

2019

ZOOLOGY

(Major)

Paper : 5.2

(**Biochemistry and Bioenergetics**)

Full Marks : 60

Time : 3 hours

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

1. Answer the following as directed : $1 \times 7 = 7$

(a) What is proton-motive force?

(b) The pH at which a molecule has no net electric charge is called _____.

(Fill in the blank)

(c) Define free energy.

(d) Raffinose found in bean, cabbage, etc, is a form of _____.

(Fill in the blank)

(e) The four-fused ring structure called the cyclopentanoperhydrophenanthrene nucleus is found in

(i) steroids

(ii) oligosaccharides

(iii) purine

(iv) albumin

(Choose the correct option)

(f) Hydrolysis of fat by alkali is called _____.
(Fill in the blank)

(g) What are essential amino acids?

2. Write very brief answer of the following
(any four) : $2 \times 4 = 8$

(a) What are zymase? Give an example.

(b) Name the different classes of enzymes.

(c) Write briefly on different storage lipids.

(d) Differentiate between isoenzyme and alloenzyme.

(e) Define nucleosomes.

(f) What is competitive inhibition?

3. Answer the following briefly (any three) :
 $5 \times 3 = 15$

(a) Describe the TCA cycle.

(b) Enumerate on the general properties of enzymes.

- (c) Classify proteins based on functions.
- (d) Describe the process of biogenesis of ribosomes.
- (e) What is active site of enzyme? State some important characteristics of active site.

4. Answer the following questions : 10×3=30

- (a) What is oxidative phosphorylation? Describe the process of oxidative phosphorylation in the hydrogen transport system. 2+8=10

Or

Discuss how the laws of thermodynamics are applicable to biological system. 10

- (b) Discuss in detail the functions of plasma membrane. 10

Or

What is urea? Explain the chemical reactions involved in formation of urea in the body. 1+9=10

(4)

- (c) Define carbohydrates. Classify them and describe their properties with example. 1+9=10

Or

Describe the biosynthetic pathways of fatty acids. 10
