B.Sc. Part—II (Semester—III) Examination

BIOCHEMISTRY

(Intermediary Metabolism)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) **All** questions are compulsory and carry equal marks except Q. No. **1** which carries **8** marks.

(2) Draw the well labelled diagram wherever necessary.

1. (A) Fill in the blanks :

(i) Conversion of glyceraldehyde 3-phosphate to dihydroxyacetone phosphate is catalysed by _____. ½

(ii) Gluconeogenesis is a reversal of _____. ½

(iii) The only Ketogenic amino acid is _____. ½

(iv) Cholesterol synthesis is _____ by cyclic AMP. ½

(B) Choose correct alternative :

(i) Oxidation of one mole of pyruvate to acetyl CoA leads to the formation of :

(a) 1 mole of ATP (b) 2 moles of ATP

(c) 3 moles of ATP (d) 4 moles of ATP ½

(ii) The carrier of the citric acid cycle is :

(a) Malate (b) Fumarate

(c) Succinate (d) Oxaloacetate ½

(iii) Transamination is a :

(a) Reversible process (b) Irreversible process

(c) Both of above (d) None of the above ½

(iv) The carbon atoms at position 4 and 5 and N atom at position 7 of purine base are supplied from :

(a) Valine (b) Alanine

(c) Glycine (d) Serine ½

(C) Answer in **one** sentence :

(i) Define gluconeogenesis. 1

(ii) Define decarboxylation of an amino acid. 1

(iii) Define oxidative deamination. 1

(iv) Why Krebs cycle is known as "TCA Cycle" ? 1

2. (a) Describe chemical coupling hypothesis. 4

(b) Discuss glycogenolysis in detail. 4

(c) Describe reactions of gluconeogenesis which are not part of glycolysis. 4

OR

(p) Describe NADH and FADH2 producing steps of TCA cycle. 4

(q) Discuss Mitochondrial ETC. 4

(r) Describe glyoxalate bypass. 4

3. (a) Describe ketogenesis in detail. 4

(b) Describe biosynthesis of Triglycerides. 4

(c) Describe β-oxidation of saturated fatty acids. 4

OR

(p) Describe biosynthesis of unsaturated fatty acids. 4

(q) Describe activation of fatty acids and its transport to mitochondria. 4

(r) Biosynthesis of saturated fatty acids. 4

4. Describe in detail biosynthesis of various types of phospholipids. 12

OR

Give brief account of cholesterol metabolism. 12

5. (a) Describe transamination and deamination. 4

(b) Discuss biosynthesis of glycine. 4

(c) Discuss the degradation of Tyrosine. 4

OR

(p) Describe urea cycle. 4

(q) Describe degradation of cysteine. 4

(r) Describe the biosynthesis of Methionine. 4

6. (a) Describe salvage pathway for biosynthesis of purine nucleotide. 4

(b) Explain formation of 5-aminoimidazole ribonucleotide starting from glycinamide ribonucleotide. 4

(c) Describe degradation of pyrimidines. 4

OR

(p) Describe biosynthesis of UMP. 4

(q) Describe catabolism of purines in humans. 4

(r) Discuss the biosynthesis of Thymidylate nucleotide. 4

7. Describe biosynthesis of Haem in detail. 12

OR

Describe biosynthesis of bile pigments in detail. 12