

**SARDAR PATEL UNIVERSITY**  
**M.Sc (INTEGRATED) BIOTECHNOLOGY- VII SEMESTER**  
**ATKT EXAMINATION, APRIL '2016**  
**M. Sc. IG-IBT/EBT/MBT - 7<sup>th</sup> SEMESTER**

**PS07CIGIB4/PS07CIGEB4/PS07CIGMB4: Advanced Molecular Biology**

Date 16<sup>TH</sup> April '2016

TIME: 02:30 (p.m.) to 5.30pm

Marks: 70

**Q.1 Attempt all the questions**

1x8=8

- (i) The incoming nucleotide is added to  
a) 3' OH b) 3'PO<sub>4</sub> c) 5' OH d) 5' PO<sub>4</sub>
- (ii) Mcm complex has following activity  
a) Polymerase b) ligase c) helicase d) exonuclease
- (iii) The sensitivity of RNA Pol II towards  $\alpha$ -amanitin is  
a) Very sensitive b) intermediate sensitivity c) insensitive d) none of the above
- (iv) \_\_\_\_\_ transcription factor binds to TATA box  
a) TBP b) TFIIB c) TFIID d) DPE
- (v) The process of mRNA scanning is driven by  
a) tRNA b) rRNA c) Small subunit of ribosome d) Large subunit of ribosome
- (vi) The enzyme involved in amino acid activation is \_\_\_\_\_.  
a) ATP synthetase b) Amino acyl tRNA synthetase c) Amino acyl mRNA synthetase d) All of these
- (vii) Transposons are \_\_\_\_\_ sequences.  
a) Complementary b) Jumping c) Signal d) all of the above
- (viii) The full form of LTR is  
a) Long Terminal Repeat b) Left Terminal Repeat c) Latent Terminal Repeat d) Left Terminal Region

**Q.2 Attempt any seven questions**

2x7=14

- (i) Explain polymerase switching.
- (ii) Mention the characteristics of mitochondrial DNA.
- (iii) What is the role of mediator complex in transcription?
- (iv) Classify introns on the basis of their mechanism of splicing.
- (v) Enlist the types of post translational modifications.
- (vi) What are isoaccepting tRNAs? Give example.
- (vii) With the help of diagram illustrate various possible orientations of

(1)

(P.T.O.)

membrane bound proteins.

- (viii) Enlist functions of tumor suppressor gene.
- (ix) Write the characteristics of transposable elements?

- Q.3** A Explain the role of various enzymes and proteins in initiation of eukaryotic DNA replication. **06**
- B What is end replication problem? Explain the role of telomerase enzyme in eukaryotic replication. **06**

OR

- B Discuss mechanism of site specific recombination by tyrosine recombinase enzyme. **06**

- Q.4** A Define promoter escape? Describe the formation of pre-initiation complex during transcription in eukaryotes.

- B What is alternative splicing? Explain its types. **06**

OR

- B Describe any two types of post transcriptional modifications of mRNA. **06**

- Q.5** A Elaborate steps in eukaryotic translation initiation with diagram. **06**

- B Explain the secondary structure of tRNA. What are the steps in tRNA charging? **06**

OR

- B Discuss peptidyl transferase reaction and translocation events of elongation. **06**

- Q.6** A Discuss Ac/Ds system of Maize in detail. **06**

- B Define autonomous and non autonomous transposons. Explain DNA transposition by cut and paste mechanism. **06**

OR

- B Explain the role of retinoblastoma gene in cancer development. **06**

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