PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 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)

1 If no primer DNA was given, find out the following scientist who could not have synthesized DNA. K1, CO1
(A) Ochoa (B) Okazaki
(C) Kornberg (D) Monod

2 Show the type of RNA synthesized by Mammalian RNA polymerase I K2, CO1
(A) mRNA (B) rRNA
(C) tRNA (D) hnRNA

3 Predict the location of Restriction endonucleases K2, CO2
(A) Viruses (B) Bacteria
(C) Eukaryotes (D) All of these

4 Which fragments of DNA can be identified by the technique of? K1, CO1
(A) Western blotting (B) Eastern blotting
(C) Northern blotting (D) Southern blotting

5 What does a human cDNA library contains? K1, CO3
(A) contains DNA for virtually all of the human proteins in vectors
(B) contains DNA for specific human proteins
(C) cannot be used to obtain human genes because it would be radioactive
(D) None of the above

6 Which of the following may be used as a cloning vector? K1, CO1
(A) Prokaryotic plasmid (B) Lambda phage
(C) Cosmid (D) All of these

7 Predict the mammalian DNA polymerase among the following K2, CO2
(A) DNA polymerase α (B) DNA polymerase I
(C) DNA polymerase II (D) DNA polymerase IV

8 How a particular RNA in a mixture can be identified? K2, CO1
(A) Western blotting (B) Northern blotting
(C) Eastern blotting (D) Southern blotting

9 How the presence of DNA is identified by DNA finger printing? K2, CO1
(A) Constant number of tandem repeats (B) Varibale number of tandem repeats
(C) Non-repititive sequences in each DNA (D) Introns in eukaryotic DNA

10 The Southern blotting technique reviews K1, CO3
(A) similarities between the sequences of probe DNA and experimental DNA
(B) similarities between the sequences of probe RNA and experimental RNA
(C) similarities between the sequences of probe protein and experimental protein
(D) the molecular mass of proteins

Cont...

SECTION - B (35 Marks)

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

11.	a. Explain the importance of restriction enzymes.	K2, CO1
	OR	
	b. Illustrate the general basic steps of DNA cloning method.	K2, CO1
12	a. Summarize on pUC18 vector.	K2, CO2
	OR	
	b. Interpret an account on lambda vector.	K2, CO2
13	a. Explain the procedure of RFLP technique.	K2, CO3
	OR	
	b. Demonstrate the gene therapy for cardiomyopathy.	K2, CO3
14	a. Illustrate about in vitro mutagenesis.	K3, CO3
	OR	
	b. Demonstrate the Maxam Gilbert method of gene sequencing.	K3, CO3
15	a. Write a note on fusion protein.	K1, CO2
	OR	
	b. Write a role of promoters in genetic engineering.	K1, CO2

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 X 10 = 30)

16.	Discuss the principle and procedure of M13 DNA.	K2, CO2
17.	Describe the introduction of phage DNA into bacterial vector.	K2, CO3
18.	How to construct cDNA library? Discuss.	K2, CO4
19.	Organize the principle, procedure and applications of RT PCR technique.	K3, CO3
20.	Evaluate the yeast expression system for HBVSAg.	K5, CO3

Z-Z-Z END