U.G. 5th Semester Examination - 2020

BOTANY

[HONOURS]

Discipline Specific Elective (DSE)

Course Code : BOT-H-DSE-T-01

(Analytical Techniques in Plant Science)

Full Marks : 40 Time : $2\frac{1}{2}$ 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 **five** of the following: 2×5=10
   a) Mention one technique for each characterization of proteins and nuclic acids.
   b) Define Mean and standard deviation.
   c) Write down the principles of affinity chromatography.
   d) Which centrifugation is used to separate certain organelle from whole cell and which media is used for density gradient?
   e) What is cryofixation?
   f) What are two staining solutions containing heavy metals used in negative staining?
   g) Mention the stationary phases used in paper chromatography and HPLC.
   h) What is shadow casting?

2. Answer any **two** questions from following: 5×2=10
   a) Compare between scanning electron microscopy and transmission electron microscopy. 5
   b) How is freeze fracturing different from freeze itching? 5
   c) What are the difference between liquid chromatography and gas chromatography? Write down the fill form of TLC, HPLC and GC. 2+3=5
   d) Comment on two uses of each X-Ray crystallography and NMR analysis each in experimental plant biology. 5
3. Answer any **two** questions from following: 10×2=20
   a) What is Beer-Lambart law? With help of sketch diagram describe different components of spectrophotometer. 3+7=10
   b) Which isotopes are used for radio labeling? Write its applications in different bio synthetic pathways. Mention merits and demerits of these techniques. 3+3+4=10
   c) Explain centrifugation, its principle, types of centrifugations and difference between them. Also explain the role of marker enzymes in centrifugation techniques. 3+2½+2½+2=10
   d) Define electrophoresis, classify with examples and add a note on gel electrophoresis. 5+5=10

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