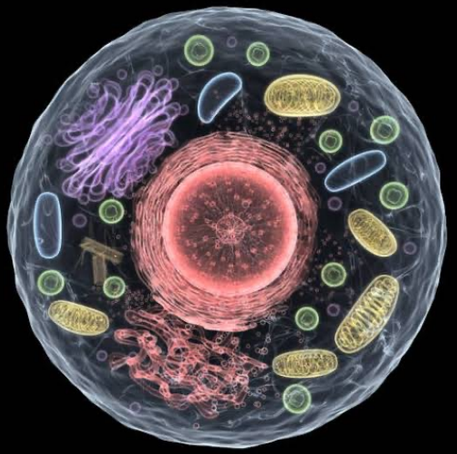
DEPTH OF BIOLOGY

Biochemistry 2nd Sem.

Unit-1



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

10/15 Marks

Q.1 Give a detail note on introduction, Classification, & biological role of Carbohydrate ?

2/3 Marks

Q.1 Define Protein / Amino acid / Lipid / Nucleic Acid ?

Q.2 Explain endergonic and exergonic reaction ?

Q.3 Define Redox Potential

Q.4 Explain Biological Significance of ATP ? Q.5 Define Cyclic AMP ?

DEPTH OF BIOLOGY

Unit-2

Glycolysis- Pathway, energetics and significance

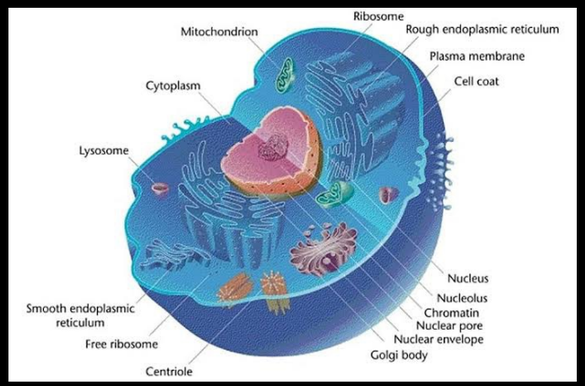
Citric acid cycle- Pathway, energetics and significance

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 phosphorylation, Inhibitors ETC and oxidative phosphorylation/Uncouplers level

DEPTH OF BIOLOGY

10/15 Marks

Q.1 Explain Glycolysis its pathway energetics & Significance ?

Q.2 Give a detail note on Citric Acid Cycle ?

Q.3 Explain HMP Shunt or pentose phosphate pathway (PPP) ?

Q.4 Explain Diabetes Mellitus ?

Q.5 Explain ETC & Oxidative Phosphorylation ?

Q.6 Explain Gluconeogenesis ?

Q.7 Glycogen metabolism pathway?

DEPTH OF BIOLOGY

2/3/ Mcq

Q.1 Define G-6PD deficiency ?

Q.2 Define Glycogen storage disease ?

Q.3 Explain ETC inhibitors ?

Q.4 Explain Uncouplers with example ?

DEPTH OF BIOLOGY

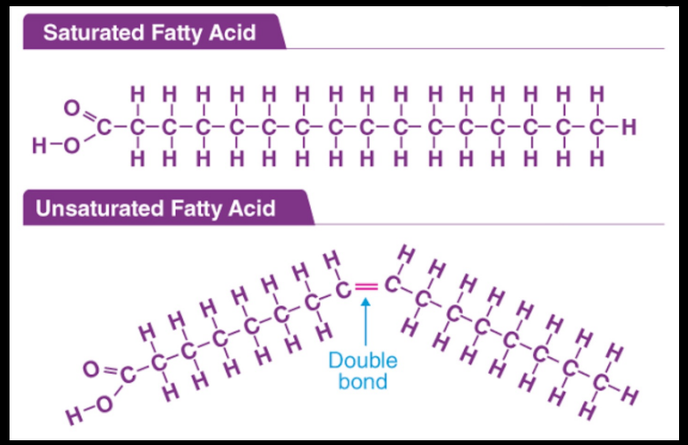
Unit-3

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

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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 (Phenyketonuria, Albinism, alkeptonuria, tyrosinemia)

Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline
Catabolism of heme; hyperbilirubinemia and jaundice

DEPTH OF BIOLOGY

10/15 Marks

Q.1 Explain oxidation of saturated fatty acid (Palmitic acid). ?

Q.2 Explain De-novo Synthesis of Fatty acid ?

DEPTH OF BIOLOGY

5/7 Marks

Q.1 Give a detail note on Urea Cycle & their disorder ?

Q.2 Explain Catabolism of Phenylalanine & Tyrosine ?

Q.3 Write the metabolism disorders of Catabolism of Phenylalanine & Tyrosine ?

Q.4 Write down the synthesis & Biological Significance of 5-HT & Dopamine ?

Q.5 Explain Jaundice ?

DEPTH OF BIOLOGY

2/3/ Mcq

Q.1 Define Obesity ?

Q.2 Ketoacidosis ?

Q.3 Define Atherosclerosis ?

Q.4 Define Transamination / Deamination / Decarboxylation ?

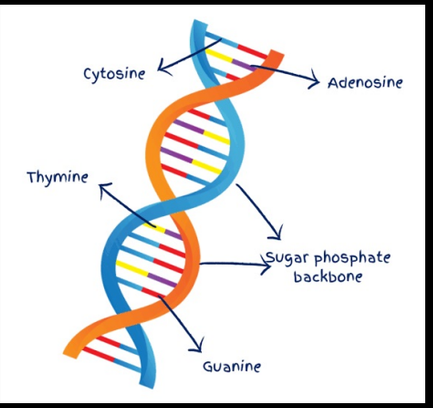
Q.5 Define Albinism ?

Q.6 Biological significance of cholesterol and vitamin D. ?

Q.7 What is hyperbilirubinemia ?

DEPTH OF BIOLOGY

Unit-4



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

10/15 Marks

Q.1 Explain the biosynthesis of Purine & Pyrimidine Nucleotide ?

Q.2 Explain Catabolism of Purine Nucleotide ?

DEPTH OF BIOLOGY

5/7 Marks

Q.1 Write down the structure & functions of DNA & RNA ?

Q.2 Define DNA replication (Semi- Conservative Method) ?

Q.3 Define Transcription / RNA synthesis ?

Q.4 Explain Protein Synthesis ?

Q.5 Define Genetic Code ?

Q.6

DEPTH OF BIOLOGY

2/3 MCQ

Q.1 Define Hyperuricemia ?

Q.2 Gout disease ?

Q.3 DNA & It's Functions ?

Q.4 RNA & It's Functions ?

Q.5 Define protein Synthesis & its Inhibitors ?

DEPTH OF BIOLOGY

Unit-5

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

10/15 Marks

Q.1 Define Introduction, Nomenclature & IUB Classification of Enzymes ?

Q.2 Therapeutic and diagnostic applications of enzymes and isoenzymes

5/7 Marks

Q.1 Define Michaelis plot ?

Q.2 Explain enzyme inhibitors with example ?

Q.3 Write a short note on CO-Enzyme its structure & biochemical functions ?

DEPTH OF BIOLOGY

2/3/ Mcq

Q.1 Define Enzyme ?

Q.2 Define Enzyme inhibitors & its example ?

Q.3 What is Co-enzyme ?

Q.4 Define iso-enzyme ?