

Write short Notes on:

1. What are the biochemical markers of bone turnover? Give their clinical significance.
2. Discuss the biochemical basis for the action of oral contraceptives.
3. What are free radicals? Diseases how they are detoxified in the body.
4. What is fat malabsorption? How will you do the differential diagnosis on the basis of biochemical tests?
5. Discuss the role of diet, life style and drugs in the management of hypercholesterolemia.
6. Discuss the metabolism and regulatory role of fructose-2-6-bisphosphate in liver.
7. What is Bohr's effect? Explain its molecular mechanisms both at peripheral tissue and lungs level.
8. Discuss the spontaneous and assisted pathways of folding of large polypeptides.
9. Mentions the principles used by enzyme for catalyzing a reaction. Give the mechanism of action of 'Chymotrypsin'.
10. Discuss the various DNA binding motifs seen in protein DNA interaction with example.

Write short Notes on:

1. What is folate trap? Discuss the role of hematopoietic vitamins in the causation of megaloblastic and pernicious anemia.
2. Discuss various types of enzyme inhibition. Give the mechanism of action of two drugs that act as irreversible inhibitors with their significance.
3. Discuss the structure and function of various membrane lipids. How membrane lipids are degraded? Describe two inherited disorders resulting from abnormal accumulation of membrane lipids.
4. Describe the structure of collagen. Explain the role of L ascorbic acid in the formation of collagen. Describe two conditions that are produced as a result of mutations in genes encoding collagen.
5. Describe various biochemical reactions that lead to increased cellular level of homocysteine. How molecular derangements in homocysteine metabolism can lead to neural tube defects and atherosclerosis?
6. What is a glycoprotein? Briefly discuss the process of glycosylation. Explain with example, how an error in glycosylation can result in a pathological condition.
7. What do you understand by denaturation of proteins? What is protein misfolding? Explain the molecular consequences of protein misfolding with respect to cystic fibrosis, amyloidosis and prion disease.
8. Describe the keys to successful evaluation of a new analytical laboratory method.
9. What do you understand by gene therapy? Describe the salient features and its applications in the treatment of genetic disorders and cancer.
10. Discuss the role of adipose tissue in the regulation of body mass.

Write short Notes on:

1. Discuss the biochemical mechanisms involved in activation of protooncogenes to oncogenes.
2. Describe the role of Gas-chromatography-mass spectroscopy in organic acidemias.
3. Discuss various tests to assess exocrine pancreatic function.
4. Write the principle of chemiluminometer. Mention its diagnostic significance.
5. Discuss the role of cyclins and cyclin dependent kinases in the regulation of cell cycle progress.
6. What is PET scanning? Give the principle, precautions, procedure and clinical importance of PET scanning.
7. Classify acid base imbalance and state the primary deficit, compensatory mechanism and laboratory values obtained for each.
8. Describe the role of copper in the body. Discuss two genetic disorders involved in copper metabolism.
9. Describe protein energy malnutrition and give the biochemical tests used to assess nutritional status.
10. Name the antioxidant vitamins and explain their role as antioxidants.

Write short Notes on:

1. What is alternative RNA-splicing? How does it help in regulation of gene expression?
2. Describe the chemiosmotic hypothesis for ATP synthesis and discuss the role of uncouplers.
3. Enumerate the different types of RNA and give their structure and function.
4. Give the structure and function of plasma membrane. Enumerate the different transport mechanisms.
5. Discuss the structural features of mitochondrial DNA. Write the pathological conditions associated with mitochondrial dysfunction.
6. What are glycosaminoglycans? Give examples. Briefly discuss their composition and function.
7. Define a sphingolipid. List the different types seen in human body. Give examples of each and briefly describe their function.
8. Discuss the various mechanisms by which enzyme activity is regulated in a cell.
9. What are indications for a Schilling's test? Explain how the test is carried out. How would one interpret the results of a Schilling's test?
10. Discuss the biochemical role of vitamin K in the body. List the deficiency manifestations. Mention the mechanisms of action of anticoagulants.

Write short notes on:

1. Enzyme defects of urea cycle – leading to aminoacid urea
2. HDL Sub classes – composition & metabolic role in the body
3. Reciprocal regulation of glycolysis and gluconeogenesis
4. Purine & pyrimidine analogs and their role as therapeutics agents
5. G Proteins in cell signaling transduction
6. Structure and function of insulin receptors
7. Role of reactive oxygen species in health
8. Oxidative phosphorylation with special reference to chemiosmotic hypothesis. Mention the importance of natural uncouplers
9. Laboratory investigational approach for thyroid disorders
10. Formation of active vitamin D and its role in calcium homeostasis

Write short notes on:

1. Enzymes used in molecular cloning
2. Urinary tests for detection of inborn errors of metabolism
3. Receptor assays in clinical biochemistry
4. Pre analytical & analytical errors of quality control
5. Stem cells and their importance in medicine
6. i) Sphingolipidosis ii) Cholestasis
7. Meta analysis & randomized case control studies
8. Biochemical basis of chronic complication of diabetes mellitus
9. Aminoaciduria, causes & method of their diagnosis
10. Principle & importance of different types of PCR

Write short notes on:

1. Structure of C1 compliment & its role in compliment activation
2. Role of telomerases in cancer & aging
3. Promoter, inhibitors & predisposing risk factors of stone formation
4. Qualitative & quantitative importance & requirements of proteins in a balanced diet
5. Role of diet & essential nutrients in connective tissue disorder
6. Inborn errors of metabolism associated with neonatal liver disease and laboratory studies useful in diagnosis
7. Role of various proteins in regulation of iron metabolism
8. i) atomic absorption spectrophotometry & ii) biosensors
9. Mention various tests for diagnosis of hepatic encephalopathy in infants. Explain the biochemical basis of its treatment
10. Discuss pro apoptotic & anti apoptotic factors

Write short notes on:

1. Role of enzymes against free radicals
2. Caspases & their role in apoptosis
3. Different mechanism of protein degradation
4. Biochemical role sulph-hydral group of cysteine in enzyme action
5. Diverse biological role of cytochromes
6. What is amyloidosis. Discuss the various types of amyloidosis
7. Mention different types of protein kinases. Discuss a protein kinase involved in signal transduction
8. Describe the kinetic & mode of action of allosteric enzymes
9. i) proteomics & ii) nanotechnology
10. Describe small interfering RNA(si RNA) function, structure & potential application for therapy

Write short notes on:

1. Discuss various diseases associated with transport of amino acids across the cells.
2. Discuss the biochemical role & significance of various lipases in the body.
3. Discuss the role of CETP, ABCAI & SR(BI) in HDL metabolism.
4. Describe insulin receptor and its signaling pathway.
5. (i) t-fatty acids
(ii) peroxisomes.
6. Explain the role of the following in intermediary metabolism :
(i) pyridoxal phosphate
(ii) fructose 2-6 biphosphate
7. Enumerate the different polyamines. Outline their synthetic pathway & mention their biological role.
8. Mention the various nitric oxide synthases. Discuss the biochemical role of nitric oxide in the body.
9. What is meant by "Metabolic Syndrome"? Describe the factors leading to this syndrome & consequent biochemical changes and complications.
10. Two opposite pathways viz. gluconeogenesis in liver and glycolysis in muscle occur simultaneously in Cori's cycle. Explain.

Write short notes on:

1. (a) Specificity Ofatest
(b) Reference interval
(c) Effect of diet on test results.
2. Quality Management of a clinical laboratory.
3. What are various ways to estimate serum electrolytes, give principles of all techniques and tabulate advantages of one over other.
4. How is GTT interpreted, give importance of HBA_{1c} vis-à-vis glucose estimation. What is significance of knowing albumin: creatinine ratio in diabetes mellitus.
5. Give the causes of iron overload. How can it be diagnosed in the lab.
6. What are the factors leading to hypocalcaemia, give dietary sources, metabolism of calcium.
7. What are W-3 fatty acids? Give their dietary source and importance in health maintenance.
8. Mention the role of flavinoids as antioxidants. What are their sources?
9. Name some minerals which can prevent acquired diseases. How is iodine being metabolized in the body?
10. Explain the coenzyme role of Vitamin B-Complex.

Write short notes on:

1. Discuss the various procedures and methodologies used for pre-natal diagnosis of genetic diseases. Give appropriate examples.
2. Explain the common pre-analytical errors in a clinical biochemistry laboratory and how they can be minimized.
3. Discuss the role of hyperlipidemia, diabetes and oxidative stress in the causation of atherosclerosis.
4. Discuss the different biochemical tests that help to assess liver function.
5. What is meant by gene therapy? Give details of some diseases in which it has been used.
6. Discuss the biological importance, deficiency and toxicity of Selenium.
7. Explain the basis of vaccination with details of the different kinds of vaccines available.
8. Enumerate eight tumor markers and discuss the clinical applications of any two.
9. (a) Serum isozymes used for diagnosis.
(b) Enzymes as therapeutic agents
(c) Enzymes used in laboratory Assays
10. How would you evaluate a 74 year old man for diabetic complications?

Write short notes on:

1. Mucopolysaccharides and their functions.
2. Determination of protein structure.
3. Eicosanoids and their importance
4. Allosteric regulation of enzyme activity.
5. Therapeutic importance of enzymes.
6. Lipoproteins.
7. Vitamin D and bone metabolism
8. Metabolic functions of co-transaminase.
9. Physiological functions of Vitamin A
10. Digestion and absorption of lipids and related disorders.