

S. B. Roll. No.....

APPLIED CHEMISTRY-I
1st Exam/Common/6052/Dec'22
(For 2018 Batch Onwards)

Duration: 3Hrs.

M.Marks:75

SECTION-A

Q1. a) Fill in the blanks.

15x1=15

- i. Pure substance containing only one kind of atoms is called_____
- ii. Electron was discovered by_____
- iii. Hybridization of carbon in ethyne is_____
- iv. The pH of pure water is_____
- v. _____hardness of water cannot be removed by boiling.
- vi. The reaction in which both oxidation and reduction takes place is known as_____
- vii. IUPAC name of $\text{CH}_3\text{-OH}$ is _____
- viii. General formula of alkenes is_____
- ix. _____water do not forms lather with soap.
- x. One faraday of electricity is equal to _____coulombs.

b) State True or False.

- xi. Ions are neutral particles.
- xii. There are thirteen periods in the periodic table.
- xiii. Water cannot be used to extinguish petrol fire.
- xiv. Sterilization of water is generally done by chlorination.
- xv. Reduction is gain of electrons.

SECTION-B

Q2. Attempt any ten questions.

10x3=30

- a. Calculate the percentage composition of Ca, O and H in Ca (OH)_2 . Given Atomic mass of Ca = 40 amu, O = 16 amu and H = 1 amu.
- b. Differentiate between sigma and pi bond.
- c. What are the advantages of the long form of periodic table?
- d. Define isotopes and isobars.
- e. Define molarity. Give its units.
- f. Define pH. What is the pH of an acidic solution?
- g. Write a short note on buffer solutions.
- h. A sample of hard water is found to contain 204 mg of CaSO_4 / L. What will be its hardness in ppm?
- i. Give any three disadvantages of using hard water for industrial purposes.
- j. What is electrochemical cell? Show the chemical reactions taking place at each electrode.
- k. Give two industrial applications of electrolysis.
- l. What is homologous series? Give one example.
- m. Give the functional group of alcohols, ketones and amines.
- n. Give the IUPAC nomenclature of $\text{CH}_3\text{-CH}_3$, $\text{CH}_3\text{-CH}_2\text{-Cl}$ and $\text{CH}_3\text{-NH}_2$.

SECTION-C

Q3. Attempt any three questions.

3x10=30

- i. State the postulates of Bohr's model of atom. What are the limitations of Bohr's model of atom?
- ii. What is hard water and soft water? Give one method to remove permanent hardness.
- iii. What are the essentials of a chemical equation? Balance the following chemical equations:
 - a. $\text{Fe}_3\text{O}_4 + \text{H}_2 \longrightarrow \text{Fe} + \text{H}_2\text{O}$
 - b. $\text{KMnO}_4 + \text{H}_2\text{SO}_4 \longrightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{O} + \text{O}$
 - c. $\text{H}_3\text{PO}_3 \longrightarrow \text{H}_3\text{PO}_4 + \text{PH}_3$
- iv. Define hybridization. Explain the shape of CH_4 , BF_3 and BeCl_2 on the basis of hybridization.
- v. Define electrolysis. Give a detailed account of Faraday's laws of electrolysis.