D 92299 (Pages : 4) Name.....................................

Reg. No.............................

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

(CUCBCSS—UG)

Complementary Course

BCH 3C 03—BIOCHEMISTRY III

Time : Three Hours

Maximum : 80 Marks

Part A

*Answer **all** questions.*
Each question carries 1 mark.

1. V_{max} of an enzyme may be affected by :

    (a) pH. (b) Temperature.

    (c) Non-competitive inhibitors. (d) All of these.

2. Allosteric enzymes regulate the formation of products by :

    (a) Feedback inhibition. (b) Non-competitive inhibition.

    (c) Competitive inhibition. (d) Repression-derepression.

3. Competitive inhibitors :

    (a) Decrease the K_m. (b) Decrease the V..

    (c) Increase the K_m. (d) Increase the V..

4. In Lineweaver-Burk plot, the y-intercept represents :

    (a) V_{max}. (b) K_m.

    (c) $1/V_{max}$. (d) $1/K_m$.

5. Which of the following enzymes in Glycolytic pathway is inhibited by fluoride ?

    (a) Glyceraldehyde-3-p dehydrogenase.

    (b) Phosphoglycerate kinase.

    (c) Pyruvate kinase.

    (d) Enolase.

6. Lactate formed in muscles can be utilized through :

    (a) Rapoport-Luebeling cycle. (b) Glucose-alanine cycle.

    (c) Cori's cycle. (d) Citric acid cycle.

Turn over

7. Gluconeogenesis is decreased by :

   (a) Glucagon

          (b) Epinephrine.

   (c) Glucocorticoids.

          (d) Insulin.

8. The conversion of pyruvate to acetyl CoA and CO_2 :

   (a) Is reversible.

          (b) Involves the participation of lipoic acid.

   (c) Depends on the coenzyme biotin. (d) Occurs in the cytosol.

9. Glycogen is present in all body tissues except :

   (a) Liver.

          (b) Brain.

   (c) Kidney.

          (d) Stomach.

10. How many ATPs are produced in the conversion of phosphoenol pyruvate to citrate ?

   (a) 1.

          (b) 2.

   (c) 4.

          (d) 6.

11. Electron transport and phosphorylation can be uncoupled by compounds that increase the permeability of the inner mitochondrial membrane to :

   (a) Electrons.

          (b) Protons.

   (c) Uncouplers.

          (d) All of these.

12. Dehydrogenases involved in HMP shunt are specific for :

   (a) NADP+.

          (b) NAD+.

   (c) FAD.

          (d) FMN.

13. Production of one molecule of 3-phosphoglyceraldehyde requires how many turns of the Calvin cycle ?

   (a) 1.

          (b) 2.

   (c) 3.

          (d) 4.

14. The light reaction of photosynthesis does not include :

   (a) Chemiosmosis.

          (b) Oxygen liberation.

   (c) Charge separation.

          (d) Electron transport.

15. The final product of the Calvin cycle is :

   (a) RuPB.

          (b) PGA.

   (c) ATP.

          (d) G3P.

16. The dark reaction in photosynthesis is limited by :

    (a) CO_2, temperature, and light.   (b) CO_2, light, and water.

    (c) Oxygen, water, and temperature. (d) Water, temperature, and CO_2.

    (16 x 1 = 16 marks)

Part B

Answer any **eight** *questions.*

Each question carries 3 *marks.*

17. Define coenzyme with an example.

18. What is optical specificity ? Give an example.

19. Why is pancreatic amylase more important than salivary amylase ? Explain.

20. Define substrate level phosphorylation with an example.

21. Why is molecular oxygen necessary for the TCA cycle to operate ?

22. Give the action of debranching enzyme.

23. What are C4 plants ? How are they different from C3 plants ?

24. What are high energy compounds ? Give examples for high energy compounds.

25. Outline the carbon dioxide fixing reactions in Calvin's cycle.

26. What is the significance of glyoxylate cycle ?

    (8 x 3 = 24 marks)

Part C

Answer any **four** *questions.*

Each question carries 5 *marks.*

27. Give an account of enzymes in food and pharmaceutical industry.

28. Explain non-competetive inhibition on the basis of double reciprocal plot.

29. Compare the components of cyclic and non-cyclic photophosphorylation.

30. Give an outline of Hexose monophosphate shunt and its significance.

31. How does phosphorylation and dephosphorylation regulate gycogenolysis and glycogenesis ?

32. Outline the arrangement of electron carriers in the mitochondrial electron transport chain and indicate the sites of action of different inhibitors.

    (4 x 5 = 20 marks)

    Turn over

Part D

Answer any two questions.
Each question carries 10 *marks.*

33. Discuss the various factors that affect enzyme activity.

34. Explain in detail about anaerobic glycolysis.

35. Explain the role and mechanism of pyruvate dehydrogenase complex. Calculate how many molecules of ATP are formed when one molecule of glucose is oxidized completely.

(2 x 10 = 20 marks)