Registration Number:

Date & Session:

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU -27**

**B.Sc.–V SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2023**

**(Examination conducted in November /December 2023)**

**MB 5121 – Microbial Genetics and Molecular Biology**

**(For current batch students only)**

**Time: 2 Hours Max Marks: 60**

**This paper contains 1 printed page and 4 parts**

**I. Answer any Five of the following 5X3=15**

1. Draw the structure of the dsDNA.

2. Diagrammatically represent the central dogma of molecular biology.

3. Mention the applications of DNA mutations.

4. List the general properties of plasmids.

5. Comment on Rho dependent termination of transcription.

6. What are the merits and demerits of transformation.

7. Draw and label the structure tRNA.

1. **Answer any Five of the following 5X6=30**

8. Write a short note of *trp* operon.

9. Prove that DNA is the genetic material and not the proteins in bacteriophages.

10. Give an account of Hfr conjugation.

11. Discuss the mode of action of 5-bromouracil and UV on DNA.

12. Differentiate composite and non-composite transposons.

13. Illustrate how prokaryotic genome is organised.

14. Write the mechanism of photo reactivation repair.

**III. Answer any One of the following 1X10=10**

15. Explain the mechanism of translation in prokaryotes.

16. a. Illustrate rolling circle DNA replication. (6 marks)

b. List the proteins and enzymes involved in prokaryotic DNA replication. (4 marks)

1. **Answer the following 1X5=5**

17. A bacteriophage infected *E. coli* cells and virions were released after lysing the host cells. One of the progeny phage infected another *E. coli* and introduced a new character to the host cell by site specific recombination. Name the process and explain the mechanism.