DM-003-1134001 Seat No. _____

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

March - 2022

BT-418 : Biotech

(Molecular Phylogeny and Extremophile)

Faculty Code : 003
Subject Code : 1134001

Time : **2.30** Hours] [Total Marks : **70**

1 Answer the following (Any seven out of ten, each, of 02 marks). **14**

(1) What are polyamines in bacteria, and what is the role of polyamines in bacterial systematic ?

(2) What is Thermoplasma ?

(3) What is the ecological importance of Archaebacteria ?

(4) What are three ways in which archaebacteria differ from eubacteria ?

(5) How many nucleotides are in 16S rRnA ? And Why is it called 16S RNA ?

(6) What do you mean by theromoacidophiles ?

(7) What is the ecological significance of methanogens ?

(8) What is the chronological distance ?

(9) What are the limits of extremities ?

(10) What is the survival strategy of acidophiles ?

2 Answer the following (Any two out of three, each of 07 marks). **14**

(a) Describe any two molecular characters useful in microbial taxonomy

(b) Write a note on 16S RNA.

(c) Write a brief note on molecular chronometers.

3 Answer the following (Each of 07 marks). 14

(a) What is the G+C content of DNA ? How would you determine it ?

(b) What is the difference between genomics and metagenomics ? Briefly describe the applications of metagenomics.

OR

3 Answer the following (Each of 07 marks). 14

(a) What is the biotechnological importance of non-cultivable microbes ?

(b) Write a brief note on in situ hybridization.

4 Answer the following (Each of 07 marks). 14

(a) What are halophiles ? What are their adaptation strategies ?

(b) Write a note on the ecology of habitats of Archaebacteria.

5 Answer the following (Any two out of four, each of 07 marks) 14

(a) How does an archaeal cell wall differ from a eubacteria cell wall ? Discuss.

(b) How well do alkaliphiles regulate their cytoplasmic pH? Discuss.

(c) Write in detail about alkaline enzymes and their applications.

(d) Discuss Extremophiles as a source for novel enzymes.