

## **CORE – X (BIOCHEMISTRY OF METABOLIC PROCESSES)**

### **A. Answer the following questions [1]**

**1. Which of the following mineral element facilitates insulin binding to cell receptor site?**

- a) Zinc
- b) Selenium
- c) Copper
- d) Chromium

**2. Which of the following is a folate analog?**

- a) Carnosine
- b) Aniserine
- c) Azaserine
- d) Methotrexate

**3. ATP concentration is maintained relatively constant during muscle contraction by**

- a) Increasing the metabolic activity
- b) The action of creatine phosphokinase
- c) The action of adenylate kinase
- d) all of the above

**4. The cone of retina**

- a) Are responsible for colour vision
- b) Are much more numerous than rods
- c) Have red, blue and green light- sensitive pigment that differ because of small difference in the retinal prosthetic group
- d) Do not use transducin in signal transduction

**5. The C 21 steroid hormones include**

- a) Vitamin D3
- b) Estradiol
- c) Testosterone
- d) Aldosterone

**6. Which of the following oxidoreductases form hydrogen peroxide as one of its products?**

- a) Oxidases
- b) Peroxidases
- c) Dehydrogenases
- d) Oxygenases

**7. The major protein responsible for the storage of iron**

- a) Ferredoxin
- b) Ferretin

- c) Hemosiderine
- d) Transferine

**8. Which of the following is an excitatory neurotransmitter?**

- a) Glutamate
- b) GABA
- c) Glycine
- d) Taurine

**9. Which of the following is not involved in enzyme regulation?**

- a) Covalent modification
- b) Competitive inhibition
- c) Suicide inhibition
- d) Allosteric activation

**10. The preferred substrate for hexokinase is**

- a) Glucose
- b) Fructose
- c) Glucose and fructose are equally preferred
- d) None of these

### **Answers**

- 1. d) Chromium
- 2. d) Methotrexate
- 3. d) all of the above
- 4. a) Are responsible for colour vision
- 5. d) Aldosterone
- 6. a) Oxidases
- 7. b) Ferretin
- 8. a) Glutamate
- 9. c) Suicide inhibition
- 10. a) Glucose

**B. Answer the following questions in 2-3 sentences. [1.5]**

- 1) Differentiate between anabolism and catabolism.
- 2) What is the difference between glucogenic and ketogenic amino acids?
- 3) State about mobile electron carriers.
- 4) Name the complexes of ETC.
- 5) Give the significance of glycogen metabolism.
- 6) What is glycogenin.
- 7) What is branching and debranching enzyme.

- 8) What is the significance of gluconeogenesis?
- 9) Give the other names of pentose phosphate pathway.
- 10) What are the two phases of pentose phosphate pathway?
- 11) What is beta-oxidation of fatty acids?
- 12) What is the difference between transamination and deamination?

**C. Answer the following questions in 75 words. [2]**

- 1) What do you understand by compartmentalization of metabolic pathways?
- 2) What are the stages of catabolism?
- 3) What are coupled reactions?
- 4) What are reducing equivalents?
- 5) What are cofactors?
- 6) Differentiate between malate-aspartate shuttle and glycerol-3-phosphate shuttle.
- 7) How is glycolysis regulated?
- 8) Give significance of TCA cycle.
- 9) What is the importance of pentose phosphate pathway?
- 10) Write a short note on transaminases.
- 11) What is the significance of transamination?
- 12) What are the different types of deamination?
- 13) What is the site of urea cycle? Add a note on significance of urea cycle.
- 14) Give the energetics of glycolysis.
- 15) What are redox systems?

**D. Answer the following questions in 500 words. [6]**

- 1) Give a detailed account on shuttle systems and membrane transporters.
- 2) State about ATP as energy currency of cell.
- 3) What are intermediary metabolism and regulatory mechanisms?
- 4) Explain glycolysis.
- 5) State about citric acid cycle.
- 6) Give a detailed account on pentose phosphate pathway.
- 7) Write about gluconeogenesis.
- 8) What is glycogenolysis?
- 9) State about glycogenesis.
- 10) Write about  $\beta$ -oxidation and omega-oxidation of saturated fatty acids with even and odd no. of carbon atoms.
- 11) Explain ketogenesis.
- 12) What do you know about biosynthesis of palmitic acid?
- 13) Describe transamination.
- 14) Give a detailed account on deamination?
- 15) What is urea cycle? Give steps of urea cycle.
- 16) What is the fate of C-skeleton of glucogenic and ketogenic amino acids?
- 17) Explain mitochondrial respiratory chain.
- 18) State about inhibitors and uncouplers of Electron Transport System.