

- N. B. : (1) All questions are compulsory.
 (2) Figures to the right indicate total marks.
 (3) Draw neat and labeled diagram wherever necessary.

1. (a) Give one word for the following : (any three) 3
- Vesicles formed after fusion of phagosome and lysosome.
 - Macrophages present in lungs.
 - Non-phagocytic granulocyte.
 - Secondary lymphoid organ showing presence of M cells.
 - Antibody present in saliva.
 - Water in oil emulsion, containing antigen in aqueous phase and killed bacteria in oily phase, used to enhance immune response.
- (b) Attempt the following : (any two) 12
- Discuss the role of thymus as a primary lymphoid organ.
 - What are antigens? Describe its types.
 - Justify: Passive immunity can be acquired naturally and artificially.
 - Describe the third line of defense in innate immunity.
2. (a) Give an example of the following : (any three) 3
- mIg bearing cell.
 - T cell accessory molecule.
 - Dimer that form part of CO_3 in TCR complex.
 - Technique that uses immunodiffusion and electrophoresis.
 - Fluorescent dye used in immunofluorescence.
 - Method for immunoprecipitation.
- (b) Describe : (any two) 12
- Structure of MHC Class I and II (Using diagram).
 - Structure of BCR.
 - Principle and applications of Immunoblotting.
 - Principle of direct and indirect ELISA.
3. (a) Do as directed : 2
- (i) Give the biochemical reaction catalyzed by UDP-glucose pyrophosphorylase.
- OR
- (i) Give the structure of UDP-galactose.

- (ii) Name the intracellular site for the biosynthesis of sucrose. (1)
- OR**
- (ii) Name the enzyme for the reaction- UDP-glucose to sucrose 6 phosphate. (1)

(b) Answer the following : (any two)

- (i) Describe catalytic activity of starch synthase in detail.
- (ii) Justify: "Fructose 2,6 bisphosphate is a potent regulator of gluconeogenesis."
- (iii) Give an overview of steps involved in peptidoglycan biosynthesis.
- (iv) Elaborate on allosteric regulation of sucrose 6 phosphate synthase.

(a) Name the biochemical pathway to which the following reactions belong : (any three)

- (i) β hydroxyacyl ACP to enoyl ACP.
- (ii) Stearate to oleate.
- (iii) Squalene to Squalene 2,3 epoxide.
- (iv) DHAP to glycerol 3 phosphate.
- (v) Phosphatidyl serine to phosphatidyl ethanolamine.
- (vi) Mevalonate to phosphomevalonate.

(b) Attempt the following : (any two)

- (i) Acetyl Co A carboxylase is a key regulatory enzyme of fatty acid biosynthesis - Justify.
- (ii) Give an account of the desaturation of fatty acids catalysed by mixed function oxidases.
- (iii) Discuss the synthesis of phosphatidylcholine from choline in mammals.
- (iv) Describe the formation of mevalonate in cholesterol biosynthesis.

5. Write short notes on : (any three)

- (i) Factors influencing innate immunity.
- (ii) Classes of antibodies.
- (iii) Coombs' test.
- (iv) Role of glycogenin in glycogen biosynthesis.
- (v) Regulation of Cholesterol biosynthesis.
- (vi) Synthesis of long chain fatty acids from palmitate.