

TM242399T

Reg. No : .....

Name : .....

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2024

2023 ADMISSIONS REGULAR

SEMESTER II - CORE COURSE BOTANY

BO2C08TM20 - Molecular Biology

Time : 3 Hours

Maximum Weight : 30

**Part A**

**I. Answer any Eight questions. Each question carries 1 weight**

**(8x1=8)**

1. Comment on the molecular structure of DNA-i-motif.
2. Comment on mRNA and hnRNA.
3. Comment on lagging strand in DNA replication.
4. List out the roles of DNA pol in eukaryotes.
5. Differentiate the eukaryotic and prokaryotic ribosomes.
6. Write brief notes on alternative splicing and exon shuffling.
7. Explain the switch mechanism of gene regulation in prokaryotes.
8. Write an account on activators and repressors.
9. Write an account on non-homologous end joining.
10. Give a brief account on direct repair of nucleotides with alkylation damage.

**Part B**

**II. Answer any Six questions. Each question carries 2 weight**

**(6x2=12)**

11. Mention the canonical and non-canonical forms of DNA.
12. Give details on the ribosomal RNA.
13. Comment on leading strand and lagging strand.
14. Explain the Meselson Stahl experiment.
15. Explain the role of tRNA in translation.
16. Describe the process of capping and tailing of mRNA.
17. Give the structure of Lac operon and explain how it is induced by lactose.
18. Explain the process of homologous recombination repair in eukaryotes.

**Part C**

**III. Answer any Two questions. Each question carries 5 weight**

**(2x5=10)**

19. Comment on replisomes in eukaryotic DNA replication. Give details on the various steps in replication.
20. Describe the processes involved in protein synthesis.
21. Describe the intricate mechanisms involved in the choice of life cycle in a  $\lambda$  phage.
22. Write an account on excision repair of DNA.

