

SCHOOL OF CHEMICAL AND LIFE SCIENCES

JAMIA HAMDARD, NEW DELHI-110062

Ph.D. Course Work Examination, October 2023

Paper Code: PHBC 101

Paper Title: Molecular Biology

(Write your Roll No. at the top immediately on receipt of this question paper)

Time: 3 Hours

Maximum Marks: 75

Answer all questions. All parts of a question must be answered in the continuation. Start answering each question on a new page. Cite examples and draw labeled diagrams.

Question 1. Write short notes on ANY TEN of the following. (Not more than half page).

[10 x1.5= 15]

- A. Shine Dalgarno sequence
- B. COT curve
- C. Central Dogma
- D. Reverse Transcription
- E. DNA repair mechanisms
- F. Site directed mutagenesis
- G. Nucleosome
- H. Replication fork
- I. Histones
- J. Codon
- K. Wobble hypothesis
- L. Overlapping genes
- M. Frameshift mutation
- N. RNA polymerase
- O. Alternate splicing

Question 2. Answer ANY FOUR of the following. (Not more than two pages/ question).

[4x5=20]

- A. Discuss the presence and role of unusual bases in tRNA.
- B. Differentiate between different forms of DNA.
- C. Discuss the differences between DNA replication in prokaryotes and eukaryotes.
- D. What roles do acetylation and methylation play in gene expression?
- E. Explain regulation of genes by Lac operon.
- F. What are the different types of transposons in bacteria?

Question 3. Answer ANY TWO of the following. (Not more than four pages/ question).

[2x20= 40]

- A. Discuss in detail the role of promoter and enhancer in the gene expression.
- B. Mention different types of RNA, their structure and role inside the cell.
- C. Discuss in detail the replication of viral RNA.
- D. Discuss the post transcriptional processing of RNA.
- E. Discuss the role of chromatin structure in gene regulation.