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V. P. & R. P. T. P. SCIENCE COLLEGE, V. V. NAGAR.

INTERNAL TEST: MARCH-2014

S. Y. B. Sc. Semester-IV

Sub.:- Inorganic Chemistry (US04CCHE01)

Date: 12/03/2014 **Total Marks:30**

Day: Wednesday **Time: 1.00 P.M. To 2.30 P.M.**

Note: (i) All questions are to be attempted.

(ii) Figures to the right of each question indicate full marks.

Q : 1 Answers the following short questions**(any three).** (6)

(1) How solid V_2O_5 acts as catalyst during the conversion of SO_2 to SO_3.

(2) Which d-block elements of 3d series show anomalous electronic configuration and give their correct configuration.

(3) Define EAN of central metal ion in co-ordination compound and calculate EAN of Cr^{3+} ion in $[Cr(NH_3)_6]^{3+}$.

(4) Give the molecular formula of all the hydrate isomers of $CrCl_3.6H_2O$ and its physical properties.

(5) Give general electronic configuration of Lanthanides and Actinides.

(6) What is meant by lanthanide contraction?

Q : 2[A] Give the name, symbol, complete and valence shell electronic configuration of 2^{nd} transition series elements. [4]

[B] How will you determine the paramagnetic or diamagnetic nature of a given substance? [4]

OR

Q : 2[A] Classify d-block elements and discuss any two series. [4]

[B] Discuss the variable oxidation states shown by d-block elements of 1^{st} transition series under headings: [4]

(i) Acidic/basic character of the compounds

(iii) Relative stability of various oxidation states.

Q : 3[A] Write note on optical isomerism found in octahedral complexes. [4]

[B] On the basis of EAN rule, predict the number of unpaired electrons and μ value of the following complexes : (i) $[Cu(NH_3)_4]^{2+}$ (ii) $[Cr(NH_3)_6]Cl_3$ [4]

OR

Q : 3[A] Justify, optical isomerism rarely occurs in square planar complexes. [4]

[B] Arrange the following complexes in the increasing order of their electrical conductivity : $[Co(NH_3)_3Cl_3]$, $[Co(NH_3)_5Cl]Cl_2$, $[Co(NH_3)_6]Cl_3$ and $[Co(NH_3)_4Cl_2]Cl$, [4]

Q : 4[A] Define lanthanides. Give the name, symbol, atomic number and electronic configuration of lanthanides. [4]

[B] Discuss the various oxidation states exhibited by actinides. [4]

OR

Q : 4[A] Discuss the position of lanthanides in periodic table. [4]

[B] Give the brief account on consequences of lanthanide contraction. [4]