Seat No. : _____

FA-133

February-2025

M.Sc., Sem.-I

MIC-401 : Microbiology

(Diversity of Prokaryotic and Eukaryotic Microorganisms)

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

1. Describe various molecular techniques used to study microbial diversity and systematics. Write the limitations of each technique over classical methods. **14**

OR

(A) What are molecular chronometers ? Discuss their attributes in detail. **7**

(B) Give a detailed note on chemotaxonomy. **7**

2. Write a detailed note on the systematics and significance of cyanobacteria. **14**

OR

(A) Discuss significant characteristics of the *Betaproteobacteria* class with suitable examples. **7**

(B) Write a detailed note on types of fermentative patterns occurring in enteric bacteria. **7**

3. Describe the structure, life cycle and classification of yeast with illustrations. **14**

OR

(A) Explain types of mycorrhizae and their role in the environment. **7**

(B) Describe the classical classification of fungi in detail. **7**

4. Discuss diversity, molecular and biochemical adaptation, and applications of thermophiles. **14**

OR

(A) Discuss diversity and characteristics features of archaea. **7**

(B) Discuss the typical features and molecular adaptation strategies found among acidophiles. **7**

5. Write **1-2** line answers to any **seven** of the following : **14**

(a) Define - polyphasic taxonomy.

(b) What are signature sequences ?

(c) What do you mean by 'richness' and 'evenness' ?

(d) Give full form of FAME.

(e) What is gut actinobacteria ?

(f) What is the physiology of spirochetes ?

(g) Give names of edible mushrooms.

(h) Give names of two human pathogenic fungi and the disease caused by them.

(i) Give types of basidiospores and differences in each.

(j) Define - compatible solutes.

(k) What is the major adaptation strategy for survival found in alkaliphiles ?

(1) Which group of archaea are the slowest evolving organisms ?