

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Second Semester)

Branch - BOTANY

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	A cell without a cell wall is termed as a. Tonoplast b. Protoplast c. Symplast d. Apoplast	K1	CO1
	2	The primary function of ribosomes in the cell is a. cellular respiration b. lipid synthesis c. protein synthesis c. DNA replication	K2	CO2
2	3	Lysosomes are called "suicidal bags" because of a. Parasitic activity b. Hydrolytic activity c. food vacuole d. Catalytic activity	K1	CO1
	4	Best stage to count the number of chromosome is a. prophase b. anaphase c. telophase d. metaphase	K2	CO2
3	5	Which of the following is absent in DNA? a. uracil b. adenine c. thymine d. guanine	K1	CO1
	6	The difference between the sugar molecules of DNA and RNA is a. absence of N at 3-C b. absence of N at 2-C c. absence of O at 2-C d. absence of O at 3- C	K2	CO2
4	7	During transcription, which enzyme binds to the DNA template and synthesizes mRNA? a. RNA polymerase b. DNA polymerase c. DNA ligase d. DN helicase	K1	CO1
	8	The operon concept was proposed by a. Jacob and Monod b. Rosalind Franklin c. Watson and Crick d. Gregor Mendel	K2	CO2
5	9	Which technique is widely used in comparative genomics to identify conserved regions? a. southern blotting b. DNA sequencing c. multiple sequence alignment d. PCR	K1	CO1
	10	The primary focus of proteomics is to study a. protein synthesis b. entire set of proteins c. protein interaction d. individual proteins	K2	CO2

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.	Briefly discuss the fluid mosaic model of plasma membrane with labeled sketches.	K3	CO3
	(OR)			
	11.b.	Elucidate the structure and functions of nucleus.		
2	12.a.	Illustrate the structure of flagella and explain their composition and function.	K4	CO4
	(OR)			
	12.b.	Explore the special types of chromosomes studied by you.		
3	13.a.	Simplify the mechanism of DNA replication.	K4	CO4
	(OR)			
	13.b.	Interpret the nucleosome concept.		
4	14.a.	Identify and discuss the process in which mRNA is translated into proteins.	K5	CO5
	(OR)			
	14.b.	Exemplify the lac operon concept.		
5	15.a.	Categorize the types of genomics and explain how they are used in the research.	K3	CO3
	(OR)			
	15.b.	How do you apply protein microarray in various analysis?		

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	Elucidate the structure and genome organization of plastids.	K4	CO4
2	17	Enumerate the steps involved in the meiosis with suitable illustrations.	K4	CO4
3	18	DNA as a genetic material. Justify and prove this statement with suitable evidences.	K5	CO5
4	19	Simplify the process of transcription.	K4	CO4
5	20	Assume that you have extracted the protein from the biological specimen and you are curious in its structure. How do you predict the tertiary structure of proteins by homology modeling?	K5	CO5