Or

Write the definition and formula for calculation of standard deviation. What is the significance of standard deviation in biological studies ? Write the merits and demerits of standard deviation.

2+2+2+2+2=10

(c) What are the types of Gel Electrophoresis ? Describe different steps involved in Agarose Gel Electrophoresis process for extraction of DNA from plant material. Mention the factors affecting electrophoresis.

1+6+3=10

Or

What is Cryofixation ? Describe different types of cryofixations used in biological studies. How cryofixation is necessary for biological studies ?

2+6+2=10

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3 (Sem–6/CBCS) BOT HE 2

2023

BOTANY

(Honours Elective)

Paper : BOT–HE–6026

(Analytical Techniques in Plant Sciences)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions very briefly :

1×7=7

(a) What do you mean by arrayed data ?

(b) Name the scientist who first created the scanning electron microscope.

(c) Paper chromatography is an example of liquid-liquid/liquid-solid chromatography.

(Choose the correct option)

Contd.

(d) Succinate dehydrogenate is the enzyme marker for which cell organelle ?

(e) In X-ray crystallography, _____ is used to position the crystal in desired orientation. *(Fill in the blank)*

(f) What are the limitations of chromosome painting ?

(g) Silver (Ag) atom is used for image formation in _____. *(Fill in the blank)*

2. Give very short answers of the following questions : 2×4=8

(a) Do all chromosomes have same banding pattern ? Give reasons.

(b) Mention *two* precautions that need to be taken during preparation of chromatographic plates in TLC.

(c) What is X-ray crystallography ?

(d) Application of Spectrophotometry in biological research.

3. Write short notes on **any three** of the following : 5×3=15

(a) PAGE

(b) Freeze fracture technique of electron microscopy

(c) Autoradiography

(d) Differentiate between differential and density gradient centrifugation.

4. Write answer of the following questions : 10×3=30

(a) What do you mean by column chromatography ? What is the working principle of column chromatography ? Describe the procedure of this kind of chromatography and the precautions to be taken while doing this technique. 1+2+5+2=10

Or

Write short notes on the following : 5×2=10

(i) Application of flow cytometry

(ii) Ion exchange chromatography

(b) Write the definition of the following along with their merits and demerits : 5×2=10

(i) Median

(ii) Mode