# 2025

## M.Sc. 1st Semester Examination

## BIOCHEMISTRY

### Paper : BICC402X1

### (Biophysical Chemistry and Enzymology)

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 : 2×2=4

1. What do you mean by Standard Free Energy of ATP hydrolysis?
2. Briefly discuss the mechanism of Sigma and Pi bond formation based on electronic orbitals.
3. Write the significance of van der Waals' interaction in macromolecular structure.
4. What is meant by allosteric enzyme?

P.T.O.

## Group - B

Answer any *two* questions : 4×2=8

5. Name two high energy phosphorylated compound. How is free energy value related with biochemical reaction? 2+2

6. Briefly discuss about enzyme nomenclature and classification citing suitable examples.

7. Briefly discuss about feedback inhibition.

8. Differentiate between UV-Visible spectroscopy and Circular Dichroism spectroscopy.

## Group - C

Answer any *one* question : 8×1=8

9. What is Coupling Reaction? Write the equation which relates First and Second Law of Thermodynamics. Why does ATP hydrolysis produce large negative free energy? What do you mean by Oxidative Phosphorylation? 2+2+3+1

10. Write down the basic principle of IR Spectroscopy. How does IR frequency vary with the presence of Hydrogen bond and Resonance? 6+2

**Internal Assessment : 5 marks**