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SARDAR PATEL UNIVERSITY  
M. Sc. Integrated Biotechnology, Fourth Semester Examination  
Day and Date: Saturday, 21-04-2018  
Time: 10:00 am to 1:00 pm  
Paper Code and Subject: PS04CIGB05; Molecular Biology-II

Total Marks: 70

- Q-1 Multiple choice questions (All are compulsory). [8x1=8]
- Which of the following activity is absent in Klenow fragment of DNA polymerase I.  
a) 3' to 5' exonuclease b) 5' to 3' polymerase c) 5' to 3' exonuclease d) None of these
  - Which of the following produces the first segment of DNA in *E. Coli* DNA replication?  
a) DNA polymerase (pol III) b) DNA polymerase (pol I) c) DNA ligase d) DNA primase
  - Which of the following complex interacts with RNA polymerase with the highest affinity?  
a) Open complex b) Closed complex c) Stable ternary complex d) None of the above
  - What is the rate of transcription elongation in prokaryotes?  
a) 40 ribonucleotides per second b) 20 ribonucleotides per second  
c) 100 ribonucleotides per second d) None of the above
  - Which is the energy rich molecule required for translation initiation?  
a) ATP b) GTP c) CTP d) AMP
  - Which translation elongation factor is need to bring charged tRNA at ribosomal sites?  
a) EF-Tu b) EF-Ts c) EF-G d) All of the above
  - 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
  - DNA repair mechanism is absent in  
a) nuclear genome b) mitochondrial genome c) Chloroplast genome d) both b and c
- Q-2 Answer the following questions in short. (Any Seven) [7x2=14]
- Differentiate between replication and transcription?
  - What do you mean by processivity of an enzyme? Give processivity of different DNA polymerases?
  - Give diagrammatic representation of rolling circle replication.
  - Explain attenuation in brief.
  - Give difference between strong and weak promoters.
  - What do you mean by accommodation and scanning process of translation? Give their significance in the translation process.
  - Write a note on Transposon.
  - Write a note on anti-termination.
  - Briefly write concept of positive and negative regulation of gene expression.

P.T.O

- Q-3 (A) Enlist different enzymes and proteins utilized in prokaryotic replication with their roles and give diagrammatic representation of initiation of replication. [06]
- (B) Explain synthesis of leading and lagging strand by DNA polymerase III enzymes in prokaryotic system? [06]

OR

- (B) Write experiment showing mode of replication is semi conservative. [06]
- Q-4 (A) Give pictorial presentation of Sigma and NUS A cycle for initiation of prokaryotic transcription with little explanation. [06]
- (B) Describe prokaryotic transcription elongation polymerization and proofreading activity with diagram. [06]

OR

- (B) What do you mean by conserved sequence? Explain the role of promoters in detail in transcription. [06]
- Q-5 (A) Explain the mechanism of initiation of translation in prokaryotes. [06]
- (B) Describe charging of tRNA and initiator tRNA in detail. [06]

OR

- (B) Give an account of peptide bond formation and translocation events of translation elongation in detail. [06]
- Q-6 (A) Give detailed account of trp operon. [06]
- (B) Discuss Mutation and its types. [06]

OR

- (B) Write a short note on photo reactivation and base excision repair mechanism, [06]

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