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3 (Sem-3/CBCS) ZOO HC 3

2022

**ZOOLOGY**

(Honours)

Paper : ZOO-HC-3036

**( Fundamentals of Biochemistry )**

Full Marks : 60

Time : Three hours

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

1. Answer the following questions : **(any seven)**  
1×7=7

(a) \_\_\_\_\_ types of bonds are present in oligosaccharides and polysaccharides.  
(Fill in the blank)

(b) What is saponification number ?

(c) Tertiary structure of proteins is stabilized by \_\_\_\_\_ bonds.  
(Fill in the blank)

Contd.

- (d) \_\_\_\_\_ protein help in blood clotting.  
(Fill in the blank)
- (e) Who coined the term enzyme for the first time ?
- (f) Which enzyme convert glucose to ethyl alcohol ?
- (g) \_\_\_\_\_ immunoglobulin can pass through the placenta. (Fill in the blank)
- (h) Disulphide bonds are formed between
- (i) Cysteine residues that are close together
  - (ii) Cystine residues that are close together
  - (iii) Proline residues that are close together
  - (iv) Tyrosine residues that are close together
- (Choose the correct option)



- (i) What are prions ?
- (j) Name *two* essential amino acids.
- (k) Name *one* glycogenic and *one* ketogenic amino acid.
- (l) What are waxes ?

2. Answer the following questions : (**any four**)

2×4=8

- (a) What is meant by amphipathic nature of phospholipids ?
- (b) "Proteins are biological polymers." Explain.
- (c) Mention the significance of Chargaff's rule.
- (d) Explain cooperativity in allosteric enzymes.
- (e) Write the difference between holoenzyme and isoenzymes.

(f) State the function of phospholipid.

(g) What is protein denaturation ?

(h) Briefly state the structure of immunoglobulin molecule.

3. Answer the following questions : **(any three)**

5×3=15

(a) How does an enzyme work ? Mention the characteristics of allosteric enzymes with proper illustrations.

(b) Explain the different types of enzyme regulation with proper examples.

(c) What is Cot curve ? Mention the significance of Cot curve. 2+3=5

(d) What is non coding RNA ? Mention the significance with few examples.



- (e) What are steroids ? Describe the major steroids of biological significance.
- (f) State the biological function of immunoglobulin types.
- (g) Why is sucrose a non-reducing sugar ? Explain the composition of glycogen.
- (h) What is Ramachandran plot ? Briefly describe its importance with proper illustrations.

4. Answer the following questions : **(any three)**

10×3=30

- (a) Discuss the structure and the biological significance of disaccharide. Define polysaccharide and describe the structure of *three* biologically important homopolysaccharide. 5+5=10

- (b) Classify lipids with examples. Describe various types of saturated and unsaturated fatty acids.  $7+3=10$
- (c) Classify proteins on the basis of chemical composition, shape and solubility. Give examples of each classes.
- (d) Describe the structure and function of different types of RNA.
- (e) What is enzyme inhibition ? Explain different types of enzyme inhibition.
- (f) Discuss enzyme classification with examples.
- (g) What are terpenes ? Discuss the biological importance of different types of terpenes with proper examples.

$2+8=10$



(h) Define glycoconjugates. What are its classes and mention characteristics of each class with examples ? 2+8=10

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