U.G. 6th Semester Examination - 2022

BOTANY

Course Code : BBOTDSHC5 [DSE-5]

Course Title : Analytical Techniques in Plant Sciences

Full Marks : 30 Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **ten** questions: 1×10=10

a) What is Svedberg unit?

b) What is distribution coefficient?

c) What is retention factor?

d) What technique can be used to determine the 3D structure of a protein?

e) On what basis analytes are separated in molecular (size) exclusion chromatography?

f) What do you mean by degree of scattering in transmission electron microscope?

g) What is variance?

h) What do you mean by resolution of microscope?

i) What is the main purpose of cell fractionation?

j) What is cryofixation?

k) What is negative staining?

l) What do you mean by reverse phase HPLC?

m) What is native PAGE?

n) What is chromosome banding?

o) What is FACS?

2. Answer any **five** questions from the following: 2×5=10

a) Differentiate between SEM and TEM.

b) For what purpose SDS is used in SDS-PAGE?

c) What is density gradient centrifugation?

d) What is Lambert-Beer law?

e) Name the technique for identification of particular sequence of DNA from the mixture of DNA molecules.

f) What is standard deviation (SD)?

g) What do you mean by 2D gel electrophoresis?

h) What is t-test and mention is its application.

3. Answer any **two** questions of the following: $5 \times 2 = 10$

a) Briefly explain the method of chromosome banding and its applications. 3+2

b) Write short notes on any **two** of the following: $2\frac{1}{2} \times 2 = 5$

i) Spectrophotometry

ii) FISH

iii) Freeze fracture method

c) A biologist was interested in the average height and standard deviation of a plant species. The following data are the heights for a sample of n = 20 plants.

10	11	9.5	10	11	10	11.5	11	10.5	11.5
9	10	10.5	11.5	11	9.5	10.5	11	11	10.5

Find the mean height of the plants and the standard deviation, rounded to two decimal places.

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