

- Attempt all questions.
- All questions carry equal marks.
- Draw neat labeled diagrams wherever necessary.

- Q1 (a) Explain the following terms (any two) 2**
- Exocytosis
  - Freund's incomplete adjuvant
  - T cytotoxic cells ( $T_c$ )
  - Antigenicity
- (b) Give one example of the following (Any one) 1**
- Macrophages present in brain
  - Secondary lymphoid organ
- (c) Discuss the following (any two) 12**
- Anatomical barriers present in gastrointestinal tract and respiratory tract.
  - Structure and function of spleen.
  - Properties and biological activities of IgA.
  - Properties of an immunogen.
- Q2 (a) Do as directed: (any three) 3**
- Name the technique used to separate fluorochrome-labeled cells.
  - State True or False: Insoluble antibody combines with antigen to form a precipitate.
  - Fill in the blank: Antibodies that aggregate soluble antigens are called \_\_\_\_\_.
  - What is a chromogenic substrate?
  - Give one example of T-cell accessory membrane molecules.
  - Name any one fluorescent dye used in Immunofluorescence technique.

**(b) Explain the following in detail: (any two) 12**

- (i) Principle and any two applications of RIA.
- (ii) Structure and functions of MHC class II molecule.
- (iii) Indirect and Sandwich ELISA.
- (iv) Complement fixation test.

**Q3 (a) Name the enzyme catalyzing the following reactions: (Any three) 3**

- (i) Galactose to Galactose 1 phosphate
- (ii) Starch<sub>n</sub> to Starch<sub>n+1</sub>
- (iii) Galactose 1 phosphate to UDP Galactose
- (iv) Glucose 1 phosphate to UDP glucose
- (v) Pyruvate to oxaloacetate
- (vi) Fructose 6 phosphate to fructose 2,6 biphosphate

**(b) Answer the following : (Any two) 12**

- (i) Give an account of the three by-pass reaction of gluconeogenesis
- (ii) Discuss the biosynthesis of sucrose in plants
- (iii) Describe the biochemical reactions of glycogenesis
- (iv) Diagrammatically describe the assembly of peptidoglycan in bacterial cell wall synthesis

**Q4 (a) State true or false (any three) 3**

- (i) Acetyl - Co A carboxylase requires riboflavin as coenzyme.
- (ii) Acyl carrier protein of FAS complex contains the vitamin C as prosthetic group.
- (iii) Fatty acyl CoA desaturase converts stearic acid to oleic acid.
- (iv) Decarboxylase converts phosphatidylethanolamine to phosphatidylcholine
- (v) Epinephrine promotes the conversion of carbohydrate to triacylglycerol.
- (vi) Cholesterol biosynthesis occurs in liver mitochondria.

- (b) **Schematically represent the following (any two)** **12**
- (i) Synthesis of unsaturated fatty acids
- (ii) Synthesis of triacylglycerol from glycerol.
- (iii) Stages IV in synthesis of cholesterol
- (iv) Synthesis of cardiolipin from phosphatidic acid

**Q5 Write short notes on (any three)** **15**

- (a) Granulocytic cells
- (b) Idiotypic antigenic determinants
- (c) Structure of CD<sub>4</sub> and CD<sub>8</sub> receptor
- (d) Regulation of sucrose phosphate synthase by phosphorylation.
- (e) Starch biosynthesis in plants
- (f) Atherosclerosis

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