

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

Time : Three Hours]

[Maximum Marks : 80

- N.B. :—** (1) All questions are compulsory.
 (2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

- (i) _____ lenses are used in objective optical microscope.
 (ii) The instrument used for sterilization at 160-180°C temperature using dry heat is called as _____.
 (iii) The unit of size measurement in bacteriology is _____.
 (iv) _____ is the causative agent of typhoid. 2

(B) Choose the correct alternative :

- (i) Flagella are made up of the protein :
 (a) Keratin (b) Flagellin
 (c) Flavoprotein (d) Flavin
- (ii) Teichoic acid is present in _____.
 (a) Gram positive bacteria (b) Gram negative bacteria
 (c) Fungi (d) Algae
- (iii) Crystal violet is used in _____ staining.
 (a) Gram (b) Acid fast
 (c) Endospore (d) Negative
- (iv) _____ is an antibiotic producing organism.
 (a) Rhizobium (b) Aspergillus
 (c) Anabaena (d) Streptomyces 2

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

- (i) Autotroph (ii) Photosynthesis
 (iii) Obligate parasite (iv) Disinfectant. 4

2. Describe the following :

- (a) Endospore staining 4
 (b) Bacterial filters 4
 (c) Mechanism of Gram's staining. 4

OR

- (d) Parts of optical microscope 4
 (e) Negative staining 4
 (f) Autoclaving. 4
3. Explain :
 (a) Bacterial cell wall 4
 (b) Phototrophs 4
 (c) Singer and Nicolson model. 4
- OR**
- (d) Bacterial flagella 4
 (e) Cytoplasmic membrane 4
 (f) Heterotrophs. 4
4. Describe in detail role of nitrogen fixing microbes in agriculture. 12
- OR**
- Describe in detail TCA cycle. 12
5. Explain the role of following microbes as biofertilizers :
 (a) Azotobacter 4
 (b) Rhizobium 4
 (c) PSB. 4
- OR**
- Explain the importance of following microbes in fermentation industry :
 (d) *Saccharomyces cerevisiae* 4
 (e) *Lactobacillus* 4
 (f) *Streptomyces*. 4
6. Describe the following :
 (a) *Mycoplasma* infections 4
 (b) Koch postulates 4
 (c) Hepatitis virus. 4
- OR**
- (d) *Mycobacterium tuberculosis* 4
 (e) *Trichophyton* 4
 (f) *Vibrio cholerae*. 4
7. Describe in detail paper and thin layer chromatography. 12
- OR**
- Describe in detail gel electrophoresis. 12