AW–1753

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 releated 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