

# **B.Sc. 5<sup>th</sup> Semester (Hons.) Examination, 2020 (CBCS)**

## **Subject: Zoology**

### **Paper: CC-11(Molecular Biology)**

**Full Marks: 40**

**Time: 2 Hrs**

*Candidates are required to give the answers in their own words as far as practicable.*

*Answer any **eight** questions of the following:*

**$5 \times 8 = 40$**

1. Briefly discuss about the physical properties and chemical stability of the DNA.
2. Concisely illustrate the concurrent replication on both strands of DNA molecule with proper diagram.
3. Highlight the role of regulatory elements and transcription factors in prokaryotic transcription initiation.
4. Briefly describe the process of splicing of hnRNA.
5. Enumerate the characteristic features of genetic code. State why a Codon is triplet, neither doublet or singlet?
6. Write differences between the prokaryotic and eukaryotic translation process taking into account of three steps: initiation, elongation and termination.
7. Suppose you have discovered an antibiotic and applied it in cell free prokaryotic protein synthesis of a mRNA 5'AUGUUUUUUU.....3'. Instead of synthesis of a polypeptide N fMet-Phe-Phe....., a dipeptide is synthesized as N fMet-Phe. Explain the mechanism of action of discovered antibiotic.
8. In lactose operon for each of the following two partial diploids, explain whether mRNA synthesis is constitutive or inducible:
  - i.  $i^+ o^c z^- y^- / i^- o^+ z^+ y^+$
  - ii.  $i^+ o^+ y^+ z^+ / i^+ o^c z^+ y^+$
9. Differentiate between nucleotide excision repair and base excision repair with appropriate illustration.
10. State the principle of PCR and mention its at least two advantages and disadvantages.