

2018

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. Fill in the blanks :

1×7=7

- (a) The word 'bacteria' was coined by \_\_\_\_\_.
- (b) The plant growth promoting Rhizobacteria have been discovered by \_\_\_\_\_.
- (c) The immunoglobulin responsible for allergic symptoms is \_\_\_\_\_.
- (d) Genetical change of bacteria by taking cell-free naked DNA is called \_\_\_\_\_.
- (e) 'Kuru' disease of human being is caused by \_\_\_\_\_.

- (f) Ribosomal RNA extensively used for microbial taxonomy is \_\_\_\_.
- (g) The infectious circular single-stranded RNA dependent on other virus is \_\_\_\_.

2. Write in brief on any *four* of the following :

2×4=8

- (a) Interferon
- (b) Acquired immunity
- (c) Bacterial binary fission
- (d) Viroids and disease caused by them
- (e) Mycoplasma
- (f) Germ theory of disease

3. Answer any *three* of the following :

5×3=15

- (a) Describe the major nutritional groups of microorganisms citing suitable examples.
- (b) Describe the molecular trends of bacterial taxonomy.
- (c) Describe the methods of isolation of soil microorganisms.
- (d) Write in brief about the lytic multiplication cycle of bacteriophage.

(e) Write in brief about the application of microbiology in soil.

(f) Write a note on cell-mediated immunity.

(g) Write the mechanisms of transmission of plant viruses.

4. Answer the following questions : 10×3=30

(a) What is biogeochemical cycle? Give a detailed account of cycling of elemental nitrogen in nature and role played by microorganisms. 1+9=10

Or

What is water microbiology? How potability of water can be determined? 2+8=10

(b) What are the chemical compositions of bacterial cell wall? Give a detailed structure of Gram-positive and Gram-negative bacterial cell wall. 3+7=10

Or

Write the general characteristics of Rickettsiae and Chlamydiae. Also mention diseases caused by them. 10

- (c) What are antibodies? Describe the structure of a typical antibody molecule. Mention the important classes of antibodies.  $2+6+2=10$

Or

What is meant by non-specific resistance? Describe the role of skin and mucous membrane in defending pathogenic microorganisms.  $1+9=10$

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