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3 (Sem–4/CBCS) ZOO HC 3

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ZOOLOGY

(Honours Core)

Paper : ZOO–HC–4036

(Biochemistry of Metabolic Processes)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions : 1×7=7

   (a) What are aquaporins ?

   (b) Which shuttle mechanism is used in the cells of skeletal muscle and brain ?

   (c) ATP is a coenzyme/isozyme/apoenzme. *(Choose the correct option)*

   (d) The major site of gluconeogenesis is _____. *(Fill in the blank)*

Contd.

(e) Palmitic acid is straight chain saturated fatty acid. *(True/False)*

(f) Give an example of glucogenic amino acid.

(g) The inner mitochondrial membrane is impermeable to H^+ ions/OH^+ ions / K^+ ions. *(Choose the correct option)*

2. Answer the following questions briefly : 2×4=8

(a) Differentiate between anabolism and catabolism.

(b) Define substrate level phosphorylation with example.

(c) Write the significance of urea cycle.

(d) Why is acetyl-CoA called as a key metabolite precursor ?

3. Answer the following questions : ***(any three)*** 5×3=15

(a) What is shuttle system ? Describe the malate aspartate shuttle system.

(b) Give an account of ketogenesis and its regulation.

(c) Write elaborately about inhibitors of electron transport system.

(d) Describe briefly the pathways of formation of glycogen.

(e) "ATP is the energy currency of the cell." Justify the statement.

4. (a) Describe elaborately the process of glycolysis. Add a note on its regulation. 8+2=10

Or

(b) Describe the pentose phosphate pathway of carbohydrate metabolism. Mention its significance. 8+2=10

5. (a) Give an account of various steps of Krebs cycle. Why this cycle is called an amphibolic pathway ? 8+2=10

Or

(b) What are various complexes of Electron Transport System (ETS) ? Describe the flow of electron through the complexes with illustration. 4+6=10

6. *(a)* Describe the process of β-oxidation of saturated fatty acid with even number of carbon atoms along with its energetics. 8+2=10

Or

(b) What is transamination ? Describe the mechanism and significance of transamination. How does it differ from deamination ? 1+6+2+1=10