

Dr Jitendra Vashist

Roll No:.....

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- April 2019

B.Tech. IV Semester

COURSE CODE: 10B11BT413

MAX. MARKS: 25

COURSE NAME: Molecular Biology

COURSE CREDITS: 04

MAX. TIME: 1.5Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

- Q1.** Bacterial genomes are comparatively small (appr. 5×10^6 bp) and it takes 25-30 minutes for replication. However, human genome is much larger (3×10^9 base pairs). If replication occurs at the rate of a bacterium it would require 300 hours for completion, however the entire human genome gets replicated within several hours. How is this possible? (2 marks) (CO3)
- Q2.** What is the significance of -35, -10 and +1 sites in prokaryotic genome organization? Define each of these sites and decipher the general sequence of these sites. (1X3=3 marks) (CO3)
- Q3.** An mRNA was synthesized by transcription with a sequence of 5'-AUG AGAAUAACAAUGCAAACACUUUUUU-3'. Deduce the sequence of its corresponding template and coding-strand. Justify your answer with diagrammatic representation also. (1X2=2 marks) (CO2)
- Q4.** A multimeric protein complex is required for initiation of transcription of *E.coli* and different proteins of this complex have different properties. Define this complex and explain different sequence of events carried by this complex in transcription. (3 marks) (CO2)
- Q5.** DNA replication occurs at a faster rate; however it is not allowable for this process to get an error. Explain different mechanisms which prevent errors and proof read the process. Also explain the role of different DNA polymerases and enzymes for these processes. (5 mark) (CO4)
- Q6.** Describe the following terms in brief. (10 mark) (CO2, CO3)
- Rho independent mechanisms of transcription termination
 - Molecular events of bacterial replication