

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)**

Branch - **BIOCHEMISTRY**

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	Choose the organism in which transformation is observed in Griffith's experiment. a) <i>S. pneumoniae</i> b) <i>E. coli</i> c) <i>S. typhi</i> d) <i>B. subtilis</i>	K1	CO1
	2	Relate the responsibility of F-factor in bacteria. a) Replication b) Conjugation c) Transcription d) Protein synthesis	K2	CO1
2	3	Select the location of TATA box in eukaryotic promoter a) -10 region b) -35 region c) -25 region d) +1 region	K1	CO2
	4	Select the following which is involved in the removal of introns. a) Spliceosome complex b) Rho factor c) Polymerase d) Helicase	K2	CO2
3	5	Which of the following is start codon in mRNA? a) UAG b) AUG c) UAA d) UGA	K1	CO3
	6	Name the phenomenon in which multiple codons code for the same amino acid in genetic code a) Degeneracy b) Ambiguity c) Overlapping d) Non-overlapping	K2	CO3
4	7	Pick out the base formed when cytosine in DNA undergoes deamination. a) Adenine b) Guanine c) Thymine d) Uracil	K1	CO4
	8	Pick out the process by which nitrous acid cause mutation. a) Deaminating bases b) Dimer formation c) Removal of bonds d) Inserting bonds	K2	CO4
5	9	Find the mutation that changes a codon to stop codon. a) Point b) Missense c) Nonsense d) Silent	K1	CO5
	10	Identify the process that is related to holiday model. a) Replication b) Translation c) Transcription d) Homologous recombination	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.	Demonstrate the importance of Hershey-Chase bacteriophage experiment.	K2	CO1
		(OR)		
	11.b.	Illustrate the mechanism of replication fork and label the leading and lagging strands.		
2	12.a.	Select the role of sigma factor in the initiation of prokaryotic transcription.	K3	CO2
		(OR)		
	12.b.	Identify the role of enhancers in eukaryotic transcription.		
3	13.a.	Construct a diagram of ribosome with A, P and E site and explain the role of each site during elongation phase in translation.	K3	CO3
		(OR)		
	13.b.	Compare the difference between prokaryotic and eukaryotic translation.		
4	14.a.	Examine the mechanism of SOS response.	K4	CO4
		(OR)		
	14.b.	Analyze the concept of Trp operon regulation.		
5	15.a.	Summarize the holliday model of homologous recombination.	K4	CO5
		(OR)		
	15.b.	Evaluate the role of insertion sequence elements in prokaryotes.		

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	Analyze the significance of Griffith's transformation experiment in establishing DNA as genetic material.	K4	CO1
2	17	Compare the mechanism of transcription in rho dependent and rho independent transcription termination in prokaryotes.	K4	CO2
3	18	Examine the post translational modification of proteins.	K4	CO3
4	19	Paraphrase the mechanism of different types of DNA damage.	K4	CO4
5	20	Differentiate between composite and non-composite transposons.	K4	CO5

Z-Z-Z

END