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SEAT No. \_\_\_\_\_

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[91 & A-60]

SARDAR PATEL UNIVERSITY  
B.Sc. V SEMESTER EXAMINATION  
Monday, 09-04-2018  
2:00 P.M TO 4:00 P.M  
BIOTECHNOLOGY: US05CBIT01  
MOLECULAR BIOLOGY

Total Marks: 70

**Q.1 Multiple Choice Questions. [10]**

- i) Which of the following enzyme is not involved in the replication?  
a) Helicase    c) Topoisomerase  
b) Reverse transcriptase                              d) Primase
- ii) During replication, the template is read in \_\_\_\_\_ direction and new strand synthesized in \_\_\_\_\_ direction.  
a) 3' - 5' & 5' - 3'                                      c) 5' - 3' & 3' - 5'  
b) 5' - 3' & 5' - 3'                                      d) 3' - 5' & 3' - 5'
- iii) \_\_\_\_\_ process is involved in DNA repair?  
a) Conjugation    c) Transposition  
b) Homologous Recombination                      d) Reversion of mutation.
- iv) Which of the following would you expect to find of took apart a spliceosome?  
a) RNA only    c) Both RNA and Protein  
b) Protein only    d) Neither RNA nor Protein
- v) What is the main function of tRNA in relation to protein synthesis?  
a) Inhibit protein synthesis  
b) Identifies amino acids & transport them to ribosome  
c) Proof reading  
d) All of the above.
- vi) The enzyme involved in activation of amino acid is \_\_\_\_\_.  
a) ATP synthetase                                      c) Aminoacyl mRNA synthetase  
b) Aminoacyl tRNA synthetase                      d) Aminoacyl rRNA synthetase.
- vii) During translation the role of enzyme peptidyl transferase is \_\_\_\_\_.  
a) Transfer of phosphate group  
b) Amino acid activation  
c) Peptide bond formation between adjacent amino acids  
d) Binding of ribosome subunit to m-RNA.
- viii) eRF1 is the release factor in eukaryotes that requires \_\_\_\_\_.  
a) ATP for its binding to ribosome  
b) GTP for its binding to ribosome  
c) ATP and GTP for its binding to ribosome  
d) Mn<sup>+2</sup> for its binding to ribosome.
- ix) P elements which evolved the capacity to regulate P elements movement are known as \_\_\_\_\_.  
a) R cytotype    b) P cytotype    c) C cytotype    d) M cytotype
- x) ORF1 gene in retrotransposons encodes \_\_\_\_\_.  
a) Transposase    c) RNA binding proteins  
b) DNA binding proteins                              d) Both a and c.

C.P.T.O.)

**Q.2 Answer the following questions in short. (Attempt any 10) [20]**

- i) What do you mean by shortening of chromosomes?
- ii) Give an importance of Rec ABC protein in DNA repair.
- iii) How thymine dimer occurs in DNA?
- iv) Name the enzymes involved in 5' capping.
- v) Define enhancers and write its functions.
- vi) Define RNA splicing.
- vii) Write about translocation event of translation.
- viii) What is kozak sequence?
- ix) Write in brief about protein targeting.
- x) Give the functions of Chi sequence in recombination.
- xi) IS elements are also called inverted terminal repeats. – Comment on this sentence.
- xii) Give the full form of -- a) CPSF b) TAFs c) SnRNPs d) CstF

**Q.3 a) Write about the end replication problem with its perfect solution. [06]**  
**b) Discuss post replication repair in detail. [04]**

OR

**Q.3 a) Write a descriptive note on DNA damage by different radiation. [06]**  
**b) Explain the process of elongation of eukaryotic replication. [04]**

**Q.4 a) Explain initiation of transcription in eukaryotes. Elaborate the role of initiation factors involved in it. [06]**  
**b) Give an account on 5' capping. [04]**

OR

**Q.4 a) Define Splicing. Write a detail note on splicing of m-RNA. [06]**  
**b) Write a note on 3' polyadenylation. [04]**

**Q.5 Write a diagrammatical note on initiation of eukaryotic translation [10]**

OR

**Q.5 Give an account on post translation modification. [10]**

**Q.6 a) Describe the Ac - Ds elements as transposable elements. [06]**  
**b) Explain P elements with its map. [04]**

OR

**Q.6 a) Explain the mechanism for transposition of LTR retrotransposons. [06]**  
**b) Write about copia with its diagram. [04]**

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