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No. of Printed Pages:02

**SARDAR PATEL UNIVERSITY**  
**T.Y.B.Sc EXAMINATION, V<sup>th</sup> Semester**  
**Tuesday, 12<sup>th</sup> November 2013, 10.30p.m to 01.30p.m**  
**BIOTECHNOLOGY : US05CBIT01**  
**[Molecular Biology]**

**NOTE- Figures in the right indicate full marks.**

**Maximum Marks-70**

**Q.1. Multiple Choice Questions (10 marks- One Mark for Each MCQ)**

**1. The repair system acting just after the replication finishes is based on:**

- a. The elimination of methylated bases
- b. The activities of Methylases
- c. The recognition of hemimethylated DNA strands to be repaired
- d. The excision of the oligonucleotide bearing the mismatch

**2. Which of the following processes is involved in DNA repair:**

- a. Conjugation
- b. Reversion of mutation
- c. Transposition
- d. Homologous recombination

**3. Which of the following statements concerning nucleotide excision repair is FALSE?**

- a. It is a type of mismatch repair.
- b. It involves a nuclease.
- c. It involves a DNA polymerase.
- d. It involves DNA ligase.

**4. Which of the following would you expect to find if you took apart a spliceosome?**

- a. RNA only.
- b. Protein only
- c. Both RNA and protein
- d. Neither RNA nor protein.

**5. Proteins targeted for destruction in eukaryotes are covalently linked to :**

- a. Clathrin
- b. Pepsin
- c. Laminin
- d. Ubiquitin

**6. The process in which ribosomes engage is:**

- a. replication
- b. translation
- c. cell division
- d. translocation

**7. The amino acid chain of transmembrane proteins, are \_\_\_\_\_,**

- a. Metabotropic receptor
- b. Chemokine receptor
- c. Membrane receptor
- d. Receptor

**8. Many proteins are needed in both mitochondria and \_\_\_\_\_.**

- a. Chloroplast
- b. Cell wall
- c. Photosynthesis
- d. Plastid

**9. Which of the following enzymes is required for most transposition events:**

- a. DNA polymerase
- b. telomerase
- c. transposase
- d. reverse transcriptase

**10. IS element are**

- a. simplest transposable element
- b. present in all organism
- c. Has code for essential gene
- d. all the above.

P.T.O

**Q.2. Short Question (any 10 question x2 marks each)**

1. What is DNA Polymerase? Discuss its significance.
2. What are silencer? Describe its advantage.
3. Describe carboxylation of amino acid with its significance.
4. Describe Ty element with map.
5. Discuss importance of Rec ABC protein in DNA repair.
6. Describe the promoter required for the RNA polymerase III.
7. What are SRP receptors? Describe the importance of it.
8. What are the various transposition mechanisms?
9. What are trans-esterification? Describe its significance.
10. Describe the importance of G1 stage of cell cycle in eukaryotic replication.
11. How methylation helps in DNA damage repair.
12. Discuss inteins.

**Q.3.a. What are the various problems associated with eukaryotic replication? [5]**

**Q.3.b. Describe the mismatch repair mechanism with its significance. [5]**

**OR**

**Q.3.a. Discuss the initiation of eukaryotic replication with enzyme required in it. [5]**

**Q.3.b. Describe the recombinational repair mechanism for damaged DNA. [5]**

**Q.4.a. Describe the post transcriptional modification of tRNA in detail. [10]**

**OR**

**Q.4.a. Describe the initiation of transcription by RNA Polymerase II. [5]**

**Q.4.b. What is splicing? Describe the splicing of mRNA. [5]**

**Q.5.a. Describe the signal required for targeting protein in mitochondria and nucleus. [5]**

**Q.5.b. Describe the termination of eukaryotic translation with its factors. [5]**

**OR**

**Q.5.a. What is SRP? Describe the feature and application of SRP. [5]**

**Q.5.b. Describe the post translational modification of individual amino acids. [5]**

**Q.6.a. Describe the virus like transposable element with example. [5]**

**Q.6.b. Describe the P element with its map. [5]**

**OR**

**Q.6.a. Describe the Tn10 transposable element of prokaryotes. [5]**

**Q.6.b. Describe the application of transposable element in r-DNA technology. [5]**

**ALL THE BEST**