

**B.Sc. (Part—III) Semester—V Examination**

**5S : MICROBIOLOGY**

**(Environmental Microbiology and Bioinstrumentation)**

Time : Three Hours]

[Maximum Marks : 80

**Note** :— (1) All questions are compulsory.

(2) Draw diagrams wherever necessary.

1. (A) Fill in the blanks : 2
- (i) Phytoplankton living in river are known as \_\_\_\_\_ .
  - (ii) The bacteria \_\_\_\_\_ are present in root nodules of leguminous plants.
  - (iii) Formation of schmutzdeck layer occurs in filter \_\_\_\_\_ .
  - (iv) \_\_\_\_\_ is the coldest layer of atmosphere.
- (B) Choose correct alternative :— 2
- (i) A horizon is related to \_\_\_\_\_ .
    - (a) Soil profile (b) Water profile
    - (c) Air (d) None
  - (ii) Coagulation is addition of \_\_\_\_\_ .
    - (a) Sulfur (b) Magnesium
    - (b) Potassium (d) Alum
  - (iii) Ultra-violet radiations kill microorganisms by causing damage to \_\_\_\_\_ .
    - (a) Protein (b) Lipid
    - (c) DNA (d) RNA
  - (iv) Proteolysis is \_\_\_\_\_ .
    - (a) Hydrolysis of lipids (b) Hydrolysis of Carbohydrates
    - (c) Hydrolysis of proteins (d) Hydolysis of fats
- (C) Answer in one sentence :— 4
- (i) Define Symbiosis
  - (ii) Define Rhizosphere
  - (iii) Give long form of WHO
  - (iv) Define BOD.
2. (a) Describe sampling of air by settling plate device. 4
- (b) Describe etiology and symptoms of any one viral airborne disease. 4
- (c) Explain control of airborne micro-organisms of UV irradiation. 4

**OR**

- (d) Define and discuss antagonism with example. 4
- (e) Describe slit type air sampler. 4
- (f) Describe etiology and symptoms of any one bacterial air-borne disease. 4
3. Describe symbiotic nitrogen fixation in detail. 12

**OR**

- Describe in detail sulfur cycle with its significance. 12
4. (a) Describe in brief eutrophication and its control. 4
- (b) Discuss "Blackout algae" method for planktons control. 4
- (c) Discuss any four harmful activities of planktons. 4

**OR**

- (d) Describe any two methods to remove colour and odour produced by planktons. 4
- (e) Discuss beneficial activities of planktons. 4
- (f) Explain methods of preventing growth of algae. 4
5. (a) Explain MPN method for coliforms. 4
- (b) Differentiate between faecal and non faecal coliforms. 4
- (c) Describe confirmed test for coliforms. 4

**OR**

- (d) Discuss the advantages of membrane filter technique. 4
- (e) Give detailed account on IMViC tests of Coliforms. 4
- (f) Describe ICMR and WHO bacteriological standards of drinking water in detail. 4
6. (a) Explain construction of slow sand filter. 4
- (b) Explain coagulation and flocculation. 4
- (c) Give outline of bio-gas production. 4

**OR**

- (d) Explain break point chlorination. 4
- (e) Discuss in brief Sewage treatment in oxidation pond. 4
- (f) What is self purification of water ? 4
7. Define electrophoresis. Describe in detail principle and application of paper. 12

**OR**

Define chromatography. Describe in detail principle and applications of thin layer chromatography. 12