

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023
(First Semester)

Branch - BIOTECHNOLOGY

CELL AND MOLECULAR BIOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The proteins which form open pores through the membrane and allows free diffusion of molecules are _____. i) Carrier proteins ii) Channel proteins iii) Ion channels iv) P class Ion pumps	K1	CO1
	2	Which among these serve as direct connection between cytoplasm of adjacent cells? i) Gap Junctions ii) Tight Junctions iii) Intermediate Junction iv) cell Junctions	K2	CO1
2	3	Elongation of RNA chains by RNA polymerase is inhibited by _____. i) Actinomycin D ii) Butyl phenyl dGTP iii) Carbonyl diphosphonate iv) Aphidicolin	K1	CO2
	4	Base +Sugar+Phosphate constitute _____. i) Nucleoside ii) Nucleotide iii) Nucleosome iv) Heterochromatin	K2	CO2
3	5	Arthur Kornberg enzyme is _____. i) DNA Polymerase III ii) DNA Polymerase II iii) DNA Polymerase I iv) DNA Polymerase α	K1	CO3
	6	The maximum frequency of recombination that can occur between two loci is _____. i) 25% ii) 50% iii) 75% iv) 100%	K2	CO3
4	7	The DNA chain acting as a template for RNA synthesis has ATGCTTA order of base pairs. What will be the order of bases in mRNA? i) TACGAAT ii) TACGAAU iii) UACGAAU iv) UACGAAT	K1	CO4
	8	Which among the following is the transcription initiation site? i) Operator ii) Regulator iii) Promoter iv) Inducer	K2	CO4
5	9	The phenomenon of RNA interference was discovered in _____. i) MUS musculus ii) Drosophila iii) C.elegans iv) Arabidopsis thaliana	K1	CO5
	10	In eukaryotes and bacteria the most common form of regulation is _____. i) Promoter control ii) translational control iii) repressor control iv) transcriptional control	K2	CO5

Cont...

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.	Describe about the components and structure of cytoskeleton.	K2	CO1
	(OR)			
	11.b.	How transport across cell membrane occurs?		
2	12.a.	Describe the organisation of chloroplast DNA.	K3	CO2
	(OR)			
	12.b.	Give the structure and function of chromosome.		
3	13.a.	Selectively List out the enzymes involved in DNA Replication.	K3	CO3
	(OR)			
	13.b.	Discuss in detail about transposons.		
4	14.a.	State the RNA polymerase role in mRNA synthesis and examine their functional importance.	K4	CO4
	(OR)			
	14.b.	Give an account on splicing mechanism of mRNA in eukaryotes.		
5	15.a.	Compare the types of regulation of transcription in prokaryotes.	K4	CO5
	(OR)			
	15.b.	Enlist and Examine the steps of post translational modification.		

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	Explain the structure of Endoplasmic reticulum and Categorize its types.	K4	CO1
2	17	Analyse the Watson and Crick model of DNA structure.	K4	CO2
3	18	Elaborate the mechanism of DNA repair with functional importance of each.	K4	CO3
4	19	Schematically explain the Types of RNA and examine their importance.	K4	CO4
5	20	Categorize the types of gene alteration in multicellular Organisms.	K4	CO5