REV-01
MSZ/09/12

2022/12

SET B

M.Sc. ZOOLOGY
THIRD SEMESTER
ANIMAL PHYSIOLOGY AND BIOCHEMISTRY-I
MSZ-303 E

[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. In the reaction, A + C ⟶ B + D + heat,
   a. 'A + C' is an endergonic reaction and 'B + C + heat' is an exergonic reaction
   b. 'A + C' is an exergonic reaction and 'B + C + heat' is an endergonic reaction
   c. Both are exergonic reactions
   d. Both are endergonic reactions

2. The greatest quantitative source of phosphate in aerobic organisms comes from:
   a. Oxidative phosphorylation
   b. Glycolysis
   c. Citric acid cycle
   d. None of the above

3. The substrate concentration at which ½ Vmax is achieved is called as:
   a. K_{cat}
   b. K_m
   c. V_o
   d. None of the above

4. The enzyme involved in conversion of ribulose – 5- phosphate to ribose – 5 - phosphate is:
   a. Ribulose-5 phosphate isomerase
   b. Ribulose-5-phosphate epimerase
   c. Transaldolase
   d. Transketolase

5. Catabolic pathways are:
   a. Divergent
   b. Convergent
   c. Cyclic
   d. Non-cyclic

6. Bipolar cell and ganglion cells are:
   a. Neurons of visual pathway
   b. Photosensitive cell
   c. Light absorbing cells
   d. None of the above

7. Which organs are connected by Limb leads of ECG?
   a. Right arm, left arm, left leg
   b. Right arm, left arm, right leg
   c. Right arm, right leg, left leg
   d. Left arm, right leg, left leg

8. A person may suffer from nitrogen necrosis:
   a. At high altitude
   b. In deep sea
   c. During birth
   d. During exercise

9. What is largely responsible for the negative resting membrane potential (around -70 mV) in a neuron?
   a. Axonal insulation by Schwann cells
   b. Voltage-gated sodium channels opening
   c. Action potential
   d. Potassium leak currents

10. In smooth muscle, when the cytoplasmic calcium (Ca2+) concentration is elevated, Ca2+ binds to which regulatory protein in order to initiate muscle contraction?
    a. Actin
    b. Myosin
    c. Calmodulin
    d. All of the above

11. During covalent bond formation, electrons are .....between the atoms.
    a. Shared
    b. Transferred
    c. Donated
    d. None of the above

12. Which of these is the primary role of Hsp 70 family of chaperones?
    a. Protein denaturation
    b. Protein renaturation
    c. Protein folding
    d. Protein misfolding

13. Match the following:

A) Cystic fibrosis	(i) Protein denaturation
B) Alzheimer disease	(ii) Interchangeof disulfide bonds
C) Heat and extreme pH	(iii) Absence of correctly folded proteins
D) Protein disulfide isomerase	(iv) Aggregation of misfolded proteins

    a. A – (i), B – (ii), C – (iii), D – (iv)
    b. A – (ii), B – (i), C – (iv), D – (iii)
    c. A – (iv), B – (iii), C – (ii), D – (i)
    d. A – (iii), B – (iv), C – (i), D – (ii)

14. Which of the following is correct?
    a. Velocity =-d(S)/dt=d(P)/dt
    b. E+S=ES=E+P
    c. Both a and b
    d. None of the above

15. The products formed in the pentose phosphate pathway are:
    a. NADPH, Glutathione and Ribose
    b. NADH, Glutathione and Ribulose
    c. NADPH, Glutathione and Ribulose
    d. NADH, Glutathione and Ribose

16. The glands which secret mucous into the olfactory membrane is:
    a. Mucous gland
    b. Bowman gland
    c. Amacrine gland
    d. Glomerulus

17. Select the immunoglobulin which is present in saliva of mammals.
    a. IgA
    b. IgG
    c. IgD
    d. IgM

18. Part of nephric tubule having aquaporin – I is:
    a. Descending limb of Henle's loop
    b. Ascending limb of Henle's loop
    c. Collecting duct
    d. All of these

19. Decreased ability of tissues to utilize oxygen themselves is called:
    a. Hypoxic hypoxia
    b. Anaemic hypoxia
    c. Stagnant hypoxia
    d. Histotoxic hypoxia

20. Where does the stimulation of muscle fibers by a motor neuron take place?
    a. Myofibril
    b. Neuromuscular junction
    c. Transverse tubules
    d. Sarcoplasmic reticulum

-- --- --

(Descriptive)

Time : 2 hr. 30 mins. Marks : 50

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

1. Deduce the Michaelis-Menten equation on enzyme kinetics. Write briefly the mechanism of action of enzyme on Bisubstrate reactions. 6+4=10

2. Why is post translational processing of protein important? Explain the different types of post translational processing of protein. 3+7=10

3. What is intermediary metabolism? Define catabolism and anabolism with example. Describe the linkage among metabolic reaction with proper diagram. 1+4+5=10

4. What do you mean by Enzyme activator and Inhibitor? Describe about 4 enzyme activators and 4 enzyme inhibitors with example. 2+4+4=10

5. Draw a labelled diagram of a human ear including cochlea. Describe the processing mechanism of auditory stimuli and mention the role of organ of corti in hearing mechanism. 3+4+3=10

6. Explain the various events involved in haemostatic mechanism. Add a note on the role of endothelium in antihaemostatic process. 6+4=10

7. What are the sources of ATP for muscle contraction? Describe in detail the contraction mechanism of smooth muscle with appropriate diagram. 3+7=10

8. Write brief note on *any two* of the following: 5+5=10
   a) Composition and regulation of gastric juice secretion.
   b) Hormonal control of urine volume.
   c) Respiratory adjustment at high altitude.

= = *** = =