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22MBU311N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch- **MICROBIOLOGY**

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	Which one of the following type of RNA has clover leaf structure? a) rRNA b) mRNA c) tRNA d) miRNA	K1	CO1
	2	Identify the principle enzyme for DNA replication. a) Alkaline phosphatase b) Permease c) DNA polymerase d) S1 nuclesase	K2	CO1
2	3	What is the work of the sigma factor in transcription? a) Helicase action b) Transcription initiation c) Transcription elongation d) Transcription termination	K1	CO2
	4	Which of the following is a transcription factor? a) Gamma factor b) Delta factor c) Epsilon factor d) Rho factor	K2	CO2
3	5	Who identify the first genetic code? a) Nirenberg and Mathaei b) Kary Mullis c) Maxam and Gilbert d) Holly	K1	CO3
	6	Tanslation occurs in the a) Nucleus b) Cytoplasm c) Nucleolus d) Lysosomes	K2	CO3
4	7	What is the regulation of a lac operon by a repressor? a) Neutral regulation b) Positive regulation c) Mixed regulation d) Negative regulation	K1	CO4
	8	Which of these operons is anabolic? a) Lac b) Ara c) Trp d) Phes	K2	CO4
5	9	Where is the splice site found? a) 3' end of exon b) 5' end of intron c) within the exon d) with in the intron	K1	CO5
	10	How will you name the non-coding sequences? a) Mutons b) Recons c) Exons d) Introns	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.	Build the semi-conservative model of DNA replication.	K3	CO1
		(OR)		
	11.b.	Apply the function of autoradiography.		
2	12.a.	Choose the function of post transcriptional modification of rRNA.	K3	CO2
		(OR)		
	12.b.	Develop the Rho dependent process.		
3	13.a.	Categorize the features of genetic code.	K4	CO3
		(OR)		
	13.b.	Explain the charging of tRNA.		
4	14.a.	Distinguish the repressor and inducer molecules.	K4	CO4
		(OR)		
	14.b.	Assume the tryptophan's role in negative control.		
5	15.a.	Describe interaction eukaryotic DNA with histones.	K5	CO5
		(OR)		
	15.b.	Discuss the hormonal control of gene expression.		

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	Examine the enzymology of DNA replication.	K4	CO1
2	17	Analyze the structure and function of RNA polymerase.	K4	CO2
3	18	Explain the post translational modifications of proteins.	K5	CO3
4	19	Describe the structure and function of Lac operon.	K5	CO4
5	20	Compare the concepts of exons and introns.	K6	CO5

Z-Z-Z END