

- (b) What is negative staining? Give an example.
- (c) Density gradient Centrifugation.
- (d) Pulse Chase experiment.
4. (a) Explain the sample preparation and working of SEM and TEM. (8)
- (b) Explain Ultracentrifugation and types of rotors used in centrifugation. (7)
5. (a) What is DNA polymorphism? Explain the techniques and applications of RFLP and SSR. (8)
- (b) Explain about uses of radioisotopes in biological research and biosafety measures taken for disposal of radioactive materials. (7)
6. (a) Describe the basics of designing a primer in PCR and explain the components along with procedure involved in the technique. (8)
- (b) Explain principle and functioning of Native PAGE and SDS-PAGE. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1762

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Unique Paper Code : 2162013603

Name of the Paper : Advanced Tools and Analytical Techniques in Plant Biology

Name of the Course : **B.Sc. (Hons) Botany**

Semester : VI

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question number **1** is compulsory.
3. Attempt **FOUR** questions in total.
4. **All** questions carry equal marks.
5. **All** parts of a question must be answered together.
6. Draw graphics wherever required.

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1. (a) Define (**any five**) : (5marks)

- (i) Fluorescence
- (ii) Chromosome painting
- (iii) Radioisotopes
- (iv) Immobilization
- (v) Western blotting
- (vi) Marker enzyme

(b) Write the role of (**any five**) : (5marks)

- (i) ddNTPs
- (ii) Nitrocellulose membrane
- (iii) Salt concentration in DNA hybridization
- (iv) Electron gun
- (v) Glutaraldehyde
- (vi) Taq polymerase

(c) True or false (**any five**) : (5marks)

- (i) Cryofixation of materials includes use of liquid nitrogen.
- (ii) Separation of molecules in paper chromatography is based on solid-liquid partitioning.

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(iii) In isopycnic centrifugation the maximum density in the gradient exceeds the density, of the particles to be separated.

(iv) RFLP is a codominant marker.

(v) Co-59 is a radioactive isotope used in nuclear reactors.

(vi) Gamma rays have highest penetration ability.

2. Discuss the following (**any three**) : (3×5=15)

(a) Carbohydrates and lipids cannot be separated by electrophoresis.

(b) How and why temperature, pH and osmotic potential are regulated during tissue homogenization?

(c) What are the advantages of HPLC over normal column chromatography.

(d) FISH Technique and its applications.

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

(a) What is the principle and applications of IR spectrophotometry.

P.T.O.