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Daffodil International University

Department of Genetic Engineering and Biotechnology
Faculty of Health and Life Sciences
B. Sc. (Hons.) in Genetic Engineering and Biotechnology
Midterm Examination Fall 2026

Course Code: 0512-1301 **Course Title:** Basic Biochemistry
Level and Term: L-1, T-3 **Section: 261 A** **Course Teacher Initials:** DMI
Time: 1 Hour 30 Minutes **Total Marks: 25**

Answer the following questions:

				Marks
1	(a)	Illustrate the chemical structures of milk sugar and cane sugar.	[CLO2, PLO2, C1]	2.0
	(b)	Classify carbohydrates with suitable examples. Explain the formation of a glycosidic bond with a chemical structure.	[CLO2, PLO2, C2]	3.0
2	(a)	Define pH and buffer solution. Describe the physical and chemical properties of water.	[CLO1, PLO1, C6]	2.5
	(b)	Define the Henderson–Hasselbalch equation. A buffer contains 0.15 M NH_3 and 0.30 M NH_4^+. The measured pOH is 4.45. Calculate pK_b.	[CLO1, PLO1, C1]	2.5
3	(a)	Distinguish among the three polysaccharides: starch, glycogen, and cellulose.	[CLO2, PLO2, C4]	2.5
	(b)	Describe the major dietary sources of carbohydrates and briefly explain their biological functions.	[CLO2, PLO2, C6]	2.5
4	(a)	Define triglyceride and draw its general chemical structure. Classify lipids with a suitable example for each class.	[CLO2, PLO2, C1]	2.5
	(b)	What are lipids? Briefly discuss the importance of lipids in living organisms.	[CLO2, PLO2, C6]	2.5
5	(a)	State the term Biochemistry. Briefly discuss the scope of Biochemistry in Biotechnology.	[CLO1, PLO1, C6]	2.5
	(b)	Explain the role of biochemistry in the development of medicines and improvement of agriculture.	[CLO1, PLO1, C2]	2.5

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