

2014

ZOOLOGY

( Major )

Paper : 5.2

Full Marks : 60

Time : 3 hours

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

1. Answer the following as directed (any seven) :

(a) What is a complete protein? Give one example.

(b) Define thermodynamics.

(c) Give example of two essential fatty acids.

(d) What is the significance of  $K_m$  value?

(e) The — in chromatin are seen as 'beads-on-string' structure under electron microscope.

(Fill in the blank)

(f) The number of ATP produced when a molecule of acetyl CoA is oxidised through TCA cycle is —.

(Fill in the blank)

(g) The lipids that possess both hydrophobic and hydrophilic groups are called — lipids.

(Fill in the blank)

(h) What is  $P : O$  ratio?

(i) Define  $\beta$ -oxidation of fatty acids.

2. Write very short answers (any four) :  $2 \times 4 = 8$

(a) Explain the chemical nature of enzyme.

(b) Write about the lipid fraction of the plasma membrane.

(c) "ATP serves as the energy currency of the cell." Justify the statement.

(d) Write in sequence the components of electron transport chain.

(e) Explain entropy and enthalpy.

(f) What are amylose and amylopectin?

(g) Discuss oxidation-reduction potential as a quantitative measure of the tendency of a redox pair to lose or gain electrons.

3. Answer in short (any three) :  $5 \times 3 = 15$

(a) Describe the bicarbonate buffer system in blood.

(b) Give a brief outline classification of enzymes based on their reaction specificity.

(c) Describe the importance of free energy in living system.

(d) "Proteins occupy a central position in the architecture and functioning of living cells." Explain.

(e) Write about pH as chemical basis of biology.

(f) Discuss mitochondrion as the powerhouse of the cell.

Answer the following (any three) :  $10 \times 3 = 30$

4. Write about the classification and biological significance of carbohydrate.

5. Describe the mechanism of enzyme action.

6. Explain the different theories of oxidative phosphorylation.
7. Describe the process of biosynthesis of fatty acids.
8. Discuss the role of ATP in metabolism and in free energy production.

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