

Bs/ZOO/M4

2024

(FYUGP)

(4th Semester)

ZOOLOGY

(Minor)

Paper Code : ZOO/M4

(Fundamentals of Biochemistry)

Full Marks : 75

Pass Marks : 40%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

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

1. What are carbohydrates? Classify them with relevant structural examples. 1+9=10

Or

Explain in detail the process involved in gluconeogenesis. 10

24L/918a

(Turn Over)

2. Write on the structures and properties of any two of the following : $5 \times 2 = 10$

(a) tri-acylglycerol

(b) phospholipids

(c) glycolipids

Or

What are lipids? Give an account on the classification of lipids. $1+9=10$

3. Describe the general properties of α -amino acids. Write a note on its physiological importance. $5+5=10$

Or

Write a detailed note on the levels of organization in protein with appropriate diagram. 10

4. What are nucleic acids? Describe the structure of purines and pyrimidines with appropriate diagram. $1+9=10$

Or

Give a detailed account on the types of DNA. 10

(3)

5. What are enzymes? Explain the mechanism involved in enzyme action with relevant diagram. 1+9=10

Or

Derive the Michaelis-Menten equation. 10

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(**Fundamentals of Biochemistry**)

(PART : A—OBJECTIVE)

(Marks : 25)

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I. Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10

1. The basic unit that makes up all the carbohydrates is

(a) monosaccharide ()

(b) disaccharide ()

(c) trisaccharide ()

(d) saccharide ()

2. Which of the following is incorrect about natural polysaccharides?

(a) Cellulose and pectin are plant polysaccharides ()

(b) Glycogen and chitin are animal polysaccharides ()

(c) Dextran and xanthan are microbe-based polysaccharides ()

(d) Spirulan and agarose are non-algae polysaccharides ()

3. Glycerol is a

(a) 3-carbon sugar alcohol ()

(b) 2-carbon sugar polyol ()

(c) fatty acid ()

(d) All of the above ()

4. Which of the following statements is false?

(a) Apolipoproteins mainly function as carrier proteins. ()

(b) Apolipoproteins also serve as enzyme cofactors ()

(c) Chylomicrons are large triglyceride-rich particle ()

(d) HDL cholesterol is considered as bad cholesterol ()

5. Essential amino acids are

- (a) synthesized by our body ()
- (b) histidine, leucine, lysine, valine, etc. ()
- (c) present in plant food such as edamame and tofu ()
- (d) only (b) and (c) ()

6. The number of amino acids required for human protein synthesis are

- (a) 30 ()
- (b) 20 ()
- (c) 10 ()
- (d) 6 ()

7. RNA is composed of which pyrimidine?

- (a) Cytosine and thymine ()
- (b) Cytosine and uracil ()
- (c) Both (a) and (b) ()
- (d) None of the above ()

8. DNA denaturation is a process of

- (a) nick formation in ssDNA ()
- (b) DNA hybridization ()
- (c) separating dsDNA into single-strands ()
- (d) systematic characterization ()

9. Hydrolases

- (a) catalyze hydrolytic reactions ()
- (b) include esterases, lipases, nitrilases, proteases ()
- (c) react only with hydrogen ()
- (d) Only (a) and (b) ()

10. Enzyme catalyzed reactions depend on

- (a) substrate concentration and temperature ()
- (b) pressure and inhibitor ()
- (c) pH and water ()
- (d) All of the above ()

II. Match the following :

1×5=5

List—I

List—II

- | | |
|--------------------|------------------------------------|
| 1. Gluconeogenesis | (a) different amino acid sequences |
| 2. Lipidoses | (b) reverse transcriptase |
| 3. Haemoglobin | (c) quaternary protein structure |
| 4. cDNA | (d) absence or defect of enzymes |
| 5. Isozyme | (e) non-carbohydrate precursors |

III. Write short notes on any *five* of the following : $2 \times 5 = 10$

1. Role of carbohydrates

(7)

2. Schematic presentation of lipid classification

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3. Stability of protein structure

4. Cot curves

5. Hypochromaticity of DNA

6. Specificity of enzyme action

7. Concept of K_m and V_{max}
