

Serial No. of Question Paper: 13327

Unique Paper code: 2164000011

Name of the paper: Genomics, Proteomics and Metabolomics

Name of the Course: Botany (GE)

Semester: VII

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)