Subject: Biotechnology P:II
Biochemistry, Immunology and Instrumentation.
2016-17

QP Code : 77049

(2½ Hours) **[Total Marks : 75**

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

1. (a) Explain the term (**Any One**) **2**
   (i) MALT
   (ii) Opsonisation
   (b) Give one example of (**Any One**) **1**
   (i) Granulocyte
   (ii) Primary Lymphoid organ
   (c) Discuss in brief (**Any Two**) **12**
   (i) Structure of MHC II
   (ii) Thymus: structure and function
   (iii) B cell receptor and its heterodimers
   (iv) Classical pathway in complement fixation

2. (a) Name a hormone associated with the following (**Any Three**) **3**
   (i) cAMP as second messenger
   (ii) Anterior pituitary gland
   (iii) Diabetes mellitus
   (iv) Contraction of uterus
   (v) Adrenal gland
   (vi) Alpha cells of Islet of Langerhans
   (b) Answer the following (**Any Two**) **12**
   (i) Discuss the functions of growth hormone.
   (ii) Describe the three hormones secreted by anterior pituitary gland.
   (iii) Explain the role of insulin in metabolism of carbohydrates, lipids and proteins.
   (iv) Discuss the release, physiological functions and disorder associated with ADH.

3. (a) Name the metabolic pathway to which the following enzymes belong (**Any Three**) **3**
   (i) Ribose 5 phosphate isomerase
   (ii) ADP glucose pyrophosphorylase
   (iii) Glucosyl (4-6) transferase
   (iv) PEP carboxykinase
   (v) UDP - GlcNAc pyrophosphorylase **[TURN OVER**
   (vi) Transaldolase

(b) Schematically explain the following (**Any Two**)
   (i) Mechanism of action of starch synthase.
   (ii) Regulation of sucrose biosynthesis through triose phosphate.
   (iii) Gluconeogenesis.
   (iv) Second stage of CO_2 assimilation of the Calvin cycle.

4. (a) Give the role of (**Any One**)
   (i) Sephadex in Chromatography
   (ii) Sucrose in Centrifugation

   (b) Name / state the following (**Any One**)
   (i) An Anionic exchanger
   (ii) One factor affecting sedimentation velocity

   (c) Elaborate on the principle and application of (**Any Two**)
   (i) Gas liquid Chromatography
   (ii) Isopycnic Centrifugation
   (iii) Affinity Chromatography
   (iv) Rotors in Centrifugation

5. Write short note on (Any **Three**) :--
   (i) Peptide interaction with MHC
   (ii) Role of T_H cell in CMI
   (iii) Analytical centrifugation
   (iv) Mechanism of action of Group II hormones
   (v) Allosteric regulation of glycogen synthesis
   (vi) CO_2 fixation in plants like pineapple

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