Diploma in Engg./Integrated B.Tech 1st Semester Examination
Applied 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: Attempt any five questions and all questions carry equal marks.

Section – A

1. (A) Explain any four of the following terms (2x5)
   I. Isobars
   II. Isotopes
   III. Normality
   IV. Mole fraction
   V. Isotones

   (B) 5 gm of NaOH was dissolved in 250 ml of distilled water. Calculate the normality and molarity of the solution. (10)

2. (A) Calculate the no of proton and neutrons in
   C\(_6^{13}\), O\(_8^{16}\), Mg\(_{12}^{24}\), Fe\(_{26}^{56}\), Sr\(_{38}^{88}\) (1x5)

   (B) Explain the significance of quantum numbers. Also give an idea about all the four quantum numbers. (10)

   (C) Explain the formation of a chemical bond. (5)

3. (A) Write the expressions for equilibrium constant (K\(_C\)) for the following reactions (2.5x2)
   I. 2NOCl (g) \rightleftharpoons 2NO (g) + Cl\(_2\)(g)
   II. N\(_2\)(g) + 3H\(_2\)(g) \rightleftharpoons 2NH\(_3\)(g)
   III. Fe\(^{3+}\) (aq) + 3OH\(^-\) (aq) \rightleftharpoons Fe(OH)\(_3\)

   (B) Calculate the pH of the 0.001 M NaOH solution. (7)

   (C) Write the short notes on any two of the following (4x2)
   (i) Acid –base concept
   (ii) Buffer solutions
   (iii) Le Chateliers principle

   SECTION -B

4. (A) Explain the hardness in ppm, degree French and degree clark units. (2)
   (B) Explain in details the EDTA method for quantitative analysis of hardness. (8)
   (C) Short notes on any two (5x2)
   (i) Scale and sludge formation
   (ii) Ion Exchange process
   (iii) Parameters for drinking water

5. (A) Explain Faraday’s law of electrolysis. (10)
   (B) Write the difference between electrolyte and non electrolyte. (5)
   (C) Write the cell reactions of the cell Zn/Zn\(^{++}\) // Cu\(^{++}\)/Cu (5)

6. (A) Write the IUPAC names of the CH\(_3\)OH, CH\(_3\)OC\(_2\)H\(_5\),
CH\(_3\)CHO, CH\(_3\)COCH\(_3\), C\(_6\)H\(_5\)OH. (10)

   (B) Define the terms Catenation, Homologous Series, Aliphatic Compounds, Aromatic Compounds giving at least one example. (2.5x4)