

S.B. Roll No. _____

APPLIED CHEMISTRY
1st Exam/Common/2555/Dec-2011

Duration: 3 Hrs.

Max. Marks: 75

Section-A

- Q1. Fill in the blanks: 8
- (1) Dimensional formula of density is _____
 - (2) Negatively charged ions are called _____
 - (3) One mole of particles means _____ particles.
 - (4) The shape of p-orbital is like _____
 - (5) Bond length is measured in _____ unit.
 - (6) A base is a proton _____
 - (7) Oxidation involves _____ of electrons by atoms or ions.
 - (8) The functional group of aldehydes is _____

State true or false: 7

- (1) Every inorganic compound is made up of two radicals.
- (2) Isotopes have same number of protons.
- (3) Electronic energy is negative because electron has negative charge.
- (4) An element with atomic number 18 belongs to p-block.
- (5) Molecule of methane (CH₄) is tetrahedral
- (6) NH₄OH is a strong electrolyte.
- (7) Chlorine molecule is formed by ionic linkage.

Section-B

- Q2. Attempt any ten questions: 10x3=30
- (1) Write the significance of a chemical equation with an example.
 - (2) Calculate the number of atoms in .23gms of Na (at mass of Na=23)
 - (3) Differentiate between S and P orbitals.
 - (4) Explain line spectrum of hydrogen
 - (5) Define covalent bonding with at least two examples.
 - (6) What are the disadvantages of using hard water in laundry work, paper and textile Industry?
 - (7) Explain open and closed systems.
 - (8) Define ionization and degree of ionization.
 - (9) A current of 2amp on passing through a soln of AgNO₃ for 100 secs, deposited 2.22 gms of Ag, Calculate electrochemical equivalent of Ag.
 - (10) Define catenation and functional group.
 - (11) What is the difference between an atom and an ion?
 - (12) Explain the defects in the long form of the periodic table.

Section-C

- Q3. Attempt any three questions 10x3=30
- (1) (a) What are the various factors favoring formation of ionic bond? 5
(b) Balance the following equation by hit and trial method. 3
$$\text{KClO}_3 \longrightarrow \text{KCl} + \text{O}_2$$

(c) How many protons and neutrons are there in the nuclei of ¹⁷₈O? 2
 - (2) (a) A sample of hard water is found to contain 272mg of CaSO₄ litre, what will be its hardness in ppm. (Ca = 40, S = 32, O = 16, C = 12) 5
(b) Explain industrial application of PH 5
 - (3) (a) Define and explain the process of electrolysis. 5
(b) Differentiate between saturated and unsaturated hydrocarbons, giving two examples of each. 5
 - (4) (a) Write IUPAC names of the following compounds: 6

$$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_3 \\ | \\ \text{OH} \end{array}$$

$$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{COOH} \end{array}$$

$$\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{CH}_3 \\ | \\ \text{NO}_2 \end{array}$$

$$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$$
 - (b) Write the characteristics of chemical equilibrium and explain the types of chemical equilibrium. 4
 - (5) (a) Define co-ordinate or dative bond, explain with examples of NH₄⁺ and NH₃⁻ BF₄ molecules 5
(b) Calculate the PH value of 0.01m HCl soln. 5