SEAT No._____ No. of Printed Pages: 02

[50]

SARDAR PATEL UNIVERSITY

TY. B.Sc EXAMINATION, Vth Semester

Thursday, 24th December 2020, 02.00 to 04.00p.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. Histone synthesis takes place in cytoplasm, then transported to nucleus by

a. Nuclear organizing region b. nuclear localization signal

c. importin d. all the above

2. Deletion of which domain of ARS would give the least replication rate in eukaryotes?

a. A domain b. B1 domain c. B2 domain d. B3 domain

3. Which of the following enzyme(s) involve in replacement of incorrect base

a. DNA glycosylase b. AP endonuclease c. AP exonuclease d. Both a and b

4. The capping of eukaryotic mRNA catalyzed by guanylyltransferase for the addition of

a. 5-methyl guanosine b.7- methyl guanosine

c. 5- acetyl guanosine d. 7- acetyl guanosine

5. CAAT box is present in many

a. Prokaryotic promoters upstream of TATA box

b.Prokaryotic promoters are downstream of TATA box

c. Eukaryotic promoters are upstream of TATA box

d. Eukaryotic promoters are downstream of TATA box

6. Proteins targeted for nucleus in eukaryotes are covalently linked to :

a. Clathrin b. NLS c. Laminin d. Ubiquitin

7. The mitochondrial matrix enzyme, pyruvate dehydrogenase's single peptide is deleted, what will happen

a. it will remain in the intermembrane space. b. it won't be completely synthesized

c. it will remain in the cytoplasm. d. it will still move to the matrix

8. SRP is specific for

a. Translation b. Post translational Modification c. Both a and b d. Protein targeting

9. Which of the following functions is not performed by transposase?

a. Restriction of the IS element b. Integration of the transposon

c. Formation of the RNA intermediate d. Restriction of the host genome

10. IS element is a

a. simplest transposable element b. Has marker gene

c. Has code for transposase d. all the above.

Q.2.Fill in the Blanks **(01 Mark each)** **[08]**

1. In NER mechanism,the incision at 3' position of the lesion is done by----------
2. Topoisomerise enzymes cut, --------- and ---------- the double stranded DNA.
3. The antibody binding diversity is a result of a type splicing that produces mRNA variants and protein variants by processing different segment of exons. The process is known as----------
4.Enhancers increase the rate of transcription present at ---------- of promoter.
5. RNA molecules serves as an adaptor molecule during protein synthesis----------
6.In Eukaryotes the region between 1st AUG and 5'-G cap is known as _____
7.Silencing of transposons can be achieved by---------
8.---------- can jump from one location to another within the genome.

Q.3. Short Answer Question (any 10 question X 2 marks each) **[20]**

1. Discuss about eukaryotic low fidelity DNA polymerase with its significance.
2. Describe the direct repair of DNA damage by methylation.
3. Discuss about the regulation of SOS operon.
4. What are silencer? Describe its advantage.
5. Describe the binding the RNA polymerase III with its promoter.
6. Discuss the function of enhancer.
7. What are SRP? Describe the importance of it.
8. Describe phosphorylation of amino acid with its significance.
9. Discuss the charging of tRNA.
10. Describe copia element with map.
11. What are the various transposition mechanisms?
12. Discuss the various application of transposable element.

Q.4. Long Answer Question (attempt any 4 X 08 marks each) **[32]**

1. Describe the initiation of eukaryotic replication with its regulation.
2. Describe the excision repair mechanism for damaged DNA.
3.Describe the termination of transcription of mRNA.
4. What is splicing? Describe the splicing of group IV intron.
5.Describe the signal required for targeting protein in the nucleus.
6.Describe the initiation of eukaryotic translation with its factor.
7. Describe the virus like transposable element.
8. Describe the P element as transposable element.

——— X ———