AT – 285

First Semester B. Sc. (Part – I) Examination

1 S – MICROBIOLOGY

(Fundamentals of Microbiology and Microbial Physiology)

P. Pages : 7

Time : Three Hours | | Max. Marks : 80

Note : (1) Question No. **One** is compulsory and carries **Eight** marks without any internal choice.

(2) Question No. **Two** to **Seven** carry equal marks with internal choice.

(3) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :—

(i) —— oil is used in oil immersion objective.

(ii) Chemostat is used for obtaining —— culture.

(iii) In bacterial growth curve, maximum growth is obtained in _____ growth phase.

(iv) Gram's Iodine is used as ... in Gram staining. 2

(B) Choose the correct alternatives :—

(i) Fungi like bacteria are known as —— .

(a) mycoplasma

(b) rickettsia

(c) actinomycetes

(d) Staph. aureus.

(ii) Plasmid is —— .

(a) Protein

(b) DNA

(c) RNA

(d) both DNA and RNA.

(iii) Chemotrophs obtain their energy by —— .

(a) utilizing sunlight

(b) air

(c) oxidation of chemical compounds

(d) using uv light.

(iv) The cell wall of bacteria is made up of ——— .

(a) flagellin

(b) fatty acid

(c) hyaluronic acid

(d) peptidoglycan. 2

(C) Answer the following in **One** sentence each :—

(i) Define mordant.

(ii) What is function of Turbidostat ?

(iii) Define Biotechnology.

(iv) What is capsule ? 4

2. Give contributions of Schulze and Schwann. Schroeder and Von Dusch and Louis Pasteur to disprove spontaneous generation. 12

OR

Describe medical microbiology, genetic engineering and biotechnology in detail. 12

3. (a) Define :—

(i) Dye.

(ii) Resolving power.

(iii) Magnification.

(iv) Condenser. 4

(b) Differentiate between simple and differential staining. 4

(c) Explain principle and method of endospore staining. 4

OR

(d) Draw ray diagram of scanning electron microscope (SEM). 4

(e) Explain flagella staining. 4

(f) Describe flouresecence microscopy in brief. 4

4. Define taxonomy, nomenclature classification and identification. Give comparative account on Gracilicutes, Firmicutes and Tenericutes. 12

OR

Describe general characteristics of Actinomycetes, viruses and Algae. 12

5. (a) Draw well labelled diagram of flagella of Gm + ve bacteria. 4

(b) Differentiate between cell wall of Gm + ve and Gm – ve bacteria. 4

(c) Explain in brief plasmids. 4

OR

(d) Draw well labelled diagram of bacterial cell. 4

(e) Explain ribosomes in brief. 4

(f) Discuss structure of endospore. 4

6. (a) Explain streak plate method for isolation of pure culture. 4

(b) Discuss the role of beef extract peptone and agar – agar in medium. 4

(c) Describe replica plate technique in brief. 4

OR

(d) Differentiate between synthetic and nonsynthetic media. 4

(e) Explain :—

(i) Autotrophs.

(ii) Heterotrophs. 4

(f) Explain Freeze drying in brief. 4

7. (a) Define :—

(i) Synchronous culture.

(ii) Psychrophiles. 4

(b) Explain classification of bacteria on the basis of oxygen requirement. 4

(c) Describe in brief Turbidostat. 4

OR

(d) Discuss methods of reproduction in bacteria. 4

(e) Draw well labelled diagram of bacterial growth curve. 4

(f) Explain classification of bacteria on the basis of growth temperature. 4