Roll No. : .....

Total No. of Questions : **16**] [Total No. of Printed Pages : **3**

SEM–1035

M.Sc. (Ist Semester) Examination, 2022

MICROBIOLOGY

Paper – FS–MIC–CC–103

(Molecular Biology)

*Time : **3** Hours*] [*Maximum Marks : **40***

The question paper contains three Sections.

Section–A **(Marks : 1 × 10 = 10)**

Note :– The candidate is required to answer all the *ten* questions carries **1** mark each. The answer should not exceed **50** words.

Section–B **(Marks : 3 × 5 = 15)**

Note :– The candidate is required to answer *five* questions by selecting at least *one* question from each Unit. Each question carries **3** marks. Answer should not exceed **200** words.

Section–C **(Marks : 5 × 3 = 15)**

Note :– The candidate is required to answer *three* questions by selecting *one* question from each Unit. Each question carries **5** marks. The answer should not exceed **500** words.

Section–A

1. Attempt all questions. Answers should not exceed **50** words in each question.

   (i) How is a Phosphodiester Bond formed ?

   (ii) What is Melting Temperature of DNA ?

   (iii) What is the significance of Satellite DNA ?

   (iv) Write down the function of Shine Dalgarno Sequence.

   (v) Define Nick Translation Activity.

   (vi) What are Split Genes ?

   (vii) Define antisense RNA. How is it formed ?

   (viii) Define an Operon.

   (ix) What is the role of chaperons in protein synthesis ?

   (x) What is Catabolite Repression ?

Section–B

Note :– Answer any *five* questions in about **200** words, by selecting at least *one* question from each Unit. Each question carries **3** marks.

Unit–I

2. Give a brief outline of the structure of nucleosome.

3. Write down about the types of Transposons.

4. What are different types of DNA repair mechanisms in Prokaryotes ?

Unit–II

5. Differentiate between prokaryotic and eukaryotic messenger RNAs.

6. Write a note on *rho* dependent termination of transcription.

7. Write down the properties of codons.

Unit–III

8. Write a note on heat shock proteins.

9. How do protein molecules bind to DNA ?

10. Write down the mechanism of gene regulation by antitermination.

Section–C

Note :– Answer any *three* questions in this Section, by selecting *one* question from each Unit in about **500** words. Each question carries **5** marks.

Unit–I

11. Give an account of the mechanism of DNA replication in prokaryotes.

12. Describe the types of DNA recombination in Eukaryotes.

Unit–II

13. Write down the process of initiation of transcription in prokaryotes.

14. Describe the structure of ribosomes in eukaryotes with reference to the synthesis of proteins.

Unit–III

15. How is the *lac* operon regulated in *Escherichia coli* ?

16. Describe the regulatory mechanism of Tryptophan operon.