QP Code : 05027

(2½ Hours) [Total Marks : 75

N.B. : (1) All questions are **compulsory.**
(2) All questions carry **equal** marks.
(3) Draw **neat, labelled** diagrams wherever **necessary.**

1. (a) Give one example of any **three** of the following :- 3
(i) Cytoskeletal proteins.
(ii) Cell signaling.
(iii) Microtubule monomers.
(iv) Microfilament function.
(v) Cross linking protein.
(vi) Second messenger.

(b) Give an account of any **two** of the following :- 12
(i) Types of intermediate filaments.
(ii) Structure and function of cytoplasmic dynein.
(iii) Drugs affecting formation of microfilaments.
(iv) Structure and activation of GPCRs.

2. (a) Do as directed (any **three**) :- 3
(i) Fill in the blank : _____ is a normal occurence in which an orchestrated sequence of events leads to the death of a cell.
(ii) Write True/False :– Sphingomyelin is present mainly in the inner layer of the RBC membrane.
(iii) Give the role of - FAK.
(iv) Define - Plasmolysis.
(v) Give one example of - Glycosaminoglycans.
(vi) Explain - Apoptosome.

(b) Attempt any **two** of the following :- 12
(i) What are caspases ? Describe their targets.
(ii) Outline the general functions of the cell membrane.
(iii) Give an account of tight junction as a differentiation of the cell membrane.
(iv) Explain the theories proposed for cell to cell adhesion.

3. (a) Explain any **one** of the following :- 2
(i) Co-culture. (ii) Anchorage dependent cells.

(b) Name any **one** of the following :- 1
(i) Equipment used in sterilization of medium for animal tissue culture.
(ii) Cryopreservant used for storage of animal tissues for several years.

3. (c) Discuss any **two** of the following :-
   (i) Tissue culture and its applications in various fields.
   (ii) Design and layout of animal tissue culture laboratory.
   (iii) Types of biosafety cabinets.
   (iv) Principle and significance of CO_2 incubator and hot room.

4. (a) Give significance of any **three** of the following in animal tissue culture :-
   (i) Eagle's MEM.
   (ii) Glutathione.
   (iii) Dissociation enzymes.
   (iv) Feederlayers.
   (v) Irradiation.
   (vi) Transformed cell lines.

   (b) Answer any **two** of the following :-
   (i) State the constituents of serum and its role in Animal tissue culture media.
   (ii) Discuss the advantages of serum free media.
   (iii) Explain two methods of establishing organ culture.
   (iv) State the procedure adopted to grow primary culture of any two specialized tissues.

5. Write short notes on any **three** of the following :-
   (i) Nucleation and time course of cytoskeletal polymelization.
   (ii) Extracellular messenger.
   (iii) Extrinsic pathway of apoptosis.
   (iv) Passive permeability.
   (v) Tissue culture vessels.
   (vi) Types of stem cells with respect to its potency.
