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Daffodil International University

Department of Agricultural Science
Faculty of Health & Life Sciences
Final Examination, Summer– 2025

Course Code: 0815-1105 | Course Title: Biochemistry I (General Biochemistry)
Section: 251 All | Level-Term: L1-T2 | Teacher's Initial: MSA
Full Marks: 40 | Time: 2 Hours

"Split answering is strictly prohibited"

1.	(a) Imagine you are a metabolic detective tracing the fate of one glucose molecule in a living cell. Construct a step-by-step journey showing how glucose is converted into pyruvate through the glycolytic pathway. At each step, mention the intermediate compound formed and the specific enzyme responsible. Additionally, indicate at which steps ATP is consumed or produced, and where NAD^+ is reduced. Present your findings as a labeled metabolic flowchart.	(PLO1,CLO2, CLO3,C5)	5
	(b) Define metabolism. Write only the names of the major pathways of carbohydrate metabolism.	(PLO1,CLO3,C2)	3
2.	(a) Draw the Fischer projection formulas of β-L-glucopyranose, α-D-glucofuranose, and α-L-fructofuranose.	(PLO1,CLO4, C3)	6
	(b) Describe enantiomers with proper example and structural representation.	(PLO2,CLO5,C1)	2
3.	(a) Draw the Haworth projection formulas of α-D-glucopyranose, α-L-glucopyranose, and β-D-fructofuranose.	(PLO1,CLO4,C3)	6
	(b) Describe an epimer with a proper example and structural representation.	(PLO2,CLO5,C4)	2
4.	(a) Define fatty acids with proper structural representation and classification. Describe the concept of rancidity.	(PLO2,CLO5,C6)	5
	(b) Enlist the names of any three saturated fatty acids and any three unsaturated fatty acids.	(PLO4,CLO5,C1, C2)	3
5.	(a) Define enzyme with a proper diagram and suitable examples. Discuss the mode of enzyme-substrate complex formation.	(PLO7,CLO3,C1, C4)	5
	(b) Discuss any three factors that can affect enzymatic activity. Support your answer with appropriate graphs.	(PLO1,CLO5, C4)	3