October 2025
B.A./B.Sc.
Fifth Semester
CORE – 11
ZOOLOGY
Course Code: ZOC 5.11
(Molecular Biology)

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

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. Explain Avery-MacLeod-McCarty experiment and Hershey-Chase experiment to prove DNA as the genetic material. 7+7=14

2. What is an RNA primer? Explain the process of RNA priming in DNA replication. Add a note on telomere elongation. 2+5+7=14

UNIT–II

3. Define transcription unit. Explain the components of transcription unit. Write a note on eukaryotic RNA polymerases. 2+5+7=14

4. Explain in detail the mechanism of transcription in prokaryotes. 14

UNIT–III

5. Describe the process of protein synthesis in prokaryote. 14

6. Write the difference between genetic code and central dogma. Why is genetic code a triplet code? Construct a standard genetic code table representing different amino acids. 2+2+10=14

UNIT–IV

7. Discuss the biological significance of exons and introns in gene expression. Add a note on split genes. 8+6=14

8. Explain in detail the splicing mechanism of pre-mRNA. 14

UNIT–V

9. Explain the principle of transcriptional regulation taking *trp* operon as example. Add a note on positive and negative regulation of *trp* operon. 10+4=14

10. Write a note on each of the following: 7×2=14
    (a) Cause of DNA damage
    (b) Pyrimidine dimerization