

Total number of printed pages-4

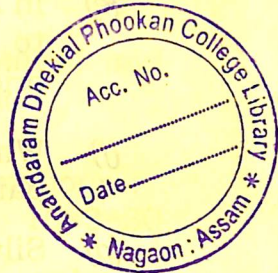
3 (Sem-6/CBCS) BOT HE 2

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 :  $2 \times 4 = 8$

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

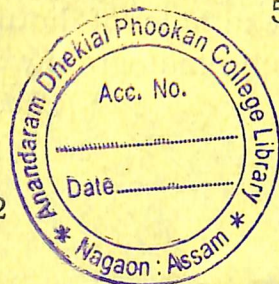
(b) Mention *two* precautions that need to be taken during preparation of chromatographic plates in TLC.

(c) What is X-ray crystallography ?

(d) Application of Spectrophotometry in biological research.

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

(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 :  $10 \times 3 = 30$

(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 :  $5 \times 2 = 10$

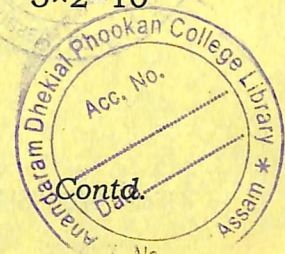
(i) Application of flow cytometry

(ii) Ion exchange chromatography

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

(i) Median

(ii) Mode



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 ?

$2+6+2=10$

