Seat No. : _____

FC-141

February-2025

M.Sc., Sem.-I

403 : Microbiology

(Microbial Genetics and Biostatistics)

Time : 2:30 Hours] **[Max. Marks : 70**

1. Write a detailed note on specialized transduction in rDNA technology. **14**

OR

1. (A) Discuss the process of natural transformation in bacteria. **7**

(B) Exemplify plasmid segregation and its mechanisms. **7**

2. Explain in detail the types of tetrad analysis with suitable examples. **14**

OR

2. (A) Explain the Ordered tetrad analysis with a suitable example. **7**

(B) Discuss the structural features of both T4 and T7 bacteriophages. **7**

3. Discuss various DNA repair mechanisms in detail. **14**

OR

3. (A) Explain the molecular mechanism of transcription. **7**

(B) Give your perspective on prokaryotic DNA replication. **7**

4. Write a note on Measures of Dispersion and provide a suitable example. **14**

OR

4. (A) Define data and discuss different types of data applicable to biostatistics with suitable example. **7**

(B) Obtain the mean, median, and mode values for the given data : **7**

Marks	10	9	8	7	6	5
Number of candidates	3	10	9	8	10	2

5. Answer the following : (any **seven**) **14**

(1) Explain Transfection.

(2) Explain vertical and horizontal gene transfer.

(3) What is the plasmid copy number ?

(4) What is the central dogma and reverse dogma of life ?

(5) What is Centi-Morgan ?

(6) Define the term 'Linkage'.

(7) Define mutagenic agents and give examples of each.

(8) Discuss the terms forward mutation and missense mutation.

(9) What are Linker histones ?

(10) What is the difference between Standard deviation and Variance ?

(11) What are the X-scale and Z-scale in the normal distribution curve ?

(12) In a normal distribution curve, 1 standard deviation from the central mid-point, what is the value of the area under the curve ?