

**CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN
NUVEM-GOA**

B. Sc. CBCS SEMESTER V EXAMINATION, JANUARY 2021

Semester: V Course name & Code: BIOCHEMISTRY AND METABOLIC PROCESSES ZOC-106

Total Marks: 80

Duration: 2 hrs

Total No. of pages:02

Instructions: 1. All questions are compulsory.

2. Figures to the right indicate marks allotted to the question.

3. Illustrate your answers wherever necessary.

Q.I. Answer ANY FOUR of the following: (4x4)

1. Differentiate between diffusion and facilitated diffusion.
2. Catabolism and anabolism have different corresponding pathways. Explain.
3. What is the significance of ATP as the energy currency of the cell?
4. Present the sequence of reactions of the preparatory phase of Glycolysis.
5. What is the fate of carbon skeleton of amino acids?
6. Briefly explain the Carbonyl phosphate formation with reference to urea cycle.

Q.II. Answer ANY FOUR of the following: (4x4)

1. Mention the steps involved in conversion of Lactate to Phospho-Enol-Pyruvate in Gluconeogenesis.
2. What is meant by oxidative decarboxylation? Write the reactions from the TriCarboxylic Acid Cycle where oxidative decarboxylation occurs.
3. What is the Chemical coupling Hypothesis for oxidative phosphorylation?
4. List any three uncouplers of the ETC. Mention the significance of uncouplers of ETC.
5. What is the fate of the basic components of triglycerides in the body?
6. How is ketogenesis regulated in the body?

Q.III. A) The regulation of metabolic pathways is accomplished by many control mechanisms. Explain. (6)

OR

A) Write a short note on the Malate- Aspartate shuttle. (6)

B) ΔG° for the reaction below is 31.4 kJ/mol at 25° C. Calculate ΔG when the concentrations of A, B, and C are 0.2 M, 0.1 M, and 0.1 M respectively. Consider $R = 8.314 \text{ J/mol K}$.



Q.IV. A) Explain the reactions taking place in the Pyruvate Dehydrogenase Complex. (6)

OR

A) Outline the steps involved in the oxidative stage of Pentose Phosphate Pathway. Mention the significance of the oxidative stage.

B) Discuss the steps involved in Glycogenolysis. (6)

Q.V. A) With an illustration explain the urea cycle. (6)

OR

A) With an example, explain the transamination reaction. (6)

B) Explain with an illustration the structure of ATP synthase enzyme involved in oxidative phosphorylation. (6)

Q.VI. A) Discuss four inhibitors of oxidative phosphorylation with their mechanism of action. (6)

OR

A) During starvation and diabetes mellitus, glucose is unavailable to the cells. How is fat utilized, instead as an energy source? (6)

B) Explain the beta oxidation of palmitic acid. (6)