



MBT-003-1194002

Seat No. _____

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

April / May - 2018

MICRO - 420 : Extremophiles

(Core)

Faculty Code : 003

Subject Code : 1194002

Time : Hours]

[Total Marks : 70

- 1** Answer any **seven** of the following : (2 Marks each)
- (a) What are major lipid components of halobacteria ?
 - (b) Highlight mechanism of survival at high pressure.
 - (c) What are the applications of thermophiles in molecular biology ?
 - (d) What is the role of bacteriorhodopsin ?
 - (e) Enlist various extremophilic groups of the microorganisms.
 - (f) What are adaptation strategies of barophiles ?
 - (g) What is an Archaeosome ?
 - (h) What are key features of Thermoplasmas ?
 - (i) List out eukaryotic extremophiles.
 - (j) What are the differences between thalassohaline and athalassohaline environment ?
- 2** Answer any **two** of the following : (7 Marks each)
- (a) Discuss distribution, ecological significance and metabolic diversity of extremophiles.
 - (b) What is osmoregulation? Discuss the strategies adopted by extremophiles for its maintenance.
 - (c) Describe archaea and bacterial cell wall in a comparative manner.

- 3** Answer the following : (7 Marks each)
- (a) Explain in detail about ecology, habitats and distinguishing features of Archaea.
 - (b) Describe industrial relevance and current trends of extremozymes.

OR

- (a) Discuss physiology and adaptive strategies of Archaea,
 - (b) Discuss the status of molecular biology studies with respect to thermophiles and its biotechnological significance.
- 4** Answer the following : (7 Marks each)
- (a) Describe structural adaptation mechanism of hyperthermophiles at extreme temperatures,
 - (b) Explain in detail about the halophiles with respect to adaptation strategies and biological significance.
- 5** Write a note on any **two** of the following : (7 Marks each)
- (a) Distribution, diversity, ecological significance and adaptation of psychrophiles.
 - (b) Methanogens and its ecological significance.
 - (c) Alkaliphiles and their industrial applications.
 - (d) Adaptation mechanism and applications of acidophiles.
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