April 2025
B.A./B.Sc.
Fourth Semester
CORE – 8
BOTANY
Course Code: BOC 4.11
(Molecular Biology)

Total Mark: 70 *Pass Mark: 28*
Time: 3 hours

Answer five questions, taking one from each unit.

UNIT–I

1. Elaborate on how the nucleosome chromatin structure of DNA influences its function and expression. 14

2. Write notes on *any two* of the following: 7×2=14
   (a) Z-DNA
   (b) Cytoplasmic DNA
   (c) Nucleotide with the support of a neat diagram

UNIT–II

3. Discuss on the role of various enzymes that regulates linear DNA replication. 14

4. Write notes on *any two* of the following: 7×2=14
   (a) Rolling circle
   (b) Gyrase
   (c) Theta mode of replication

UNIT–III

5. Describe the transcriptional process in eukaryotes. 14

6. Write notes on *any two* of the following: 7×2=14
   (a) RNA polymerase
   (b) Mechanism of transcriptional termination in prokaryotes
   (c) Promoter site for transcription initiation in prokaryotes

UNIT–IV

7. Citing an appropriate example for each, describe the mechanism of inducible and repressible operons. 7+7=14

8. Write notes on *any two* of the following: 7×2=14
   (a) mRNA editing
   (b) Spliceosome
   (c) Steroid hormones

UNIT–V

9. Discuss on the post translational modifications in eukaryotes. 14

10. Write notes on *any two* of the following: 7×2=14
    (a) Wobble hypothesis
    (b) Ribosomes
    (c) tRNA charging
