(c) Name the key regulatory enzymes of TCA cycle. Show how they are regulated by product inhibition and allosteric feedback regulation. (4,5,6)

6. (a) Give the cause and symptoms of the following diseases :

(i) Lactose intolerance

(ii) Pompe's disease

(iii) Cori's disease

(b) Give an overview of Starve feed cycle. (3×3, 6)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4109 **H**

Unique Paper Code : 2492011202

Name of the Paper : Metabolism of Carbohydrates

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

Semester : II

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **6** questions.
3. Attempt any **4** questions.
4. **All** questions carry equal marks.
5. Question no. **1** is compulsory.

1. (a) Give the biochemical basis of the following :

(i) Fructose 2, 6-bisphosphate activates glycolysis but inhibits gluconeogenesis.

(ii) Glycogenesis needs a primer to initiate itself.

(iii) Patients suffering from Von Gierke's disease manifest hypoglycemia.

(iv) Iodoacetate is a suicide inhibitor of Glycolysis.

(b) Give the reaction for the following :

(i) Give the reaction generating NADH in Glycolysis.

(ii) Reaction catalyzed by phosphoglucomutase.

(iii) Dehydration reaction in Glycolysis.

(iv) Reaction involved in substrate level phosphorylation in TCA cycle.

(v) Reaction that introduces branching in Glycogen. (2.5×4,1×5)

2. (a) Differentiate between the following :

(i) Catabolism and Anabolism

(ii) Aldolase A and Aldolase B

(iii) Lactose fermentation and alcohol fermentation

(iv) Hexokinase and Glucokinase (3,4,4,4)

3. (a) Show schematically the role of 3 enzymatic activities and 5 Coenzymes in the conversion of Pyruvate to Acetyl CoA by Pyruvate dehydrogenase complex.

(b) Show how Pyruvate is converted to Phosphoenol pyruvate. Give the enzymes, coenzymes and the regulators involved in the reactions.

(c) Conversion of galactose 1- phosphate to glucose 1- phosphate requires two nucleotide derivatives. Explain. (6,6,3)

4. (a) Give the steps involved in Glycogenolysis with the generation of Glucose-1-P and glucose.

(b) Show how Glycogenolysis and Glycogen synthesis are counter regulated to prevent futile cycles.

(c) Give the ATP utilizing steps in Gluconeogenesis. (6,6,3)

5. (a) What are Anaplerotic reactions? Give examples.

(b) Give the reactions of Oxidative phase of Pentose phosphate pathway. Give the biological importance of these reactions.