

Biochemistry

Marks distribution

- **Written = 200 (Formative- 20+MCQ (SBA+MTF) 40+(SAQ+SEQ) 140)**
- **SOE = 100**
- **Practical = 100 (OPSE- 50+ Traditional- 40+ Assignment- 10)**

Contents

Core:

- Introduction to Biochemistry.
- Concept of solutions.
- Colloids and crystalloids.
- Concept of isotope.
- Concept of Biomolecules: Carbohydrates.
- Amino acids and proteins.
- Lipids and fatty acids.
- Enzymes.

Core:

- Basic concepts of food, nutrition and dietary principles.
- Energy balance and calculation of energy equivalent of food.
- Nutritional aspects of carbohydrates, fats and proteins, Fibers.
- Vitamins and Minerals.
- Common Nutritional disorders.

Digestion, Absorption, Bioenergetics and Metabolism

Contents

Core:

- Introduction to Metabolism
- Biological oxidation, respiratory chain and oxidative phosphorylation
- High and low energy compounds. ATP
- Phase of metabolism (digestion, absorption and intermediary metabolism)
- Glycolysis
- Citric acid cycle
- Glycogenesis and glycogenolysis
- Hexose monophosphate shunt
- Gluconeogenesis
- Blood glucose homeostasis
- Cori cycle

Core:

- Digestion and absorption of lipid.
- Blood lipids and pathways of lipid metabolism.
- Triglyceride metabolism.
- Beta-oxidation.
- Ketogenesis and ketosis.
- Lipid transport and lipoprotein metabolism.
- Eicosanoids.

Core:

- Digestion and absorption of protein
- Protein turnover, common amino acid pool, nitrogen balance
- Pathways of protein metabolism
- Deamination and transamination.
- fate of amino acid in the body
- Source and disposal of ammonia

Additional:

- Role of liver in overall metabolisms.
- Integrated metabolism
- Metabolic adjustment of fed, fasting and starvation state.

Renal biochemistry, body fluid, electrolytes and acid-base balance

Contents

Core:

Renal biochemistry in relation to water, electrolytes and acid base homeostasis

- Total body water and body fluid compartments. Consumption of body fluids.
- Regulation of normal water balance.
- Major electrolytes and their homeostasis.
- Volume disorders
- Acid base homeostasis & disorders.

Renal biochemistry, body fluid, electrolytes and acid-base balance

Contents

Core:

- Introduction to clinical biochemistry.
- Normal biochemical values in conventional and SI. Units.
- Clinical enzymology related to liver and myocardial diseases.
- Lipid profiles and dyslipoproteinemias.
- Organ function tests (liver, kidney & thyroid)

- Diagnosis of diabetes mellitus
- Bilirubin metabolism and jaundice.
- proteinuria and microalbuminuria

Fundamentals of Molecular Biology and genetics

Contents

Core:

- Basic concepts of molecular biology.
- Nucleic acid, nucleosides, nucleotides.
- Replication, transcription and translation.
- Gene, genome, allele, trait, genetic code, mutation, mutagens.
- PCR. DNA, cloning, recombinant DNA technology
- Biomedical aspects of medical
- biotechnology: understanding & application.

Biochemistry Practical

Contents

Core:

- Identification of laboratory glass wares and equipment.
- Preparation of solutions.
- Sample collection & processing.
- Photometry.
- Estimation, demonstration of technique, calculation and interpretation of result:
- Blood glucose estimation.
- Serum cholesterol estimation.
- Serum urea
- Serum creatinine
- Serum total protein
- Serum bilirubin
- Abnormal constituents of urine and their clinical significance.