

DEPTH OF BIOLOGY

B. PHARMACY

2 SEM IMPORTANT QUESTIONS

BIOCHEMISTRY

UNIT I

08 Hours

- **Biomolecules**

Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

Energy rich compounds; classification; biological significances of ATP and cyclic AMP

DEPTH OF BIOLOGY

10 MARKS

1. Introduction, classification & biological role of carbohydrates

2 MARKS

1. Explain protein/ amino acid/ lipid/ nucleic acid
2. Explain endergonic & exergonic reactions
3. Explain redox potential
4. Write down the biological significance of ATP
5. Define cyclic AMP

UNIT II

10 Hours

- **Carbohydrate metabolism**

Glycolysis – Pathway, energetics and significance

Citric acid cycle- Pathway, energetics and significance

HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

Glycogen metabolism Pathways and glycogen storage diseases (GSD)

Gluconeogenesis- Pathway and its significance

Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

Electron transport chain (ETC) and its mechanism.

Oxidative phosphorylation & its mechanism and substrate level phosphorylation

Inhibitors ETC and oxidative phosphorylation/Uncouplers

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10 MARKS

1. Explain glycolysis, its pathway , energetics & significance
2. Short note on citric acid cycle
3. Explain HMP shunt & define it ssignificance
4. Explain diabetes mellitus
5. Explain ETC with mechanism or write a short note on oxidative phosphorylation
6. Explain gluconeogenesis
7. Explain glycogen metabolism pathway

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2 MARKS

1. Short note on G6PD deficiency
2. Explain glycogen storage disease
3. What is ETC inhibitors
4. Explain uncompress with example

UNIT III

10 Hours

- **Lipid metabolism**

β -Oxidation of saturated fatty acid (Palmitic acid)

Formation and utilization of ketone bodies; ketoacidosis

De novo synthesis of fatty acids (Palmitic acid)

Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D

Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.

- **Amino acid metabolism**

General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and its disorders

Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenylketonuria, Albinism, alcaptonuria, tyrosinemia)

Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline

Catabolism of heme; hyperbilirubinemia and jaundice

DEPTH OF BIOLOGY

10 MARKS

1. Explain oxidation of saturated fatty acid [palmitic acid]
2. Explain de-novo synthesis of fatty acid [palmitric acid]

5 MARKS

1. Urea cycle & its disorder
2. Catabolism of phenylalanine & tyrosine
3. Metabolic disorder of catabolism of phenylalanine & tyrosine
4. Synthesis & biological significance of 5-Ht & dopamine
5. Explain the term jaundice

DEPTH OF BIOLOGY

2 MARKS

1. Define obesity
2. Ketoacidosis
3. Define atherosclerosis
4. Define transmutation/ deamination/ decarboxylation
5. Define albinism

UNIT IV

10 Hours

- **Nucleic acid metabolism and genetic information transfer**

Biosynthesis of purine and pyrimidine nucleotides

Catabolism of purine nucleotides and Hyperuricemia and Gout disease

Organization of mammalian genome

Structure of DNA and RNA and their functions

DNA replication (semi conservative model)

Transcription or RNA synthesis

Genetic code, Translation or Protein synthesis and inhibitors

DEPTH OF BIOLOGY

10 MARKS

1. Write down biosynthesis of purine & pyrimidine nucleotide
2. Explain catabolism of purine nucleotide

5 MARKS

1. Define DNA replication by semi conservative model
2. Write down structure & function of DNA & RNA
3. Define transcription/ RNA synthesis
4. Explain protein synthesis

UNIT V

07 Hours

- **Enzymes**

Introduction, properties, nomenclature and IUB classification of enzymes

Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

Enzyme inhibitors with examples

Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

Therapeutic and diagnostic applications of enzymes and isoenzymes

Coenzymes –Structure and biochemical functions

DEPTH OF BIOLOGY

10 MARKS

1. Define introduction, nomenclature & IUB classification of enzyme
2. Explain enzyme inhibition with example
3. Short note on coenzyme, its structure & biochemical function