

**Second Semester B. Sc. Examination**

**MICROBIOLOGY**

**Paper – II**

**(Microbial Techniques)**

Time : Three Hours ]

[ Max. Marks : 50

- N. B :** (1) All questions are compulsory and carry equal marks.  
(2) Draw diagrams and give suitable examples wherever necessary.

1. Describe principle, construction and applications of TEM and SEM.

**OR**

Draw the diagram of bright-field microscope. Give its various parts along with their functions. 10

2. Explain the principle and working of phase contrast microscope. Add a note on its applications.

**OR**

Write the principle and working of fluorescent microscope. Write its applications. 10

3. (a) Write the principle and procedure of Gram staining technique. 5  
(b) Describe the principle and procedure of acid-fast staining. 5



OR

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

(d) Write the principle and procedure of endospore staining. 5

4. (a) Describe pour plate method for measurement of growth.  $2\frac{1}{2}$
- (b) Explain synchronous culture technique.  $2\frac{1}{2}$
- (c) Describe Auxanographic techniques.  $2\frac{1}{2}$
- (d) What is Coulter counter technique ? Write its limitations.  $2\frac{1}{2}$

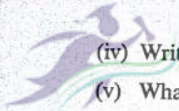
OR

- (e) Write a note on replica plating technique.  $2\frac{1}{2}$
- (f) Write a note on single cell isolation.  $2\frac{1}{2}$
- (g) How streak plate technique is performed for isolation of pure Culture.  $2\frac{1}{2}$
- (h) What is Breed's method ? Write its limitations.  $2\frac{1}{2}$

5. Solve any **Ten** :—

- (i) What is numerical aperture ? 1
- (ii) Write one application of dark field microscopy. 1
- (iii) Write the example of oil used in microscopy. 1

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(iv) Write two examples of fluorescent dyes. 1

(v) What is cantilever ? 1

(vi) What is a chromophore ? 1

(vii) Give any two limitations of atomic force microscopy. 1

(viii) Give two examples of basic dyes. 1

(ix) What is simple staining ? 1

(x) What is minimal medium ? 1

(xi) Name two special medium for isolation of pure culture. 1

(xii) What is the use of Petroff-Housser's chamber ? 1