

**G-1/181/22**

Roll No. ....

**I Semester Examination, January 2022**

**M.Sc.**

**MICROBIOLOGY**

Paper I

(Bacteriology and Virology)

Time : 3 Hours ]

[ Max. 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**

**8×1=8**

**(Objective Type/Multiple Choice Questions)**

*Choose the correct answer :*

- 1.** Schaeffer Fulton stain is used to stain which of the following component of cell ?
- (a) Metachromatic granules
  - (b) Endospore
  - (c) Flagella
  - (d) Capsule

P.T.O.

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- 2.** Which of the following facts is true about gram positive bacteria ?
- (a) Cell wall contains high percentage of lipids
  - (b) Peptidoglycon is loosely arranged
  - (c) Possess Teichoic acid
  - (d) Outer membrane is present
- 3.** Generation time is shortest in which of the following phase of a growth curve ?
- (a) Lag phase
  - (b) Logarithmic growth phase
  - (c) Maximum stationary phase
  - (d) Death phase
- 4.** In Carl Woese three domain classification which of the following RNA is used as a chronometer ?
- (a) 5 S RNA                      (b) 5.8 S RNA
  - (c) 25 S RNA                    (d) 16 S RNA
- 5.** The nucleic acid of M 13 bacteriophage is :
- (a) SS RNA                      (b) SS DNA
  - (c) DS RNA                      (d) DS DNA

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6. Which of the following virus has icosahedral symmetry ?  
 (a) Rabies virus      (b) Adeno virus  
 (c) Mumps virus      (d) Measles virus
7. Which of the following fact is true for TMV ?  
 (a) It is a plant virus  
 (b) It has DS DNA as genome  
 (c) It has icosahedral symmetry  
 (d) It is non pathogenic
8. Which of the following is a brick shaped virion ?  
 (a) Herpes virus      (b) Influenza virus  
 (c) Pox virus      (d) HIV

**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) Chemical nature and properties of bacterial capsule.
- (b) Steps involved in synthesis of peptidoglycan.

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**Unit-II**

2. Write short note on any *one* of the following :
- (a) Salient features of Whittaker's five Kingdom concept
- (b) Methods employed to get synchronous cultures.

**Unit-III**

3. Write short note on any *one* of the following :
- (a) Baltimore classification
- (b) Bacteriophage typing.

**Unit-IV**

4. Write short note on any *one* of the following :
- (a) Use of embryonated egg for cultivation of viruses
- (b) Morphology of animal viruses having RNA as genome.

**SECTION C****12×4=48****(Long Answer Type Questions)**

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

**Unit-I**

1. Give an illustrative account of flagella of gram positive and negative bacteria.

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*Or*

Answer the following questions :

- (a) What are the different layers of cell wall of gram negative bacteria ?
- (b) What are the different stages of formation of endospore ? Comment upon the characteristics features of bacterial endospores.

#### **Unit-II**

- 2. Draw a well labelled diagram of a typical bacterial growth curve and point out the features of each phase.

*Or*

Answer the following questions :

- (a) How are bacteria classified on basis of temperature and pH ? Support your answer by giving suitable examples.
- (b) Give an accounts of seven Kingdoms as proposed by Carl Woese.

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#### **Unit-III**

- 3. What is the difference between lytic and lysogenic cycle ? Explain the different stages of lysogenic cycle by drawing suitable diagrams.

*Or*

Answer the following questions :

- (a) What are the different stages of a one step growth curve of a bacteriophage ?
- (b) Explain by drawing suitable diagrams the life-cycle of T<sub>4</sub> bacteriophage.

#### **Unit-IV**

- 4. Give an illustrative account on morphology, pathogenicity of Pox virus.

*Or*

Write short notes on the following :

- (a) Chemical methods for assay of virus
- (b) Application of cell cultures in virology.

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