Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.PHARM(NEW)/SEM-4/PT-404/2010

2010

PHARMACEUTICAL CHEMISTRY

(BIOCHEMISTRY)

Time Allotted : 3 Hours Full Marks : 70

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

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) Hemoglobin is

      a) conjugated protein b) allosteric protein

      c) globular protein d) all of these.

   ii) Each turn of α–helix contains

      a) 3.6 amino acid b) 3.5 amino acid

      c) 3.7 amino acid d) 3.8 amino acid.

   iii) Allopurinol, an inhibitor of Xanthine oxidase, gets converted to Alloxanthine, a more potent inhibitor of Xanthine Oxidase. This phenomenon is an example of

      a) Allosteric inhibition b) Allosteric regulation

      c) Feedback inhibition d) Suicide inhibition.

iv) The pentose sugar present mainly in the heart muscle is

a) Lyxose b) Ribose

c) Arabinose d) Xylose.

v) The number of ATP molecules produced when one molecule of glucose is converted into lactic acid by glycolysis is

a) 1 b) 6

c) 2 d) 8.

vi) Michaelis-Menten equation is used to explain the effect of substrate concentration on

a) Carbohydrate b) Lipid

c) Enzyme d) Protein.

vii) Which is not an essential amino acid ?

a) Threonine b) Valine

c) Tryptophan d) Glutamine.

viii) Which bond is present in the primary structure of protein ?

a) Ester b) Ionic

c) Hydrogen d) Peptide.

ix) Refsum's disease is due to defect in ..... of fatty acids.

a) α oxidation b) β oxidation

c) ω oxidation d) γ oxidation .

x) All the amino acids except one, give – *ve* test for biuret test. Name of the amino acid is

a) Histidine b) Argenine

c) Alanine d) Tryptophan.

xi) Hyperbilirubinemia indicates blood concentration of bilirubin above

a) 0.5 mg/dl b) 1 mg/dl

c) 5 mg/dl d) 10 mg/dl.

xii) Fick's law deals with

a) Viscosity b) Active transport

c) Passive diffusion d) Transamination.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Why is pentose sugar needed for the biosynthesis of nucleotide ?
3. Discuss about the stability of an α-helix.
4. Discuss about the inhibitors of the Electron Transport Chain.
5. a) Define Bioenergetics.

   b) Why is mitochondria known as the 'powerhouse' of the cell ?

   c) Differentiate between Malate-Aspartate shuttle and Glycerol-Phosphate shuttle. 1 + 1 + 3
6. Signify the role of vitamin as co-enzyme.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Discuss about the β-oxidation of fatty acids.
   b) Differentiate between the following :
      i) Crabtree Effect and Pasteur Effect.
      ii) TCA cycle and Glyoxylate cycle. $10 + (2 \times 2\frac{1}{2})$

8. a) Derive the Michaelis-Menten Equation for Enzyme kinetics.
   b) Discuss about the inhibition of Enzyme action. 6 + 9

9. a) Define enzyme. Classify them with suitable example as per I.U.B. system.
   b) Describe the factors affecting enzyme activity.
   c) Write a short note on denaturation of protein.
   d) Write the colour reaction involved in test for protein.
   5 + 5 + 3 + 2

10. a) Define Symport, Uniport, Antiport and Cotramport.
    b) Define Simple Diffusion, Facilitated Diffusion and active transport.
    c) Differentiate between primary and secondary Active Transport.
    d) What do you understand by the term 'Gated Ion Channels' ?
    e) Explain 'Ligand Gated Ion Channel' and 'Voltage Gated Ion Channel' with example.
    f) What is Onabain ? 4 + 3 + 2 + 1 + (2 + 2) + 1

11. Discuss essential features of Citric Acid cycle. Write in brief on aerobic oxidation of Glucose. What is its significance ?
    7 + 6 + 2