Q.P. Code :19322

[Time: $2\frac{1}{2}$ 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 bisphosphate 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) $\text{Glycogen}_{(n)}$ to $\text{glycogen}_{(n-1)}$ + glucose 1 phosphate.

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Q.3 b) Attempt the following **(Any Two)** **12**

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_4 plants.
iv) Give an account of biosynthesis of glucose from pyruvate.

Q. 4 a) Name a separation technique associated with the following**: (Any Three)** **03**

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

Q. 4 b) Discuss the following: **(Any Two)** **12**

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

Q. 5 Write short notes on the following: **(Any three)** **15**

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

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