

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION DECEMBER 2023  
(First Semester)  
Branch -BIOTECHNOLOGY  
CELL BIOLOGY

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer ALL questions  
ALL questions carry EQUAL marks (10 × 1 = 10)  
All Questions are Multiple Choice

Module No.	Question No.	Question	K Level	CO
1	1	In the plasma membrane, carbohydrates _____. (a) always faces outwards, towards extracellular space (b) directed to all sides in the membrane randomly (c) always faces to the lumen of cells (d) always faces inward to the nonpolar portion of the membrane	K1	CO1
	2	Which of the following cell organelle is responsible for transporting, modifying, and packaging proteins and lipids? a) Mitochondria                      b) Endoplasmic Reticulum c) Golgi Complex                      d) DNA	K2	CO1
2	3	Cytoskeletal filaments are polymers of _____. a) proteins                                      b) ribonucleic acids c) deoxyribonucleic acids      d) carbohydrates	K1	CO2
	4	Which of the following filaments bind to the cadherin and catenin complex? a) Myosin                      b) Actin                      c) Globulin                      d) Albumin	K2	CO2
3	5	Which of the following cell organelles does not contain DNA? a) Nucleus                      b) Lysosomes                      c) Chloroplast                      d) Mitochondria	K1	CO3
	6	Which of the following cell organelles is present in plant cells and absent in animal cells? a) Nucleus                      b) Vacuole                      c) Chloroplast                      d) Cytoplasm	K2	CO3
4	7	Which of the following is not a post-translational modification? a) Lipidation                                      b) Protein phosphorylation c) Proteolytic processing                      d) DNA methylation	K1	CO4
	8	Protein phosphorylation cannot occur on which of the following amino acid residues? a) Serine                      b) Threonine                      c) Tyrosine                      d) Tryptophan	K2	CO4
5	9	Endocrine messengers are also called _____. a) hormones                      b) receptors                      c) antibody                      d) antigen	K1	CO5
	10	At which cell cycle checkpoint, cell cycle is halted if cells' DNA is damaged? a) G <sub>1</sub> – S                      b) S – G <sub>2</sub> c) G <sub>2</sub> – M                      d) G <sub>0</sub> – G <sub>1</sub>	K2	CO5

**SECTION - B (35 Marks)**

Answer ALL questions  
ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Distinguish the active and passive transport system.	K4	CO1
		(OR)		
	11.b.	Categorize the different classes of membrane transport proteins.		
2	12.a.	Identify and outline the four main types of cell-cell junctions.	K3	CO2
		(OR)		
	12.b.	Organize the different intermediate filaments and its function.		

Cont...

3	13.a.	Explain the structure and functions of chloroplast.	K2	CO3
	(OR)			
	13.b.	Outline the different stages of meiosis.		
4	14.a.	List of the process of protein synthesis.	K4	CO4
	(OR)			
	14.b.	Describe the theory of organelle biogenesis.		
5	15.a.	Explain the role of oncogenes properties to identify how cancerous cells develop.	K3	CO5
	(OR)			
	15.b.	State the concept of ligand-receptor. Explain, how cells communicate.		

**SECTION -C (30 Marks)**

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Examine the plasma membrane structure with labelled diagram.	K4	CO1
2	17	Describe the role of extracellular matrix in cell membrane and its importance.	K4	CO2
3	18	List and analyze the four steps of electron transport chain.	K4	CO3
4	19	Distinguish exocytotic vs endocytic pathway.	K4	CO4
5	20	Classify the different types of cell secondary messengers.	K4	CO5

Z-Z-Z

END