

CBCS Scheme

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15BT43

Fourth Semester B.E. Degree Examination, June/July 2018 Molecular Biology

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. How did Chromosomal theory of heredity concluded the fact that genes are located on chromosomes? (08 Marks)
b. What is Genetic code? Discuss the general properties of genetic code. (08 Marks)

OR

- 2 a. Differentiate between the three different forms of DNA. Explain in brief the Watson and Crick model of DNA structure. (08 Marks)
b. With a neat labeled diagram, highlight the significance of several proteins and enzymes working at the prokaryotic replications fork. (08 Marks)

Module-2

- 3 a. Write a comparative account on Eukaryotic RNA polymerases. (06 Marks)
b. Explain any two transcriptional inhibitors with their mechanism of action. (06 Marks)
c. "Fidelity and transcription is lesser than Replication" Justify this statement with two reasons. (04 Marks)

OR

- 4 a. Explain in detail the mechanism of transcription in prokaryotes. (10 Marks)
b. Write short note on Si RNA. (06 Marks)

Module-3

- 5 a. Define Translation. Describe with neat illustrations the mechanism of transaction in prokaryotes. (12 Marks)
b. Explain any two translational inhibitors. (04 Marks)

OR

- 6 a. What is Protein targeting? Explain any one co-translational targeting mechanism. (08 Marks)
b. Discuss the various post translational mechanisms. (08 Marks)

Module-4

- 7 a. A group of E - Coli cells are grown in a media supplemented with both Glucose and Lactose. Explain how lac operon undergoes regulation in these E - coli cells. (10 Marks)
b. What is trp operon attenuation? Discuss how it is controlled based on tryptophan levels in the cells. (06 Marks)

OR

- 8 a. Eukaryotic genes undergo predominately positive regulation, why? Discuss in detail the chromatin remodeling mechanism in eukaryotes. (10 Marks)
b. What are Homeotic genes? How they are organized in Drosophila melanogaster? What will be the effects of homeotic genes mutation? (06 Marks)

Module-5

- 9 a. Differentiate between homologous and site specific recombination. Describe in brief the mechanism of SSR in bacteria and bacteriophages. (08 Marks)
- b. Explain the structure and role of transposons and insertion sequences in genetic recombination. (08 Marks)

OR

- 10 a. Explain Photo reactivation repair mechanism. (06 Marks)
- b. What is a point mutation? Describe the various Base substitution mutations, with an example to each. (06 Marks)
- c. Justify the role of recombination and transpositions in Evolution. (04 Marks)

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