



DN-003-1194002

Seat No. _____

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

March / April - 2022

Microbiology

(Micro 420 Extremophiles)

Faculty Code : 003

Subject Code : 1194002

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

[Total Marks : 70

- 1 Answer any 7 : (2 marks each) 14
- (i) State the major groups included in archaea.
 - (ii) What are extremozymes ?
 - (iii) State the differences between archaeal and eubacterial cell membrane.
 - (iv) What are compatible solutes ?
 - (v) What is an Archaeosome ?
 - (vi) What are endoliths ?
 - (vii) What are psychrophiles ?
 - (viii) Comment on the cell wall chemistry in alkaliphiles.
 - (ix) State the major lipid components of halobacteria.
 - (x) State the unique features of archaeal protein synthesis.
- 2 Answer any 2 of the following : (7 marks each) 14
- (i) Discuss ecological significance and metabolic diversity of polyextremophiles.
 - (ii) Write a note on radiation resistant *Deinococcus radiodurans*.
 - (iii) Discuss the strategies adopted by extremophiles for osmoregulation.
- 3 Answer the following : (7 marks each) 14
- (i) Describe ecology and habitats of archaea.
 - (ii) Comment on the physiology of archaea.

OR

- 3 Answer the following : (7 marks each) **14**
(i) Discuss striking features of phylum euryarchaeota.
(ii) Describe biotechnological potential of archaea.
- 4 Answer the following : (7 marks each) **14**
(i) Discuss protein stability in hyper-extremophiles.
(ii) Describe adaptation mechanism of hyperthermophiles at extreme temperatures.
- 5 Write a short note on any 2 of the following : (7 marks each) **14**
(i) Methanogens
(ii) Barophiles
(iii) Archaeorhodopsin
(iv) Physiology of alkaliphiles
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