

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Second Semester)

Branch - BIOCHEMISTRY

MOLECULAR GENETICS

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	Inheritance of ABO blood group system is an example of (a) dominance (b) epistasis (c) partial dominance (d) multiple allelism	K1	CO1
	2	The IS elements can be identified by the presence of _____. a) Antibiotic resistance gene b) Endonuclease cleavage site c) 50 bp inverted repeat d) Integrase site	K2	CO2
2	3	Which of the following is a common feature of plastids and mitochondria? (a) Both have Double-stranded DNA (b) Both contain 70s ribosomes (c) Both are double membranous cell organelles (d) All of the above	K1	CO1
	4	Rearrangement of DNA that involves the breakage and reunion of DNA is called _____. (a) Replication (b) Recombination (c) Translation (d) Transcription	K2	CO2
3	5	Which among the following motifs contain a positively charged ion? (a) Leucine zippers (b) H-T-H motif (c) Homeobox (d) Zinc fingers	K1	CO1
	6	What is the length of a motif, in terms of amino acids residue? (a) 30- 60 (b) 10- 20 (c) 70- 90 (d) 1- 10	K2	CO2
4	7	Regulatory proteins turn transcription off through binding to a site rapidly at the front of the promoter and many times even overlaps the promoter, this site is the (a) regulatory site (b) operator site (c) suppressor site (d) transcriptional control site	K1	CO1
	8	The Stimulation of a Muscle Fiber by a Motor Neuron occurs at the (a) Myofibril (b) Transverse Tubules (c) Neuromuscular Junction (d) Sarcoplasmic Reticulum	K2	CO2

5	9	The map of the chromosome which shows identifiable sites is called _____. (a) Gene expression (b) Genome sequencing (c) Chromosome walking (d) Genome map	K1	CO1
	10	Which of the following disorder is also called the Royal disease? (a) Colour blindness (b) Haemophilia (c) Sickle cell anaemia (d) Alzheimer's disease	K2	CO2

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.	Explain Multigene families.	K2	CO2
	(OR)			
	11.b.	Summarize mutant generation.		
2	12.a.	Illustrate Plastid DNA and its significance.	K2	CO2
	(OR)			
	12.b.	Demonstrate the significance of Endosymbiont therapy.		
3	13.a.	Choose any two DNA binding motifs and give its significance.	K3	CO3
	(OR)			
	13.b.	Identify the steps in the viral entry into the cell.		
4	14.a.	Explain the gene expression by steroid hormone.	K4	CO4
	(OR)			
	14.b.	Criticize about the role of serum response factor.		
5	15.a.	Compare Codominance and incomplete dominance.	K4	CO5
	(OR)			
	15.b.	Explain about Polygenetic inheritance and its significance.		

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	Create a detailed account on Transposons and its various types.	K5	CO2
2	17	Explain about Recombination and its holliday model in detail.	K4	CO3
3	18	Evaluate about Zinc-finger motif in detail.	K3	CO3
4	19	Criticize about gene expression by steroid hormones and glucocorticoids.	K4	CO4
5	20	Elaborate about various Gene mapping methods.	K5	CO5