4/12/18 (M)

This question paper contains 4 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper: **540** I

Unique Paper Code : **32167501**

Name of Paper : **Analytical Techniques in Plant Sciences**

Name of Course : **B.Sc. (H) Botany : DSE-1**

Semester : **V**

Duration : **3 hours**

Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all including Q. No. 1 which is compulsory. All the parts of a question must be attempted together.

1. (a) Explain the following:

(i) FISH

(ii) PAGE

(iii) ddNTPs

(iv) TLC

(v) IF 5

(b) Match the following:

Column A	*Column B*
Uranyl acetate	G-banding
Staining condensed chromosomes	P^{32}

P. T. O.

Lambert Beer's Law	Positive staining
β particles	Ion exchanger
DEAE cellulose	Spectrophotometry

5

(c) Define:

(i) Resolving power

(ii) Chromosome painting

(iii) Standard deviation

(iv) Marker enzymes

(v) Immunofluorescence. 5

2. Write short notes on any *three*:

(a) Negative staining

(b) Phase contrast microscopy

(c) Southern blotting

(d) Analytical centrifugation

(e) Chi-square test. 5×3=15

3. Differentiate between any *three*:

(a) Differential and density gradient centrifugation

(b) GLC and HPLC

(c) X-ray crystallography and X-ray diffraction

(d) SEM and TEM

(e) Freeze fracture and freeze etching. 5×3=15

4. (a) Diagrammatically depict the process of polymerase chain reaction. 5

(b) Comment on the role of GFP in biological research. 5

(c) What is the measure of central tendency? Discuss three most common measures used. 5

5. Answer any *three* of the following:

(a) Comment on the technique of affinity chromatography.

(b) Explain the technique of FISH and write its applications.

(c) Briefly explain the sample preparation for light microscopy.

(d) Discuss the role of antibodies in biological research. 5×3=15

6. Answer any *three* of the following:

(a) Discuss the role of autoradiography in biological research.

(b) Compare and contrast the technique of PAGE and SDS-Page.

(c) Briefly discuss the types of column chromatography.

P. T. O.

(d) Name the following:

(i) Chemical used in cryofixation

(ii) Any *one* vital stain

(iii) DNA polymerase used in PCR

(iv) Scientists associated with DNA sequencing by chain termination method

(v) Marker enzyme for peroxisomes. 5×3=15