

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION MAY 2023  
(Fourth 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. Enzymes that remove nucleotides one at a time from the 3' & 5' ends of a DNA molecule are called \_\_\_\_\_  
(i) Ligases (ii) Exonucleases  
(iii) Endonucleases (iv) Modifying enzymes
2. Bolivar and Rodriguez constructed \_\_\_\_\_ vector.  
(i) Yip7 (ii) R6-5 (iii) pUC8 (iv) p<sup>BR</sup>322
3. The first genomic libraries were cloned and constructed in \_\_\_\_\_.  
(i) Plasmid (ii) Bacteria (iii) Human (iv) Plants
4. How many DNA duplex strands are obtained from one DNA duplex after 4 cycles of PCR?  
(i) 4 (ii) 8 (iii) 16 (iv) 32
5. Write down the name of scientist who has discovered the method of site directed mutagenesis?  
(i) Bostein Shortle (ii) Craik (iii) Grait (iv) Joller Smith

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 (a) Write short notes on Restriction enzymes and its types.  
OR  
(b) Differentiate Linkers and Adaptors used in sub cloning experiments.
- 7 (a) Write the characteristic features of vectors.  
OR  
(b) Discuss the applications of yeast artificial chromosome.
- 8 (a) Differentiate cDNA and Genomic DNA library.  
OR  
(b) Write a short note on cosmid vectors.
- 9 (a) Elucidate Real time PCR with its applications.  
OR  
(b) Write down the application of PCR in Forensics sciences.
- 10 (a) Discuss the application of recombinant DNA technology in Pharmaceutical Industry.  
OR  
(b) Discuss the polymerase chain reactions based site-directed mutagenesis.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

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

- 11 (a) Explain Homopolymer tailing.  
OR  
Describe the following :  
(b) a) Nucleases  
b) Polynucleotide Kinase
- 12 (a) Write a detailed note on pBR322.  
OR  
(b) Briefly explain Plasmid Properties and its Types.
- 13 (a) Elucidate the construction of a genomic DNA Library.  
(b) Write an essay on screening for recombinants and selection.
- 14 (a) Explain Pulsed field gel electrophoresis.  
OR  
(b) Explain Sanger DNA sequencing method.
- 15 (a) Describe insulin production method using recombinant DNA technology.  
OR  
(b) Briefly explain the selection of different types of mutants.

Z-Z-Z

END