

# CBCS SCHEME

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18BT42

## Fourth Semester B.E. Degree Examination, Feb./Mar. 2022 Molecular Biology

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Illustrate and characterize the different forms of DNA double helix. (10 Marks)  
b. Explain the asymmetric structure of DNA polymerase III in accordance with their function with a neat labeled diagram. (10 Marks)

OR

- 2 a. DNA replication is bidirectional and discontinuous fashion. Justify. (08 Marks)  
b. Information in genes flows in to the synthesis of protein. Illustrate directional flow of information with diagrammatic representation. (08 Marks)  
c. List out the substances with their action that inhibits the DNA replication. (04 Marks)

### Module-2

- 3 a. Explain the mechanisms of transcription in Prokaryotes in detail. (10 Marks)  
b. Elaborate on the molecular mechanism in RNA editing that produces functionally distinct protein. (10 Marks)

OR

- 4 a. Illustrate the mechanism of double standard siRNA induces degradation of complementary target RNA. (08 Marks)  
b. Explain the process of 5' capping in Eukaryotes. (08 Marks)  
c. Write a short note on Transcription inhibitors. (04 Marks)

### Module-3

- 5 a. Explain the mechanism of protein synthesis initiation and elongation in Eukaryotes. (10 Marks)  
b. What are Protein Splicing? Explain the mechanism of protein splicing. (10 Marks)

OR

- 6 a. Discuss in detail about post translational modification of a polypeptide chain. (08 Marks)  
b. Differentiate between Prokaryotic and Eukaryotic protein synthesis. (08 Marks)  
c. Write a influence on two step reaction process of tRNA charging. (04 Marks)

### Module-4

- 7 a. Describe the process of Gene Expression regulations of Lac operon in Bacteria. (10 Marks)  
b. Discuss on homeo box in the control of development in insects. (10 Marks)

OR

- 8 a. Explain the structure of Galactore Operon in detail. (08 Marks)  
b. Describe the process of Gene Expression regulations in Eukaryotes. (08 Marks)  
c. Add a note on Transcriptional control. (04 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. Explain the main process involved in Genetic recombination in Bacteria. (10 Marks)  
b. What are Transposons? Explain in detail about transposable elements in Eukaryotes. (10 Marks)

OR

- 10 a. Describe Base Excision repair mechanism in DNA. (08 Marks)  
b. What is Mutation? Explain Induced mutation in detail. (08 Marks)  
c. Write a note on Role of recombination and transposition in evolution. (04 Marks)

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