

PD-278
(572) M. Sc. MICROBIOLOGY (SECOND SEMESTER)
Examination JUNE 2021
Compulsory/Optional

Group-
Paper-I

Name/Title of the Paper: BIOINSTRUMENTATION & BIOCHEMICAL TECHNIQUES

Time: Three Hours

Maximum Marks: 80

Minimum Passing Marks:

Note: Answer from both the section as directed. The figures in the right hand margin indicate marks.

Section-A

1. Answer the following objective type question; 1x10

- a. Mention precise pressure and temperature achieved by an autoclave.
- b. How many bigger sized counting chambers are there in a haemocytometer?
- c. What do you mean by reverse phase HPLC?
- d. Name two dyes used in fluorescent microscope.
- e. How much quantity of protein sample is generally loaded in a well of SDS-PAGE gel?
- f. Which technique is popularly used for determination of structure of an unknown molecule?
- g. Why buffers are used for extraction of proteins from an animal tissue?
- h. Why nitrocellulose membranes are used in blotting techniques?
- i. What is the use of Camera-Lucida in microscopy?
- j. Mention two important applications of starch gel electrophoresis.

2. Answer the following short answer type question; 2x5

- a. What do you mean by BOD of a sample, and what are the factors affecting its value?
- b. Discuss microbiological applications of SEM.
- c. Briefly describe working principle of an AAS.
- d. Explain principle of Northern blotting technique?
- e. What for ion exchange chromatography is used?

Section-B

Answer the following descriptive type question; 15x4

Unit - I

3. Write short notes on;
- a. Laminar air flow
 - b. Ultracentrifugation

Or

- Write short notes on;
- a. Working principle of pH meter
 - b. Applications of turbidometer in microbiology

Unit - II

4. Mention working principle of phase contrast microscope and its applications in microbiology.

Or

- Write short notes on;
- a. Affinity chromatography
 - b. TEM

Unit - III

5. Write short notes on;
- a. NMR
 - b. Zonal electrophoresis

Or

Write a detailed note of SDS-PAGE mentioning its working principle, and various applications in industrial microbiology.

Unit - IV

6. Discuss working principle of X-ray diffraction and its application in structure analysis.

Or

- Write short notes on;
- a. Gas chromatography
 - b. MALDI-TOF