**P.G. Diploma in Bio - Informatics**
**Annual Examinations – 2006**

**Paper PBID – 105**
**Biochemistry**

Time allowed: Three hours Maximum Marks: 80

1. Attempt all questions from Section I.
2 Attempt any six questions from Section II.
3 Attempt any three questions from Section III

**SECTION – I** Marks

1. Attempt all the objective type questions given below and write the correct answer on the answer sheet. 1X20=20

i) Deficiency of proteins in the body causes

a) Jaundice b) Kwashiorkor c) Hepatitis d) AIDS

ii) Supramolecular assemblies involved in degradation of unwanted proteins are

a) Ribosomes b) Nucleosomes c) Proteasomes d) Peroxisomes

iii) pH inside the Lysosomes is

a) Acidic b) Basic c) Neutral d) Variable

iv) Urea cycle takes place in

a) Golgi bodies b) Mitochondria c) Cytoplasm d) Both 'b' & 'c'

v) Glutamate and Aspartate are covered through transamination to (respectively)

a) 2-ketoglutarate and Oxaloacetate b) Fumarate and Pyruvate

c) Pyruvate and Fumarate d) Oxaloacetate and 2-ketoglutarate

vi) Which of the following sets contains ONLY essential amino acids

a) His, Lys, Phe, Trp b) Ala, Arg, Ile, Thr

c) Met, Val, Gly, Pro d) Asp, Asn Glu, Gln

vii) Examples of Mono-, Di-, and Poly-saccharide, respectively are

a) Glucose, Fructose, Starch b) Glucose, Sucrose, Maltose

c) Fructose, Sucrose, Glycogen d) Galactose, Starch, Glycogen

viii) An example of a non-reducing disaccharide is

a) Maltose b) Sucrose c) Cellubiose d) Iso-maltose

ix) In anaerobic Glycolysis, Glucose is degraded to

a) $CO_2$ b) CO c) Pyruvate d) Lactate

x) Main cellular source of NADPH is

a) Glycolysis b) Electron transport chain

c) TCA Cycle d) Pentose Phosphate pathway

xi) Oxidation of One Acetyl CoA through TCA cycle gives

a) 1 NADH, 3 $FADH_2$, 1GTP b) 2 NADH, 2 $NADH_2$, 1GTP

c) 3 NADH, 1 $FADH_2$, 1GTP d) 3 NADH, 2 $FADH_2$, 1 GTP

xii) Complex II of Electron Transport Chain is

a) Cytochrome Oxidase b) NADH Dehydrogenase

c) Reiske Iron – Sulphur protein d) Succinate Dehydrogenase

xiii) Which of the following will give highest amount of energy per gram weight

a) Sugar b) Oil c) Protein d) Vitamin

xiv) The precursor of Steroid hormones is

a) Phospholipid b) Cholesterol c) Triglyceride d) Fatty acid

xv) The enzyme involved in Epinephrine induced mobilization of fatty acids is

a) Phospholipase b) Adenylate cyclase

c) G-Protein d) Hormone sensitive lipase

xvi) In humans, Prostaglandins are derived from

a) Cholesterol b) Arachidonic acid

c) Bile Acids d) Phosphtidyl Choline

xvii) Which of these is/are inborn error of amino acid metabolism

a) Albinism b) Phenylketonuria

c) Alkaptonuria d) All of these

xviii) Ascending power (lowest to highest) of Lipid- Protein ratio in the lipoproteins is

a) Chylomicrons, VLDL, IDL, LDL, HDL
b) HDL, LDL, IDL, VLDL, Chylomicrons
c) Chylomicrons, VLDL, LDL, IDL, HDL
d) HDL, IDL, LDL, VLDL, Chylomicrons

xix) Orotic Aciduria is an inborn error of

a) Amino Acid Metabolism b) Nucleotide metabolism

c) Carbohydrate metabolism d) Lipid Metabolism

xx) Disorder due to error in breakdown of branched chain amino acids is

a) Refsum's disease b) Hypoglycemia

c) Galactosemia d) Maple syrup urine disease

## SECTION – II

Q2. Attempt any <u>six</u> of the following 5X6=30

i) What are the different mechanisms of deamination of amino acids?
ii) Explain Glucose- Alanine cycle and state its significance.
iii) Give three examples each of Disaccharides and Polysaccharides. Also mention the type of linkage between the constituent sugar residues.
iv) Give the reactions of TCA cycle (formulae NOT required) with the enzymes involved.
v) Explain the activation and transport of Fatty acid from cytoplasm to mitochondria.
vi) What is the site of Fatty acid desaturation? Give the reactions in the desaturation of fatty acids.

vii) Draw the structure of any phospholipids. Show the cleavage site of Phospholipases A, B, C and D.

viii) Explain how the energy obtained from electron transport chain is used for oxidative phosphorylation.

## SECTION – III

Attempt any three questions of the following 10X3=30

Q3. Give the significance, reactions and regulation of Urea cycle.

Q4. Describe various components of Electron transport chain.

Q5. Write notes on any TWO of the following:

(i) Phenylketonuria
(ii) Krabbe's disease
(iii) Galactosemia

Q6. Discuss the regulation of any two of the following:

(i) TCA cycle
(ii) Glycolysis
(iii) Ketogenesis