Unique Paper Code	:	32231501
Name of the Paper	:	Molecular Biology
Name of the Course	:	B.Sc. (H) Zoology
Semester	:	V
Duration	:	3 hours
Maximum Marks	:	75 Marks

Instructions for Candidates

Write your Roll No., Name of the paper, Course, Semester, and Date of examination on the first page of answer sheet.

Attempt **<u>ANY</u> FOUR** questions. **All questions carry equal marks**.

Illustrate your answers with appropriate diagrams wherever necessary.

Set 1

- 1. DNA replication is 'semiconservative, bidirectional and semidiscontinuous' –Justify. What will be the consequence if helicase is not present during replication? Explaining the role of replicating enzymes describe the process of replication in eukaryotes.
- 2. Compare and contrast the process of transcription in prokaryotes with that in eukaryotes.
- 3. One gene may code for more than one polypeptide in eukaryotes. How is this achieved? Support your answer with suitable examples.
- 4. RNAi is a fundamental pathway of gene-silencing in eukaryotic cell. Discuss its components and mechanisms.
- Explain how functioning of lac operon is dependent on availability of glucose and lactose in medium. Will the cell be able to utilize lactose for energy if there is mutation in (1) lac I gene (2) β-galactosidase gene? Discuss.
- 6. Synthesis of a polypeptide requires the participation of three major classes of RNA. Name them and illustrate their involvement in this process with suitable diagrams (Answer with reference to prokaryotes). How is fidelity of protein synthesis maintained?