Syllabus for Entrance test in Clinical Biochemistry, 2023.

Note: The syllabus Prescribed for the entrance test has been divided into fifteen units. Each unit carries a weightage of four marks. Paper setters are required to setfour multiple choice type questions with only one correct or most appropriate answer separately for each unit, giving uniform representation to the whole syllabus contained therein.

Unit I

Chemical Bonding & Molecular Structure, Oxidation-reduction, Redox potential, coupled reactions, Elimination, Isomerization and rearrangements. Dipole-dipole interactions, Hydrogen bonds, vanderwaals forces, concept of acids and bases. Electrophiles and nucleophiles. Chemical kinetics and catalysis; orders of reactions, concepts of activation energy and reaction rates, laws of photochemistry, photochemical reactions. Laws of thermodynamics.

Unit II

Structure and Function ofCarbohydrates, Lipids, Vitamins, Nucleic acids, Amino acids and Proteins.

Unit III

Enzymes: General characteristics, nomenclature and classification of enzymes, enzyme activity and factors affecting enzyme activity, enzyme kinetics, enzyme Regulation.

Unit IV

Synthesis and degradation of Carbohydrates, Lipids,Amino acids and Nucleic acids. Units of energy, BMR and its measurement, Protein energy malnutrition metabolism related disorders (PKU, Tyrosinemia).

UNIT V

Morphology of Prokaryotic and Eukaryotic cells. Structure and function of cell organelles (ER, Golgi, Nuclers,Mitochondria and Peroxisomes). Cell Cycle, Cell Membrane structure & function, Membrane Transport.

UNIT VI

Central dogma of molecular biology, Structural organization of DNA and RNA. Replication, Transcription and Translation in prokaryotes and eukaryotes.

UNIT VII

Introduction to Microbial Systems, Structure, Classification of viruses and bacteria. Virulence and pathogenesis. Host parasite relationship. Antimicrobial agents.

UNIT VIII

History, scope and significance of immunology, Basic concepts of specific and Non-specific immune responses. Structure and function of Immunoglobulins.Antigen-Antibody interactions. Immunodeficiency disorders.

UNIT IX

Mendelian Genetics; laws and principles of segregation, independent assortment. Linkage and Crossing over. Chromosome organization: Structural and Numerical changes in Chromosomes.

UNIT X

Concept and application of Gene Cloning and recombinant DNA technology (RDT).Applications of genetic engineering in medical and agricultural sciences.Plasmids(Ti& Ri Plasmids of Agrobacterium), Transposons (Ac & Ds of Maize). Gene transfer techniques in plants, transgenic plants with special reference to Bt-Cotton & Golden rice.

UNIT XI

Applications of Clinical Biochemistry. Kidney, Liver and thyroid function tests (KFT, LFT, and TFT). Lipid profile. Glucose tolerance tests. Urine and stool examination.

UNIT XII

Cell Injury – types and Morphology, Inflammation, Components and functions of blood and lymph. Blood coagulation. AnemiaInflammation,Mediator's of Inflammation, Acute and Chronic Inflammation, Circulatory disturbances – Thrombosis, Infarction. Edema, Shock- definition and pathogenesis.

UNIT XIII

General organization and physiological functions and disorders of Respiratory, Excretory, Digestive andEndocrine system.

UNIT XIV

Centrifugation: Basic principles and its types, Spectroscopy-Principles and application of spectrophotometery& Fluorescence spectroscopy, Electrophoresis & Chromatography- Principle, Instrumentation & applications of PAGE, IEF. Types & basic principles of Column & Thin layer Chromatography.

UNIT XV

Photosynthesis- Light harvesting complexes, C3 &C4 pathway,Mechanisms of electron transport; photoprotective mechanisms. Nitrogen metabolism- Biological nitrogen fixation& assimilation.Plant hormones-Biosysthesis, storage, breakdown and transport; physiological effects and machanisms of action.

Sd/-
In-charge Admission

Sd/-
Head of Department