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SEAT No. _____

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Sardar Patel University

B.Sc- Semester examination-2019

B.Sc- IVth Semester

Subject – Molecular biology-II

Course no. US04EMBI02

Date - 11.04.2019 Thursday

Time – 2hrs (10AM-12PM)

Marks-70

NOTE- Figure in the right indicates marks .

All questions are compulsory. Make necessary diagram wherever needed.

Q.1. Multiple Choice Question (MCQ). Select correct answer from given MCQ. (10marks)

- 1.a. Transfer of genetic information from DNA to RNA is called
(A) Transcription (B) Reverse Transcription
(C) Translation (D) Post translational modification.
- 1.b. In eukaryotes mRNA is synthesized with the aid of
(A) RNA polymerase III (B) RNA polymerase II
(C) RNA polymerase I (D) Reverse transcriptase
- 1.c. DNA template sequence of GTGATAGC is transcribed over mRNA as
(A) GUCTUTCG (B) CACUAUCG
(C) GAUTATUG (D) UACTATCU
- 1.d. 7-methyl guanosine cap is found in
(A) mRNA at 3' end (B) mRNA at both 5' and 3' ends
(C) mRNA at 5' end (D) tRNA at 5' end
- 1.e Which of the following RNA polymerase is highly sensitive to α -amanitin?
(A) RNA polymerase-I (B) RNA polymerase-II
(C) RNA polymerase-III (D) Reverse transcriptase
- 1.f. Initiation of polypeptide chain is through
(A) Lysine (B) Glycine
(C) Leucine (D) Methionine
- 1.g. Which of the following is an example of post translational modification of proteins?
(A) Splicing (B) Anticodon-codon interaction
(C) Phosphorylation (D) Proteolysis
- 1.h. Transfer of amino acid to ribosome is done by
(A) rRNA (B) tRNA
(C) mRNA (D) hnRNA
- 1.i Full expression of the Lac operon requires
(A) Lactose and cAMP (B) Allolactose and cAMP
(D) Lactose (D) Allolactose
- 1.j Regulated unit of cluster of genes is termed as
(A) Operon (B) Regulator gene
(C) Operator gene (D) Repressor gene

P.T.O

Q.2. Short questions (2 marks each) attempt any ten (2x10=20marks)

- [1] What is RNA polymerase?
- [2] Write a brief notes on role of sigma factor.
- [3] Differentiate between prokaryotic and eukaryotic transcription.
- [4] How can you inhibit prokaryotic transcription?
- [5] What is post transcriptional modification?
- [6] Write a brief notes on function of RNA polymerase III
- [7] Give the significance of translation.
- [8] What is protein folding?
- [9] How process of translation terminated
- [10] What do you mean by gene expression?
- [11] Write brief notes on constitutive genes.
- [12] Define operon with any examples.

Q3.a. Define promoter and explain the structure of any prokaryotic promoter. [5]

Q3.b. Enlist and explain various requirements of transcription. [5]

OR

Q.3.a. Explain the structure and function of prokaryotic RNA polymerase. [5]

Q.3.b. Describe the transcriptional elongation process with neat diagram. [5]

Q.4.a. Discuss the post transcriptional modification of messenger RNA. [5]

Q.4.b. How eukaryotic RNA polymerase is different from prokaryotic RNA polymerase? [5]

OR

Q.4.a. Enlist the fundamental differences between prokaryotic and eukaryotic transcription. [5]

Q.4.b. Write notes on post transcriptional modification of ribosomal RNA. [5]

Q.5.a. Explain the initiation process of translation with neat diagram. [5]

Q.5.b. Discuss the various requirements of protein synthesis. [5]

OR

Q.5.a. Briefly explain the different process of post translational modification. [5]

Q.5.b. How heat shock protein is responsible for protein folding? Explain. [5]

6.a. Explain positive regulation of lac operon with labeled diagram. [6]

6.b. Write notes on Gratuitous inducers. [4]

OR

6.a. How lac operon is negatively regulated? Explain. [6]

6.b. Write notes on catabolic gene activator protein. [4]

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