## REPORT

**KONGU ARTS AND SCIENCE COLLEGE**
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The Management, Principal, Staff and Students
Cordially invite you to the
Inauguration of

**ONE DAY WORKSHOP ON SOIL TESTING**

Jointly Organized by
Tamil Nadu Agricultural Department, Erode District &
Department of Biochemistry, KASC

UNDER
**DBT STAR COLLEGE SCHEME**

Thiru. K. PALANISAMY
Correspondent, KASC
has graciously consented to preside over the function

Dr. N. RAMAN
Principal, KASC
has kindly consented to felicitate
Mrs. K.PREMALTHA
Joint Director of Agriculture, Erode
will Deliver the Inaugural Address

Date : 24.09.2019 Time : 10.00 A.M
Venue : PG Seminar Hall

The Department of Biochemistry organized the **One Day Workshop on "Soil Testing"** in association with **Tamil Nadu Agriculture Department**, Erode District on 24.09.2019 at KASC Auditorium and PG Seminar Hall. **Mrs. V. Revathi,** Assistant Agriculture Officer, Tamil Nadu Agriculture Department, Erode District served as the Resource Person. 90 students and Faculty members of Biochemistry participated.

This workshop was organized to create awareness about the importance of Soil testing among the students and gain practical knowledge in soil testing. Students were given practical training in taking samples for soil testing and further processing of the soil.

From this workshop students came to understand the procedures to operate the flame photometry, Atomic spectroscopy. The soil properties examined included pH, electrical conductivity, organic carbon, phosphorus (P), Nitrogen (N), Sulphur, Magnesium, and Calcium.

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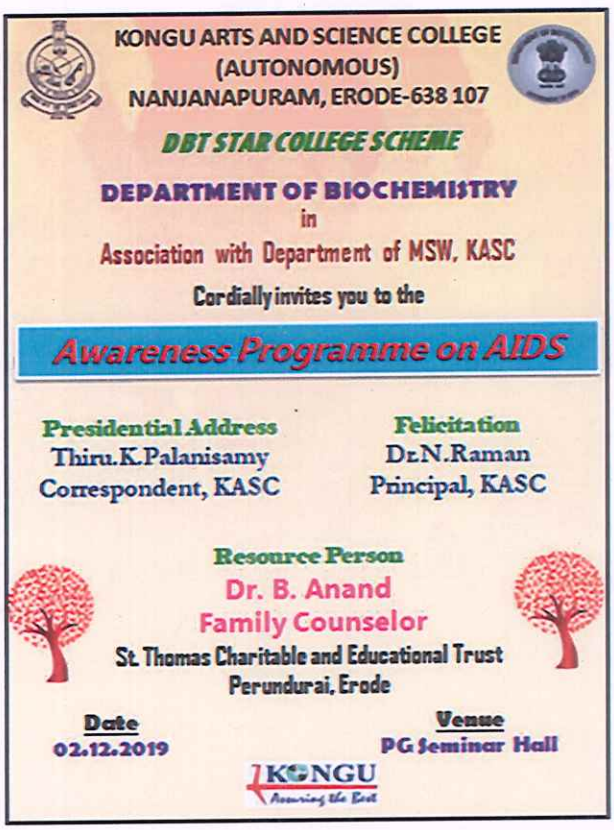
## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### An Awareness Programme on AIDS (02.12.2019)

### REPORT




To mark the occasion of **World AIDS Day**, the Department of Biochemistry organized **An Awareness Programmeon AIDS** in association with the Master of Social Work Department on 02.12.2019 at PG Seminar Hall. 215 School Students participated. **Dr. B. Anand, Family Counselor**, St. Thomas Charitable and Educational Trust, Perundurai, Erode was the Chief guest for the occasion. 180 students and Faculty members from Biochemistry and Social Work participated.

The Programme created awareness among the students on the impact and management of HIV/AIDS and availability of support systems. The programme also helped the participants to develop insight into issues of HIV/AIDS management in the workplace and assist in the creation of a safe working environment which is free from discrimination and stigma.

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## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### Industrial Visit - CSIR-CLRI, Chennai (20.12.2019)

### REPORT

The Department of Biochemistry arranged the **Industrial visit to CSIR - Central Leather Research Institute (CLRI), Chennai** on 20.12.2019 for I B.Sc Biochemistry (48) students under the guidance of Mr.S.Natarajan and Ms.M.Muthu Abirami, Assistant Professors, Department of Biochemistry, KASC.

The students got an insight into the various steps that were involved in the manufacturing of Leather for shoes, bags etc. Students were also enlightened on the methods of Wastewater treatment, an important step to control water pollution. It was a very good learning experience for the students and teachers.


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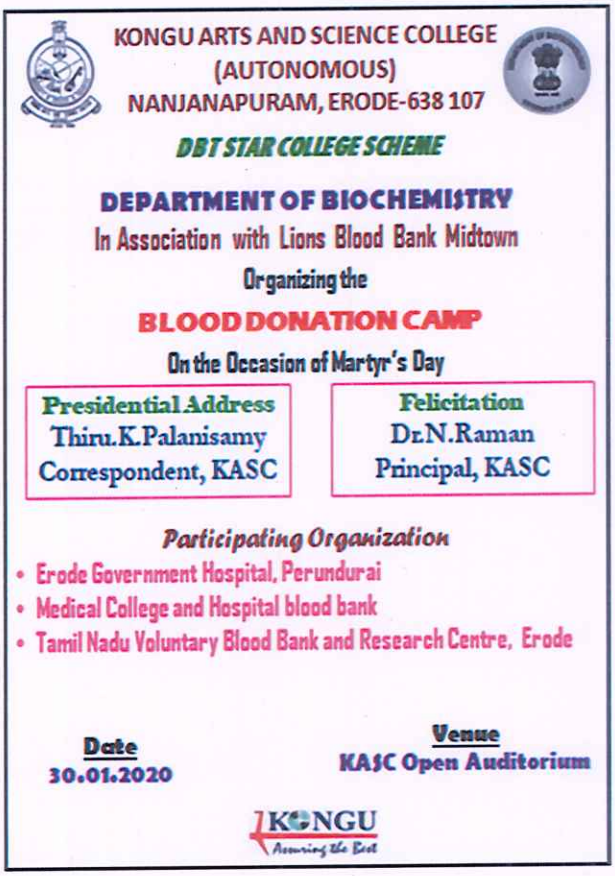
## DEPARTMENT OF BIOCHEMISTRY

## DBT STAR COLLEGE SCHEME

### Extension Activity - Blood Donation Camp (30.01.2020)

### REPORT




To mark the occasion of Martyr's Day, the Department of Biochemistry organized the **Blood Donation Camp** in association with Lions Blood Bank Midtown on 30.01.2020 at KASC Open Auditorium. About **324 students donated blood** during the drive. The drive successfully had 240 donors which included Student volunteers and Staff members. Erode Government Hospital, Perundurai Medical College and Hospital blood bank, Tamil Nadu Voluntary Blood Bank and Research Centre, Erode collected the blood units.

Blood group directory of UG and PG students released on the occasion. Many Student volunteers and Staff members participated to donate blood. Trend setter award given for blood donors who had donated blood for three or more times.

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## DEPARTMENT OF BIOCHEMISTRY

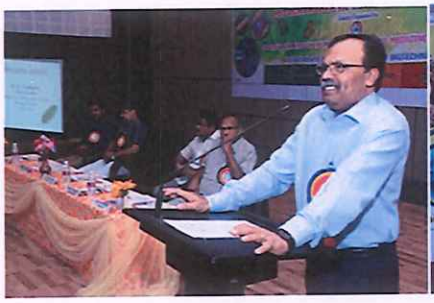
## DBT STAR COLLEGE SCHEME

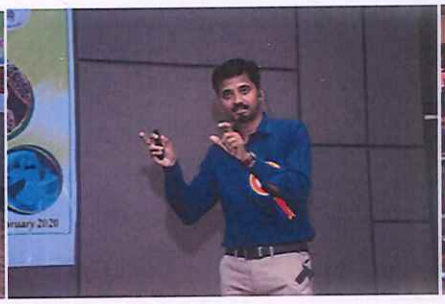
### A National Symposium on "Mitochondria in Health and Disease" (21.02.2020)

## REPORT


The Departments of Biochemistry and Biotechnology arranged the **A National Symposium on 'Mitochondria in Health and Disease'** on 21.02.2020 in association with **Society for Mitochondrial Research and Medicine** (SMRM) - India at UVS Hall, KASC. **Dr. K.Thangaraj**, Chief Scientist, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, **Dr.SwastiRaychaudhuri**, Centre for Cellular and Molecular Biology (CCMB), Hyderabad and **Dr.P.Govindaraj (Alumni)**, Research Scientist, Institute of Bioinformatics, Bangalore, served as the Resource Persons. Around 540 students (KASC & outside of KASC) and faculty members of Biochemistry and Biotechnology departments participated.

The Symposium was organized to foster research derived knowledge on basic science of mitochondria, mitochondrial pathogenesis, prevention, diagnosis, drug discovery and treatment. The Participants gained immense knowledge on the cutting -edge advances, emerging concepts in mitochondrial medicine and also the current status and future prospects in treatment of Mitochondrial disorders.





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