AS–1465

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

**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) In Voges Praskaur test_____ reagent is used.

(ii) Transmission of tuberculosis is _____ borne.

(iii) _____ is a faecal type of coliform.

(iv) In anaerobic sludge digestion_____ gas is produced. 2

(B) Choose the correct alternative :

(i) Agarose gel is used in _____.

(a) Isotopic tracer technique

(b) Spectroscopy

(c) Electrophoresis

(d) Chromatography

(ii) Ammonification is_____.

(a) Release of ammonia

(b) Release of $H_2S$

(c) Release of $CO_2$

(d) None

(iii) Select one of the layers of atmosphere _____.

(a) Stratosphere

(b) Rhizosphere

(c) Hydrosphere

(d) Lithosphere

(iv) Differentiation between faecal and non-faecal coliforms is based on _____.

(a) IMVIC test

(b) MPN

(c) Membrane filter technique

(d) All 2

(C) Answer in **ONE** sentence :

(i) Define coliforms

(ii) Define plankton

(iii) Define proteolysis

(iv) What is negative association ? 4

2. (a) Describe symbiosis with suitable example. 4

(b) Explain settling plate method for microbiological analysis of air. 4

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

**OR**

(d) Describe synergism with suitable example. 4

(e) Explain Anderson air sampler for bacteriological analysis of air. 4

(f) Discuss different types of microorganisms in air. 4

3. (a) Describe nitrogen cycle in detail. 12

**OR**

(b) Define humus and discuss formation, functions and microbiology of humus. 12

4. (a) Describe factors affecting growth of planktons 4

(b) Discuss beneficial activities of plankton 4

(c) Explain any two methods for removal of undesirable odour, taste and turbidity produced by plankton in brief. 4

**OR**

(d) Describe eutrophication 4

(e) Discuss harmful activities of plankton 4

(f) Discuss methods for preventing growth of planktons. 4

5. (a) Explain MPN for coliforms 4

(b) Describe Voges Proskaur test 4

(c) Discuss indicators of excretal pollution 4

**OR**

(d) Describe collection and handling of water sample 4

(e) Explain membrane filter technique for coliforms 4

(f) Describe ICMR bacteriological standards of drinking water. 4

6. (a) Explain rapid sand filter in brief 4

(b) Describe chlorine-ammonia treatment for disinfection of water 4

(c) Discuss activated sludge process in brief. 4

**OR**

(d) Slow sand filters are also called as biological filter. Justify the statement 4

(e) Explain coagulation and floculation 4

(f) Explain break-point chlorination. 4

7. Define chromatography and describe principle, working and applications of paper chromatography. 12

**OR**

Discuss isotopic tracer technique in detail. 12