

**M.Sc. BIOTECHNOLOGY  
FIRST SEMESTER  
CELL BIOLOGY AND BIOINSTRUMENTATION  
MBT-103**

**SET  
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

Time: 15 mins.

**( Objective )**

Marks: 10

*Choose the correct answer from the following:*

**1×10=10**

- Which organelle is known as the powerhouse of the cell?  
a. Golgi  
b. Peroxisome  
c. Mitochondria  
d. ER
- What is the name given to genetic material organisation in prokaryotes?  
a. Nucleus  
b. Nucleoid  
c. Nuclear spindle  
d. Nucleosome
- Where does the TCA cycle take place?  
a. Cytoplasm  
b. Periplasm  
c. Nucleus  
d. Mitochondria
- Vacuoles are a distinct characteristic of .....cells.  
a. Plant  
b. Animals  
c. Bacterial  
d. Fungal
- Eukaryotes have .....type ribosomes.  
a. 50  
b. 60  
c. 70  
d. 80
- Which of the following is not the product of cell disruption?  
a. DNA  
b. RNA  
c. Protein  
d. Water
- Agarose is a polysaccharide extracted from:  
a. Algae  
b. Bacteria  
c. Fungi  
d. Protozoa
- 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
- Lysozyme is used for.....  
a. Bacterial cell disruption  
b. Fungal cell disruption  
c. Viral cell disruption  
d. None

10. Chromatography is a physical method that is used to separate and analyze.....
- a. Simple mixtures
  - b. Complex mixtures
  - c. Viscous mixtures
  - d. Metals

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**(Descriptive)**

Time : 1 hr. 15 mins.

Marks : 25

[ Answer question no.1 & any two (2) from the rest ]

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|---|----------|
| 1. What is a chloroplast? Define and elaborate.   | 5        |
| 2. Differentiate between:<br>a) Paper Chromatography and Thin Layer Chromatography<br>b) Agarose Gel Electrophoresis and PAGE   | 2×5=10   |
| 3. Elaborate and explain the electron transport chain in mitochondria.  | 10       |
| 4. a) What is Agarose Gel Electrophoresis? Describe the factors affecting the rate of migration in Agarose Gel Electrophoresis. | 2+3=5    |
| b) What is Cell disruption? Describe the various methods of Cell Disruption.  | 1+4=5    |
| 5. What is chromatography? Describe the principle of Chromatography. Also, add a note on the applications of Chromatography.    | 2+3+5=10 |

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