

2013

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) :

1×7=7

- (a) Define free energy.
- (b) What is oxidising agent?
- (c) Name two hydrophobic amino acids.
- (d) What is multimeric protein? Give one example.
- (e) The most common covalent bond that stabilizes the protein conformation is \_\_\_\_\_.

(Fill in the blank)

- (f) Chitin, found in insect exoskeleton and crustacean shell, consists of \_\_\_\_\_ only.

(Fill in the blank)

(g) Phosphate binds to ADP molecule by  
— bond.

(Fill in the blank)

(h) Write two most important significances  
of lipid.

(i) Define ribozyme.

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

(a) Write the concept of energy from the  
biological point of view.

(b) Discuss 'living body as a  
thermodynamic system'.

(c) Explain normal solutions of acids and  
bases.

(d) Write the chemical significance of molar  
and normal solutions.

(e) Explain enzyme as biological catalyst.

(f) Explain chemiosmotic hypothesis.

(g) Write about the transport protein of the  
membrane.

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

(a) Write the fluid mosaic model of plasma  
membrane with suitable diagram.

(b) Describe how ribosome get assembled.

(c) Describe the law of conservation of  
energy.

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- (d) Discuss about the factors controlling enzyme activity.
- (e) Write a note on biological importance of pH.
- (f) Discuss oxidative phosphorylation in mitochondria.
- (g) Discuss that equilibrium constant is a measure of directionality.

Answer the following (any three) :

10×3=30

4. Entropy and free energy are the two means to assess thermodynamic spontaneity. Discuss second law of thermodynamics in the light of the statement.
5. What do you understand by enzyme kinetics? Discuss Michaelis-Menten kinetics with suitable explanation.
6. "Electron flows from coenzymes to oxygen." Discuss mitochondrial electron transport system in the light of the above statement.
7. Describe  $\beta$ -oxidation of fatty acid.
8. Discuss, with the help of a flow chart, the ornithine cycle and write about its significance.

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