

Vitthalbhai Patel & Rajratna P. T. Patel Science College,
Vallabh Vidyanagar
B. Sc. (Semester-IV)

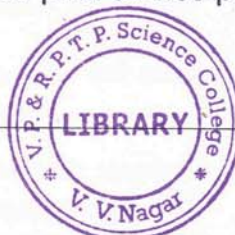
Subject : INORGANIC CHEMISTRY (US04CCHE01)

Date : 15-03-2018
Day : Thursday

Internal Test

Marks : 25
Time : 3.00 p.m. to 4.30 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) The covalent radii of the atoms of elements of group increase as expected from top to bottom.
(a) IVB(Ti, Zr, Hf) (b)VIII(Fe, Ru, Os)
(c) IIIB(Sc, Y, La) (d) IIB(Zn, Cd, Hg)
- (ii) Linkage isomerism of complex compound is due to co-ordination of ligand to central metal ion.
(a) bidentate (b) ambidentate (c) polydentate (d) optically active
- (iii) Which one of the following is most widely used extracting solvent for lanthanides ?
(a) TBP (b) Xylene (c) Kerocene (d) Benzene

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

- (i) Why transition metal atom or cation has tendency to form complex compounds ?
- (ii) Draw the structure of optical isomers of $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$ ion.
- (iii) What is lanthanide contraction ?

Q.3 Answer the following: [6]

- [a] Give the atomic number, name, symbol, complete and valence shell electronic configuration of 3rd or 5d series transition elements.
- [b] Give the brief account on variable oxidation states exhibited by d-block elements.

OR

Q.3 Answer the following: [6]

- [a] Explain the purple colour of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ ion attributed to d-d transition.
- [b] Discuss in brief classification of d-block elements.

Q.4 Answer the following : [6]

- [a] On the basis of EAN rule, predict the number of unpaired electrons and μ_{eff} value of the $[\text{Cu}(\text{NH}_3)_4]^{2+}$ complex.
- [b] Describe the Grinberg's method to distinguish between cis- and trans-isomers.

OR

Q.4 Answer the following:

[6]

- [a] Explain in brief the structures of Co(III) ammines on the basis of Werner's co-ordination theory.
- [b] Give the brief account on ionization isomerism.

Q.5 Answer the following :

[6]

- [a] Give the name, symbol, atomic number and electronic configuration of lanthanides.
- [b] Give the comparison between lanthanides and actinides.

OR

Q.5 Answer the following :

[6]

- [a] Explain ion-exchange method for separation of lanthanides.
- [b] Discuss in brief the oxidation states of actinides.

