

**Final Assessment Test – May 2024**

Course: TBIT104L - Molecular Biology

Class NBR(s): 4819 / 4831

Time: Three Hours

Slot: A1+TA1

Max. Marks: 100

- KEEPING MOBILE PHONE/ELECTRONIC DEVICES EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

General Instruction: Draw neat diagram wherever necessary**Answer any TEN Questions****(10 X 10 = 100 Marks)**

1. Why is DNA packed into chromosome? Discuss in details with proper diagrams the process of DNA packaging into chromosome in eukaryotic cell.
2. Enlist the various types of DNA. Explain how they differ from each other?
3. Describe the experiment conducted in *E. coli* which has conclusively proven semi-conservative model of DNA replication.
4. Explain in detail the role of helicase and topoisomerase in DNA replication.
5. Enlist various types of DNA damages and explain them briefly.
6. Discuss the mismatch repair (MMR) pathway in detail.
7. What is polyadenylation? How does it happen in eukaryotic mRNA?
8. Describe the process of transcription in *E. coli* (prokaryote) with neat diagrams.
9. What are the different types of post-translational modifications taking place in eukaryotic cell? Discuss any two of them.
10. Discuss the structure of tRNA and its role in translation process.
11. How does the retrovirus convert their single stranded RNA genome into double stranded DNA inside the host cell? Describe all the steps in details.
12. How are proteins sorted and transported to different locations in the cell? Discuss in details.