

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. Engineering in CSE

Mid term Examination, Spring- 2023

Course Code: **CHEM-2301**

Course Title: **Chemistry**

Time: 1 hour 30 minutes

Full Marks: 30

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.

(ii) Course Learning Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.

| Bloom's Levels of the Questions | | | | | | |
|---------------------------------|----------|------------|-------|---------|----------|--------|
| Letter Symbols | R | Un | Ap | An | E | C |
| Meaning | Remember | Understand | Apply | Analyze | Evaluate | Create |

| | | | | | |
|----|----|---|------|------|-----|
| 1) | a) | What is periodicity? How electron affinity differs in Periodic Table and gives explanation with example and values? Or Write down the modern periodic law and mention some properties of modern periodic table. Discuss the classification of elements based on electronic configurations with examples. | CLO1 | R/Un | 2+3 |
| 1) | b) | Write down the electronic configuration and find out the period and group of the following atomic number: i) Cr ₂₄ ii) Cu ₂₉ iii) Kr ₃₆ | CLO2 | An | 2+3 |
| 2) | a) | What is coordinate bond and Hybridization? Discuss the bond formation process with bond angle, structure, s-character and p-character of CCl ₄ , BCl ₃ and BeCl ₂ molecules through hybridization. | CLO1 | R/Un | 2+3 |
| 2) | b) | What is the total number of sigma and pi bonds in the following molecules? (a) C ₂ H ₂ (b) C ₂ H ₄ | CLO2 | Un | 2 |
| 2) | c) | Analyze and show clearly- the bond formation and orbital diagrams of these molecules: NaCl and HCl. | CLO2 | An | 3 |
| 3) | a) | Which one is possible-explain? - 1d, 2p, 3f, 4d. | CLO1 | R/Un | 3 |
| 3) | b) | What is the difference between orbit and orbital? | CLO1 | Un | 2 |
| 3) | c) | Briefly describe Bohr atom model with limitations. Or Write the three isotopes of carbon and find out their atomic number (Z), mass number (A), proton number (p) and neutron number (n). Comment on the physical and chemical properties of isotopes, isobars and isotones. | CLO2 | An | 3+2 |