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: 2 Hours

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. When the polymer is covalently linked to some compound that binds specifically to the desired protein which technique is used for its purification, write the principle, procedure (Illustration only) and applications of the same.

(1+5+5+7.75 =**18.75** marks)

- 2. Name the technique used as a powerful tool for generating high-resolution images and 3-D reconstructions of a specimen. Explain its types, principle, ray diagram and applications. (1+3+5+5+4.75 = 18.75 marks)
- 3. Explain the techniques (with labeled diagrams) freeze fracture and etching, negative staining, shadow casting, and cryofixation.

(6+4+4.75+ 4 =**18.75** marks)

4. Explain centrifugation, its principle, types of centrifugation and difference between them. Also explain the role of marker enzymes in centrifugation technique.

(1+6+9+ 2.75 =**18.75** marks)

5. Name the hybridization technique for identification of particular sequence of DNA from the mixture of DNA molecules. Explain the principle, procedure (with labeled diagrams) advantages, disadvantages and applications

(1+3+5+5+4.75 =**18.75** marks)

6. Explain the term sample, sampling and central tendency. Why sampling is essential in biostatistics? What are commonly used measures to find central tendency of a data and how these central values are different from each other? Suppose in the garden pea, yellow cotyledon colour is dominant to green, and inflated pod shape is dominant to the constricted form. Considering both of these traits jointly in self-fertilized dihybrids, the progeny appeared in the following numbers:

yellow, inflated	317
yellow, constricted	109
green, inflated	102
green, constricted	32

Do these genes assort independently? Support your answer using appropriate analysis.

(3+3+5+7.75 =**18.75** marks)