

2025

M.Sc. 1st Semester Examination

**BIOTECHNOLOGY AND
BIOINFORMATICS**

Paper : BTIC401X1

[Cell and Molecular Biology]

Full Marks : 25

Time : One Hour

The figures in the margin indicate full marks.

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

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. What is the importance of Cholesterol in cellular membrane?
2. Write down the difference between euchromatin and heterochromatin.
3. What is Polymerase Switching?
4. What is the function of Peroxisomes?

P.T.O.

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. Write a short note on "Hallmarks of Cancer".
6. How Wee I regulate cell cycle?
7. Write a brief note on how mi-RNA regulate gene expression.
8. What is Ligase? Write down the function of bacterial DNA Polymerase I, II and III. 1+3

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. Provide a diagrammatic representation of "Synthesis of leading and lagging strands of DNA". What is the difference between "Hot Spots" and "Cold Spots" in term of Crossing Over? 5+3
10. Define operon. Describe the regulation of '*lac*' operon by repressor and '*Trp*' operon by attenuation. What is catabolic repression? 1+6+1

Internal Assessment - 5 marks
