

2019

BOTANY

( Major )

Paper : 5.1

( Microbiology and Immunology )

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. Give very short answers : 1×7=7

- (a) What is biofilm?
- (b) Define the term bioaerosol.
- (c) What is apoptosis?
- (d) Name the causal organism of Rocky Mountain spotted fever.
- (e) Define a strain.
- (f) What is a fore spore?
- (g) What are transposons?

2. Write the difference between :  $2 \times 4 = 8$

- (a) Catabolic and Anabolic pathway
- (b) Active and Passive immunity
- (c) Virus and Virusoids
- (d) Fungi and Actinomycetes

3. Write on any *three* of the following :  $5 \times 3 = 15$

- (a) Application of microbes in sewage treatment
- (b) A typical bacterial growth curve and its different phases
- (c) Tobacco Mosaic Virus
- (d) Allergic disorders caused by air microflora
- (e) Biological nitrogen fixation

4. Answer the following questions :

- (a) How do biogeochemical cycles maintain soil fertility? Give a detailed account of cycling of elemental sulphur in nature and the role played by microbes.  $2 + 8 = 10$

Or

Write about the characteristic features of Mycoplasmas and the diseases caused by them. Why are they resistant to antibiotics?  $7 + 2 + 1 = 10$

- (b) What are the nutrients required by bacteria? Write the characteristics of major nutritional categories of bacteria based on carbon, energy and electron sources. 1+9=10

*Or*

What is transduction? Elaborate the process of transduction with suitable diagram. Differentiate between generalized and specialized transduction. 1+7+2=10

- (c) What is immunoglobulin? Write about the structure of immunoglobulin and their different classes. 1+6+3=10

*Or*

Name the T-cells involved in cellular immunity. Describe briefly their roles for combatting pathogens. How does cellular immunity differ from humoral immunity? 1+7+2=10

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