

**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27**  
**M.Sc MICROBIOLOGY – I SEMESTER**  
**SEMESTER EXAMINATION - OCTOBER 2019**  
**MB 7318 – MICROBIAL GENETICS**

Time : 2 1/2 hrs

Max. Marks : 70

This paper contains 2 printed pages and 4 parts

**I. Answer any Five of the following** **5x3=15**

1. Define reverse mutation and suppressor mutation.
2. Mention the different types of naturally occurring plasmids.
3. Comment on the fidelity of DNA replication.
4. How were retroviruses used to support the hypothesis of RNA as the source of genetic information?
5. Mention the importance of Chi site during recombination.
6. Comment on gene conversion.
7. List the applications of T7 phages.

**II. Answer any Five of the following** **5x5=25**

8. With a neat diagram explain MutHLS directed mismatch repair.
9. Explain plasmid DNA replication.
10. Give a brief account on viral-like retrotransposons.
11. Mention the steps involved in the initiation and termination of DNA replication.
12. Explain the life cycle of filamentous phages.
13. Illustrate the genome organisation in prokaryotes.
14. Write a short notes on yeast Ty elements.

**III. Answer any Two of the following** **2x10=20**

15. Explain: (5 marks each)
  - (a) Site-specific mutagenesis.
  - (b) Holiday Model of recombination.
16. Write a short notes on: (5 marks each)
  - (a) Removal of RNA primer from newly synthesised DNA.
  - (b) Different forms of DNA.
17. Explain the Denaturation and Renaturation properties of DNA with suitable experiments.

**IV. Answer the following**

**1x10=10**

18. In *E.coli*, four Hfr strains donate the following genetic markers shown in the order donated.

Strain 1 : Q W D M T

Strain 2 : A X P T M

Strain 3 : B N C A X

Strain 4 : B Q W D M

All of these Hfr strains are derived from the same F<sup>+</sup> strain. What is the order of these markers on the circular chromosome of the original F<sup>+</sup>?