QP Code: Reg. No | | | | | | | | | | | AY 24

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

M.Sc. (First Semester - Regular) Examinations, February – 2025

24MLSPC11001– Biophysics and Biochemistry

(Life Science)

Time: 3 hrs Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Write on super-secondary structure with an example.	CO3	K2
b.	Explain chirality.	CO1	K2
c.	Define entropy.	CO2	K1
d.	Explain glyoxylate cycle.	CO6	K2
e.	Illustrate the general structure of triacylglycerols (TAGs).	CO3	K3

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Compare and contrast between purines and pyrimidines. Add a note on nucleosides and nucleotides.	5	CO3	K4
b.	Justify why ATP is an energy rich molecule. Add a note on the roles of ATP in cellular processes	5	CO2	K5
	(OR)			
c.	Describe the structure of B-DNA using suitable diagram.	5	CO3	K2
d.	Illustrate the blood buffering system. Add a note on its significance.	5	CO2	K3
3.a.	Compare and contrast between the different intermolecular forces of attraction.	5	CO1	K4
b.	Briefly describe β-oxidation of fatty acids.	5	CO4	K2
	(OR)			
c.	Ramachandran plot helps to understand allowed conformations and identify secondary structures. Justify.	5	CO3	K5
d.	Describe the Michaelis-Menten equation. What are the factors affecting enzyme activity.	5	CO5	K2
4.a.	Write on adsorption and the factors affecting adsorption.	5	CO1	K1
b.	The laws of thermodynamics play a crucial role in biological systems. Justify	5	CO2	K5
	(OR)			
c.	Diagrammatically explain the Kreb's cycle.	5	CO4	K2
d.	Explain the process of oxidative phosphorylation as the electrons move across the electron transport chain.	5	CO4	K2
5.a.	Briefly discuss the different types of ultrafiltration methods.	5	CO1	K2
b.	Antiparallel β-sheets are more stable than parallel β-sheets. Justify.	5	CO3	K5
	(OR)			
c.	Provide a detailed account of non-cyclic photophosphorylation.	5	CO4	K3

d.	Cyclic photophosphorylation produced ATP without the splitting of water molecule. Justify.	5	CO4	K5
6.a.	Describe the two distinct phases of HMP shunt and the major products formed.	5	CO4	K2
b.	Explain disaccharides. Diagrammatically show the glycosidic bonds between any two important disaccharides.	5	CO3	K2
	(OR)			
c.	Explain the process of glycogenolysis.	5	CO4	K2
d.	Write the characteristics of α-helix. Explain giving suitable diagrams.	5	CO3	K2

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