(c) Explain the principle and procedure of paper chromatography. What are the advantages and disadvantages of paper chromatography over TLC ? 6+4=10

(d) Give a detailed account on the methods applied for characterization of proteins and nucleic acids.

(e) Define mean and median and cite their merits and demerits. Discuss the various ways of representation of data in biostatistics with proper example. 6+4=10

(f) What is centrifugation ? Write in detail about different forms of centrifuge. Also add a note on the precautions to be taken during centrifugation. 2+6+2=10



Total number of printed pages–4



**2024**

**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.***

*Answer **all** questions.*

1. Answer the following questions very briefly : 1×7=7

(a) The stationary phase in paper chromatography is solid/liquid/gas.
*(Choose the correct answer)*

(b) Which procedure is applied in molecular biology to separate proteins based on molecular weight ?

Contd.

(c) The procedure of _____ is applied in laboratory to separate molecules based on charge. *(Fill in the blank)*

(d) Which microscope is used to study internal structure of a cell?

(e) Spectrophotometry is based on _____ law. *(Fill in the blank)*

(f) Retention time/Retention factor/ Resolution is the most suitable index for the identification of a compound separated by Thin Layer Chromatography. *(Choose the correct answer)*

(g) Define data in biostatistics.

2. Answer the following questions in brief : 2×4=8

(a) What are the differences between confocal and electron microscopes with reference to their principles and applications?

(b) How are radioisotopes helpful in plant science research?

(c) What are the technical differences between GLC and HPLC?



(d) How will you define population and sample in biostatistics?

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

(a) Fluorochromes

(b) Cryofixation

(c) Marker enzymes

(d) Affinity chromatography

(e) Chi-square test

4. Answer ***any three*** of the following questions : 10×3=30

(a) Which principle is the basis of fluorescence microscopy? Discuss about the applications of fluorescence microscope in advanced plant science research. 5+5=10

(b) Illustrate the principle of spectrophotometry. Write a detailed note on various applications of spectrophotometry in laboratory and industry. 4+6=10