CBCS SCHEME

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21BT44

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Molecular Biology and Genetic Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Draw neat labeled diagram wherever necessary.

Module-1

1 a. Outline the concept of replication in eukaryotic cell. **(10 Marks)**
b. In detail explain the mechanism of base excision repair. **(10 Marks)**

OR

2 a. Give a detailed account of protein synthesis in a prokaryotic cell. **(10 Marks)**
b. Write short notes on: i) Photo reactivation ii) Wobble Hypothesis **(10 Marks)**

Module-2

3 a. Explain the role of cAMP molecule in regulation of Lac – operon. **(10 Marks)**
b. Quoting an example, explain how gene expression is regulated in eukaryotes. **(10 Marks)**

OR

4 a. Define gene silencing. Explain antisense RNA technology with suitable example. **(10 Marks)**
b. Write a critical note on auxin based control of gene expression in eukaryotes. **(06 Marks)**
c. Write short notes on Ribozymes. **(04 Marks)**

Module-3

5 a. Explain the salient features of an Ideal plasmid. **(08 Marks)**
b. Write a critical note on cosmids. **(06 Marks)**
c. Briefly explain Yeast artificial chromosome. **(06 Marks)**

OR

6 a. In detail explain the mechanism of restriction modification using polynucleotide kinase. **(10 Marks)**
b. Outline the mode of action of Reverse transcriptase and RNasesA **(10 Marks)**

Module-4

7 a. Explain the steps involved in the preparation of competent cells. **(08 Marks)**
b. In detail explain particle bombardment method and liposome mediated gene transfer technique. **(12 Marks)**

OR

8 a. Elaborate on the protocol employed in construction of a genomic library. **(10 Marks)**
b. Explain the working principle of RT-PCR. Add a note on its application. **(10 Marks)**

Module-5

9 a. Explain the media composition and steps involved in production of penicillin. **(10 Marks)**
b. Outline the steps involved in the production of recombinant insulin. **(10 Marks)**

OR

10 a. Explain any one strategy employed in producing transgenic plant for improved yield. **(10 Marks)**
b. In detail explain the principle and application of Cas 9. **(10 Marks)**

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