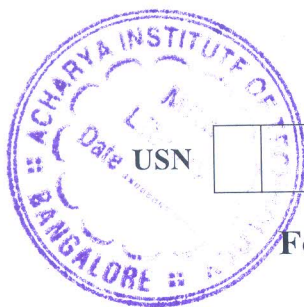


CBCS SCHEME

21BT44



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Fourth Semester B.E. Degree Examination, June/July 2023 Molecular Biology and Genetic Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. 5m7G cap is an evolutionary conserved modification of Eukaryotic mRNA. Inspect and explain process of modification. (10 Marks)
- b. Illustrate the mechanism of transcription initiation and termination in Eukaryotes. (10 Marks)

OR

- 2 a. What is DNA damage? Explain types of DNA damage with suitable example. (10 Marks)
- b. Explain the process of translation initiation in prokaryotes. (10 Marks)

Module-2

- 3 a. Inspect and explain try operon system in control of synthesis of tryptophan in prokaryotes. (10 Marks)
- b. Define Gene Silencing? Explain in detail a Biological process which involves double standard RNA in post transcriptional gene silencing. (10 Marks)

OR

- 4 a. Explain and inference on levels of gene expression regulation in Eukaryotes. (10 Marks)
- b. Illustrate in Regulation of gene expression in lac operon system. (10 Marks)

Module-3

- 5 a. Illustrate on construction of cosmid as a cloning vector. Add a note on cloning principle in cosmid. (10 Marks)
- b. Elaborate on Restriction Endonuclease and ligase as a molecular tool for gene cloning. (10 Marks)

OR

- 6 a. Paraphrase on Node of action and importance of phosphatase and polynucleotide kinase in genetic engineering. (10 Marks)
- b. Write a explanatory note on : (10 Marks)
 - i) Linker and Adapter
 - ii) Ligase free cloning.

Module-4

- 7 a. Explore on methods and steps in construction of cDNA libraries. (10 Marks)
- b. Discuss in detail on any two PCR variants and its application. (10 Marks)

OR

- 8 a. Explain basic principle and working procedure of southern blotting technique. (10 Marks)
- b. Explain the application of DNA libraries for clone identification. (10 Marks)

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Module-5

- 9 a. Elaborate on application of engineering microbes for the production of Antibiotics and Insulin. (10 Marks)
b. Give a detail account on New frontier of genome engineering with CRISPR-Cas9. (10 Marks)

OR

- 10 a. Explain in detail about various method of gene transfer techniques in development of transgenic plant. (10 Marks)
b. Give an account on "Biopharming Animal as a Bioreactor" for production of Recombinant protein. (10 Marks)
