2023

ZOOLOGY

Paper : ZOOHC3076

(Fundamentals of Biochemistry)

Full Marks : 60

Pass Marks : 24

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct option of the following (any *five*) : 1×5=5

   (a) The biochemical test employed to identify reducing nature of sugar is

      (i) Molich's test

      (ii) Barfoed's test

      (iii) Osazone test

      (iv) Seliwanoff's test

(Turn Over)

(b) Basicity of an amino acid depends on the presence of

   (i) —CHO group

   (ii) —COOH group

   (iii) —NH group

   (iv) —CO group

(c) Which of the following fatty acids is an essential fatty acid?

   (i) Stearic acid

   (ii) Palmitic acid

   (iii) Linoleic acid

   (iv) Oleic acid

(d) Turnover number of carbonic anhydrase is

   (i) 35×10^6 min^{-1}

   (ii) 36×10^6 min^{-1}

   (iii) 35×10^5 min^{-1}

   (iv) 36×10^5 min^{-1}

(e) The ability of a sugar molecule to rotate plane polarised light into clockwise direction is called

   (i) levorotatory

   (ii) dextrorotatory

   (iii) levo-dextrorotatory

   (iv) muta-rotatory

(f) Unsaturated fatty acid having alkyl chain on the same side is called

   (i) cis-configuration

   (ii) trans-configuration

   (iii) cis-trans-configuration

   (iv) cons-configuration

(g) Which of the following nitrogenous base pairings is proper?

   (i) A   T

   (ii) G   C

   (iii) T   G

   (iv) C   G

(h) The hinge region of the antibody is located in between the heavy chain

   (i) CH_1 and CH_2

   (ii) CH_3 and CH_4

   (iii) CH_2 and CH_3

   (iv) CH_1 and CH_3

(i) In case of ribose-purine connection, the type of linkage is

   (i) C_1-N_1

   (ii) C_1-N_9

   (iii) C_1-N_5

   (iv) C_1-N_7

(j) One molecule of neutral fat on hydrolysis produces

   (i) 1 glycerol+2 fatty acids

   (ii) 1 glycerol+3 fatty acids

   (iii) 1 glycerol+1 fatty acid

   (iv) 2 glycerols+3 fatty acids

2. Answer any *five* of the following questions (short answer-type) : 2×5=10

   (a) What are glycogenic amino acids?

   (b) Give the absolute configuration of glyceraldehyde.

   (c) State how pepsin is converted into an active form.

   (d) What is phosphorylation?

   (e) How are enzymes different from inorganic catalysts?

   (f) What is non-coding RNA?

   (g) Write the difference between albumins and histones.

3. Answer any *five* of the following questions : 5×5=25

   (a) Describe lipoprotein briefly with its physiological significance.

   (b) Describe the changes occured during denaturation of DNA helix.

   (c) Write a brief note on the conjugated protein.

   (d) What is antibody? Discuss its structure in brief.

(e) Write a brief note on the mucopolysaccharide.

(f) Describe the structure and functions of t-RNA.

(g) Classify enzyme as per the recomendations of the International Union of Biochemistry (IUB, 1961).

(h) Discuss the allosteric regulations of enzyme action.

(i) Describe the effects of substrate concentration on enzyme activity.

4. Answer any *two* of the following questions :

10×2=20

(a) What are glycoconjugates? Describe glycolipids in brief. Write at least three biological roles of glycolipid. 1+6+3=10

(b) What is α -amino acid? Describe different types of amino acids based on their chemical nature. 2+8=10

(c) What is nucleotide? Describe the components of nucleotide. 2+8=10

(d) Derive Michaelis-Menten equation. State in what context the equation is useful. 7+3=10

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