Registration Number:

Date & session:

**ST. JOSEPH’S UNIVERSITY, BENGALURU -27**

**M.Sc (MICROBIOLOGY) – I SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2023**

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

**MB 7121: MICROBIAL DIVERSITY**

**( For current batch students only)**

**Time: 2 hours Max Marks: 50**

**This question paper contains 2 printed page and four parts**

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

1. Write a note on the Archean RNA polymerase.

2. What is the drawback of UPGMA method?

3. How are microbes classified based on the pH required for growth?

4. List the differences between r and k selected species.

5. Write three general characteristics of sac fungi.

6. List the differences between gram positive and negative flagellar structure.

7. List the functions of the following: a. haustoria b. metaphosphate granule c. Fli G

1. **Answer any Two of the following 2X5=10**

8. What is batch cultivation of bacteria and how can the growth rate be determined?

9. Write a note on the sexual reproduction in fungi

10. How does the lambda phage control the switching between lytic and lysogenic phases.

**III. Answer any Two of the following 2X10=20**

11. a. List the importance of Next generation sequencing in taxonomy.

b. How can viruses be cultivated?

12. a. How can the G+ C content of an organism be a useful tool in classifying organisms?

b. List the adaptations used by microbes thriving in high temperatures.

13. a. Explain the interplay of opposite mating types in zygospore formation.

b. Explain the structure and life cycle of TMV.

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

14. Using the given pairwise evolutionary distances construct a phylogenetic tree using

UPGMA method.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** | **E** |
| **B** | 2 |  |  |  |  |
| **C** | 4 | 4 |  |  |  |
| **D** | 6 | 6 | 6 |  |  |
| **E** | 6 | 6 | 6 | 4 |  |
| **F** | 8 | 8 | 8 | 8 | 8 |