Q.P.Code: 06936

(3 Hours) **[Total Marks:100**

Note: 1) All Questions are compulsory.
2) Figures to the right indicate total marks
3) Draw neat and labeled diagrams wherever necessary.

1. a. Give two examples of the following **(any four)** **8**
   i. Complement proteins
   ii. Live attenuated vaccines
   iii. Immune cells seen in MALT
   iv. Cells expressing MHC class II molecules
   v. Receptors seen on surface of T cells
   vi. Enzymes used in ELISA

   b. Describe the following **(any two)** **12**
   i. Steps involved in phagocytosis
   ii. Structure and functions of IgG
   iii. Principle and application of Ouchterlony's double diffusion technique

2. a. Name the enzyme catalyzing the following reaction and the biochemical pathway to which it belongs: **(any four)** **8**
   i. Geranyl pyrophosphate to farnesyl pyrophosphate
   ii. Phosphatidylglycerol to cardiolipin
   iii. Glucose 6 phosphate to glucose 1 phosphate
   iv. Sucrose 6 phosphate to sucrose
   v. Catechol to cis,cis-muconate
   vi. Starch $_n$ to Starch $_{n+1}$

   b. Attempt the following: **(any two)** **12**
   i. Give an account of conversion of galactose to glucose.
   ii. Schematically represent biosynthesis of triacylglycerol.
   iii. Describe stage II and III of cholesterol biosynthesis.

3. a. Give the significance/ role of the following: **(any four)** **8**
   i. Graffian follicle
   ii. Glucagon
   iii. Second messenger
   iv. Oxytocin
   v. *Zona reticularis*
   vi. Epinephrine

   b. Discuss the following: **(any two)** **12**
   i. Classification of hormones based on mode of action
   ii. Biochemical functions of thyroid hormones
   iii. Release and biochemical function of progesterone

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4. a. Give two applications of following **(any four)** **8**
   i. Centrifugation
   ii. Gas chromatography
   iii. Affinity chromatography
   iv. Geiger Muller counter
   v. Visible spectrophotometer
   vi. Sucrose as gradient material

   b. Elaborate on the principle and working of the following **(any two)** **12**
   i. HPLC
   ii. Solid scintillation counter
   iii. UV –Vis spectrophotometer

5. Write short note on **(any four)** **20**
   i. Passive immunity
   ii. Granulocytes
   iii. Biosynthesis of sucrose in plants
   iv. Menstrual cycle
   v. Disorders associated with deficiency of insulin
   vi. Double beam spectrophotometer
