

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

**BSc DEGREE EXAMINATION MAY 2025
(Fourth Semester)**

Branch - BIOCHEMISTRY

RECOMBINANT DNA TECHNOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 X 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	_____ is a DNA Polymerase found in bacteria (a) DNAs Polymerase (b) Trp Polymerase (c) Taq polymerase (d) MAE Polymerase	K2	CO1
	2	An expression vector (a) always contains an origin of replication (b) usually contains a gene that confers antibiotic resistance to the bacterial host (c) always contains DNA segments for the regulation of mRNA production (d) all of the above	K2	CO1
2	3	Cosmids are plasmid vectors that contain (a) ori sites (b) Phage sites (c) cos sites (d) None of the above	K4	CO2
	4	_____ is a technique which can be used to introduce foreign DNA to a cell culture (a) Chromosome walking (b) Particle bombardment (c) Shooting gun (d) Chromosome jumping	K5	CO2
3	5	RNA populations can also be used as PCR templates after reverse transcription into (a) t DNA (b) c RNA (c) m DNA (d) r RNA	K2	CO3
	6	A nicked RNA molecule can be ligated by (a) T4 DNA ligase (b) T4 RNA ligase (c) DNA polymerase (d) all of the above	K4	CO3
4	7	In DNA double helix, the two DNA chains are held together by (a) hydrogen bonds between the pair of bases (b) covalent bonds between the pair of bases (c) ionic bonds between the pair of bases (d) none of the above	K1	CO4
	8	The final step of gene expression is protein synthesis, which is also known as (a) translation (b) transcription (c) replication (d) None of the above	K1	CO4
5	9	When was the genetic code completed? (a) 1966 (b) 1952 (c) 1959 (d) 1969	K4	CO5
	10	The lac operon (a) is under negative and positive control. (b) is under positive control only. (c) is normally expressed constitutively. (d) is an example of tissue-specific expression	K5	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 X 7 = 35)

ALL Questions Carry EQUAL Marks (5 X 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Mention the importance of gene cloning.	K4	CO1
	(OR)			
	11.b.	How to prepare phage DNA? Explain.		
2	12.a.	Describe the structure of pBR322 and its derivatives.	K6	CO2
	(OR)		K3	
	12.b.	Write an account on SV40 vector.		
3	13.a.	Enumerate the labelling of DNA probe.	K6	CO3
	(OR)		K1	
	13.b.	Discuss the gene therapy for diabetes mellitus.		
4	14.a.	Describe the oligonucleotide directed mutagenesis.	K5	CO4
	(OR)		K6	
	14.b.	Point out importance of genetic DNA finger printing.		
5	15.a.	State the uses of interferons.	K5	CO5
	(OR)		K3	
	15.b.	Write short note on Engineering of Human Insulin.		

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks

(3 X 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Describe the principle and procedure of DNA ligation.	K2	CO1
2	17	Write a detail note on yeast artificial chromosome.	K1	CO2
3	18	Elucidate the principle and procedure of Southern blotting technique.	K2	CO3
4	19	Enumerate the principle, procedure and applications of PCR.	K4	CO4
5	20	Describe the hazards and ethical issues of genetic engineering.	K6	CO5

Z-Z-Z

END