

Exam.Code:0908
Sub. Code: 6301

2053
B.E. (Biotechnology) Fourth Semester
BIO-411: Molecular Biology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. Write briefly:-

(10x1)

- a) Differentiate between chromosomes and chromatin
- b) Which amino acids have single codon?
- c) Explain processivity of an enzyme.
- d) Give example of second messengers.
- e) What are retrotransposons?
- f) What is denaturing gel electrophoresis?
- g) What is the importance of various subunits of RNA polymerase?
- h) What is the function of Rec A?
- i) What is quorum sensing in bacteria?
- j) Which polymerase is important for nick translation and why?

Section-A

2. a) What are the similarities and dissimilarities between replication and transcription process?
b) What is the importance of SOS repair pathway? Explain with diagram.
c) Origin of replication has consensus sequence. Justify the statement.

(3, 4, 3)

3. a) How nuclear splicing occur inside the cell? Explain with proper diagram.
b) Other than splicing, what are the other post synthetic processing mechanisms of RNA? Explain with diagram.

(5, 5)

4. a) What is the mechanism of rho-dependent and independent termination? Give specific example of prokaryotic and eukaryotic transcription inhibitor.
b) There are 4 nucleotides in RNA and 3 nucleotides per codon and total 64 codons. However, these 64 codons only code for 20 amino acids and 32 tRNAs are needed to recognize codons in mRNA. Why is it so?

(5, 5)

P.T.O.

(2)

Section-B

5. a) What are the steps of protein biosynthesis? Explain with diagram.
b) Proteins are synthesized as large, inactive one and then they are trimmed to the final one. What is the phenomenon? Where it occurs? What is the importance of this phenomenon? Give some examples of this phenomenon.

(5, 5)

6. a) What are the similarities and dissimilarities of lactose and galactose operon?

- b) Write short notes on, i) Peptidyl transferase, ii) Native gel and denaturing gel

(6, 2, 2)

7. a) What is the methodology and application of PCR technique?

- b) Explain importance of si-RNA technology in therapeutics.

(5, 5)

x-x-x