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

T 3101

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Fourth Semester

Biotechnology

BT 1255–MOLECULAR BIOLOGY

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is the correlation between replication slippage and DNA repeats number?

2. What is C value paradox?

3. Draw a ribosome with three major RNA binding sites.

4. List the various mechanism of DNA repair.

5. List proteins that participate in DNA replication.

6. Mention two techniques that help in identification of 5' end of mRNA.

7. Differentiate foot printing and finger printing techniques.

8. What is meant by codon usage pattern/codon preference of an organism?

9. Differentiate monocistronic and polycistronic mRNA.

10. How will you differentiate a promoter and enhancer element?

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Discuss the rationale relating Mendel's monohybrid results to his postulates.

(ii) What advantage were provided by Mendel's choice of garden peas in his experiments?

Or

(b) Discuss the concept of Hershey – Chase experiment and its inferences with illustrations?

12. (a) (i) Discuss about catalytic RNAs.

(ii) Elaborate on Spliceosome mediated splicing of nuclear mRNA.

Or

(b) Briefly explain the following post-transcriptional modifications such as

(i) RNA editing.

(ii) Self splicing introns.

(iii) Processing of rRNA and tRNA.

(iv) mRNA turnover/decay.

13. (a) Narrate transcription in prokaryotic system and the factors involved in initiation elongation and termination

Or

(b) Expound Lac operon and its regulation in prokaryotic system?

14. (a) (i) Elaborate on tRNA structure, wobbling and decoding.

(ii) Explain how suppressor mutants and synthetic lethal mutants help in genetic studies.

Or

(b) (i) Narrate the cycle of peptide chain elongation during translation in eukaryotes.

(ii) How translation is terminated and ribosome recycling increases the efficiency of translation?

15. (a) (i) Describe the semi conservative mechanism of DNA replication.

(ii) The experiment which was used to confirm the above mechanism?

Or

(b) Discuss the various stages of attenuation in trp operon with suitable diagram.
