

M.Sc. MICROBIOLOGY
FIRST SEMESTER
BIOINSTRUMENTATION
MMB-102
[USE OMR SHEET FOR OBJECTIVE PART]

**SET
A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Agarose gel electrophoresis are used for the electrophoresis of:
a. Proteins
b. Nucleic acids
c. Both a and b
d. Lipids
- TEMED is a:
a. Free radical stabilizer
b. Cross linking agent
c. Protein
d. Agarose
- Two dimensional gel electrophoresis is a technique for separating proteins:
a. Based on charge
b. Based on mass
c. Based on its pI value
d. Based on mass and charge
- What is the primary purpose of ionization in a mass spectrometer?
a. Conversion of sample to gas phase
b. Acquiring a charge
c. Creating a cation
d. All of the above
- Which one of the following acts as a chromophore in desorption ionization?
a. Taylor cone
b. Matrix
c. Laser
d. Mass analyzer
- Isotopes of an element have a different number of:
a. Neutron
b. Proton
c. Electron
d. Negatron
- Helium nuclei particles are called:
a. Alpha particles
b. Beta particles
c. Gamma particles
d. Delta particles
- 1 Ci is equal todisintegrations per second.
a. 3.7×10^{10}
b. 2.7×10^{10}
c. 1.7×10^{10}
d. 3.9×10^{10}
- L-aspartic acid is synthesized by immobilizing:
a. *Candida*
b. *S. cerevisiae*
c. *E. coli*
d. All of the above
- An example of cross-linking agent is:
a. Glucose isomerase
b. Glutaraldehyde
c. Aminoethylcellulose
d. Albumin

11. Agarose is a polysaccharide extracted from:
 - a. Algae
 - b. Bacteria
 - c. Fungi
 - d. Protozoa
12. Which of the following is NOT a method of cell disruption?
 - a. Sonication
 - b. Homogenization
 - c. Streaking
 - d. Chemical Treatment
13. What does the electrophoresis apparatus consist of?
 - a. Gel, buffer chamber and fire pack
 - b. Electrophoresis unit and gel separator
 - c. Buffer chamber and electrophoresis unit
 - d. Power pack and electrophoresis unit
14. Chitinase is used for the disruption of..... cell wall.
 - a. Bacterial
 - b. Plant
 - c. Fungal
 - d. Animal
15. Electrophoresis was developed by:
 - a. Tswett
 - b. Tsvedberg
 - c. Tiselius
 - d. Sanger
16. Which of the following technique uses sound waves for cell disruption?
 - a. Homogenization
 - b. Sonication
 - c. Blender
 - d. Mortar and Pestle
17. Chromatography is a physical method that is used to separate and analyze.....
 - a. Simple mixtures
 - b. Complex mixtures
 - c. Viscous mixtures
 - d. Metals
18. Which of the following is not the product of cell disruption?
 - a. DNA
 - b. RNA
 - c. Protein
 - d. Water
19. In chromatography, the stationary phase can be..... supported on a solid.
 - a. Solid or liquid
 - b. Liquid or gas
 - c. Solid only
 - d. Liquid only
20. Lysozyme is used for.....
 - a. Bacterial cell disruption
 - b. Fungal cell disruption
 - c. Viral cell disruption
 - d. None

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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| 1. Explain capillary electrophoresis with a labelled diagram. | 10 |
| 2. Describe the methods of immobilization of enzymes with diagrams. | 10 |
| 3. Explain two important methods to measure radioactivity with diagrams. | 10 |
| 4. Explain the steps for DNA synthesis. | 10 |
| 5. What is chromatography? Describe the principle of Chromatography.
Also, add a note on the applications of Chromatography. | 2+4+4=10 |
| 6. Differentiate between: | 5×2=10 |
| a) Adsorption chromatography and Partition chromatography | |
| b) Agarose Gel Electrophoresis and PAGE | |
| 7. Define the following: | 2.5×4=10 |
| a) Mobile Phase | |
| b) Stationary Phase | |
| c) Chromatogram | |
| d) Buffer | |
| 8. What is Cell Disruption? Describe the various methods of Cell Disruption. | 2+8=10 |

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