

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPMS-514

M.Sc. (Previous) Examination, 2023

MICROBIOLOGY

Paper - II

**(Microbial Genetics, Molecular Biology and
Techniques of Genetic Engineering)**

Time : 3 Hours]

[Maximum Marks : 75

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section-B

(Marks : 5 × 5 = 25)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

Section-C

(Marks : 10 × 3 = 30)

Note :- Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section-A

1. (i) What is a HFR cell ?
- (ii) Define plasmid copy number. Why is it significant ?
- (iii) What do you mean by T_m of DNA ?

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- (iv) Define nucleotide and nucleoside.
- (v) What is Wobble hypothesis ?
- (vi) What is the function of alpha subunit of RNA Polymerase ?
- (vii) What do you mean by DNA probe ?
- (viii) Define DNA footprinting.
- (ix) What is a cDNA library ?
- (x) What is meant by expression vector ? Give an example.

Section-B

2. Discuss the process of Transduction.

Or

What is mutagenesis ? Discuss.

3. What do you mean by linking number of DNA ? Explain the role of Topoisomerase in maintaining the linking number of DNA during DNA replication.

Or

What is Z DNA ? Write a detailed note on Z DNA.

4. What is tRNA charging ? Discuss the role of various initiation, elongation and termination factors of translation

Or

Differentiate between Prokaryotic and Eukaryotic transcription. Add a note on properties of genetic codes.

5. What is DNA microarray ? Explain its principle, types and applications.

Or

Write a note on types and applications of restriction endonucleases.

6. Explain site directed mutagenesis.

Or

Write short notes on Cosmids and Bacterial Artificial Chromosomes.

Section-C

7. Write short notes on the following :
 - (a) Classification of Plasmids
 - (b) Specialized Conjugation
8. Write a detailed note on the structure, working and functions of origin of replication and DNA Polymerase III of Prokaryotes.
9. Write a detailed note on Lac Operon.
10. Write detailed notes on RFLP and RAPD.
11. Explain the construction of Genomic and cDNA library.