This question paper contains 3 printed pages. *Your Roll No. .....*

Sl. No. of Ques. Paper : 1425 **F-7**

Unique Paper Code : **2491301**

Name of Paper : **Metabolism of Carbohydrates and Lipids**

Name of Course : **B.Sc. (Hons.) Biochemistry (FYUP)**

Semester : **III**

Duration : : **3 hours**

Maximum Marks : **75**

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

Attempt five questions in all. Question No. 1 is compulsory.

1(A) Comment on the following:

(i) Glucose is immediately phosphorylated on entry into the cell.
(ii) Isocitrate Dehydrogenase catalyzes the first oxidative decarboxylation of TCA cycle.
(iii) Anaplerotic reactions replenish the TCA cycle intermediates.
(iv) Glucokinase is inducible enzyme while Hexokinase is not.
(v) Triacylglycerol synthesis in adipose tissue is dependent on glycolysis.
(vi) Pentose phosphate pathway provide reducing power for biosynthesis.
(vii) Inspite of PEP carboxykinase availability, Gluconeogenesis does not occur in adipose tissue.
(viii) Fatty acid oxidation in mitochondria need transport molecule to transport fatty acids from cytosol.

(B) Name the following enzymes

(i) Membrane bound enzyme of TCA.
(ii) Multifunctional enzyme of lipid biosynthesis.
(iii) The main regulatory enzyme of Glycolysis.

(16, 3)

2(i) Calvin Cycle reactions are called dark reactions even-though they only occur in daylight. Explain.

(ii) What is the purpose of different anatomy of leaf cells in C_4 plants? How is the carbondioxide concentrated in C_4 plants?

(iii) Explain substrate level phosphorylation with examples.

(5,5,4)

P. T. O.

3(i) What will be the fate of NADH produced by glycolysis in yeast?

(ii) Write down the reactions of oxidative phase of Pentose Phosphate Pathway.

(iii) Write down the reactions inhibited by the following:

a. Arsenate
b. Malonate
c. Flurophosphate
d. Aspirin

(5,5,4)

4(A) Explain the following:

(i) Regulation of cholesterol biosynthesis
(ii) TCA cycle is Amphibolic in nature

(B) Describe the three bypass reactions of gluconeogenesis.

(8, 6)

5. Explain the following:

(i) β oxidation of fatty acids in mitochondria
(ii) Glyoxalate cycle in plants and its physiological significance
(iii) Regulation of Pyruvate dehydrogenase complex

(5, 5,4)

6A. Write down the coenzymes /cofactor required by the following enzymes

a. Propionyl CoA Carboxylase
b. Methyl Malonyl CoA Mutase
c. Glycogen Phosphorylase
d. Lactate Dehydrogenase

B. Glycogenin is a primer for glycogen synthesis. Explain.

C. Name the enzyme defective in following disease:

i. Niemann pick disease
ii Tay Sach's disease

(8, 4, 2)

7A. What will be the fate of Glucose 6-phosphate under following condition. Explain:

a. Much more Ribose-5 Phosphate than NADPH is required.
b. The need for NADPH and Ribose 5 phosphate is balanced.
c. Much more NADPH than Ribose 5 phosphate is required.

B. How do muscles transport lactate to liver to regenerate glucose?

(9, 5)

8. Write down short notes on the following:

(i) Multi enzyme complex

(ii) Bile Salts

(iii) Fatty acid synthesis regulation

(iv) Glycogen synthesis

(4,3,3,4)