

B.Sc. BOTANY
SECOND SEMESTER
INSTRUMENTATION & LABORATORY TECHNIQUES
BSB-921 [IDMj]

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

(Objective)

Time: 15 mins.

Marks: 10

Choose the correct answer from the following:

1 × 10 = 10

- Which of the following is a measure of the concentration of a solution based on the number of moles of solute per liter of solution?
 - Molarity
 - Normality
 - Molality
 - Mass percent
- What is the primary purpose of an autoclave?
 - To dry samples at high temperatures
 - To mix chemicals under pressure
 - To cool down materials quickly
 - To sterilize laboratory equipment
- Which of the following materials is commonly sterilized using an autoclave?
 - Glassware
 - Plastics
 - Metals
 - All of the above
- Molality is expressed as:
 - Moles of solute per liter of solution
 - Moles of solute per kilogram of solvent
 - Grams of solute per liter of solution
 - Equivalents of solute per liter of solution
- Which equation is commonly used to calculate chlorophyll a concentration from absorbance values?
 - Chlorophyll a (mg/L) = $(13.95 \times A_{663}) - (6.88 \times A_{645})$
 - Chlorophyll a (mg/L) = $(12.7 \times A_{663}) - (2.69 \times A_{645})$
 - Chlorophyll a (mg/L) = $(1000 \times A_{470}) - (2.27 \times \text{Chlorophyll b}) - (81.9 \times \text{Chlorophyll a})$
 - Chlorophyll a (mg/L) = $(22.9 \times A_{645}) - (4.68 \times A_{663})$
- In paper chromatography, what is the stationary phase?
 - The mobile phase that moves up the paper
 - The solvent used to dissolve the sample
 - The mixture being analyzed
 - The paper used in the experiment
- The largest Herbaria in the world located at:
 - Royal Botanical Garden, England
 - National Botanical Garden, India
 - New York Botanical Garden, New York
 - Komarov Botanical Institute, Russia
- What is the standard size of herbarium sheets used for mounting plant specimens?
 - 8.5 × 11 inches
 - 11 × 16 inches
 - 8 × 15 inches
 - 16 × 20 inches

9. Which of the following is NOT typically included in the label attached to a herbarium specimen?

- a. Soil pH level
- b. Collection date
- c. Geographic coordinates
- d. Collector's name

10. Which solvent would be preferred for separating non-polar compounds in paper chromatography?

- a. Water
- b. Acetone
- c. Hexane
- d. Ethanol

(Descriptive)

Time : 1 hr. 15 mins.

Marks : 25

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

- | | |
|---|--------|
| 1. What is paper chromatography and how does it work? | 5 |
| 2. Describe in brief the parts of Autoclave with neat diagram. Mention also the precautions. | 7+3=10 |
| 3. Write the definition of Molarity, Normality and Molality with suitable examples. | 10 |
| 4. Describe the steps involved in the extraction and estimation of chlorophyll content from leaf extract. | 10 |
| 5. Define herbarium. Describe the techniques of herbarium. | 2+8=10 |

= = *** = =