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3 (Sem-3/CBCS) ZOO HC 3

2023

ZOOLOGY

(Honours Core)

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 : $1 \times 7 = 7$
 - (a) Which bond stabilize the secondary structure of protein ?
 - (i) Covalent bond
 - (ii) Hydrogen bond
 - (iii) Hydrophobic bond
 - (iv) van der Waals forces
 - (b) Which of the following amino acid carries a net positive charge at the physiological pH ?
 - (i) Valine
 - (ii) Isoleucine
 - (iii) Lysine
 - (iv) None of the above

Contd.

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(c) The protein part of the enzyme is known as

- (i) Apoenzyme
- (ii) Holoenzyme
- (iii) Isoenzyme
- (iv) Cofactor

(d) Which of the following statement is true about t_m ?

- (i) The higher the content of $G \equiv Cbp$, the lower the t_m .
- (ii) The higher the content of $G \equiv Cbp$, the higher the t_m .
- (iii) The higher the content of $A = Tbp$, the higher the t_m .
- (iv) It is termed as renaturation temperature.

(e) The disaccharide lactose is composed of

- (i) glucose and sucrose
- (ii) glucose and ribose
- (iii) glucose and fructose
- (iv) glucose and galactose

(f) Which of the following is the example of derived lipids ?

- (i) Terpenes
- (ii) Steroids

(iii) Carotenoids

(iv) All of the above

(g) Antibodies recognize antigens

- (i) by neutralizing pathogens within host cells
- (ii) by covalent binding to specific epitopes
- (iii) by their hypervariable regions
- (iv) All of the above

2. Answer the following questions : $2 \times 4 = 8$

- (a) Write the difference between nucleosides and nucleotides.
- (b) Write the significance of k_m
- (c) What is protein denaturation ?
- (d) What is reducing sugar ? Give one example.

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

- (a) What are glycoconjugates ? Write its biological significance. $2 + 3 = 5$
- (b) Draw and briefly state the structure of immunoglobulin molecule. $2 + 3 = 5$
- (c) What is cot curves ? State its significance. $1 + 4 = 5$

(d) What is enzyme inhibition ? Write briefly about different types of enzyme inhibition. $1+4=5$

(e) Write the difference between simple protein and conjugate protein.

4. (a) Derive Michaelis-Menten equation for single substrate enzyme catalyzed reaction. 10

Or

(b) Discuss the different classes of carbohydrate with example and mention its biological significance.

5. (a) What are terpenes ? Discuss the biological importance of different types of terpenes with suitable example. $2+8=10$

Or

(b) Describe the classification of amino acid. Write the difference between essential and non-essential amino acid. $7+3=10$

6. (a) What are the bonds involved in stabilizing the protein structure ? Discuss the various level of organization of protein. $3+7=10$

Or

(b) Describe the various classes of immunoglobulin and state its function. 10