



MBS-003-1134001

Seat No. _____

M. Sc. (Sem. IV) (CBCS) (W.E.F. 2016) Examination

April / May- 2018

BT-418 : Biotechnology

(Molecular Phylogeny & Extremophiles)

(CORE)

Faculty Code : 003

Subject Code : 1134001

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : All Questions are compulsory. Support your answers with suitable illustrations where required.

1 Answer any seven : (2 marks each) **14**

- (a) What do you understand by the bacterial systematics ?
- (b) What is the significance of DNA: DNA hybridization in bacterial identification?
- (c) Why majority of the bacteria are non-cultivable ?
- (d) What are barophiles?
- (e) What is the metagenomic DNA and why it's important?
- (f) Why extremophiles are called so?
- (g) What are various molecular methods used in studies related to microbial diversity?
- (h) Differentiate archaea and eubacteria on the basis of their chemical nature.
- (i) Enlist various types of thermophilic habitats.
- (j) What is the correlation between the ultraextremity of a habitat and its microbial diversity?

2 Write detailed comment on any **two** of the following : **7×2=14**

- (a) Molecular approaches used in microbial taxonomy.
- (b) Various approaches to study and track the evolution
- (c) Numerical Taxonomy

- 3** Answer the following : (7 marks each) **14**
- (a) Discuss the aspects of metagenomics highlighting its relevance in biotechnology.
 - (b) Discuss various adaptation strategies in thermophilic bacteria and archaea.

OR

- 3** Answer the following : (7 marks each) **14**
- (a) Discuss different molecular methods and bioinformatic tools to study the noncultivable microbes.
 - (b) Discuss the process and significance of DGGE in studies related to bacterial diversity.
- 4** Write detailed comment : (7 marks each) **14**
- (a) Thermophilic bacteria and Archaea: Biotechnological Significance
 - (b) Halophilic bacteria: Habitats and Adaptations
- 5** Comment on any **two** (7 marks each) **14**
- (a) Adaptations in alkaliphiles
 - (b) Usefulness of the Extremophiles in bioremediation
 - (c) Regulation of gene expression as a function of salt in Halophiles
 - (d) Relevance of the studies related to the extremophiles
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