

2020

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 is Pasteur effect?
 - (b) Define glycogenolysis.
 - (c) How does anaerobic condition affect the rate of glycolysis?
 - (d) What is a ganglioside? Name one disease related to defect in ganglioside degradation.
 - (e) Name the precursor and function of leukotriene.
 - (f) Give two examples how radioactive isotopes are used for elucidation of metabolic pathway.
 - (g) Every metabolic pathway has at least one irreversible step which is regulated. — Explain the statement with an example.
 - (h) What is plasmalogen? Give example of a plasmalogen.
2. Answer **any two** questions :
- (a) (i) Define Gluconeogenesis. Gluconeogenesis is not a simple reversal of glycolytic pathway— explain.
 - (ii) Why pentose phosphate pathway is important in metabolism? (1+2)+2
 - (b) (i) Describe the function of phosphatidyl choline and cardiolipin.
 - (ii) Write down the importance of phosphatidyl inositol. How is it synthesised in eukaryotes? 2+(1+2)
 - (c) (i) Write down the reaction catalyzed by Pyruvate Dehydrogenase Complex (PDC). Where does PDC located in eukaryote and prokaryotes?
 - (ii) What are the differences between mitochondrial and peroxisomal β oxidation of fatty acids? (1+1)+3
 - (d) (i) What will be the effect of vitamin B12 deficiency of fatty acid oxidation?
 - (ii) Ketone bodies are major fuel in some tissues— comment. How does arsenic inhibit TCA cycle? 2+(1+2)

Please Turn Over

3. Answer *any three* questions ;

- (a) (i) How many ATP molecule will be produced from complete oxidation of one molecule of palmitic acid? Write down the final reaction.
 (ii) Describe the rate limiting step in cholesterol biosynthesis.
 (iii) What is carnitin? Elucidate its importance in β oxidation of fatty acid.
 (iv) What are the different ways glycolytic pathway is regulated? Name the potent regulator of both glycolysis and gluconeogenesis. 2+2+(1+2)+(2+1)
- (b) (i) How aspirin function to reduce pain? Low doses of aspirin reduce the chance of heart attack — explain.
 (ii) What is the first committed step in fatty acid synthesis? Give enzyme, coenzyme (if any) How is this step regulated?
 (iii) Name the major lipids present in bio-membranes.
 (iv) Name one disease related to impaired glycogen storage and give its cause. (2+1)+(2+2)+2+1
- (c) (i) What is lipidosiis? Give two examples.
 (ii) Mention the sources and fates of acetyl CoA in the body.
 (iii) What is a ceramide? Draw a structural formula of a ceramide molecule.
 (iv) Give the significance of each of the reactions catalyzed by succinyl CoA synthetase and succinic dehydrogenase. (1+2)+3+(1+1)+2
- (d) (i) What is sphingomyelin? Describe its synthesis from its precursor.
 (ii) What are the fates of pyruvate in anaerobic condition?
 (iii) How fatty acid synthesis is regulated?
 (iv) What is the cause of respiratory distress syndrome? (1+3)+2+2+2
- (e) (i) Describe the synthesis of phosphatidyl serine and triglyceride from their precursors.
 (ii) TCA cycle reactions are termed as anaplerotic reactions— explain.
 (iii) How glycogenesis is regulated in cell?
 (iv) Name the major regulatory enzymes in glycolysis and how does this regulation occur? 3+2+2+(1+2)
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