

[90] SEAT No. \_\_\_\_\_

No. of Printed Pages: 2

( ) SARDAR PATEL UNIVERSITY  
M. Sc. Integrated Biotechnology, Fourth Semester Examination  
Day and Date: Monday, 25-03-2019  
Time: 10:00 am to 1:00 pm  
Paper Code and Subject: PS04CIGB25; Gene Expression and Regulation

Total Marks: 70

Q-1 Multiple choice questions (All are compulsory).

[8x1=8]

- (i) Which is NOT a part of *E. coli* RNA polymerase core enzyme?  
a)  $\alpha$       b)  $\beta'$       c)  $\omega$       d)  $\sigma$
- (ii) The dissociation of  $\sigma$  factor marks the entry of \_\_\_\_\_ which help in elongation.  
a) Gre A      b) Nus G      c) Nus A      d) Srb 2
- (iii) The internal promoter is present in .....gene  
a) rRNA      b) U6 RNA      c) tRNA      d) UI RNA
- (iv) RNA polymerase I transcribes .....  
a) rRNA      b) tRNA      c) mRNA      d) snRNA
- (v) Which translation elongation factor is needed to bring charged tRNA at ribosomal sites?  
a) EF-Tu      b) EF-Ts      c) EF-G      d) All of the above
- (vi) Which of the following is known as Opal?  
a) AUG      b) UAA      c) UAG      d) UGA
- (vii) In the function of *trp* operon of *E. Coli*, transcription is attenuated by formation of hairpin loop between which regions?  
a) One and two      b) Two and three      c) One and three      d) Three and four
- (viii) \_\_\_\_\_ is involved in SOS response.  
a) Rec A      b) Tau      c) Med 1      d) Rox 3

Q-2 Answer the following questions in short. (Any Seven)

[7x2=14]

- (i) Differentiate between replication and transcription?
- (ii) Explain DNA footprinting.
- (iii) Why prokaryotic transcriptional initiation is also called as abortive initiation?
- (iv) Mention the post transcriptional processing of tRNA molecule.
- (v) Give significance of phosphorylation of CTD tail of RNA polymerase
- (vi) What do you mean by accommodation and scanning process of translation?
- (vii) How transcription repressors work?
- (viii) Write a note on anti-termination.
- (ix) What are DNA binding domains?

(P.T.O)

(1)

- Q-3 (A) Explain rho dependent and rho independent mechanism for prokaryotic transcription termination. [06]
- (B) Give pictorial presentation of Sigma ( $\sigma$ ) and NUS A cycle for initiation of prokaryotic transcription with little explanation. [06]

OR

- (B) Write a note on prokaryotic RNA polymerase along with the importance of promoter region for stable transcription. [06]
- Q-4 (A) Discuss any two types of post transcriptional processing of mRNA in detail. [06]
- (B) Describe eukaryotic transcription initiation by RNA Pol II with diagram. [06]

OR

- (B) Write a note on Transcription inhibitors and their function. Differentiate between prokaryotic and eukaryotic transcription. [06]
- Q-5 (A) Describe prokaryotic initiation phase of translation with diagram. [06]
- (B) Explain charging of t-RNA & give difference between prokaryotic and eukaryotic translation. [06]

OR

- (B) Write a note on secondary structure of tRNA. [06]
- Q-6 (A) Explain *lac* operon in detail. [06]
- (B) Write a note on attenuation termination of *trp* operon. [06]

OR

- (B) Describe in detail about negative and positive gene regulation. [06]

.....X.....

—X—