

APPLIED CHEMISTRY - I

1st Exam /Common/2555/0451/5404/Nov' 2016

Duration : 3 Hrs

M. Marks : 75

Note : Attempt all questions.

SECTION- A

Q1 (A) Fill in the blanks

(10)

1. The dimensional formula of surface tension is _____.
2. Positively charged ions are called _____.
3. The volume occupied by 0.5 mole of Helium at S.T.P will be _____.
4. Electrons, protons and neutrons are called _____ particles.
5. Horizontal rows are called _____.
6. A covalent bond is formed by _____ of half-filled atomic orbitals.
7. _____ hardness can be removed by boiling.
8. Reduction involves _____ of electrons.
9. C_nH_{2n} is the general formula of _____.
10. Blood is a _____ solution.

(B) State True or False

(5)

1. Hard water does not give lather with soap.
2. The solution having pH value more than 7 is acidic in nature.
3. Lead acid cell is a primary cell.
4. The property of carbon to form long chain molecules is called catenation.
5. The shape of p-orbital is dumb-bell.

SECTION- B

Q2. Attempt any 10 questions

(10x3=30)

1. Define chemical equation. What are the essentials of a chemical equation?
2. If the quantum number 'n' has a value of 4, what are the permitted values of quantum number l and m?
3. Differentiate between an orbit and an orbital.
4. Calculate the number of moles in 200g of $CaCO_3$.
5. State and explain Aufbau's principle.
6. Give the characteristics of drinking water.
7. Differentiate between sigma (σ) and pi (π) bond.
8. The nucleus of an atom contains 12 neutrons and 11 protons. Find its atomic number and mass number.
9. State and explain Boyle's law.
10. State Le-Chatelier's principle.
11. Explain open, closed and adiabatic systems.
12. Calculate the weight of Cu deposited, when a current of 0.5 ampere is passed for 20 minutes through a solution of $CuSO_4$. (ECE of Cu = 0.00032)
13. Give the functional groups of following compounds
(i) Aldehydes (ii) Amines (iii) Alcohols
14. A sample of hard water is found to contain 204 mg of $CaSO_4$ /L. What will be its hardness in ppm?

SECTION- C

Attempt any 3 questions

(3x10=30)

- Q3** (a) Name and explain the four quantum numbers. 7
(b) What are the successes of Bohr's model of atom? 3
- Q4** (a) Define hybridization. Explain sp , sp^2 and sp^3 . 7
(b) What are the factors which favour the formation of an ionic bond? 3
- Q5** (a) Explain ion-exchange process for softening of hard water. 7
(b) Explain Priming and Foaming. Write the various methods to prevent it. 3
- Q6** (a) State and explain Faraday's first law of electrolysis. 5
(b) Explain the working of a dry cell. 3
(c) What is salt bridge? Give its two functions. 2
- Q7** (a) Give characteristics of homologous series. 3
(b) Differentiate between alkenes and alkynes. 2
(c) Write the common and IUPAC names of the following compounds. 3
(i) CH_3CHO (ii) C_2H_5OH (iii) CH_3COCH_3
(d) Explain the term catenation. 2