Seat No. _____

# HA-003-1194002

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

### April - 2023

### Microbiology : MICRO - 420

### (Extremophiles) (New Course)

**Faculty Code : 003**

**Subject Code : 1194002**

Time : $2\frac{1}{2}$ Hours / Total Marks : **70**

**1** Answer the following question in brief : (any **seven**) **14**

(1) Which organisms are considered as thermophiles ? State the classification of thermophiles.

(2) Which organisms are considered as barophiles ? State their niches.

(3) Enlist name of the phylum of archaea and comment on their habitat in brief.

(4) Enlist the significance of alkaliphiles.

(5) Write a brief note on polyextremophiles.

(6) Enlist the applications of thermozymes.

(7) Enlist the name of photoreceptor pigments found in archaea.

(8) Enlist the biotechnological significance of acidophiles organisms.

(9) Write a brief note on archaeal chromosome.

(10) What are osmolytes ? Enlist two examples of osmolytes.

**2** Answer the question in detail : (any **two**) **14**

(1) Write a detailed note on extremophilic eukaryotes citing suitable example.

(2) Enlist the name of 7 types of extremophiles along with growth range and niches.

(3) Compare and contrast archaea with bacteria and eukaryotes.

**3** Answer the questions in detail : **14**

(1) Write a detailed note on the cell wall of archaea.

(2) Discuss the CMP and its variation in archaea.

**OR**

**3** Answer the questions in detail : **14**

(1) Discuss the peculiar characteristics of archeal cell membrane.

(2) Discuss the chemolethotrophic carbin dioxide fixation pathways found in archaea.

**4** Answer the following questions in detail : **14**

(1) Write a note on adaptation strategies and significance of thermophiles in detail.

(2) Discuss acidophiles in terms of its classification, niches and adaptation strategies.

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

(1) Write a note on adaptation strategies and significance of halophiles in detail.

(2) Draw and discuss the pathway of methanogenesis.

(3) Discuss Alkalphiles in terms of its classification, niches and genetics.

(4) Enlist and discuss the potential applications of extremophiles.

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