

[44]

FRAT No. _____

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SARDAR PATEL UNIVERSITY
T.Y.B.Sc EXAMINATION, Vth Semester
Wednesday, 13th November 2019, 10.00a.m to 01.00p.m
Genetics: US05CGEN02, [Molecular and Microbial genetics]

NOTE- Figures in the right indicate full marks. Maximum Marks-70
Q.1. Multiple Choice Questions (10 marks- One Mark for Each MCQ) [10]

1. Gene transfer in bacteria by conjugation has
 - a. a majority of the donor genes are transferred
 - b. it involves a plasmid
 - c. it depends on phage infection of the recipient cell
 - d. it can be carried out using free DNA extracted from the donor

2. Which of the following statements is true about sexduction
 - a. the F-cell is converted to an F+ cell
 - b. the F+ cell is converted to an F-cell
 - c. chromosomal genes are transferred
 - d. cell-to-cell contact is not require.

3. A prophage is involved in
 - a. lytic cycle
 - b. oncogenesis
 - c. transposition
 - d. lysogeny

4. Retrotransposons are of how many types
 - a. 1
 - b. 2
 - c. 3
 - d. 4

5. Which of the following is not necessary for homologous recombination
 - a. Chi sequence
 - b. Dam methylase
 - c. Rec A
 - d. RecBCD

6. The removal of base analog and incorporation the correct base is feature of...
 - a. Direct repair
 - b. Base excision repair
 - c. Mismatch repair
 - d. Nucleotide excision

7. The enzymes remove super coiling in replicating DNA on the replication fork
 - a. DNA polymerase
 - b. Helicases
 - c. Primases
 - d. Topoisomerases

8. Which of the following is TRUE for the RNA polymerase activity?
 - a. DNA dependent DNA synthesis
 - b. Direct repair
 - c. DNA dependent RNA synthesis
 - d. RNA dependent RNA synthesis

9. The eukaryotic RNA polymerase lack, which activity
 - a. 5'-3' Polymerization
 - b. 5'-3' elongation
 - c. 3'-5' exonuclease
 - d. 5'-3' exonuclease

10. Glycosylation is the addition of _____ to the protein.
 - a. Carbohydrate
 - b. Lipid
 - c. Fat
 - d. Minerals

①

(P.T.O)

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

1. Discuss about the U-tube experiment with its finding.
2. Enlist any four features of plasmid.
3. Describe the importance of phage in microbial genetic recombination.
4. Classify the transposable element on the basis of structure.
5. What is function of DAM methylase in DNA repair?
6. Discuss the importance of Chi sequence in recombination.
7. What is C-value paradox?
8. Describe chloroplast genome with a map.
9. Describe the Ori C for eukaryotic replication.
10. Discuss about the internal promoter in eukaryotes.
11. What is proteolytic cleavage?
12. Describe the termination of transcription of rRNA.

Q.3.a. Discuss about the type of specialized transduction with diagram. [5]

Q.3.b. Describe the molecular mechanism of Transformation. [5]

OR

Q.3.a. Discuss the LTH classification of Virus. [5]

Q.3.b. Describe the cross between the F⁺ and F[']. [5]

Q.4.a. Describe the Holliday model of recombination with its significance. [5]

Q.4.b. Discuss about the P element of drosophila with a neat map. [5]

OR

Q.4.a. Describe the Base excision repair mechanism for DNA. [5]

Q.4.b. Describe the Ac-Ds transposable element of maize. [5]

Q.5.a. Describe the re-association kinetics for the unique DNA. [5]

Q.5.b. Describe the mitochondrial genome for plant cell with its map. [5]

OR

Q.5.a. Derive the equation for Cot value of the highly repetitive DNA. [5]

Q.5.b. Describe the termination of eukaryotic replication. [5]

Q.6.a. Describe the splicing of tRNA with neat diagram. [5]

Q.6.b. Describe the initiation of eukaryotic translation. [5]

OR

Q.6.a. Describe the initiation for mRNA transcription. [5]

Q.6.b. Describe the any five post translational modification of a protein. [5]

