

Date:4-03-2022

Registration number:

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**M.Sc. Biotechnology - I SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2021**

(Examination conducted in March 2022)

**BT 7321 - Molecular Biology**

Time- 2 ½ hrs Max Marks-70

This question paper contains **ONE** printed page and **THREE** parts

**Part A**

**Answer any TEN questions 2 x 10= 20 m**

1. Write a note on the chloroplast genome.
2. DNA Pol III has a high rate of processivity. Comment on this statement.
3. What is the function of RecBCD?
4. What is the end replication problem in eukaryotes?
5. Mention the functions of A and P sites in prokaryotic ribosomes.
6. Briefly write about the Klenow fragment.
7. Distinguish between constitutive and inducible promoters with examples.
8. What would happen if DNA is subjected to a) 5 M NaOH b) 97 [°](https://www.thefreedictionary.com/%c2%b0C)C.
9. Give examples for the following – amino acid with imidazole ring, an amino acid which can form disulphide bonds, alkaline amino acid, aromatic amino acid with 2 rings.
10. What is the Primosome complex?
11. What are CpG islands? What is its significance?
12. What is protein glycosylation? Mention its relevance.

**Part B**

**Answer any FIVE questions 6 x 5 = 30 m**

1. Describe the origin of replication in yeast.
2. Explain any two DNA repair mechanisms.
3. Briefly describe the Holliday model of Homologous recombination.
4. Describe the experiment which proved the semiconservative mode of DNA replication.
5. Describe the structure of bacterial RNA Polymerase.
6. Comment on the significance of epigenetic regulation of eukaryotic gene expression.
7. Explain the principle of CRISPR-Cas9 technology.

**Part C**

**Answer any TWO questions 10 x 2 = 20 m**

1. Explain mechanisms of DNA transposition (8m). Add a note on transposase enzyme (2m).
2. Explain nucleosome structure and Solenoid model of chromosome organization (8m). Distinguish between satellite chromosome and satellite DNA (2m).
3. Describe eukaryotic translation initiation mechanisms.