

**Q.P. Code :19322****[Time: 2½ Hours]****[Marks:75]**

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory.
  2. Figure to the right indicates full marks.
  3. Draw neat labeled diagrams wherever applicable

- Q. 1 a) Explain the following term: (Any One)** 02
- i) T cytotoxic cell (Tc)
  - ii) Phagolysosome
- Q. 1 b) Give an example of the following: (Any One)** 01
- i) Macrophage found in kidney
  - ii) Granulocyte
- Q. 1 c) Describe the following: (Any Two)** 12
- i) Structure of MHC-II and add a note on its peptide interaction
  - ii) Structure and function of lymph node
  - iii) Maturation and activation of B cells
  - iv) Structure and function of TCR-CD3 complex
- Q. 2 a) Name a hormone associated with the following: (Any Three)** 03
- i) Posterior pituitary gland
  - ii) Pheochromocytomas
  - iii) Gigantism
  - iv) Milk ejection
  - v) Alpha cells of Islets of Langerhans
  - vi) Water reabsorption in renal tubules
- Q. 2 b) Give an account of the following: (Any Two)** 12
- i) Effect of glucagon on carbohydrate, lipid and protein metabolism.
  - ii) Release, biochemical functions and disorder of ADH.
  - iii) Biochemical functions of FSH and LH.
  - iv) Effect of growth hormone on carbohydrate, lipid and protein metabolism.
- Q. 3 a) Name the enzyme catalyzing the following reaction : (Any Three)** 03
- i) Sedoheptulose 1, 7 biphosphate to Sedoheptulose 7 phosphate
  - ii) Xylulose 5 phosphate to Ribulose 5 phosphate
  - iii) Glucose 6 phosphate to glucose
  - iv) Glucose 1 phosphate to ADP - glucose
  - v) Oxaloacetate to Phosphoenol pyruvate
  - v) Glycogen<sub>(n)</sub> to glycogen<sub>(n-1)</sub> + glucose 1 phosphate.

Q.P. Code :19322

Q.3 b) Attempt the following (Any Two)

- i) Describe the second stage of carbon assimilation in Calvin cycle.
- ii) What is glycogenesis? Describe the role of glycogenin in this process.
- iii) Discuss the carbon fixation in C<sub>4</sub> plants.
- iv) Give an account of biosynthesis of glucose from pyruvate.

12

Q.4 a) Name a separation technique associated with the following: (Any Three)

- i) Sucrose
- ii) rpm
- iii) Pellet
- iv) Void volume
- v) Guard column
- vi) FID

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Q.4 b) Discuss the following: (Any Two)

- i) Isopycnic centrifugation and give any two applications.
- ii) Different types of rotors used in centrifugation
- iii) Principle of ion exchange chromatography and give any two applications.
- iv) Principle and working of affinity chromatography

12

Q.5 Write short notes on the following: (Any three)

- a) Release and physiological function of catecholamine hormones
- b) Overview of peptidoglycan biosynthesis
- c) NK cells
- d) Relative centrifugal field
- e) Disorders associated with deficiency of insulin
- f) Applications of gel permeation chromatography

15

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