# 2021

## BIOCHEMISTRY — HONOURS

**Paper : CC-6**

**Full Marks : 50**

*The figures in the margin indicate full marks.*
*Candidates are required to give their answers in their own words as far as practicable.*

**1.** Answer ***any five*** questions: 2×5

(a) What are the different types of major lipids present in bio-membrane?

(b) Name the lipid component absence of which causes respiratory distress syndrome.

(c) Name one enzyme which controls rate determining reaction of glycolysis. Write reaction catalyzed by the enzyme.

(d) Write down the significance of glyoxalate pathway.

(e) What are the components of fatty acid synthase complex?

(f) Name the enzymes which are required specifically for oxidation of unsaturated fatty acids?

(g) What is Ketoacidosis?

(h) Which enzyme is considered as the principal enzyme for the regulation of glycogenolysis?

**2.** Answer ***any two*** questions:

(a) Write the names of the enzymes in proper order that are present in the preparatory and pay off phases of glycolysis. 2½+2½

(b) (i) How the metabolism of Glycogen is controlled?

(ii) What is the difference between homolactic fermentation and alcoholic fermentation? Write the respective reactions. 2+(1½+1½)

(c) (i) Justify the amphibolic nature of citric acid cycle.

(ii) What is gluconeogenesis and how it can be regulated? Why fluorocitrate is toxic? 2+(2+1)

(d) (i) Mention at least four differences of fatty acid synthesis and breakdown pathway.

(ii) Describe how the activity of phosphatidic acid phosphatase plays an important role in different membrane lipid metabolism. 2+3

**3.** Answer ***any three*** questions:

(a) (i) What is the ω-oxidation of fatty acids? Give an example.

(ii) Elucidate the reactions involved in β oxidation of a saturated fatty acid indicating all the enzymes.

(iii) What are ecosanoids? Name the precursors.

(iv) Which compounds are referred to as Ketone bodies? How the activity of Acetyl CoA carboxylase occur to control fatty acid biosynthesis? 2+(2+1)+2+(1+2)

(b) (i) What is the major functions of cholesterol in a cell? How does cholesterol biosynthesis is regulated in a cell?

(ii) Mention the difference in phospholipid biosynthesis in prokaryotes and eukaryotes.

(iii) Which condition is known as Ketoacidosis? Name the multienzyme complex catalyzes the synthesis of Acetyl CoA from pyruvate and how the regulation of this enzyme occur.

(iv) What is cardiolipin and write down the structure and function of it? (1+2)+2+(½+½+2)+2

(c) (i) Write down the overall reaction of glyoxylate cycle. Name the two unique enzyme of glyoxylate cycle. Which organelle carry out glyoxylate cycle?

(ii) List the differences of peroxisomal β oxidation and mitochondrial β oxidation.

(iii) What is the importance of methylmalonyl CoA?

(iv) Name the precursor of prostaglandin biosynthesis and how does aspirin inhibit prostaglandin synthesis. (1+1+1)+2+1+(1+3)

(d) (i) How does fatty acid become activated before transport into mitochondria? Explain with reaction.

(ii) Name the precursor of leukotriene. Mention the function of leukotriene.

(iii) What are the different types of steroid hormones? Describe their functions. What is the precursor molecule of steroid hormone biosynthesis?

(iv) TCA cycle reactions are termed as anaplerotic reactions.—Explain. 3+(1+2)+(½+1+½)+2

———————