(LG 150) **APRIL 2015** **Sub. Code:2045**

M.D. DEGREE EXAMINATION

BRANCH XIII - BIOCHEMISTRY

PAPER III – INTERMEDIARY METABOLISM, MACRO AND MICRO NUTRIENTS AND INBORN ERRORS OF METABOLISM

Q.P.Code: 202045

Time: Three Hours **Maximum: 100 Marks**

I. Essay Questions: **(2 x 10 = 20)**

1. Define biochemically- fasting and starvation. Discuss the enzymatic changes and sources of metabolic fuel to the brain, skeletal muscle, liver, adipose tissue during fasting and starvation.
2. Classify lipoproteins. Describe in detail the endogenous pathway of lipoprotein metabolism. Add a note on Frederickson's classification of dyslipoproteinemias.

II. Short Questions: **(8 x 5 = 40)**

1. Explain mechanism based inactivation with a suitable example.
2. Regulation of heme biosynthesis.
3. Binding change mechanism.
4. Describe the sources, carriers and end products of 1- Carbon atoms.
5. Write the energetics of gluconeogenesis from a) pyruvate b) glycerol c) alanine d) odd chain fatty acids as substrates.
6. Oxidation and energetics of linoleic acid.
7. Meistter's cycle and its associated inherited disorders.
8. Lipoprotein 'a' - structure and clinical significance.

III. Reasoning Out: **(4 x 5 = 20)**

1. Explain the mechanism of toxicity of lead and the enzymes which are inhibited by lead.
2. Explain the basis of biochemical findings in von Gierke's diseases.
3. Explain the biochemical basis of ketone 'bodies' production in starvation and DM.
4. Why pyruvate kinase deficiency is associated with hemolytic anemia?

IV. Very Short Answers: **(10 x 2 = 20)**

1. Site directed mutagenesis.
2. Fenton reaction and its significance.
3. CETP and its role.
4. Inhibitors of TCA cycle and their mechanism of action.
5. Why ATP is called a high energy compound and what is its $\Delta G^{0/}$?
6. Medium chain acyl CoA dehydrogenase deficiency disorder.
7. Sources of atoms of purine nucleus.
8. Mechanism of Vitamin E as an anti oxidant.
9. Hereditary fructose intolerance.
10. HGPRTase.

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