PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – BIOTECHNOLOGY

RECOMBINANT DNA TECHNOLOGY

Time: Three Hours | Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Choose the Restriction site for Bam HI.
(i) CCCGGG (ii) GGCC
(iii)GGATCC (iv) AAGCTT

2 Plasmids containing lambda DNA with cos site are referred as_____ .
(i) Phasmids (ii) BAC Vectors
(iii) Cosmids (iv) YAC vectors

3 Identify the commonly used vector in genomic library construction.
(i) λEMBL (ii) λZAP
(iii) C2XB (iv) pET

4 Which of the following contributes to errors during PCR amplification due to misincorporation of nucleotide
(i) Random Primers (ii) Temperature variation
(iii) Taq Polymerase (iv) dNTPs

5 Name the vector used in site-directed mutagenesis.
(i) pUC18 (ii) pBR322
(iii) M13 (iv) pSC101

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Discuss the role of Methyl transferase in DNA methylation.
OR
b Analyze the role of kinases and phosphatases.

7 a Show how cloning in *E.coli* is performed?
OR
b Illustrate on phagemids and packing of DNA.

8 a Sketch *in vitro* packaging of λ vectors.
OR
b Discuss protein expression Vectors.

Cont...

9 a Explain autoradiography.

OR

b Show how capillary based gel electrophoresis is used in sequencing.

10 a Explain selection of mutants.

OR

b Discuss PCR based Tn mutagenesis.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Classify Restriction enzymes and explain the nomenclature with examples.

OR

b Construct a generalized cloning strategy.

12 a Construct pBR322 and discuss its structure and biology.

OR

b Design cloning strategy using any one yeast vector.

13 a Construct a cDNA library with any one commonly used method.

OR

b Enumerate the role of Tissue specific vectors and explain the protein purification techniques used after expression.

14 a Justify how Sangers Di-deoxy method is applied in DNA sequencing.

OR

b Categorize PCR and note on its applications.

15 a Plan a site-directed mutagenesis using M13 vector.

OR

b Create a mutation using CRISPR/cas9 gene editing.

Z-Z-Z END