HEG-1603120102010200 Seat No. _____

M. Sc. (Biochemistry) (Sem. I) (CBCS) Examination

November / December – 2017

CBC - 2 : Metabolism

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 Answer briefly Any **Seven** of the following questions : **14**

(1) Describe the importance of phosphorylated intermediates in glycolysis.

(2) Write the three irreversible reactions of glycolysis.

(3) How fructose enters glycolysis?

(4) Which reactions of HMP pathway generates NADPH? Write importance of NADPH in metabolism.

(5) Name the coenzyme that is essential for transamination reactions. What is the mechanism of amino group transfer by transaminases?

(6) Explain purely ketogenic amino acids,write examples of ketogenic amino acids.

(7) What is the role of carnitine in oxidation of long chain fatty acids?

(8) Why digestion and absorption of triglycerides in small intestine is adversely affected when bile juice secretion is blocked during obstructive jaundice?

(9) Describe proton motive force in brief.

(10) What will happen to the process of mitochondrial electron transport and oxidative phosphorylation when mitochondria are incubated with high concentration of 2, 4-dinitrophenol?

2 Answer Any **Two** of the following questions in detail : **14**

(1) Why the reaction catalyzed by phosphofructokinase is called rate limiting step of glycolysis? Write in detail the process of control of glycolysis by phosphofructokinase.

(2) Give a brief account of Pyruvate dehydrogenase complex and explain the role of various factors and hormones in the regulation of this complex.

(3) Discuss how glycogen metabolism is regulated by glycogen synthase and glycogen phosphorylase.

3 Answer the following questions in detail : **14**

(1) What is oxidative deamination of amino acids? Explain with example

(2) Write short note on urea cycle using diagram and describe Krebs's bicycle (structures not required)

OR

3 Answer the following questions in detail : **14**

(3) Describe the reactions catalyzed by Alanine transaminase (ALT)and Aspartate transaminase (AST). Write the clinical significance of measuring activities of these enzymes in plasma

(4) Amino acids are not just building blocks of proteins but amino acids and their derivatives have several other important roles in human body. Justify this statement

4 Answer the following questions in detail : **14**

(1) What is ketosis? List the clinical conditions under which ketosis occurs. Outline the steps involved in formation and utilization of ketonebodies.

(2) Discuss the process of activation, transport and beta oxidation of fatty acids.

5 Answer Any **Two** of the following questions in detail : **14**

(1) Write a short note on structure and working of mitochondrial ATP synthase as molecular motor. Describe the conditions under which the same enzyme will act as ATP hydrolase?

(2) Discuss malate aspartate shuttle for transport of NADH from cytoplasm to mitochondria and give brief comparison of glycerol phosphate shuttle andmalate aspartateshuttle systems.

(3) Give a diagrammatic representation of arrangement of different complexes of mitochondrial Electron Transport Chain (ETC). Show the flow of electrons, sites of ATP formation and the sites of action of inhibitors of different complexes of ETC.

(4) Discuss denovo or salvage pathway for synthesis of pyrimidine nucleotides.
