

MSc DEGREE EXAMINATION MAY 2026

(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 replication in prokaryotes begins at a) Multiple origins b) A single origin (OriC) c) Ribosome binding site d) Centromere	K1	CO1
	2	In eukaryotes, the enzyme responsible for replicating mitochondrial DNA is a) DNA polymerase α b) DNA polymerase β c) DNA polymerase γ d) DNA polymerase δ	K2	CO1
2	3	A gene in which coding sequences are interrupted by introns is called: a) Split gene b) Overlapping gene c) Pseudogene d) Repetitive gene	K1	CO2
	4	Overlapping genes were first discovered in a) Bacteriophages b) Bacteria c) Mammals d) Plants	K2	CO2
3	5	Which of the following is a stop codon? a) UUU b) UGA c) AUG d) GGG	K1	CO3
	6	Splicing is carried out by a large ribonucleoprotein complex known as a) Telomerase b) Spliceosome c) Ribosome d) Exonuclease	K2	CO3
4	7	The first amino acid incorporated during protein synthesis in prokaryotes is a) Methionine b) Formyl-methionine (fMet) c) Glycine d) Alanine	K1	CO4
	8	The molecule that acts as an inducer in lac operon is a) Glucose b) Maltose c) Galactose d) Allolactose	K2	CO4
5	9	Chemical mutagens that cause base-pair substitutions are often a) Alkylating agents b) Acridine dyes c) UV light d) X-rays	K1	CO5
	10	Conversion of a codon into a stop codon due to mutation is: a) Translocation b) Silent mutation c) Duplication d) Nonsense mutation	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.	Analyze the role of Okazaki fragments in DNA replication.	K3	CO1
		(OR)		
	11.b.	Differentiate between prokaryotic and eukaryotic DNA polymerases.		
2	12.a.	Explore any two DNA repair mechanisms.	K3	CO2
		(OR)		
	12.b.	Assess the fine structure of a gene.		
3	13.a.	Recognize the properties of the genetic code with suitable examples.	K2	CO3
		(OR)		
	13.b.	Write short notes on (a) RNA capping and (b) Polyadenylation.		
4	14.a.	Identify the structure of tRNA and explain amino acid activation.	K2	CO4
		(OR)		
	14.b.	How the initiation of polypeptide synthesis occur.		
5	15.a.	Write a short note on UV radiation-induced mutations.	K3	CO5
		(OR)		
	15.b.	Differentiate between missense, nonsense, and silent mutations.		

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	Explore different models of DNA replication (conservative, semi-conservative, dispersive).	K3	CO1
2	17	Write an essay on split genes and overlapping genes.	K3	CO2
3	18	Demonstrate the process of transcription in prokaryotes.	K3	CO3
4	19	Write an essay on the lac operon model of gene regulation.	K3	CO4
5	20	Discuss how frame-shift mutations are induced and their consequences.	K3	CO5

Z-Z-Z END