



**DCI-003-1194002**

Seat No. \_\_\_\_\_

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

**July - 2022**

**Microbiology : M-420**

**(Extremophiles) (New Course)**

**Faculty Code : 003**

**Subject Code : 1194002**

Time : **2.30** Hours]

[Total Marks : **70**

**1** Answer the following questions : (Attempt any seven) **14**

- (1) Enlist name of four types of extremophiles along with range of extremity they can survive in.
- (2) Which types of archeae form phylum Crenarchaeota ?
- (3) Which organisms can be considered as polyextremophiles ?
- (4) Enlist the name of compatible solutes found in extremophiles (minimum four).
- (5) Enlist the niches of Barophiles (minimum four).
- (6) State one distinguishing feature of archaeal cell wall.
- (7) State the role of reverse gyrase in hyperthermophiles.
- (8) State the significance of methanogens.
- (9) Which organisms are considered as Xerophiles ? State the range of extremity it can survive in.
- (10) Which membrane protein plays crucial role of respiration in halophiles ?

**2** Answer the following questions : (any two) **14**

- (1) Discuss eukaryotic extremophilic in detail.
- (2) Write a detail note on types and ecological significance of extremophiles.
- (3) Enlist the difference between bacteria and archaea.

**3** Answer the following questions : (Any two) **14**

- (1) Discuss the phylums of archaea in detail.
- (2) Write a detail note on cell wall of archaea.

**OR**

- (1) Write a detail note on fixation of carbon in archaea.
- (2) Discuss the significance of archaea.

**4** Answer the following questions : (any two) **14**

- (1) Write detail note on Thermophiles in terms of its classification and adaptation strategy.
- (2) Discuss the adaptation strategies of Psychrophiles and Acidophiles in brief.
- (3) Discuss the significance of Thermophiles any Hyperthermophiles.

**5** Answer the following questions : (any two) **14**

- (1) Discuss in detail adaptation strategies and commercial application of Halophiles.
- (2) Enlist the pathways used for metanogenesis. Discuss Aceticlastic pathway in detail.
- (3) Write a brief note on adaptation strategies of Alkaliphiles and Barophiles.

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