

# School of Basic and Applied Sciences

Bio-Chemistry  
ETE - Jun 2023

Time : 3 Hours

Marks : 50

## Sem II - MSBC5014 - Bioenergetics and Intermediary Metabolism

*Your answer should be specific to the question asked*

*Draw neat labeled diagrams wherever necessary*

1. Describe the components of Pyruvate dehydrogenase complex and summarize the reaction catalyzed by this enzyme. K1 CO2 (2)
2. Define Chemiosmotic theory. K2 CO3 (2)
3. Write difference between  
a) Electronegativity and Electropositivity K1 CO1 (2)  
b) Free energy and enthalpy
4. NADH is produced during glycolysis, but its electrons can't reach the inner membrane of the mitochondria. Illustrate the shuttle mechanism by which the task is accomplished. K2 CO2 (2)
5. ATP as Energy currency of cell. Explain K2 CO1 (2)
6. Illustrate first four steps of TCA cycle. Briefly explain its "Amphibolic nature". K3 CO2 (5)
7. Construct and discuss the arrangement of mitochondrial electron transport chain. K4 CO3 (6)
8. Discuss the the Laws of thermodynamics. K3 CO1 (5)
9. Discribe the properties and role of photosynthetic pigments. K4 CO6 (8)
10. Write a short note on **ANY ONE** K4 CO5 (8)  
a) Glycogen metabolism  
b) Fructose metabolism
11. Discuss in detail the role of following in photosynthesis: K3 CO4 (8)  
a) Carotenoids  
b) Photosystem I and II