



Avinashilingam Institute for Home Science and Higher Education for Women,  
Coimbatore-641043

Continuous Internal Assessment II April, 2025

Semester IV

23BBCC04 Metabolism and Bioenergetics

Class: II UG

Major: Biochemistry and Biotechnology

Course Outcomes:

Students will be able to

CO1. Understand the structure and functions of biomolecules in a cell.

CO2. Relate the properties of biomolecules and their significant role in living systems.

CO3. Understand the role of enzymes in the metabolic pathway and their deficiency problems.

CO4. Relate the role distinct metabolic pathways used by cells to harvest the energy.

CO5. Recognize the role of vitamins and coenzymes in intermediary metabolism

Time: 2 hours

Max. Marks: 60

**Part A- Answer all questions**

**6X1 = 6 Marks**

**Circle the correct answer**

1. Cholesterol serves as the precursor of the following pathways Except **CO2 K3**
  - a. Synthesis of Bile acids
  - b. Synthesis of thyroid hormoned.Synthesis of steroid hormone
  - c. Synthesis of progesterone
  - d. Synthesis of thyroxine
2. Which vitamin acts as a coenzyme in transamination reactions? **CO3K2**
  - a. Vitamin B12
  - b. Vitamin C
  - c. Pyridoxal phosphate
  - d. Biotin
3. Which of the following is the end product of purine degradation in humans? **CO3K2**
  - a. Uric acid
  - b. Urea
  - c. Ammonia
  - d. Allantoin
4. In an endergonic reaction, the Gibb's free energy is ( $\Delta G$ ) is **CO4K2**
  - a. Negative
  - b. Zero
  - c. Positive
  - d. Unchanged
5. Name the compound with greatest free energy **CO4K2**
  - a. a.ATP
  - b. Phosphocreatine
  - c. Cyclic AMP
  - d. Phosphoenolpyruvate
6. ATP synthase activity is associated with the-----mitochondrial enzyme complex**CO5K2**
  - a. a.Complex I
  - b. Complex III
  - c.Complex IV
  - d. Complex V

**Part B 3x6=18**

**Answer the following**

**Answer should not exceed 200 words or one page**

- 7.(a). Discuss the salient features of transamination reactions **CO3 K2**

Or
7. (b).Brief the glucogenic and ketogenic amino acids **CO3K1**
- 8.(a).State the first and second law of thermodynamics **CO4K1**

Or
8. (b).Write a note on universal electron carriers **CO4K3**
- 9.(b).Describe the chemiosmotic theory **CO5 K1**

Or
9. (b).Write about the photosynthetic pigments and light harvesting pigments in plants **CO5 K1**

**Part C 3X12=36**

**Answer any one question**

**Answer should not exceed 700 words or four pages**

10. (a). Write the reactions of synthesis of cholesterol **CO2K1**

Or
10. (b). Describe urea cycle **CO3 K2**
11. (a).Outline the biosynthesis purine nucleotide. **CO3 K3**

Or
11. (b).Discuss about the High energy compounds. Add a note on structural features of ATP. **CO4 K1**
12. (a).Illustrate electron transport chain **CO5 K3**

Or
12. (b).Relate cyclic and non cyclic photophosphorylation **CO5 K1**

Dr.S.Velvizhi and Dr.J.Priyanka: No. of copies= 86(aided50+ SF 36)