



Department of Nutrition and Food Engineering
Faculty of Health and Life Sciences
BSc. in Nutrition and Food Engineering
Midterm Examination Fall 2025

Course Code: 0531-1103
Level and Term: L-1, T-1
Time: 1 hour 30 minutes

Course Title: Physical, Inorganic and Analytical Chemistry
Course Teacher Initials: DNU, DAMR, DZI
Total Marks: 25

Section: 253 All
Splitting any answer is strictly prohibited

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|---|--|------------------|-------|
| 1 | (a) Write the symbols of all alkali and alkaline-earth metals. | [CLO1; PLO1; C2] | 2 |
| | (b) How i) ionization energy ii) electronegativity and iii) atomic radius changes across period-2 in periodic table? | [CLO1; PLO1; C1] | 3 |
| 2 | (a) Write down the electronic configuration of the following elements: (i) Fe (ii) Cu. | [CLO1; PLO1; C3] | 1+1 |
| | (b) What are <u>isotopes</u> , <u>isobars</u> , and <u>isotones</u> ? Give an example for each of them. | [CLO1; PLO1; C2] | 3 |
| 3 | (a) What are the differences between <u>ionic</u> and <u>covalent bond</u> ? | [CLO1; PLO1; C1] | 2 |
| | (b) Define Hydrogen Bonding. Explain the types of Hydrogen Bonding with examples. | [CLO1; PLO1; C3] | 3 |
| 4 | (a) How many molecules are present in 15g of CO ₂ ? | [CLO2; PLO1; C3] | 2 |
| | (b) A 500mL solution has 40g substance dissolved in it, and its molarity is 0.75. What is the molecular <u>mass</u> of the solute in the solution? | [CLO2; PLO1; C3] | 3 |
| 5 | (a) Determine the Oxidation State of the central atom of the following compounds: i) P in Na ₃ PO ₃ (ii) B in NaBH ₄ (iii) Cr in K ₂ Cr ₂ O ₇ (iv) P in H ₃ PO ₄ . | [CLO2; PLO1; C3] | 2 |
| | (b) The percent composition of a compound is C=92.31%, H=7.69%. When molecular mass of the compound is 78, determine its molecular formula. | [CLO2; PLO1; C3] | 3 |