



M.Sc. 3rd Semester  
Examination, March-April 2021

# CHEMISTRY

## Paper - II

Chemistry of Biomolecules

*Time* : Three Hours]                 [*Maximum Marks* : 80  
[*Minimum Pass Marks* : 16

**Note** : Answer **all** questions. All questions carry equal marks.

## Unit-I

1. (a) Define Free energy. What are exergonic and endergonic reactions? Explain with suitable example.
- (b) Explain the biological function of haeme in haemoglobin and myoglobin.

***OR***

- (a) Describe the detailed structure and functions of cytochrome and iron-sulphur proteins.

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- (b) Write short notes on the following :
- (i) Rubredoxin (Rd) (1 Fe – 0S) protein
  - (i) Ferredoxin (FD) (2 Fe – 2S) protein

**Unit-II**

2. (a) How cytochrome 450 converts a hydrocarbon into an alcohol ?
- (b) Write notes on the structural behaviour and enzymatic activity of:
- (i) Xanthine oxidase
  - (ii) Carboxy peptidase

**OR**

- (a) Describe the crown ethers and cytodextrin based enzyme model.
- (b) Discuss the structural behaviour and enzymatic activity of:
- (i) Superoxide dismutase
  - (ii) Catalase

**Unit-III**

3. (a) Discuss the structure and biological functions of FMN and FAD.
- (b) Explain the following :
- (i) Effect of immobilisation of enzymes
  - (ii) Application of immobilisation of enzymes in medicinal and industrial chemistry

**OR**

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- (a) Discuss the structure and biological functions of co-enzyme-A and  $\text{NADP}^+$ .
- (b) Explain the following :
  - (i) Classification of enzymes by IUB report
  - (ii) Concept and identification of active sites by the use of inhibitors

#### Unit-IV

4. (a) What is biopolymer interaction ? Describe various types of binding process in biological cell.
- (b) Explain the following :
  - (i) Functions of nerve conduction
  - (ii) Hydrogen ion titration curve

**OR**

- (a) Write notes on irreversible thermodynamic treatment of membrane transport
- (b) Describe the following terms :
  - (i) Osmotic pressure in membrane equilibrium
  - (ii) Donnan membrane equilibrium