

VITTHALBHAI PATEL & RAJRATNA P. T. PATEL SCIENCE COLLEGE  
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B. Sc. (SEMESTER – I)



SUBJECT : GENERAL CHEMISTRY (US01CCHE01)

DATE : 01-10-2016

INTERNAL TEST – OCTOBER, 2016

MARKS : 25

DAY : SATURDAY

TIME : 01.30 P.M. TO 02.30 P.M.

Note: (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

**Q.1 Choose the correct option for the following :** [3]

- (i) Which of the following is conjugated base of HF ?  
(a)  $\text{H}_2\text{F}^+$  (b)  $\text{F}^-$  (c)  $\text{H}^+$  (d)  $\text{HF}_2^-$
- (ii) Which of the following compound is alkenol ?  
(a) Allyl alcohol (b) Vinyl chloride (c) 2 - Propanol (d) 2 - Butenal
- (iii) Which of the following chelating agent is used for the removal of harmful radioactive metals from human body ?  
(a) Glycinato (b) en (c) edta (d) dmg

**Q.2 Answer the following (Attempt any two) :** [4]

- (i) Define : (a) Common ion effect (b) Selective precipitation.
- (ii) Draw E – Z structure for 1 – Chloro – 2 – methyl – 2 – butene.
- (iii) Give the name and structure for the following abbreviations.  
(a)  $(\text{dmg})^-$  (b)  $(\text{gly})^-$

**Q.3 (a) Discuss Arrhenius concept of acids and bases. What are the limitations of this concept ?** [3]

(b) Calculate the solubility of  $\text{CaF}_2$  in (i) Pure water (ii) 0.1 M NaF solution. [3]  
( Given  $K_{sp}$  of  $\text{CaF}_2$  is  $1.7 \times 10^{-10}$  M )

OR

**Q.3 (a) All Lewis bases are Lowry – Bronsted bases but all Lewis acids are not Lowry – Bronsted acids. Explain.** [3]

(b) Discuss self ionization of water and prove that  $\text{pH} + \text{pOH} = \text{p}K_w = 14$ . [3]

**Q.4 (a) The names given below are objectionable. Write their structure and give their IUPAC name.** [3]

- (i) 3-Methyl-2-butene (ii) 2-Ethyl-1-propene (d) 2,4,5-Trimethylhexane
- (b) Combustion of 6.51 mg of a compound gave 20.47 mg of carbon dioxide and 8.3 mg of water. The molecular weight was found to be 84 gm/mole. Calculate molecular formula of the compound. (At. Wt. of C = 12, H = 1, O = 16) [3]

OR

[PTO]

[1]

- Q.4 (a) Boiling point of n-Pentane, isopentane and neopentane are  $36^\circ$ ,  $28^\circ$  and  $9.5^\circ\text{C}$  [3]  
respectively. Explain it.
- (b) Discuss Carius method for quantitative analysis of sulfur. A Carius sulfur [3]  
analysis of a 4.81 mg sample gave 6.48 mg of  $\text{BaSO}_4$ . Calculate the percentage  
of sulfur in the compound. (At. Wt. of S = 32, O = 16, Ba = 137)

- Q.5 (a) Define Ligands and give its classification based on the number of donor atoms [3]  
present in it.
- (b) Describe the uses of chelates. [3]

OR

- Q.5 (a) Write IUPAC name for the following complexes. [3]  
(i)  $\text{K}_2[\text{Ni}(\text{CN})_4]$  (ii)  $[\text{Pt}(\text{Py})_4][\text{PtCl}_4]$  (d)  $[\text{CoBr}(\text{H}_2\text{O})(\text{NH}_3)_4]^{2+}$
- (b) Define coordination number and discuss the geometry of complex having [3]  
coordination number 3 and 4.

