AR – 596

Fifth Semester B.Sc. (Part – III) Examination

5S – MICROBIOLOGY

(Environmental Microbiology and Bioinstrumentation)

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (1) All questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :—

(i) Kova's reagent is used in —— test.

(ii) Transmission of diphtheria is —— borne.

(iii) Formation of Schmutzdeck layer occures in —— filter.

(iv) In presumptive test for coliforms —— broth is used. 2

(B) Choose correct alternative :—

(i) Select nonsymbiotic nitrogen fixing bacteria.

(a) Proteus vulgaris

(b) Bacillus subtilis

(c) Azotobacter

(d) Staphylococus aureus.

(ii) Example of faecal coliform is

(a) Achromobacter

(b) Streptococcus pyogenes

(c) Escherichia coli

(d) Mycobacterium.

(iii) Coagulation is addition of

(a) Sulfer

(b) Magnesium

(c) Potasium

(d) Alum.

OR

Explain principle, working and applications of thin layer chromatography. 12

(e) Explain membrane filter technique for coliforms. 4

(f) Discuss multiple tube dilution technique for faecal streptococci. 4

6. (a) Explain construction and working of slow sand filter in brief. 4

(b) Explain break–point chlorination. 4

(c) Describe oxidation pond. 4

OR

(a) Explain self purification of water. 4

(b) Explain rapid sand filter in brief. 4

(c) Discuss sewage treatment by trickling filter. 4

7. Describe principle, working and applications of Gel Electrophoresis.

(iv) Oxidation pond is an example of symbiotic association between

(a) Algae and fungi

(b) Algae and bacteria

(c) Protozoa and bacteria

(d) Bacteria and virus. 2

(C) Answer in one sentence.

(i) Define symbiosis.

(ii) Enlist two microorganisms used as biofertilizer.

(iii) Define humus.

(iv) Define biopesticide. 4

2. (a) Define and discuss antagonism with example. 4

(b) Discuss control of micro–organisms in air in brief. 4

(c) Describe any one method for impingement of micro-organisms in air. 4

OR

(d) Discuss commensalism with suitable example. 4

(e) Describe slit type of air sampler. 4

(f) Describe etiology and symptoms of any one bacterial air-borne disease. 4

3. (a) Describe symbiotic nitrogen fixation in brief. 4

(b) Explain carbon cycle in brief. 4

(c) Explain decomposition of carbohydrate in soil with suitable example. 4

OR

(d) Discuss biofertilizer in brief. 4

(e) Draw diagram of nitrogen cycle. 4

(f) Describe different kinds of micro-organisms in soil. 4

4. Define plankton and discuss methods of controlling plankton problems.

OR

Describe plankton. Discuss harmful and beneficial activities of planktons. 12

5. (a) Explain presumptive test for coliforms. 4

(b) Describe Indol test. 4

(c) Discuss indicators of faecal pollution. 4

OR

(d) Why coliforms are considered as indicators of faecal pollution ? 4