

Bachelor of Science (B.Sc.) Semester—II Examination
MICROBIOLOGY (Microbial Techniques)
Optional Paper—2

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) **ALL** questions are compulsory.

(2) Draw well labelled diagrams.

(3) All questions carry equal marks.

1. Describe Transmission Electron Microscopy (TEM) along with ray diagram. 10

OR

Describe bright field microscopy along with its components. 10

2. Discuss the principle of Atomic force microscopy along with ray diagram. Write its application. 10

OR

Define Fluorescence. Explain principle and application of fluorescent microscopy along with ray diagram. 10

3. (a) Discuss the principle and procedure of spore staining. 5

(b) Explain the principle and procedure of Gram Staining. 5

OR

(c) Describe the principle and procedure of flagella staining. 5

(d) Explain principle and procedure of Acid fast staining. 5

4. (a) Explain serial dilution technique. 2½

(b) Discuss auxanographic technique for determination of “Carbon” requirement. 2½

(c) What is Coulter counter method ? 2½

(d) Explain induction techniques to obtain synchronous culture. 2½

OR

(e) Describe in detail streak plate method. 2½

(f) Describe briefly replica plate technique. 2½

(g) What is Helmstetter-Cummings Method ? 2½

(h) Explain membrane filter technique for enumeration of bacteria. 2½

5. Attempt any **Ten** :—

(i) What is the role of dark field stop ?

(ii) Write any two applications of confocal microscopy.

(iii) Give the example of immersion oil used in bright field microscopy.

(iv) Write any two applications of phase contrast microscopy.

(v) Give the limitations of Atomic force microscopy.

(vi) What is the role of annular diaphragm in phase contrast microscopy ?

(vii) What is negative staining ?

(viii) What is Chromophore ?

(ix) What is Auxochrome ?

(x) What is Micromanipulator ?

(xi) What does ‘CFU’ stand for ?

(xii) Give one limitation of Breed’s count.

1×10=10