

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPG–1095

M.Sc. (Previous) Examination, 2021

MICROBIOLOGY

Paper – II

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

Time : 1½ 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

2 each

1. (i) What are Hfr Cells ?
- (ii) Enlist the factors which determine the plasmid copy number.

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(1)

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- (iii) Define insertion elements. Why are they important ?
- (iv) What is Cot value of DNA ?
- (v) What is stringent response ? Why is it important ?
- (vi) Define catabolic repression.
- (vii) What is restriction mapping ? Why is it important ?
- (viii) Enlist *two* properties of type-II endonucleases.
- (ix) Define reporter gene. Give its examples.
- (x) Enlist two similarities and two differences between cosmids and phagemids.

Section-B

2. Write short notes on the following :

(a) Transduction

(b) R-plasmids

2½+2½=5

Or

What are Plasmids ? Write a note on various types of plasmids.

1+4=5

3. Explain structure of prokaryotic DNA polymerase III.

Or

Explain process of DNA transposition.

5,5

4. Explain structure of prokaryotic RNA polymerase enzyme. Add a note on functioning of different subunits of this enzyme.

2½+2½=5

Or

Briefly explain the following :

(a) Nus proteins

(b) Elongation step of bacterial translation

2½+2½=5

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(2)

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5. Write a brief note on Southern Blotting. How is it different from Western Blotting ? 3+2=5

Or

Write principle, procedure and applications of Polymerase Chain Reaction.

2+1½+1½=5

6. Write notes on the following :

(a) Oncogenes

(b) Ti Plasmid

2½+2½=5

Or

Write a note on cDNA and Genomic Library.

2½+2½=5

Section–C

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

7. (a) What are point mutations ? Explain.

(b) What is Bacterial Conjugation ? Why is it important ?

5+5=10

8. Explain the following :

(a) DNA ligase and its role in DNA replication

(b) DNA denaturation and effect of denaturation on properties of DNA

5+5=10

9. Write a detailed note on Lac operon.

10

10. (a) Briefly explain DNA fingerprinting.

(b) What are DNA probes ? How do they work ?

5+5=10

11. Explain the various techniques used for gene transfer.

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