

## M.Sc. (Part-I) Semester-I (C.B.C.S. Scheme) Examination

## BIOCHEMISTRY

## (Bio-Energetics and Biological Oxidation)

## Paper—IV

Time : Three Hours]

[Maximum Marks : 80

**Note :—**(1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams and figures wherever necessary.

1. Discuss the following points in short :

- |                                  |   |
|----------------------------------|---|
| (a) Free Energy.                 | 5 |
| (b) Measurement of free energy.  | 5 |
| (c) First law of thermodynamics. | 6 |

OR

- |                                   |   |
|-----------------------------------|---|
| (p) Second law of thermodynamics. | 5 |
| (q) ATP                           | 5 |
| (r) Phosphorylation potential.    | 6 |

2. Discuss the following :

- |                                      |   |
|--------------------------------------|---|
| (a) Ultra structure of mitochondria. | 5 |
| (b) Heme iron binding protein.       | 5 |
| (c) Reversible ETC.                  | 6 |

OR

- |                                           |   |
|-------------------------------------------|---|
| (p) Sequence of electron carrier in cell. | 5 |
| (q) Redox potential.                      | 5 |
| (r) Factors affecting ETC.                | 6 |

3. Write in short about :
- (a) Coupling factors. 5
  - (b) Theories of oxidative phosphorylation. 5
  - (c) ATP synthetase complex. 6

OR

- (p) Uncouplers of energy transfer. 5
  - (q) Inhibitors of energy transfer. 5
  - (r) Mechanism of oxidative phosphorylation. 6
4. Describe the following :
- (a) Light harvesting complex. 5
  - (b) Photosystem I. 5
  - (c) Photosynthetic Electron Transport. 6

OR

- (p) Photosystem II. 5
  - (q) Photorespiration. 5
  - (r) Location and mechanism of energy transfer. 6
5. Discuss in detail about cyclic and non-cyclic photophosphorylation. 16

OR

What is photophosphorylation ? Describe molecular mechanism of it. 16