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Daffodil International University

Department of Nutrition and Food Engineering
Faculty of Health and Life Sciences
B.Sc. in Nutrition and Food Engineering
Midterm Examination Spring 2025

Course Code: 0531-1103 **Course Title:** Physical, Inorganic and Analytical Chemistry

Level and Term: L-1, T-1 **Section: 251 All** **Course Teacher Initials: DNU, DMR, DFR**

Time: 1 hour 30 minutes **Total Marks: 25**

Splitting any answer is strictly prohibited

			Marks
1.	(a)	Explain which of the following orbital is possible or not: 2d, 3p, 3f and 4p. [CLO1; PLO1; C2]	2
	(b)	In periodic tables if you move left to right in Period-2 what change in i) **atomic radius** and ii) **electronegativity** will you expect? [CLO1; PLO1; C1]	3
2.	(a)	Explain hydrogen bond with example. [CLO1; PLO1; C3]	2
	(b)	What are differences between ionic and covalent bond? [CLO1; PLO1; C2]	3
3.	(a)	How many lone pair electrons present in O atom of H_2O and C atom of CH_4? [CLO1; PLO1; C1]	2
	(b)	Write the name and symbol of Group 1 elements in the periodic table. Why are they called alkali metal? [CLO1; PLO1; C3]	3
4.	(a)	How much Na_2CO_3 is needed to prepare 300mL of 0.25M Na_2CO_3 standard solution? [CLO2; PLO1; C3]	2
	(b)	A compound was analyzed and found to contain 50.00% Na, 10.00% C and 40.00% O. Determine its empirical formula. [CLO2; PLO1; C3]	3
5.	(a)	Calculate the number of molecules of H_2O present in 1g H_2O. [CLO2; PLO1; C3]	2
	(b)	Find out the percent composition of Aluminum, Sulfur and Oxygen in $Al_2(SO_4)_3$. [CLO2; PLO1; C3]	3