

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

- (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