3 Hours **Total Marks: 100**

1. **Attempt all questions.**
2. **All questions carry equal marks.**
3. **Draw neat labeled diagrams wherever necessary.**
4. **Use of log tables and non-programmable calculator is allowed.**

Q.1 a. Do as directed: (Any six) **06**

1. What is salting out of proteins?
2. Define sarcomere.
3. Enlist the types of protein motifs.
4. State true or false: 3D structure of protein can be determined by X-ray crystallography.
5. Fill in the blank:
   -------- plays an essential role in the folding of collagen.
6. Name the technique used to separate soluble proteins from insoluble cellular debris.
7. Give the names of motor proteins.

1. Explain chromatography techniques with reference to protein purification.
2. Explain in detail the protein denaturation process.
3. Discuss the oxygen binding to hemoglobin molecules.

Q.2 a. Do as instructed: (Any six) **06**

1. Repeating units of peptidoglycan are synthesized within the cytoplasm while bound to the nucleotide
   a. ATP
   b. GDP
   c. CTP
   d. UDP
2. What is bactoprenol ?
3. Synthesis of glycogen from glucose is done by the enzyme
   a. Glycogen polymerase b. Glycogen ligase
   c. Glycogen lyase d. Glycogen Synthase
4. Peptidoglycan polymers are synthesized in the
   a. Cytoplasm b. Nucleus c. Cell membrane d. Cell wall

5. Squalene 2, 3- epoxide is converted to Stigmasterol in Plants. (True/ False)

6. The essential intermediates in the pathway from acetate to cholesterol are
a. Acetic acid b. Ethylene c. Isoprene units d.Methane

7. High levels of cholesterol in blood in humans is correlated to _____.

8. What is Glycogenin?

9. Sucrose is synthesized in
a. Cell membrane b. Cell wall c. Cytosol d. Mitochondria

Q.2 b. Answer the following questions: (Any Two) **14**

1. Explain the regulation of cholesterol biosynthesis.

2. Diagrammatically explain starch biosynthesis.

3. What are ketone bodies? Explain the process of ketogenesis.

Q.3 a. Do as directed: (Any Six) **06**

1. An enlargement of thyroid gland associated with elevated TSH level is ……..
2. Name the hormone associated with diabetes insipidus.
3. Which hormone is produced by zona fasciculata of adrenal gland?
4. State true /False: Progesterone is synthesized and secreted by corpus luteum and placenta
5. Give one function of PTH.
6. Name the hormone associated with Cushing's syndrome.
7. Mention the importance of hCG.
8. State true /False:Glucagon do not enhances gluconeogenesis and glycogenolysis.
9. Carecholamine are produced in response to fight,..... and ……

Q.3 b. Answer the following: (Any Two) **14**

1. Define Hormone. What are group I and II hormone? Discuss in brief the mechanism of action of the same.
2. Elaborate on biochemical functions of glucocorticoids.
3. Discuss on physiological and biochemical function of estrogen.

Q.4 a. Do as directed: (Any six) **06**

1. Name any one vitamin containing sulfur.
2. _____ are certain non-heme proteins necessary for ETC and oxidative phosphorylation.
3. State true / false: Deficiency of cobalt leads to pernicious anaemia.
4. What do you mean by fluorosis?
5. _____ is associated with the metabolism of histidine.
6. Mention the role of carotenoids.
7. Acrodermatitis is a rare inherited metabolic disease of _____ deficiency.
8. State true / false: Lactose promotes Ca uptake by intestinal cells.
9. Give any two examples of essential trace elements.

Q.4 b. Answer the following questions: (Any Two) **14**

1. Explain the absorption of phosphorus and various diseases associated with the abnormal levels of serum phosphates.
2. Give an overview of the absorption, transport, and storage of Vitamin E, including any four of its biochemical functions.
3. Give a detailed account on obesity - its cause, classification based on BMI and the pharmacologic treatment.

Q.5 Write Short notes on the following (Any four) **20**

a. Regulation of muscle contraction

b. Quaternary Structure of protein

c. Synthesis of peptidoglycan.

d. Insulin associated disorders.

e. Calcitonin

f. Kwashiorker

_____