



Seat No. _____

HW-22

B. Sc. (Sem. II) (CBCS) (W.E.F. 2019) Examination

May - 2023

BC-201 : Biochemistry

(Cell Biology)

(New Course)

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

- 1 (a) Answer the following questions briefly : 4
- (1) Which type of cytoskeleton component is involved in generation of actual contraction force for movement of a cell?
 - (2) Write name of the scientist who has described the cells in plants for the first time by observation of cross section of cork under microscope?
 - (3) Which organelles of plant cells are absent in animal cells ?
 - (4) Define cell.
- (b) Yeast cells are classified as prokaryotes or eukaryotes. 2
Justify your answer.
- OR**
- (b) Why viruses are not classified as cells ? Explain your answer. 2
- (c) Explain structural and functional diversity of cells in multi 3
-cellular eukaryotes.
- OR**
- (c) Draw labelled diagrams of typical animal and plant cell. 3
- (d) Write a short note on differences between prokaryotes 5
and eukaryotes.
- OR**
- (d) Discuss structure, composition and functions of microtubules. 5

- 2 (a) Answer the following briefly : 4
- (1) List the major chemical constituents of plant cell walls.
 - (2) Mitochondria we all have in our cells are inherited from our mothers, fathers or both.
 - (3) Name the organelle of eukaryotic cells that is involved in synthesis of polysaccharides and glycosylation of proteins.
 - (4) Which organelles in animal cells have hydrolytic enzymes and can destroy the cell if it gets ruptured?
- (b) What are the functions of cell walls in plants ? 2
- OR**
- (b) Describe the functions of rough endoplasmic reticulum. 2
- (c) Why the isolation of cell organelles by differential centrifugation is carried out using isotonic medium and at lower temperatures? 3
- OR**
- (c) Define marker enzymes and write examples of marker enzymes for various cell organelle. 3
- (d) Write a short note on structure, composition and functions of mitochondria. 5
- OR**
- (d) Describe the functions of the eukaryotic plasma membrane. 5
- 3 (a) Answer the following questions briefly : 4
- (1) List different stages of cell cycle.
 - (2) Write importance of chromosomal crossing over during meiosis.
 - (3) During which stage of cell cycle DNA replication occurs?
 - (4) Germ cells are haploid or diploid in nature.
- (b) Differentiate between apoptosis and necrosis. 2
- OR**
- (b) Write physiological significance of mitosis. 2

- (c) Why the sperm and ovum cells are produced by meiosis and not by mitosis ? Justify. **3**
- OR**
- (c) Briefly describe checkpoints in eukaryotic cell cycle. **3**
- (d) Discuss mitotic type cell division with diagrams. **5**
- OR**
- (d) Write a detailed note on different stages of meiosis. **5**
- 4** (a) Answer the following questions briefly : **4**
- (1) Write full form of CAMs.
 - (2) How plant cells are adhered together ?
 - (3) Define Gap Junctions.
 - (4) What is the role of collagen in tissues ?
- (b) Write the importance of Gap Junctions. **2**
- OR**
- (b) Describe bacterial cell-cell interactions in bio-film production. **2**
- (c) Why cell adhesion is essential in the process of development of multi-cellular eukaryotes ? **3**
- OR**
- (c) Write a brief note on desmosomes. **3**
- (d) Write a short note on cell-cell interactions in communication between the cells with each other in response to changes in their microenvironment. **5**
- OR**
- (d) Discuss the tight junctions and their importance. **5**
- 5** (a) Answer the following questions briefly : **4**
- (1) List the main chemical constituents of plasma membrane.
 - (2) What kind of interactions do the integral membrane proteins have with fatty acid tails of phospholipids?
 - (3) Define flip-flop movement of phospholipids or proteins in biological membranes.
 - (4) Write two examples of substances which are transported across the plasma membrane by simple diffusion process.

(b) Write a brief note on facilitated diffusion. **2**

OR

(b) Define membrane asymmetry and list the factors that contribute to membrane asymmetry. **2**

(c) Describe FRAP experiment for studying lateral movement in biological membranes.

OR

(c) Describe the mechanism of Sodium/Potassium – ATPase with diagram. **3**

(d) Write a detailed note on ionophores and their functions. **5**

OR

(d) Discuss Singer Nicholson model of plasma membrane structure in eukaryotes. **5**
