

**THIRD SEMESTER B.Sc. DEGREE EXAMINATION
NOVEMBER 2012**

(CCSS)

Biochemistry

BC 3C 09 – ENZYMOLOGY AND METABOLISM

Time : Three Hours

Maximum : 30 Weightage

I. Answer all twelve questions

1. In photosynthesis

- (a) No ATP is formed. (b) ATP is formed in initial stages.
(c) Water is not involved. (d) Oxygen comes from carbon di oxide.

2. In which of the following processes light energy is converted into chemical energy

- (a) Digestion. (b) Respiration.
(c) Fermentation. (d) Photosynthesis.

3. How does the Calvin cycle differ from the light-dependent reactions?

- (a) It takes place in the stroma. (b) It takes place in chloroplasts.
(c) It requires light. (d) It takes place in the thylakoid.

4. The site where enzyme catalyzed reaction takes place is called ?

- (a) Active site. (b) Catalytic site.
(c) Activity site.. (d) Functional site.

. Which enzymes are said to follow Michaelis-Menten kinetics?

- (a) Enzymes which show parabolic dependence of rate of reaction and substrate.
(b) Enzymes which show circular dependence of rate of reaction and substrate.
(c) Enzymes which show hyperbolic dependence of rate of reaction and substrate.
(d) None of the above.

6. The hexose monophosphate shunt pathway is utilized for all of the following EXCEPT which one?

- (a) Formation of ATP. (b) Generation of NADPH.
(c) Ribose-5-phosphate synthesis. (d) Ribose-5-phosphate degradation.

Turn over

7. The two principal contractile proteins found in skeletal muscle are ;
- (a) Actin and troponin. (b) Actin and myosin.
(c) Troponin and tropomyosin. (d) Myosin and tropomyosin.
8. 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.
9. Which is the wrong statement about allosteric enzyme?
- (a) Exhibits anomalous kinetic.
(b) Generally oligomer in nature.
(c) Regulated by modulators.
(d) Dissociation of subunits does not affect the regulatory action.

Fill in the blanks ;

10. Enzymes that catalyse removal of groups from substrates without addition or removal of water are called _____
11. Glucose 6 phosphate is converted to glucose in the liver by the enzyme _____
12. Pyruvate is reduced to lactate by _____

(12 x $\frac{1}{4}$ = 3 weightage)

II. Answer all *nine* questions

13. A student exposed two plants to only red light and two plants to only green light. Which plants should grow better? Why?
14. Draw Lineweaver Burk Plot and mark K_m and V_{max} .
15. What are high energy compounds? Give examples.
16. Define Coenzyme and give examples.
17. What is substrate level phosphorylation?
18. What is the action of glycogen phosphorylase?
19. What do you mean by gluconeogenesis?
20. Name an important industrial enzyme and its application.
21. What do you mean by competitive inhibition?

(9 x 1 = 9 weightage)

III. Answer any *five* questions :

22. Name the major digestive enzymes of carbohydrates and describe their functions.

23. How are enzymes classified? Give examples.

24. Describe the structure of Mitochondria.

25. Explain glycogen synthesis.

26. State Michaelis equation and write down the significance of K_m value.

27. Describe glyoxylate cycle.

28. Write down the reactions catalysed by the following enzymes :

(a) Aconitase.

(b) Pyruvate dehydrogenase.

(5 x 2 = 10 weightage)

IV. Answer any *two* questions

29. Describe the reactions of glycolysis and write down the number of ATP molecules produced under anaerobic conditions.

30. Describe how the following factors affect the velocity of an enzyme catalysed reaction :

(a) Substrate concentration.

(b) pH•

(c) Temperature.

31.. Write an essay on muscle contraction.

(2 x 4 = 8 weightage)