Reg. No. : | | | | | | | | | | |

R 3122

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

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. What is a genetic map?

2. What is a test cross and back cross?

3. What are Topoisomerases?

4. Define Chargaff's rule?

5. Mention the mode of replication that occurs in the following:
   (a) Bacteriophages
   (b) Mitochondria

6. What is an initiation complex?

7. Define Ribozymes.

8. What is the central dogma of Molecular Biology?

9. Explain the difference between structural and regulatory gene.

10. Differentiate Transition from Transversion.

PART B — (5 × 16 = 80 marks)

11. (a) What is post translational modification? Briefly discuss the post translational modification undergone by secreted and membrane associated proteins?

Or

(b) (i) Elaborate linkage and cross over functions of genes in prokaryotes. (8)

(ii) One gene one protein hypothesis is no more valid — Why? (8)

12. (a) (i) Describe replication process in prokaryotes? (8)

(ii) Hammer-Head conformation of RNA — What for? Discuss its significance? (8)

Or

(b) Explain in detail the experiments conducted by Avery Mcleod, Mc Carty and Hershey-chase?

13. (a) What are rho-factors? Explain the role of rho-factors in bacterial transcription with diagram?

Or

(b) Describe the structural organization of phage Lambda genes and regulation of expression of these genes.

14. (a) (i) Explain how the lac-operon is regulated. (8)

(ii) Explain with example about suppressor mutation. (8)

Or

(b) Discuss in detail the following :

(i) Mutagenesis (8)

(ii) Reversion. (8)

15. (a) Describe the chemical composition and function of prokaryotic ribosomes?

Or

(b) (i) Describe the structure and function of transfer RNA. (8)

(ii) RNA is the catalytic bench in protein synthesis — Comment. (8)