D 21547 **(Pages : 3)** **Name.....**

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION

SEPTEMBER/OCTOBER 2011

(CCSS)

Biochemistry—Complementary

BC 3C 09—ENZYMOLOGY AND METABOLISM

Time : Three Hours Maximum Weightage : 30

I. Answer *all* the 12 questions :

1. Chlorophyll consists of a porphyrin ring that contains a single atom of :

(a) Manganese. (b) Magnesium.

(c) Phosphorus. (d) Nitrogen.

2. Mitochondrial ATP synthesis requires :

(a) [H+] gradient.

(b) A membrane potential.

(c) An intact inner mitochondrial membrane.

(d) All the three.

3. The reactants of the Calvin cycle are :

(a) H_2O, ATP,and NADPH.

(b) CO_2, ADP,and NADP+.

(c) CO_2, ATP,and NADPH.

(d) H_2O, ATP,and NADPH.

4. During glycolysis the following reaction requires NAD+ :

(a) Alcohol dehydrogenase.

(b) Glyceraldehyde-3-phosphate dehydrogenase.

(c) Lactate dehydrogenase.

(d) Pyruvate dehydrogenase.

5. Which of the following factors can affect enzyme activity

(a) Temperature.

(b) pH.

(c) The presence of certain metal ions.

(d) All of the above.

Turn over

6. The energy for all forms of muscle contraction is provided by :
   (a) ATP. (b) ADP.
   (c) Phosphocreatine. (d) Oxidative phosphorylation.
7. The enzymes of glycolysis are located in the :
   (a) Mitochondrion. (b) Nucleus.
   (c) Cytoplasm. (d) Lysosomes.
8. The synthesis of glucose from lactate, glycerol, or amino acids is called :
   (a) Glycogenolysis. (b) Glycolysis.
   (c) Lipolysis. (d) Gluconeogenesis.
9. Coenzyme involved in carboxylation reaction is :
   (a) TPP. (b) Pyridoxal phosphate.
   (c) Biotin. (d) NADP.
10. Enzyme accelerate reaction by :
   (a) Increasing Ea. (b) Decreasing Ea.
   (c) Increasing A H. (d) Increasing A G.
11. The enzyme is more efficient in catalysis when Km value is :
   (a) Low. (b) High.
   (c) Zero. (d) Infinity.
12. End product of alcoholic fermentation of glucose is :
   (a) Ethanol and water. (b) Ethanol and CO_2.
   (c) Acetone and water. (d) Acetone and CO_2.

(12 x = 3 weightage)

II. Answer all the *nine* questions :

13. Write down Michaelis- Menten equation.
14. Write down an example for optical specificity of an enzyme.
15. What are zymogens ?
16. What are high energy compounds ?
17. What is the action of glycogen synthase ?
18. Name an important industrial enzyme and give its application.
19. Differentiate between aerobic and anaerobic oxidation.
20. What is the difference between apoenzyme and holoenzyme ?
21. Name the most important photosynthetic pigments.

(9 x 1 = 9 weightage)

III. Answer any *five* questions :

22. Outline alcoholic fermentation.
23. Draw Lineweaver Burk plot and indicate how it can be used to calculate Vmax and Km.
24. Describe the effect of pH and temperature on the velocity of enzymes.
25. What are the features of competitive inhibition ?
26. What is the importance of pentose phosphate pathway ?
27. Differentiate between substrate level oxidation and oxidative phosphorylation.
28. Describe the glyoxylate cycle.

(5 x 2 = 10 weightage)

IV. Answer any *two* questions :

29. Describe the reactions of glycolysis and mark the irreversible steps in glycolysis.
30. Describe the arrangements of complexes in the electron transport chain and mark the sites of ATP formation in the chain.
31. Describe the sliding filament theory of muscle contraction.

(2 x 4 = 8 weightage)