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18BT54

Fifth Semester B.E. Degree Examination, July/August 2022
Genomics and Proteomics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define genetic polymorphism. Classify the types of genetic polymorphism. (10 Marks)
b. Illustrate using a neat diagram the principle and process of Maxam – Gilbert DNA sequence method. (10 Marks)

OR

- 2 a. Define gene discovery. Summarise the process of discovery new gene and their functions. (10 Marks)
b. Outline the features of Next Generation sequencing. Briefly explain Fluorescent method of sequencing. (10 Marks)

Module-2

- 3 a. Define SNP's. Outline their types and importance. (10 Marks)
b. Explain the functional genomics study of C.elegans. (10 Marks)

OR

- 4 a. Define genotyping. Outline the types of genotyping tools with its applications. (10 Marks)
b. Explain in detail the genome of E. coli based on its genome project. (10 Marks)

Module-3

- 5 a. Define C-value. Explain the concept of C-value paradox and C-value enigma. (08 Marks)
b. Illustrate the organizational features of mitochondrial genome with neat labeled diagram. Compare its features with nuclear genome. (12 Marks)

OR

- 6 a. Define Gene editing. Briefly explain the concept of CRISPR – Cas9 gene editing with its applications. (08 Marks)
b. Illustrate the mechanism of RNA silencing by RNAi pathway with a note on its applications in medicine and gene knockdown. (12 Marks)

Module-4

- 7 a. Explain AFLP as genetic markers with a note on their applications and advantages. (12 Marks)
b. With neat labelled diagram illustrate the concept of differential display via RT-PCR. (08 Marks)

OR

- 8 a. Explain the concept of Marker-assisted selection with a note on its advantages. (12 Marks)
b. Outline the concept of T-DNA tapping with its applications. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Illustrate the principle and methodology of MALDI-TOF MS with its applications in proteomics. (10 Marks)
b. Briefly explain the concept of 2D-PAGE for proteome analysis. (10 Marks)

OR

- 10 a. Explain the types of Protein chip with a note on assay fabrication, labeling and detection techniques. (10 Marks)
b. Outline the concept of two hybrid interaction screens. (10 Marks)
