

Serial No. of Question Paper: 4925A

Unique Paper code: 2164000011

Name of the paper: Genomics, Proteomics and Metabolomics

Name of the Course: Botany (GE)

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. Attempt any four questions in all
3. Question No. 1 is compulsory
4. Attempt all parts of a question together

Q1. a) Match the following:

(5 X 1 = 5)

(i) Illumina	Secondary antibodies
(ii) Emulsion PCR	DNA Library
(iii) Heterochromatin	Mobile phase
(iv) Silica	Beads
(v) Alkaline phosphatase	Repetitive sequences

b) Explain in brief -any five of the following:

(5 X 2= 10)

- i. Importance of in third generation sequencing in genomic research.
- ii. Clone-by-clone sequencing yields a more accurate final genome assembly compared to whole genome shotgun sequencing.
- iii. RNA-seq provides information that DNA sequencing does not.
- iv. Role of different protein structures in functional aspect of proteins.
- v. HPLC is used as analytical technique in metabolomics.
- vi. In an ELISA, it is crucial to have a washing step after each incubation period.

Q2. Differentiate between (any five):

(5 X 3= 15)

- (i) Western blotting and ELISA
- (ii) Primary metabolites and secondary metabolites
- (iii) Primary structure and Secondary structure of proteins
- (iv) Column chromatography and Ion-exchange chromatography
- (v) RNA sequencing and ESTs sequencing
- (vi) Genomics and Transcriptomics

Q3. Write short notes on any three:

(3 X5 = 15)

- (i) Model organisms
- (ii) Microarrays
- (iii) Rice genome project
- (iv) SDS-PAGE
- (v) Proteomics and its application

Q4. (a) What is chromatography? What are the different types of chromatographic techniques used in proteomics? **(8**

Marks)

(ii) Explain the different types of post translational modification with examples? **(7)**

Q5. (i) Explain the procedure of classical sequencing methods used for sequencing of organism with larger genome. **(8)**

(ii) What is Next generation sequencing? Enumerate the different types of NGS platforms?

(7)