



Seat No. _____

H-003-1134001

M. Sc. (Biotech) (Sem. IV) (CBCS) Examination

April - 2023

BT-418 : Molecular Phylogeny & Extremophiles

Faculty Code : 003

Subject Code : 1134001

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

1 Answer the following : (any **seven** out of ten, each of 2 marks) **14**

- (1) Define : Metagenomics.
- (2) Give ecological significance of Methanogens.
- (3) Which type of sequencing is helpful for bacterial identification ?
- (4) Define : Chronometer.
- (5) DNA :rRNA hybridization.
- (6) What are cultivable and non cultivable microbes ?
- (7) What are different conventional methods to study microbial diversity ?
- (8) How RFLP is used – as a tool for bacterial systematic.
- (9) What are Methanogens ? Exemplify.
- (10) How does an archaeal cell wall differ from its bacterial counterpart ?

2 Answer the following : (any **two** out of three, each of 7 marks) **14**

- (a) Write a short note on phenetic diversity.
- (b) Explain role of rRNA in phylogenetic analysis.
- (c) What is endosymbiotic theory of evolution ? Explain.

3 Answer the following : (a) & (b) - both are compulsory, each of 7 marks) **14**

- (a) Describe evolutionary significance of Non-cultivable microbes.
- (b) How soil community analysis is carried out using DGGE of 16S rDNA Polymerase chain Reaction Products.

OR

- (a) Write a short note on physiology of archaeobacteria.
- (b) Describe ecology and habitat of archaeobacteria.

4 Answer the following : (a) and (b) – both are compulsory, each of 7 marks) **14**

- (a) Explain Adaptation of Halophiles in saline environment.
- (b) What are the biochemical and structural basis of heat stability in hyperthermophiles ?

5 Answer the following : (any **two** out of four, each of 7 marks) **14**

- (a) Write a short note on “Archaeal genomics”.
- (b) Discuss physiology, ecological significance and habitats of Psychrophiles.
- (c) What is bacteriorhodopsin? Explain.
- (d) Write a note on general characteristics of methanogenic bacteria.
