

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch – ZOOLOGY

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	DNA is composed of which of the following nitrogenous bases? A. Adenine, Cytosine, Guanine, Thymine B. Adenine, Cytosine, Guanine, Uracil C. Adenine, Uracil, Guanine, Thymine D. Cytosine, Uracil, Adenine, Thymine	K1	CO1
	2	DNA replication occurs during which phase of the cell cycle? A. G1 phase B. S phase C. G2 phase D. M phase	K2	CO1
2	3	What is the term for the smallest unit of recombination in a gene? A. Muton B. Recon C. Intron D. Promoter	K1	CO2
	4	The process of synthesizing a protein from mRNA is called: A. Transcription B. Replication C. Translation D. Splicing	K2	CO2
3	5	How many nucleotides make up a codon in the genetic code? A. One B. Two C. Three D. Four	K1	CO3
	6	In prokaryotes, transcription occurs in which part of the cell? A. Nucleus B. Mitochondria C. Cytoplasm D. Endoplasmic reticulum	K2	CO3
4	7	How many major loops in t RNA module? A. One B. Two C. Three D. Four	K1	CO4
	8	The operon model of gene regulation was first proposed by A. Francis Crick B. Jacob and Monod C. Watson and Crick D. Beadle and Tatum	K2	CO4
5	9	A mutation that involves the substitution of one nucleotide for another is known as: A. Deletion B. Insertion C. Point mutation D. Frameshift mutation	K1	CO5
	10	Which of the following dye is known to cause mutations by intercalating between DNA bases? A. Methylene blue B. Ethidium bromide C. Acridine orange D. Safranin	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.	Summarize the semiconservative DNA replication.	K2	CO1
	(OR)			
	11.b.	Briefly explain the Meselson and Stahl's experiments.		
2	12.a.	Analyze the fine structure of gene.	K4	CO2
	(OR)			
	12.b.	List out the applications of overlapping gene.		
3	13.a.	Interpret the genetic code.	K5	CO3
	(OR)			
	13.b.	Highlight the importance of RNA splicing.		
4	14.a.	Evaluate the significance of the Lac Operon model.	K5	CO4
	(OR)			
	14.b.	Discuss the activation of amino acids in Protein synthesis.		
5	15.a.	Illustrate the types of chemical mutagens.	K3	CO5
	(OR)			
	15.b.	Elucidate the mechanism of Radiation induced mutation.		

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	Demonstrate the structure of DNA with neat diagram.	K2	CO1
2	17	Narrate the mechanism of DNA repair.	K2	CO2
3	18	Discuss in detail about Transcription in Prokaryotes.	K6	CO3
4	19	Analyze the structure of tRNA.	K4	CO4
5	20	Interpret the various types of mutations.	K5	CO5

Z-Z-Z

END