

L 1038

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Fourth Semester

Biotechnology

BT 1255 — MOLECULAR BIOLOGY

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate prokaryotic and eukaryotic promoters.
2. What are the three enzymatic activities for DNA polymerase I?
3. One of the complementary strands of two DNA molecules is given. Which DNA molecule would denature at low temperature? Why?
 - (a) AGTTGCGACCATGATCTG
 - (b) ATTGGCCCCGAATATCTG.
4. Explain DNA foot printing.
5. What is the fundamental difference between the initiation of θ replication and of rolling circle replication?
6. Differentiate heterochromatin from euchromatin.
7. Write a note on types of RNA splicing.
8. What is conditional mutant? Give example.
9. How do lactose molecules first enter an uninduced $lacI^+ lacZ^+ lacY^+$ cell to induce synthesis of β -galactosidase?
10. What is the reading frame of an mRNA? What additional features would you expect an mRNA to have?

PART B — (5 × 16 = 80 marks)

11. (i) Discuss spliceosome role in nuclear pre mRNA splicing. (8)
(ii) Explain the structure and role of RNA polymerase. (8)
12. (a) Describe in detail the molecular regulation involved in tryptophan synthesis.

Or

- (b) Explain in detail how conjugation and transduction are used in gene mapping.
13. (a) Explain in detail tRNA role in translation.

Or

- (b) Outline the mechanisms for excision and recombinational repair in E.Coli.
14. (a) Write in detail the various uses of mutant.

Or

- (b) Discuss in detail the stages of life cycle of typical lytic and lysogenic phages.
15. (a) Explain the events taking place in replication fork with a neat sketch.

Or

- (b) Discuss in detail the physical and chemical structure of DNA. Add a note on alternate DNA structures.
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