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Your Roll No. .....

1373 **A**

B.Sc. (Hons.)/II

BIOCHEMISTRY—Paper IX

(Metabolism of Carbohydrates and Lipids)

(Admissions of 2000 and onwards)

Time : 3 *Hours* *Maximum Marks* : 60

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer ***five*** *questions, in all including.*
Question No. **1** *which is compulsory.*

1. Comment on the following :

   (i) Fats provide more energy on hydrolysis still cells to store glucose as glycogen.

   (ii) Cori-cycle is more prevalent under anaerobic glycolysis.

   (iii) Triacyl Glycerol hydrolysis is increased in adipose tissues during fasting state.

   (iv) Fructose intolerence may cause hypo glycemia in children.

   (v) Radio active Labelled biocarbonate ions are consumed for fatty acid.

[P.T.O.

(vi) The distribution of fatty acids in many tissue phospholipids is different than that of the initially synthesized phospholipids.

(vii) Defective Glucose 6 phosphate dehydrogenase is associated with haemolytic anemia.

(viii) Formation of bile salts also represent pathway for cholesterol degradation. $(8 \times 2 = 16)$

2. Explain :

(i) What is physiological importance of glyoxalate cycle in plants. How this cycle is different than TCA inspite of sharing some of reactions.

(ii) Name the responsible enzymes for the following disorders :

(a) McArdle desease (b) Refsum's disease

(c) Gaucher's desease (d) Pompe desease

(e) Von Gierke desease

(iii) Thiolase enzyme is used for cholesterol biosynthesis in cell but same enzyme is not used for fatty acid biosynthesis in liver. why? $(4+5+2)$

3. (a) Differentiate between the following :

(i) Substrate level phosphorylation and oxidative phosphorylation.

(ii) C_4 and C_3 plants.

(iii) Fatty acid oxidation in mitochondria and peroxisomes.

(b) Write down synthesis of phosphotidyl serine from phosphotidyl ethanolamine in mammals. (3+3+3+2)

4. (a) Write down the reactions affected by the following inhibitors.

(i) Fluoride (ii) Arsenate (iii) Iodoacetate (iv) Aspirin

(b) How is blood glucose level regulated?

(c) How do galactosemics whose diet devoid of galactose, get their galactose for glycolipids and glycoproteins. (4+5+2)

5. (a) Differentiate between glycerol phosphate shuttle and malate aspartate shuttle.

(b) When gluconeogenesis is on glycolysis is off. Why?

(c) How many ATP molecules will be produced on complete oxidation of arachidomic acid. Write the reactions. (4+3+4)

6. Explain :

(a) How are Ketone bodies synthesized in liner and act as substitute for fatty acids to provide energy in tissues.

(b) Why are cycles called important regulatory sites of metabolic pathways.

(c) Write down complete equation of linolenic synthesis in mammals.

(5+4+2)

7. (a) Describe with reactions the fate of the glucose 6 phosphate in following conditions :

(i) Cell require more NADPH than ribose 5P.

(ii) Cell require NADPH and ribose 5P both.

(iii) Cell need ribose 5 phosphate more than NADPH.

(b) Explain Regulation of Pyrurate dehydrogenase complex.

(7.5 + 3.5)

8. Answer the following :

(a) If a cell is forced to metabolize glucose anaerobically, how much faster would glycolysis have to proceed to generate same amount of ATP as it would get if it is metabolized glucose aerobically.

(b) Write a balanced equation for the synthesis of α Ketoglutarate from pyrurate.

(c) If methylene carbon of acetyl CoA is labelled what will be its fate in TCA after first, second and third cycle.

(d) Role of lipoproterins in transport of fatty acids and why HDL is good cholesterol and LDL is bad cholesterol. (2 + 3 + 3 + 3)