NKT/KS/17/5091

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

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw diagrams and give suitable examples wherever necessary.

1. Differentiate between TEM and SEM along with their ray diagrams. 10

OR

Describe various components of Bright field microscope along with their functions. Give ray diagram of bright field microscopy. 10

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

OR

Discuss phase contrast microscopy. Draw well labelled ray diagram. 10

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

(b) Describe the principle and procedure of acid fast staining. 5

OR

(c) Write the principle and procedure of Gram staining. 5

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

4. (a) How streak plate technique is performed for isolation of pure culture ? 2½

(b) What is Coulter counter technique ? Write its limitations. 2½

(c) Explain synchronous culture technique. 2½

(d) Explain replica plating technique. 2½

OR

(e) Describe pour plate method for measurement of growth. 2½

(f) Explain Breed's method. Write its limitations. 2½

(g) Write a note on single cell isolation technique. 2½

(h) Describe Auxanographic technique. 2½

5. Solve any **TEN** questions :—

(i) Define numerical aperture. 1

(ii) Write application of dark field microscopy. 1

(iii) Why oil is used along with oil immersion lens ? 1

(iv) What is the role of phase shifting plate in phase contrast microscope ? 1

(v) What is the function of excitation filter ? 1

(vi) Give two applications of atomic force microscopy. 1

(vii) What is auxochrome ? 1

(viii) Name the stain used in negative staining of capsule. 1

(ix) Define acidic and basic dyes. 1

(x) What is pure culture ? 1

(xi) Name any two methods for cell mass determination. 1

(xii) Name any two special media used for isolation of pure culture. 1