

Unique Paper Code (UPC) : 32535327
Name of the Paper : Microbial Genetics and Molecular Biology
Name of the Course : B.Sc. (Hons.) Microbiology
Semester : 3
Duration : 4 hours including time taken for downloading question paper and uploading answer sheets
Maximum marks : 75

On first page, please write the following details:

1. Date and time of examination (DD/MM/YYYY, Hours:Min)
2. Examination Roll Number
3. Name of the Program, i.e. B.Sc. (H) Microbiology
4. Semester
5. Unique Paper Code (UPC)
6. Title of the Paper
7. Name of the College
8. Email ID of the student
9. Mobile Number of the student

SET 1

Attempt any **four** questions. **All** questions carry equal marks. Please write your answers on A4 sheets and put the page numbers on the top of each sheet

Q1. With the help of labelled diagrams explain the structure of various forms of DNA, along with the differences between them. Discuss about the contribution of Meselson and Stahl and the importance of their work. 12.75+6

Q2. Using the lac operon as an example discuss the regulation of transcription in bacteria, mentioning the *cis*-acting elements involved and their role. 18.75

Q3. What are plasmids? Compare and contrast F plasmid and R plasmid. Write a short note on the different types of plasmids studied by you and outline their importance. 18.75

Q4. Who discovered conjugation? Explain the mechanism of conjugation, supporting your answer with well labelled diagrams and discussing the role of F plasmid. What are Hfr and F+ strains? 1+12+5.75

Q5. Differentiate mutagenesis from mutations. Discuss the mode of action of any one physical and chemical mutagen each. Describe the Ames test, giving its principle and applications. 3+8+7.75

Q6. Define the term translation. Explain the mechanism of translation in prokaryotes. Discuss the features of peptidyl transferase. 2+12+4.75