

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.

Q1. (a) Do as directed: (Any Six)

06

1. What are fibrous proteins?
2. State true or false:  
Ribonuclease polypeptide exists predominantly in  $\beta$  conformation.
3. Name the technique commonly employed for determining 3 D structure of protein.
4. Fill in the blank:  
Larger polypeptides often fold into two or more stable globular units called
5. Define protomer.
6. State true or false:  
Hydrophilic interactions are involved in tertiary protein structure.
7. Name any one analytical procedure based on antigen - antibody interaction.
8. Fill in the blank:  
Tobacco mosaic virus protein has \_\_\_\_\_ symmetry.
9. State the role of Hsp 70.

(b) Answer the following (Any Two)

14

1. Give salient features of tertiary structure of myoglobin
2. Elaborate on chemical energy modulated mechanism of muscle contraction
3. Explain protein purification by salting out and dialysis.

Q2. (a) Name the Pathway to which the following reactions are associated: (Any Six)

06

1. Starch<sub>n</sub> to Starch<sub>n+1</sub>
2. Geranyl pyrophosphate to farnesyl pyrophosphate
3. Glycogen<sub>n</sub> to glycogen<sub>n+1</sub>
4. Sucrose-6-phosphate to sucrose
5. Mevalonate to 5-phosphomevalonate

6. Glycogen phosphorylase 'b' to glycogen phosphorylase 'a'
7. Squalene to squalene 2,3 epoxide
8. UDP -Glucose to Sucrose 6 phosphate
9. Acetyl-CoA to AcetoacetylCoA

b) Give an account on the following: (Any Two)

14

1. Biosynthesis of sucrose in plants
2. Synthesis of Mevalonate in cholesterol biosynthesis
3. Biochemical reactions of glycogenesis

Q3. (a) Do as Instructed: (Any Six)

06

1. Name one hypothalamic hormone.
2. State true or false:  
Growth hormone is antagonistic to insulin and causes hyperglycemia.
3. Which hormone is associated with diabetes insipidus?
4. Fill in the blank:  
\_\_\_\_\_ is an enlargement of thyroid gland associated with elevated TSH levels.
5. Give one function of androgen.
6. Mention the name of the hormone synthesized and secreted by corpus luteum and placenta.
7. Give the function of  $\beta$ -hCG
8. Name the hormone produced by Zona fasciculata of adrenal gland.
9. What is the effect of glucagon on blood glucose level?

(b) Answer the following: (Any Two)

14

1. What are group I and group II hormone? Discuss the mechanism of action of the same.
2. Explain the biochemical functions of catecholamines.
3. Elaborate on the effect of insulin on carbohydrates metabolism.

06

Q4. (a) Name the following: (Any Six)

1. The vitamin containing isoalloxazine ring
2. The egg injury factor present in raw egg white.
3. The vitamin that is synthesized only by microorganisms
4. Iron is transported in the plasma in a bound form to a protein
5. Sulfur containing amino acid.
6. Element that prevents the development of dental caries.
7. Principal intracellular cation.
8. Disease characterized by Dermatitis, Diarrhea, dementia
9. A in Coenzyme A stands for.

(b) Answer the following questions (Any Two)

14

1. Explain Wald's Visual cycle
2. Explain the various functions of Calcium
3. Give the clinical differences between Kwashiorkor and Marasmus

Q5. Write short notes on: (Any Four)

20

- a) Protein denaturation
- b) Regulation of sucrose phosphate synthase by phosphorylation
- c) Functions of Oxytocin
- d) Abnormalities of growth hormone.
- e) Symptoms of Vitamin D deficiency
- f) Disease states associated with Phosphorus levels

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