

G-2/207/21

Roll No.....

## M.Sc. II Semester Examination, 2021

### BIOTECHNOLOGY

#### Paper III

(Microbial Morphology and Physiology)

Time : 3 Hours ]

[Maximum Marks : 80

**Note :** *All questions are compulsory. Question Paper comprises of 3 sections. **Section A** is objective type/multiple choice questions with no internal choice. **Section B** is short answer type with internal choice. **Section C** is long answer type with internal choice.*

#### SECTION 'A'

##### (Objective Type Questions)

Choose the correct answer :

1 × 8 = 8

1. Chlorobium species is which of the following type bacteria ?

- (a) Purple sulphur bacteria
- (b) Green sulphur bacteria
- (c) Purple non-sulphur bacteria
- (d) Green non-sulphur bacteria

P.T.O.

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2. Rotatory motor of flagella is associated with which ring ?

- (a) M Ring
- (b) P Ring
- (c) M and S Ring
- (d) L Ring

3. During exponential phase growth rate is .....

- (a) Same as generation time
- (b) Reciprocal of generation time
- (c) Time required to double the population
- (d) Rate of doubling population

4. Against HIV there is no any vaccine because .....

- (a) The virus is so antigenically variable
- (b) Such a vaccine would be very expensive
- (c) Virus can be controlled by change in sexual habits
- (d) Latency can abrogate any vaccine effect

5. An intermediate of TCA cycle which undergoes reductive amination with glutamine is.....

- (a) Acetyl CoA
- (b) Glutamine
- (c)  $\alpha$ -keto glutarate
- (d) NADPH

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6. During photosynthesis RuBisCo play an important role in which phase :

- (a) Light phase                      (b) Dark phase
- (c) Electron transport chain
- (d) TCA cycle

7. Organism *Thermus aquaticus* generally prevails in which temperature ?

- (a) 0°C                                  (b) 100°C
- (c) 70-72°C                          (d) 80-82°C

8. Which of the following mineral most often limits the primary productivity of an ecosystem ?

- (a) carbon                              (b) nitrogen
- (c) sulphur                              (d) phosphorus

**SECTION 'B'**

**6 × 4 = 24**

**(Short Answer Type Questions)**

**Note :** Answer the following questions in 250 words.

Unit I

1. Write short note on any one of the following :

- (a) Cyanobacteria,                      (b) Mycobacterium.

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**P.T.O.**

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Unit II

2. Write a note on any one of the following :

- (a) TMV,
- (b) Growth curve.

Unit III

3. Write a note on Entner-Doudoroff pathway and its significance.

Or

Describe methanogens and process of methanogenesis.

Unit IV

4. Write note on aero-allergens.

Or

Explain the soil microbes and its interactions.

**SECTION 'C'**

**12 × 4 = 48**

**(Long Answer Type Questions)**

**Note :** Answer the following questions in 500 words.

Unit I

1. Write an essay on various physical and chemical methods of sterilization.

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Or

Write short notes on the following :

- (a) Purple bacteria,
- (b) Gliding and sheathed bacteria.

Unit II

2. Write notes on the following :

- (a) Continuous culture,
- (b) Mathematics of growth.

Or

Write notes on the following :

- (a) Retrovirus,
- (b) Pox virus.

Unit III

3. Write an essay on various nutritional types of microbes.

Or

Write note on the following :

- (a) Fermentation,
- (b) PPP.

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Unit IV

4. Give detail account of  $N_2$  cycle and its significance.

Or

Write note on the following :

- (a) Phosphorus cycle,
- (b) Microbiology of marine water.

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