

S. No. of Question paper :

Unique paper code: 42167904

Name of the Paper: Analytical Techniques in Plant Sciences

Name of the Course: B.Sc. (P) : DSE-1

Semester: VI

Duration: 3 Hours + 1 hour

Maximum Marks: 75

(Write Your University Roll Number on top of the Answer Sheet)

Attempt four questions in all. All questions carry equal marks.

Attempt all parts of the questions together.

Simple calculations are allowed.

1. Define Mass spectrometry. Describe its principle for the identification of unknown proteins with the help of diagrams. List its important applications. (2+6+4+6.75=18.75)
2. Explain pulse chase experiment with the help of an example. Give its importance in the biological experiments. (8+4+6.75=18.75)
3. Explain ion exchange chromatography? Name a cationic and an anionic exchanger. What are marker enzymes? Explain the importance of marker enzymes. Give one example for marker enzymes of nucleus, mitochondria, chloroplast and peroxisomes. (7+2+2+3.75+4=18.75)
4. Describe fluorescence microscope. How is it different from a confocal microscope? What are fluorochromes? Write the principle and applications of various techniques which uses fluorochromes. (4+5+1+8.75= 18.75)
5. What is a monochromator in a spectrophotometer? What is the principle of a spectrophotometer? Why is a spectrophotometer important in biological science? (3+8+7.75=18.75)
6. Explain 'Mean', 'Median', 'Mode' and 'Degrees of freedom'. Suppose, in corn, purple kernels (D) are dominant over yellow (d) and smooth kernels (G) are dominant over shrunken (g). When two double heterozygote plants were crossed, the resulting phenotypes were observed. Perform a *chi* square test to identify whether the progeny followed expected Mendelian ratio or not for the below given data:

Purple, smooth	216
Purple, shrunken	79
Yellow, smooth	65
Yellow, shrunken	21

(8+10.75=18.75)