

B.TECH DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Third Semester

BIOTECHNOLOGY

BTY102: Biochemistry

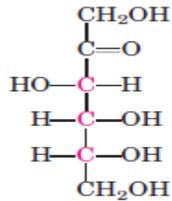
Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Identify the given below monosaccharide:



- a) D-Fructose b) D-Xylose
 c) D-Galactose d) D-Glucose
2. Spot the correct hydroxyl group containing amino acid
 a) Glycine b) Phenyl alanine
 c) Alanine d) Serine
3. TCA cycle is operated in the ----- of a cell
 a) Mitochondrial inner membrane b) Mitochondrial matrix
 c) Mitochondrial outer membrane d) Cytoplasm
4. The potent uncoupler of oxidative phosphorylation is -----
 a) 2,4-dinitrophenol b) 3-chlorobenzene
 c) Phenol d) Catechol
5. What is the other name for urea cycle?
 a) Kreb's cycle b) Glycolysis
 c) Kreb's Henselit cycle d) Rappaport – Leubering cycle
6. The rate limiting enzyme in urea cycle is -----
 a) CTP transcarbamoyalase b) Carbamoyal Phosphate synthatase I
 c) ATPase d) GTPase

7. How many ATP molecules are utilized in the synthesis of a palmitic acid?
 a) Four b) One
 c) Three d) Two
8. ----- is used to inhibit cholesterol biosynthesis
 a) Simvastatin b) Nistatin
 c) Histatin d) Cystatin
9. Which one of the following is **NOT** a purine catabolite?
 a) Allantoin b) Citric acid
 c) Xanthine d) Uric acid
10. The pacemaker enzyme in pyrimidine synthesis is -----
 a) GOR synthatase b) PRPP synthetase
 c) Orotase d) Aspartate transcarbamoyalse

PART B (10 x 2 = 20 Marks)

11. Outline few functions of carbohydrates
 12. Draw the structure of triacylglycerol and indicate its ester bond
 13. Calculate the energetics of aerobic glycolysis
 14. List out the bypass enzymes in gluconeogenesis
 15. Define sequential feedback inhibition
 16. Write the disorders of branched chain amino acids
 17. Give the importance of carnitine in fatty acid catabolism
 18. Write the reaction of acetyl CoA to malonyl CoA
 19. What is salvage pathway?
 20. List the products of purine nucleotide degradation

PART C (5 x 14 = 70 Marks)

21. a) Give a detailed account on the chemistry, properties and functions of any **ONE** monosaccharide
- (OR)**
- b) (i) Classify the lipids with suitable examples (7)
 (ii) Brief the structural characteristic features of α -helical structure of protein with a suitable example (7)
22. a) What is aerobic glycolysis? Elaborate the pathway in detail with a neat labeled sketch. (2 + 12)

(OR)

b) Give the detailed mechanism of Peter Mitchell's proposed chemiosmotic theory with oxidative phosphorylation reactions

23. a) Draw and explain the reaction sequences of urea cycle in detail

(OR)

b) Elaborate in detail the biosynthesis of serine and glycine with a neat labeled sketch.

24. a) Give a detailed account on β -oxidation of fatty acid with appropriate reaction steps. Add a note on non covalent modification mediated regulation (10 + 4)

(OR)

b) Describe in detail the biosynthesis of cholesterol with the prescribed pathway and add a note on its regulation (10 + 4)

25. a) Describe in brief the *de novo* biosynthesis of purine nucleotides. How the pathway is regulated? (10 + 4)

(OR)

b) How uric acid and allantoin is formed in a biological system? Explain the pathway with necessary structures
