Exam.Code:0037
Sub. Code: 0982

2012
B.Sc. (Hons.) Biotechnology
Fifth Semester
BIOT-501-T: Molecular Biology

Time allowed: 3 Hours Max. Marks: 67

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

I. Answer the following:-

a) Who suggested that DNA can carry genetic information? Discuss the experiment in detail.

b) What is hyperchromacity? Discuss.

c) How the extreme ends in lagging strand are synthesized? Discuss.

d) Discuss in brief about intrinsic terminators of transcription.

e) What is alternate splicing? Explain with help of example. (5x3)

UNIT - I

II. a) Draw the boding pattern on C-T and G-C base pairs in the complimentary strand. Based on bonding pattern suggest which one is preferred and why?

b) Major groove is rich in chemical information. Justify. (2x6½)

III. a) Differentiate between B-DNA and Z-DNA.

b) What are insertional elements? Discuss the process of insertion, their role and importance. (2x6½)

UNIT - II

IV. a) Name the three enzymatic properties carried out by prokaryotic DNA polymerase 1. Discuss their role in detail.

b) Discuss the process of DNA synthesis By DNA polymerase at its active site. How it distinguish between ribo and deoxyribonucleoside triphosphates? How the accuracy of base pairing in monitored? (2x6½)

V. a) Differentiate between eukaryotic and prokaryotic replication.

b) Discuss proofreading process during DNA synthesis. (2x6½)

P.T.O.

UNIT - III

VI. a) How tRNA are transcribed and processed? Discuss the structure and unique features of tRNA and its importance.

b) How the tyrosine and phenyl alanine are differentiated during charging of tRNA by aminoacyl synthetases? (2x6½)

VII. a) Discuss the basic structure of a eukaryotic core promoter. Which protein mediates binding of RNA polymerase to eukaryotic promoter? How these proteins provide specificity to RNA polymerase binding to the promoter region.

b) Discuss in detail about the modifications of mRNA ends. Is it a universal phenomenon? Mention the characteristics and role of Kozak sequence. (2x6½)

UNIT - IV

VIII. a) Discuss the mechanism by which a ribosome provides specificity for correct amino acid addition. Which proteins are used for tRNA loading onto ribosomes during protein synthesis? Discuss their role in elongation process in detail.

b) Many antibiotics inhibit the protein synthesis in bacteria. Name any two antibiotics and their target in the process of translation. Explain the inhibition mechanism. (2x6½)

IX. a) What is catabolic repression and where it works? Discuss the mechanism in detail.

b) Lactose and tryptophan both work by binding to the represser, but regulate the gene expression differently. Discuss the functioning of these two ligands in the regulation of gene expression. (2x6½)

x-x-x