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Sardar Patel University
First Semester B.Sc. Examination-2010 (CBCS)
Course No.: US01CCHE-01
Subject: General Chemistry

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Date: 22/11/10, Monday
Time: 11.30 to 1.30 pm

Marks: [70]

Instruction: Answers of all the questions (including multiple choice questions) should be written in the provided answer books only.

Q-1 Multiple choice questions.(mention the correct option in the given answer book). [10]

- From the following which analysis is based on amount of sample?
(a) Proximate analysis (b) Qualitative Analysis
(c) Macro analysis (d) Complete Analysis
- Which one of following is based on spectroscopic properties measurements?
(a) Chromatography (b) Flame photometry
(c) Potentiometry (d) Titrimetry
- The digits of a number which are needed to express the precision of the measurements from which the numbers were derived are known as....
(a) Standard Deviation (b) Significant Figures (c) error (d) mean
- The conjugate base of H_3O^+ is.....
(a) H_2O (b) OH^- (c) HCO_3^- (d) None of these
- According to Lewis concept, acid is;
(a) electron donor (b) electron acceptor
(c) proton donor (d) proton acceptor
- During combustion of organic compound CuO is used as:
(a) catalyst (b) oxidizing agent (c) solvent (d) reducing agent
- The correct name of 6-octene is:
(a) 2-octene (b) octane (c) 3-octene (d) none of these
- The abbreviation "en" is used for
(a) Ethylene diaminetetraacetato (b) Ethylene diamine
(c) Dimethyl glyoxime (d) Diethylene triamine
- The ligands which can be coordinated to the central metal ion through either of the two donor atoms are called.....
(a) bi-dentate Ligand (b) Bridging Ligand
(c) Polydentate Ligand (d) Ambidentate Ligand
- In co-ordination compound primary valency of a central metal ion is satisfied by,
(a) cation (b) ligand (c) carbocation (d) negative ions

- Q-2 Attempt Any Ten Questions. (20)**
- Discuss the stages of analysis.
 - The following values were obtained for the determination of Cadmium in a sample of dust 4.3, 4.1, 4.03, 3.2 $\mu\text{g. g}^{-1}$ should the last value 3.2 be rejected? Q_{critical} is 0.831.
 - "Precision always accompanies accuracy but high degree of precision does not mean accuracy" justify.
 - Define and explain sparingly soluble salts with the example.
 - Discuss the concept of Lowry-Bronsted acid-base with suitable example.
 - The solubility product of AgCl is 2.8×10^{-10} . Determine the solubility of AgCl in pure water.
 - Explain Lassaigne's test for the detection of elements in organic compounds.
 - Discuss on Carius Method for the estimation of halogen.
 - "As number of branch increases in n-alkane, boiling point decreases" -why?
 - Give IUPAC nomenclature of: H_3CoCl_6 , $\text{K}_4[\text{Ni}(\text{CN})_4]$
 - Defines terms: Bridging Ligand, Co-ordination Sphere.
 - Discuss on chelation.
- Q-3 (a) Discuss the any five methods for minimization of systematic errors. (05)**
(b) Give classification of quantitative analysis and discuss any one in detail. (05)
- OR**
- Q-3 (a) Write applications of Analytical chemistry in various fields. (05)**
(b) Define Accuracy. Discuss methods for determination of accuracy. (05)
- Q-4 (a) Discuss on self-ionization of water and prove that $\text{pH} + \text{pOH} = 14$. (04)**
(b) Explain on: Lewis concept of acids and bases. (03)
(c) Calculate solubility of CaF_2 in pure water and in 0.1M $\text{Ca}(\text{NO}_3)_2$ if K_{sp} of CaF_2 is 1.7×10^{-10} . (03)
- OR**
- Q-4 (a) Write a note on: Selective precipitation. (04)**
(b) Discuss on Arrhenius theory of acid-base. (03)
(c) Explain on strength of acids and bases. (03)
- Q-5 (a) Explain on quantitative analysis of carbon and hydrogen in organic compounds. (04)**
(b) Draw E-Z isomers for the following. (03)
 (a) 2-pentene (b) 1-bromo-1,2-dichloro ethane
(c) Explain: Boiling point of n-butane, n-pentane and n-hexane are 0° , 36° and 69° respectively. (03)
- OR**
- Q-5 (a) Describe Duma's Method for the estimation of organic nitrogen. (04)**
(b) In C and H analysis of organic sample having weight 50 mg gave 150 mg of CO_2 and 72 mg of H_2O . Determine percentage of carbon, hydrogen and oxygen. (03)
(c) Explain: 1-butene does not show geometric isomerism while 2-butene shows it. (03)
- Q-6 (a) What is Ligand? Give classification of Ligand based on dentate character. (05)**
(b) Discuss co-ordination theory or Werner's co-ordination theory. (05)
- OR**
- Q-6 (a) Define chelates and give uses of chelates. (05)**
(b) Discuss geometry and draw the structures of complexes having co-ordination numbers 4 and 6. (05)

*** ALL THE BEST ***