# 2 0 1 9

## 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?

( *Turn Over* )

**2.** Write the difference between : 2×4=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 : 5×3=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

*( Continued )*

(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 immunoglobin? Write about the structure of immunoglobin 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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