

USBCDST-09 - Biochemistry Paper-I - Metabolism of Carbohydrates and Lipids

P. Pages : 2

Time : Three Hours



GUG/W/24/13111

Max. Marks : 50

Notes : 1. All questions are compulsory and carry equal marks.

1. Describe glyoxylate pathway in detail with its regulation. **10**

OR

a) Describe the three bypass reactions of gluconeogenesis. **2½**

b) Why second phase of glycolysis is known as energy yielding phase? **2½**

c) What is the role of the hormone insulin and glucagon in glycogen metabolism? **2½**

d) Describe the regulation of glycogenesis pathway. **2½**

2. Describe the electron transport chain ATP generating sites. **10**

OR

a) Describe the amphibolic role of TCA cycle. **2½**

b) How is acetyl CoA formed from pyruvate? **2½**

c) Describe the $F_0 - F_1$ ATPase protein of ETC. **2½**

d) Write a note on regulation of TCA cycle. **2½**

3. Discuss the pathway of beta oxidation of saturated fatty acids. **10**

OR

a) Discuss the mobilization and transport of triacylglycerols. **2½**

b) Explain why unsaturated fatty acids yield less ATP than saturated fatty acids having same chain length. **2½**

c) Discuss the pathway of Ketogenesis. **2½**

d) Write a note on peroxisomal oxidation of fatty acids. **2½**

4. Describe the synthesis of membrane phospholipids in the cell. 10

OR

- a) What is the significance of HMP shunt in lipid metabolism? 2½
- b) Give the reactions of synthesis of sphingolipids. 2½
- c) Describe the structure of fatty acid synthetase complex? 2½
- d) What are glycolipids? How are they synthesized? 2½

5. Attempt **any ten** of the following.

- a) What is the product of anaerobic glycolysis? 1
- b) Name the substrate level phosphorylation step in glycolysis? 1
- c) What is meant by galactosemia? 1
- d) Why mitochondria are known as power house of cell? 1
- e) What are uncouplers of ETC? 1
- f) Which enzyme of TCA cycle is attached to the mitochondrial inner membrane? 1
- g) Define Ketonemia. 1
- h) What is alpha and omega oxidation? 1
- i) Whose work led to the findings that fatty acids undergo beta oxidation? 1
- j) Name the pentose sugar synthesized in HMP pathway? 1
- k) Name the alcohol present in sphingolipids. 1
- l) What are polyunsaturated fatty acids? 1
