



Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956 (now MoE)

Re-accredited with A++ Grade by NAAC. Recognised by UGC under Section 12B

Colombatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment – I February, 2025

IV Semester

Class: II UG

Major: Biochemistry and Biotechnology

Time: 2 hours

Max. Marks: 60

23BBCC04 Metabolism and Bioenergetics

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 of distinct metabolic pathways used by cells to harvest the energy.

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

Part A

Answer all questions

6x1 = 6 Marks

Circle the correct answer

1. The number of ATP produced when a molecule of acetyl CoA is oxidized through citric acid cycle
a.38 b. 12 c. 24 d.15 CO1 K3
2. The connecting link between HMP shunt and lipid synthesis is CO2K2
a. Ribose b. NADPH c. Xylulose 4 Phosphate d. NADH
3. Cancer cells have high energy demands for replication and division. Increased flux of glucose into glycolysis replenishes the energy demand. Which of the following enzymes plays an important role in tumor metabolism ? CO1K2
a. Glucokinase c. Phosphor fructokinaase
b. phosphor glucose mutase d. pyruvate kinase M2
4. What high energy phosphate Compound is formed in the Citric acid cycle? CO2K2
a. ATP b. TTP c. GTP d. PLP
5. Which of the following hormone maintain blood glucose level by activation of gluconeogenesis? CO2 K2
a. Insulin b. Glycogen c. Epinephrine d. Nor epinephrine
6. The two final products in the B-oxidation of odd chain fatty acids are CO2K2
a. Acetyl CoA and malonyl CoA c. Acetyl CoA and acetyl CoA
b. Acetyl CoA and propionyl CoA d. Acetyl CoA and succinyl CoA.

Part B

3x6=18

Answer the following

Answer should not exceed 200 words or one page

- 7.(a). Differentiate anabolism and catabolism. Write Compartmentalization of metabolic pathways CO1 K2
Or
7. (b). State the energetics of glucose oxidation CO1K1
8. (a). State the difference between glyoxalate cycle and TCA cycle CO1K1
Or
8. (b). Write the significance of pentose phosphate pathway CO2K3
Or
- 9.(b). Describe the synthesis of glycogen CO2 K1
Or
9. (b). Illustrate fatty acid synthase complex CO2 K1

Part C

3X12=36

Answer question

Answer should not exceed 700 words or four pages

10. (a). Write the reactions of glycolytic pathway **CO3K1**
Or
10. (b) Describe TCA cycle **CO1 K2**
11. (a) Illustrate the biosynthesis of glucose from alanine **CO1 K3**
Or
11. (b) Discuss the process of uronic acid pathway **CO2 K1**
12. (a) Illustrate Pentose phosphate pathway **CO2 K3**
Or
12. (b) Explain the process of β -oxidation **CO2 K1**

Staff in-charge:

Aided: Dr.S.Velvizhi

SF: Dr. J. Priyanka

No. of copies= 86(aided50+ SF 36) +5