

**B.Sc. (Part-I) Semester-II Examination  
BIOTECHNOLOGY (R/V)  
(Microbiology)**

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 :— 2

- (i) In optical microscope \_\_\_\_\_ is used as source of illumination.
- (ii) In bacterial classification name of the family is suffixed with \_\_\_\_\_.
- (iii) In microscopy, TEM stands for \_\_\_\_\_.
- (iv) \_\_\_\_\_ first explained theory of host parasite relationship for pathogenic microorganisms.

(B) Choose correct option :— 2

- (i) Mantoux test is used for \_\_\_\_\_.
  - (a) Measles
  - (b) Hepatitis
  - (c) Tuberculosis
  - (d) Polio
- (ii) Saccharomyces is \_\_\_\_\_.
  - (a) Saccharide
  - (b) Saccharin
  - (c) Yeast
  - (d) Mold
- (iii) \_\_\_\_\_ is the counter stain in Gram Staining.
  - (a) Crystal violet
  - (b) Iodine
  - (c) Safranin
  - (d) Methylene blue
- (iv) In microbiology laboratory, bacterial culture is preserved in \_\_\_\_\_.
  - (a) Autoclave
  - (b) Hot air oven
  - (c) Refrigerator
  - (d) Incubator

(C) Answer in **ONE** sentence each :— 4

- (i) Photocell
- (ii) Phagocytosis
- (iii) Sterilization
- (iv) Lithotrophs

2. Explain :—

- (a) Objectives in compound microscope. 4
- (b) Membrane filter. 4
- (c) Gaseous chemosterilization. 4

**OR**

- (d) Sterilization by hot air oven. 4
- (e) Simple staining. 4
- (f) Typical bacterial cell. 4
3. (a) Classify microbes on the basis of energy source. 4
- (b) Differentiate between gracilicutes and firmicutes. 4
- (c) Describe importance of methanogens. 4
- OR**
- (d) Describe teichoic acids of bacterial cell wall. 4
- (e) Differentiate between flagella of Gram positive and Gram negative bacteria. 4
- (f) Explain halophiles. 4
4. Explain fixation of atmospheric nitrogen by following microorganisms :
- (a) Azotobacter 4
- (b) Rhizobium 4
- (c) Cyanobacteria 4
- OR**
- (d) Describe symbiotic association. 4
- (e) Define antibiosis. Explain with suitable example. 4
- (f) Explain ATP generation steps in electron transport chain. 4
5. Explain the role of following microbes as agricultural biofertilizers :
- (a) Rhizobium 4
- (b) Azotobacter 4
- (c) PSB. 4
- OR**
- Explain the importance of following industrially important microorganisms :
- (d) Aspergillus 4
- (e) Penicillium 4
- (f) Spirulina 4
6. Describe in detail specific host defence mechanism. 12
- OR**
- Describe in detail mycoplasma as pathogenic organism. 12
7. Describe in detail working and applications of UV-VIS spectrophotometer. 12
- OR**
- Discuss biotechnologically important radioactive isotopes. 12