

3. : (1) All questions are compulsory.
 (2) Figures to the right indicate full marks.
 (3) Draw neat, labelled diagrams wherever necessary.

(a) Do as directed (any three)

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- (i) Define : Antigenic determinants.
- (ii) Give an example of Agranulocyte.
- (iii) Name the lymphoid organ where T-cells mature.
- (iv) _____ are produced by virus infected cells to protect the neighbouring cells (Fill in the blank).
- (v) Choose the correct answer :— Macrophages present in liver are called _____.

(a) Histiocytes

(b) Osteocytes

(c) Microglial cells

(d) Kupffer cells

- (vi) Give the role of hypervariable region in an antibody.

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(b) Describe in brief (any two)

- (i) Structure and functions of IgG.
- (ii) Mechanism of action of adjuvants.
- (iii) Anatomical barrier present in skin, urinogenital tract and mammary gland.
- (iv) Lymph node - Structure and function.

(a) Explain the term (any one)

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- (i) Peptide binding cleft.
- (ii) Agglutination reaction.

(b) Give an example of (any one)

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- (i) Cell that express CD-8.
- (ii) Enzyme used in ELISA.

(c) Discuss the following (any two)

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- (i) Complement fixation test.
- (ii) Precipitation curve.
- (iii) BCR with its heterodimers.
- (iv) Structure of MHC class I.

3. (a) Name the enzyme catalyzing following reactions (any three)

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- (i) Sucrose 6 phosphate to sucrose.
- (ii) Glucose 6 phosphate to glucose 1 phosphate.
- (iii) Amylose to amylopectin.
- (iv) Glucose 1 phosphate to ADP-glucose.
- (v) UDP - galactose to UDP - glucose.
- (vi) Galactose to galactose 1 phosphate

TURN OVER

(b) Answer the following (any two)

- (i) Schematically represent biosynthesis of peptidoglycan.
- (ii) Give an account of three bypass reactions of gluconeogenesis (structures).
- (iii) "Fructose 2, 6 bisphosphate regulates the biosynthesis of sucrose"
- (iv) Elaborate on the hormonal regulation of glycogen synthase.

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

- (i) Acetyl CoA to acetoacetyl CoA.
- (ii) Glycerol 3 phosphate to phosphatidic acid.
- (iii) Phosphatidyl glycerol to cardiolipin.
- (iv) Palmitate to stearate.
- (v) Malonyl ACP to β Ketoacyl ACP.
- (vi) Geranyl pyrophosphate to farnesyl pyrophosphate.

(b) Attempt the following (any two)

- (i) Give a schematic overview of the biosynthesis of membrane phospholipids in *E. coli*.
- (ii) Describe the formation of activated isoprene units in cholesterol biosynthesis.
- (iii) Give the scheme for the biosynthesis of unsaturated fatty acids and discuss the role of mixed function oxidase in it.
- (iv) Explain regulation of cholesterol biosynthesis.

5. Write short notes on the following (any three)

- (i) Role of glycogenin in glycogen biosynthesis.
- (ii) Inflammatory response.
- (iii) Artificially acquired immunity.
- (iv) Principle of antigen-antibody interaction.
- (v) Fatty acid synthase.
- (vi) Biosynthesis of triacylglycerol.

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