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 numbers a belongs to p-block.
(5) Molecule of methane (CH_4) is tetrahedral
(6) NH_4OH 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 laundary 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 $AgNO_3$ 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 band? 5

(b) Balance the following equation by hit and trial method. 3

$$KclO_3 \longrightarrow Kcl + O$$

(c) How many protons and neutrons are there in the nuclei of $^{17}_{8}O$? 2

(2) (a) A sample of hard water is found to contain 272mg of $CaSo_4$ 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 1UPAC names of the following compounds: 6

$$CH_3 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_3$$

$$CH_3 - \underset{\displaystyle COOH}{\underset{|}{CH}} - CH_2 - CH_2 - CH_3$$

$$CH_3 - CH_2 - CH_2 - CH_2 - \underset{\displaystyle NO_2}{\underset{|}{CH}} - CH_3$$

$$CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$$

(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 NH_4^+ and NH_3^- BF_4 molecules 5

(b) Calculate the PH value of 0.01m Hcl soln. 5