



B.TECH DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Third Semester

BIOTECHNOLOGY

U18BTI3203: Concepts in Biochemistry

COURSE OUTCOMES

- CO1:** Comprehend and evaluate the nutritional aspects and metabolism of carbohydrates
CO2: Analyze and evaluate the dietary importance and metabolism of lipids
CO3: Critically evaluate and analyze the structure and metabolic pathways of amino acids
CO4: Interpret the metabolic disorders of amino acid metabolism and evaluate the function of proteins
CO5: Imbibe the confirmation and metabolism of nucleic acids and analyze the metabolic disorders of nucleic acid metabolism
CO6: Conceptualize the biological oxido-reduction reaction and respiratory chains

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|--|-----|-------------------|
| 1. Insulin inhibits the glycogenolysis, whereas glucagon stimulates the same. Justify the statement. | CO1 | [K ₃] |
| 2. List the benefits of dietary fibers. | CO1 | [K ₁] |
| 3. What are the functions of triglycerides? | CO2 | [K ₂] |
| 4. Distinguish the saturated and unsaturated fats | CO2 | [K ₃] |
| 5. Define protein efficiency ratio. | CO3 | [K ₁] |
| 6. Recall the significance of urea cycle. | CO4 | [K ₂] |
| 7. State Chargaff's rule. | CO5 | [K ₂] |
| 8. Name the metabolic disease which is associated with overproduction of uric acid and infer the symptoms. | CO5 | [K ₂] |
| 9. Why ATP is considered as universal energy currency? | CO6 | [K ₃] |
| 10. Sketch the flow of electron through ETC. | CO6 | [K ₂] |

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

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|-----|----|---|----|-----|-------------------|
| 11. | a) | A series of reactions that extract energy from glucose by splitting it into two three-carbon molecules of pyruvate. Explain the statement with metabolic cycle. | 12 | CO1 | [K ₂] |
| | b) | Give the nutritional importance of carbohydrates. | 4 | CO1 | [K ₂] |
| 12. | a) | Write a detailed note on β – oxidation of fatty acid with a neat sketch. | 16 | CO2 | [K ₂] |
| 13. | a) | Ammonia formed in the body is toxic to the system, hence it is converted into non-toxic urea. Interpret the name of pathway and describe in detail with a suitable sketch. | 16 | CO3 | [K ₄] |
| 14. | a) | Explain the symptoms, treatment and prevention of phenylketonuria. | 10 | CO4 | [K ₂] |
| | b) | Why are proteins important? Classify the protein based on shape and functions. | 8 | CO4 | [K ₂] |
| 15. | a) | Enumerate the structure of DNA and RNA with a neat illustration. | 16 | CO5 | [K ₂] |
| 16. | a) | A process in which ATP synthesis is coupled to the movement of electrons through the mitochondrial electron transport chain and the associated consumption of oxygen. Identify the process and explain in detail. | 16 | CO6 | [K ₄] |
