2022/12

SET A

B.Sc. ZOOLOGY
THIRD SEMESTER
FUNDAMENTALS OF BIOCHEMISTRY
BSZ-303

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Solution that have more hydrogen ion than water are called as:
   a. Acid b. Base
   c. Buffer d. Salt
2. The number that describe the acidity of a particular molecule is called as:
   a. pH b. Buffer
   c. pKa d. Alkali
3. On the basis of titration where a pH indictor shows equivalence, that state is called as:
   a. Neutral state b. Transition state
   c. Alkaline state d. Acidic state
4. A mixture of weak acid and conjugate base is called as:
   a. Alkaline solution b. Acidic solution
   c. Inorganic buffer d. pH indicator
5. The numbers of substrate molecule converted into product per active site of enzyme in one second is called:
   a. Turnover number b. ½ Vmax
   c. Km d. Vmax
6. When fat is shaken with water and alkali it forms:
   a. Soap b. Emulsion
   c. Foam d. All of the above
7. The distance between one base pair to another in a DNA molecule is:
   a. 20 A° b. 34 A°
   c. 3.4 A° d. 2 A°
8. To inhibit an enzyme action uncompetitive enzyme inhibitor binds with:
   a. Active site of the enzyme b. Substrate body
   c. Enzyme's body d. None of the above
9. If the product of an enzymatic step can inhibit the earlier step of that enzyme, then the inhibition is called as:
   a. Competitive inhibition b. Uncompetitive inhibition
   c. Non competitive inhibition d. None of the above
10. Which one is the vegetable enzyme?
    a. Papain b. Pepsin
    c. Ptyalin d. Erepsin

11. Glycolysis occurs in:
    a. Cytoplasm
    b. Nucleus
    c. Mitochondria
    d. Ribosome

12. High concentration of Glucose 6 phosphate is inhibitory to:
    a. Pyruvate kinase
    b. Hexokinase
    c. Phosphofructokinase I
    d. All of the above

13. Number of CO_2 molecules evolved in glycolysis is:
    a. 1
    b. 2
    c. 3
    d. 0

14. From each molecule of glucose, how many times does the TCA cycle occur?
    a. 1
    b. 2
    c. 3
    d. 4

15. The product formed in the first substrate level phosphorylation in glycolysis is:
    a. Pyruvate
    b. 3-phosphoglycerate
    c. 1, 3-bisphosphoglycerate
    d. 2-phosphoglycerate

16. Which process transports the acyl CoA to mitochondria?
    a. Simple diffusion
    b. Passive transport
    c. Carnitine transport
    d. Active transport

17. The free fatty acids are transported by blood association with:
    a. Albumin
    b. A fatty acid binding protein
    c. β-lipoprotein
    d. None of the above

18. Where are the enzymes for β-oxidation present?
    a. Nucleus
    b. Cytosol
    c. Golgi apparatus
    d. Mitochondria

19. Which of the following is the first complex (complex I) of ETS?
    a. Cytochrome aa_3
    b. Cytochrome bc1
    c. NADH dehydrogenase
    d. ATP synthasese

20. For its activity, pyruvate decarboxylase requires:
    a. Mg^{2+}
    b. Ca^{2+}
    c. H^+
    d. Na^+

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(Descriptive)

Time : 2 hr. 30 mins. Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Describe glycolysis. What is the significance of glycolysis? 8+2=10
2. Explain TCA cycle. How many ATP produced from one TCA cycle? 8+2=10
3. What do you mean by pH and pKa, describe briefly. Mention the formulas used to calculate pH and pKa. Describe 5 differences between acid and base. 4+1+5=10
4. Classify nucleic acid. Describe the structure of Nucleic acid. Mention its significance. 4+3+3=10
5. Describe the nature of enzymes. Write briefly about enzyme inhibition. 5+5=10
6. Describe about the different classes of amino acids with diagram. What are essential and non-essential amino acids? Describe with examples. 5+5=10
7. Where oxidation of fatty acid takes place? What are the four steps of β-oxidation of fatty acid? How many ATP produced from 14-Carbon fatty acid? 1+7+2=10
8. Explain Electron Transport System (ETS) with suitable diagram. 10

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