AT–391

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 well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) The left over chlorine in water after satisfying the chlorine demand of water is known as _____.

(ii) _____ broth is used for presumptive test for faecal streptococci.

(iii) Sample holder in visible spectrophotometer is called as _____.

(iv) _____ is the end product of proteolysis. 2

(B) Choose correct alternative :

(i) Select liquid impingement method :

(a) Fuel device (b) Anderson air sampler

(c) Lemon air sampler (d) None

(ii) In thin layer chromatography _____ is used as stationary phase.

(a) Whatman paper (b) Thin layer of Agar

(c) Silica (d) Agarose

(iii) _____ bacteria can fix the nitrogen.

(a) Pseudomonas (b) Staphylococcus

(c) Rhizobium (d) Lactobacillus

(iv) Long form of WHO is :

(a) White Health Organ (b) World Health Organization

(c) Wild Health Organ (d) World Hygiene Organization 2

(C) Answer in **one** sentence each :

(i) What is proteolysis ?

(ii) Name the media used in membrane filter technique for coliform.

(iii) Define residual chlorine.

(iv) Define sewage. 4

2. (a) Define and discuss symbiosis with suitable example. 4

(b) Draw a well labelled diagram of Anderson air sampler and comment on it. 4

(c) Describe viral air borne diseases in brief. 4

OR

(d) Illustrate parasitism with suitable example. 4

(e) What are HEPA filter ? Explain its working in Laminar air flow. 4

(f) Enlist four different air borne diseases with its causative agent. 4

3. Explain in detail Nitrogen cycle with special reference to Nitrogen fixation of symbiotic type. 12

OR

What are pesticides ? Describe harmful effects of chemical pesticides. Explain about biological pest control with example. 12

4. (a) Describe undesirable characteristics of planktons. 4

(b) What is eutrophication ? Write its causes. 4

(c) Discuss two methods for preventing the growth of planktons. 4

OR

(d) Explain planktons in general. 4

(e) Describe in brief removal of undesirable odour, taste caused by planktons. 4

(f) Discuss beneficial activities of planktons. 4

5. (a) What is MPN ? How it is detected ? 4

(b) Differentiate between faecal and nonfaecal coliforms. 4

(c) Explain membrane filter technique for faecal streptococci. 4

OR

(d) What are coliforms ? Explain IMViC classification of coliforms. 4

(e) Explain multiple tube fermentation technique for detection of faecal streptococci. 4

(f) Give names of media for coliforms in multiple tube fermentation technique. 4

6. Draw well labelled flow sheet diagram for water treatment plant at municipality level. Explain coagulation, flash mixing and flocculation in detail. 12

OR

Define chlorine demand of water. Explain various methods of chlorination in detail. 12

7. (a) Explain principle of paper chromatography. 4

(b) Discuss gel electrophoresis in brief. 4

(c) Explain principle of isotopic tracer technique. 4

OR

(d) Give applications of Thin layer chromatography. 4

(e) Give principle of spectroscopy in brief. 4

(f) Discuss principle of paper electrophoresis. 4