



B.TECH DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2013)

Third Semester

BIOTECHNOLOGY

U13BTT301: Metabolism of Biomolecules

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which of the following substances yields the most energy up on oxidation?
 - a) Proteins
 - b) Glucose
 - c) Fatty acids
 - d) Alcohol
2. produced by the oxidation of pyruvate and feeds into the citric acid cycle.
3. Which of the following statements about food storage in the body is correct?
 - a) More glycogen is stored per unit mass
 - b) Glycogen storage in the liver is unlimited in the muscles than in the liver.
 - c) Fat is a more efficient form of fuel
 - d) Proteins in muscle cells are a normal storage form of fuel.
4. Carbohydrate found in the cell walls of plants is
5. A person with phenylketonuria cannot convert
 - a) phenylalanine to tyrosine
 - b) phenylalanine to isoleucine
 - c) phenol into ketones
 - d) phenylalanine to lysine
6. Oxidative deamination is the conversion of an amino group to
7. The key enzyme in the regulation of fatty acid synthesis is
 - a) acetyl CoA carboxylase
 - b) AMP activated proteinkinase
 - c) protein phosphatase
 - d) Glycogen phosphatase
8. Arachidonic acid hasdouble bonds
9. The backbone of DNA is
 - a) Hydrophilic
 - b) Hydrophobic
 - c) Both hydrophilic & hydrophobic
 - d) neutral
10. The pentose present in nucleic acid is

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Differentiate diabetes mellitus with that of diabetes insipidus
12. Why is less ATP synthesized under oxygen limiting conditions?
13. List out the coenzymes present in pyruvate dehydrogenase complex.
14. Compare starch and glycogen.
15. Name clinical symptoms of Maple syrup urine disease.
16. What is oxidative deamination?
17. Triacylglycerol is a neutral fat – justify the statement.
18. Identify the four types of hormones that are synthesized using cholesterol.
19. Draw the structure of pyrimidines
20. Demonstrate the differences between *de novo* and salvage pathway of nucleic acid synthesis.

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. Describe the gluconeogenesis with enzymes involved in the biochemical reactions.

22. a) (i) Discuss the salient features of respiratory chain with the proteins involved. (10)
(ii) Elaborate on Von Gierke's disease (4)

(OR)

b) (i) Explain biological oxidation- reduction reactions with examples. (10)
(ii) Describe the enzymes that degrade starch into glucose. (4)

23. a) (i) Discuss the biosynthesis of serine. (10)
(ii) Describe the reactions in urea cycle. (4)

(OR)

b) (i) Explain the metabolic breakdown of any one amino acid from oxaloacetate family. (10)
(ii) Discuss non-oxidative deamination with a suitable example. (4)

24. a) Describe the degradation of cholesterol with a note on enzymes involved therein.

(OR)

b) Explain the biosynthesis of fatty acid with the enzymes.

25. a) Discuss the den ovo pathway for the synthesis of purines.

(OR)

b) (i) Describe the degradation of any one pyrimidine (10)

(ii) Explain in brief on Lesch-Nyhan syndrome (4)
