

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

P. Pages : 2

Time : Three Hours



GUG/W/22/13111

Max. Marks : 50

- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw diagrams wherever necessary.

1. Describe in detail glycogenolysis pathway. Add a note on its regulation. **10**

OR

- a) Describe all bypass reactions of gluconeogenesis. **2½**
b) Describe the glycolytic pathway with flowchart. **2½**
c) Write a note on glycogen storage diseases. **2½**
d) Briefly describe Glyoxylate pathway. **2½**

2. Describe in detail the reactions of TCA cycle. **10**

OR

- a) Write the sequence of electron flow from NADH to molecular oxygen in ETC. **2½**
b) Write a note on F_0F_1 ATPase. **2½**
c) Discuss pyruvate dehydrogenase complex. **2½**
d) Describe one example of substrate level phosphorylation. **2½**

3. Describe in detail β -oxidation of saturated fatty acid. **10**

OR

- a) Describe the β -oxidation of odd chain fatty acid. **2½**
b) Describe the role of carnitine in fatty acid oxidation. **2½**
c) Write a note on peroxisomal β -oxidation of fatty acid. **2½**
d) Describe the reactions of ketone body formation. **2½**

4. Discuss in detail the biosynthesis of saturated fatty acid. **10**

OR

- a) Describe the oxidative steps of HMP shunt **2½**
b) Describe the biosynthesis of triacylglycerol **2½**
c) Explain the mitochondrial chain elongation of fatty acids. **2½**
d) Give an account of biosynthesis of phosphatidyl choline and serine. **2½**

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

- a) Name any two regulatory enzymes of glycolytic pathway. **1**
- b) The biosynthesis of glucose from noncarbohydrate compound is called ----- **1**
(Fill in the blanks)
- c) Write one use of glyoxylate cycle **1**
- d) Define Chemiosmotic hypothesis **1**
- e) Why TCA cycle known as amphibolic cycle? **1**
- f) Name any two inhibitors of ETC. **1**
- g) Calculate the ATP yield of oxidation of 16-carbon saturated fatty acid. **1**
- h) Define ketoacidosis. **1**
- i) Name the auxiliary enzymes required for oxidation of unsaturated fatty acids. **1**
- j) Fatty acid synthase complex can synthesize fatty acids containing only ----- carbon **1**
atoms.
- k) Give the significance of HMP shunt. **1**
- l) In which compartment of the cell fatty acid synthesis occur. **1**
