

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – MICROBIOLOGY

**PRINCIPLES OF GENETIC ENGINEERING & 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 Who created the first rDNA molecule?
(i) Watson and Crick (ii) Boyer and Cohen
(iii) Paul Berg (iv) Arber and Smith
- 2 Which one of the following are vectors for animals?
(i) SV40 (ii) CMV
(iii) M13 Phage (iv) Gemini
- 3 cDNA library construction strategies are given by _____.
(i) Sanger (ii) Maxam and Gilbert
(iii) Maniatis (iv) Cohen
- 4 The PCR techniques was developed by
(i) Kary Mullis (ii) Kohler
(iii) Milstein (iv) Altman
- 5 Which nucleotide used as a terminator in Sanger's sequence
(i) dGTP (ii) dATP
(iii) ssATP (iv) ddGTP

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Explain the mode of action of ligases.
OR
b What is Linkers? Write in brief.
- 7 a Write a detail account on lambda vectors.
OR
b Describe the properties of good vectors.
- 8 a How are Genomic library constructed give their advantages?
OR
b Explain the marker inactivation selection of recombinant.

Cont...

- 9 a Explain the applications of blotting technique.
OR
b Give a brief account on RFLP
- 10 a Compare contrast Sanger's sequence and Next generation sequence.
OR
b Describe the role of sequencing in forensic science.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Explain the characteristic features and applications of type II restriction enzymes with examples.
OR
b Elucidate the characteristic features and applications DNA polymerases.
- 12 a Compare and contrast the features of Phagemid, Cosmid vectors.
OR
b Draw and label pBR322 and add note on cloning of DNA in it.
- 13 a Bring out the Maniatis strategies of construction of cDNA library.
OR
b Explain the various techniques for screening of recombinants.
- 14 a Elaborate the steps of Southern blotting Process.
OR
b 'A reliable diagnosis is possible by employing PCR as a modern diagnostic tool' – Discuss.
- 15 a Discuss in detail the DNA sequencing by Sanger's sequence.
OR
b Examine the major challenges involved in DNA sequencing and data analyses.

Z-Z-Z END