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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKEUP EXAMINATION- 2016

B.Tech. IV Semester

COURSE CODE: **10B11BT413** MAX. MARKS: **25**

COURSE NAME: **Molecular Biology**

COURSE CREDITS: **04** MAX. TIME: **1Hr 30 Min**

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

Q1. Why DNA replication is considered as semi-conservative process? Name the scientists and explain their experimental proof for this process. **(2marks)**

Q2. Which of these DNA fragments will have a higher melting temperature and why? **(2marks)**

A) GCATTGACCGGAGGGACT
CGTAACTGGCCTCCCTGA

B) GGATTTCAATTACTTAAT
CCTAAAGTTAATGAATTA

Q3. Define and explain the biological significance of promoter, pribnow box and transcription start site. **(3 marks)**

Q4. Explain the following in brief. **(4X2=8 marks)**

a) DNA Foot-printing and its application
b) Nucleotide Excision Repair and Strand-Directed Mismatch Repair.

Q5. Explain the salient features and functions of the different subunits of RNA-polymerase holoenzyme of *E. coli*. **(3 marks)**

Q6. The mode of action of a widely used therapeutic drug for tuberculosis treatment is through RNA synthesis inhibition in *Mycobacterium tuberculosis*. Name this drug and define the molecular target site where this drug binds. **(2marks)**

Q7. A special problem encountered when the replication fork reaches an end of a linear chromosome. There is no place to produce the RNA primer needed to start the last Okazaki fragment at the very tip of a linear DNA molecule. DNA polymerase/ligase cannot fill gap at end of chromosome after RNA primer is removed. If this gap is not filled, chromosomes would become shorter each round of replication. Explain, how this problem gets sorted out ingeniously by eukaryotic cell? **(3 marks)**

Q8. Explain the basic principle and applications of Polymerase chain reaction. **(2marks)**