

2 ½ Hours

Total Marks: 75

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat, labeled diagrams wherever necessary.

**Q 1. (a) Answer the following: (Any three) 03**

- (i) Name the macrophage specific to liver.
- (ii) Give one example of primary immune organ.
- (iii) State true/false: Classical complement pathway is activated by antigen-antibody complex formation.
- (iv) State the role of neutrophil.
- (v) Fill in the blanks: CD8+ cells are also called as \_\_\_\_\_.
- (vi) Give one example of granulocytes.

**(b) Discuss on the following: (Any two) 12**

- (i) Structure and function of B cell receptor.
- (ii) Classical pathway of complement system
- (iii) Structure and function of TCR-CD3 Complex.
- (iv) Endocytic pathway of antigen presenting.

**Q2. a) Do as directed (Any three) 03**

- (i) Give one example of anterior pituitary hormones
- (ii) Name the hormone whose deficiency cause dwarfism
- (iii) Name the hypothalamic hormone that stimulates hormones associated with the reproductive system
- (iv) Which cells of the pancreas secrete glucagon?
- (v) What is the effect of insulin on blood glucose level?
- (vi) Name one deficiency disorder of ADH.

**Q2. b) Describe (Any two) 12**

- (i) The functions and deficiency disorders associated with ADH
- (ii) What are the hypothalamic hormones? Give the functions of any two.
- (iii) The functions and deficiency disorders of insulin

- (iv) The release, transport and functions of epinephrine.

**Q 3. (a) Name the pathway to which following compounds are associated (Any three) 03**

- (i) Glycogenin
- (ii) Fructose 2,6- bisphosphate
- (iii) Sucrose 6 phosphate
- (iv) Glycogen phosphorylase
- (v) ADP-glucose pyrophosphorylase
- (vi) Glucose 6 phosphatase

**(b) Attempt the following (Any two) 12**

- (i) Schematically represent peptidoglycan biosynthesis in bacteria
- (ii) Explain the steps involved in conversion of pyruvate to phosphoenolpyruvate
- (iii) Give an account of starch synthase activity
- (iv) Describe fixation of CO<sub>2</sub> into 3 -phosphoglycerate

**Q4. (a) Do as directed (Any three) 03**

- (i) Name any one ligand used in Affinity chromatography
- (ii) Give significance of pumping system in HPLC
- (iii) What is Anion exchanger?
- (iv) Give use of caesium chloride in centrifugation
- (v) Name any one type of rotor used in centrifuge
- (vi) Density of gradient column increases from top to bottom in tube(State True/False)

**(b) Discuss the following (Any two) 12**

- (i) Principle and working of gel permeation chromatography
- (ii) Principle of GLC and two applications
- (iii) Separation of cell organelles by Differential centrifugation
- (iv) Applications of centrifugation in biological sciences

**Q5. Write short note on (Any three) 15**

- (a) Immune response theories.
- (b) Different types of Goiters
- (c) Oxytocin
- (d) Carbon assimilation in C<sub>4</sub> plants
- (e) Applications of Ion exchange chromatography
- (f) Differential centrifugation

\*\*\*\*\*