

3. Write short notes on **any three** : (3×5=15)

- (i) Disposal of hazardous waste
- (ii) Culture media: types and applications
- (iii) Herbarium
- (iv) Fire extinguisher

4. (a) Explain the process of serial dilution and how it is used to estimate the concentration of microorganisms in a sample. Include the steps involved and an example calculation. (8)

(b) Detail the working principle of Spectrophotometer and writes its applications. (7)

5. (a) What is sampling? Briefly describe the different sampling methods? (7)

(b) What is standard error? Compute the mean, standard deviation, standard error and coefficient of variation of the following data that showed increase in the length of pods of a plant after treatment with a hormone.

Observation	1	2	3	4	5	6	7	8	9	10
Length of pod	4.25	4.20	4.15	3.35	3.25	4.70	3.25	3.75	3.70	3.90

(8)

(1500)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1392

I

Unique Paper Code : 2162011103

Name of the Paper : Basic Laboratory and field skill in Plant Biology

Name of the Course : B.Sc. (H) Botany

Semester : I

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

- Write your Roll No. on the top immediately on receipt of this question paper.
- Attempt any **four** questions in all.
- Question No. 1 is compulsory.
- Attempt all parts of a question together.

1. (a) State True or False of the following (**any five**) : (5×1=5)

(i) Agarose gel electrophoresis mainly used to separate nucleic acids based on the molecular size.

(ii) The median and the mode of the following data is 44, 49, 44, 54, 42 is 42

P.T.O.

- (iii) Using a fume hood without ventilation is an example of bio-safety measures.
- (iv) PCR is a technique to amplify the DNA of a sample.
- (v) Number of moles of solute present in one liter of the solution is called Molality.
- (vi) The goal of fixation is to keep the cells or specimen in the living state for longer duration.
- (vii) Condenser lens collects the electron beam coming out of specimen after interaction and bends them to magnify the image in electron microscope.

(b) Expand the following (**any five**) : (5×1=5)

- (i) HEPA (ii) BOD
- (iii) SEM (iv) PAGE
- (v) HPLC (vi) EDTA
- (vii) YEB

(c) Fill in the blanks (**any five**) : (5×1=5)

- (i) _____ in confocal microscope blocks out-of-focus light from above and below the focal point.

- (ii) To prepare 500 mL of a 2% (v/v) ethanol solution, you would need _____ mL of ethanol.
- (iii) _____ is a measure of data spread or dispersion.
- (iv) _____ is a catalogue to collect and preserve plant specimens.
- (v) _____ is used to analyses and present the data in organized manner.
- (vi) _____ is a workstation used to create a contamination-free and sterilized environment through filters to capture all the particles entering the cabinet.
- (vii) _____ incubator is a specialized equipment used to measure the amount of oxygen consumed by microorganisms in wastewater samples.

2. Differentiate between **any five** : (5×3=15)

- (i) LR grade and AR grade chemicals
- (ii) Light microscope and Electron Microscope
- (iii) Pour plate and spread plate technique
- (iv) MS excel and power-point
- (v) Micrometer and Hemocytometer
- (vi) Agarose and SDS-PAGE gel electrophoresis