

Roll. No.....

1211025

**Diploma 1<sup>st</sup> Semester Examination**

**Jan.2014**

**Subject – Chemistry**

**Subject Code: AHL010**

Time Allowed: 03 hours.

Maximum Marks: 100

**Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.**

*Note: Question No. 1 is Compulsory and attempt two questions from each section. All questions carry equal marks.*

- 1(a) What is matter? Define the following terms giving two examples in each case:
- a) Element (b) Compound (c) Mixture (4)
  - (b) Explain ionic bond with examples. (4)
  - (c) Explain Acid and Bases according to Bronsted and lowry theory, give two examples of acid and base. (4)
  - (d) Explain the following terms in detail: (4)
    - (i) Priming & Foaming, (ii) Scale & Sludge formation,
  - (e) Write definition of Oxidation and Reduction with two examples each. (4)

**SECTION-A**

- 2(a) What is the definition of formula? Write significances of formula. Explain all the steps which are used in writing the formula of a compound with example. (8)
- (b) Write definitions of solute, solvent and solution with examples. Explain some important methods of expressing the concentration of a solution? (12)
- 3(a) Write electronic Configurations of the following elements and draw their atomic models also –
- ${}_{7}\text{N}^{14}$ ,  ${}_{11}\text{Na}^{23}$ ,  ${}_{13}\text{Al}^{27}$ ,  ${}_{19}\text{K}^{39}$  (8)
- (b) Write a short note on: (12)
- (i) Aufbau principle (ii) Heisenberg's Uncertainty principle
  - (iii) Hund's Rule (iv) Isotopes and isobars.

- 4(a) Define pH and explain pH scale in detail. Write the applications of pH. (5+5)
- (b) Find out the pH of a 0.001 M HCl. (3)
- (c) Write the properties of acids and bases. Explain Arrhenius concept of acid and base by giving suitable examples. (7)

**SECTION-B**

- 5(a) Define hardness. Explain types of hardness in detail. (10)
- (b) Write types of water. Explain ion exchange process of removal of hardness of water. Which Chemicals are used in this method? (10)
- 6(a) Explain Faraday's first and second Laws of electrolysis. (10)
- (b) Define electrolyte and non electrolyte. Make diagram of dry cell and explain its working. (10)
- 7(a) What is a functional group? Write functional group of the following compounds: (6)
- (i) Aldehydes (ii) Carboxylic acids (iii) Ethers (iv) Alcohols (v) Ketones
- (b) Write the IUPAC names of the following compounds- (4)
- (i)  $\text{CH}_3\text{-CH=CH-CH}_2\text{-CH}_2\text{-CH}_3$  (ii)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-COOH}$
  - (iii)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{OH}$  (iv)  $\text{C}_2\text{H}_5\text{-O-C}_2\text{H}_5$
- (c) Explain the concept of Homologous series with examples. Give four characteristics of any Homologous series. (10)