

Roll No. \_\_\_\_\_

No. of Printed Pages: 02

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

INTERNAL TEST:- OCTOBER-2019

S. Y. B. Sc. Semester-III

Sub.:- Inorganic Chemistry (US03CCHE21)



Date:- 05/10/2019

Total Marks:-25

Day:-Saturday

Time: 03:00 P.M. To 04:15 P.M.

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

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

Q : 1 Give the most correct choice to the following multiple choice questions. [5]

(i) Which of the following group is odd?

- (a) hydrates, ammoniates, alcoholates, hydrazinates.
- (b) Hydration, ammonation, alcoholates, hydrazination reaction.
- (c) hydrolysis, ammonolysis, alcoholysis, etherolysis reaction.
- (d) Acid-base, salt formation, neutralization, precipitation reaction.

(ii) \_\_\_\_\_ is an outer orbital octahedral complex ion.

- (a)  $[\text{Fe F}_6]^{3-}$
- (b)  $[\text{Fe}(\text{CN})_6]^{3-}$
- (c)  $[\text{Co}(\text{NH}_3)_6]^{3+}$
- (b)  $[\text{Fe}(\text{CN})_6]^{4-}$

(iii) Optical isomerism is not shown by the complex ion.....

- (a)  $[\text{Cr}(\text{ox})_3]^{3-}$
- (b)  $\text{Tras}[\text{Co}(\text{en})_2\text{Cl}_2]^+$
- (c)  $\text{Cis}[\text{Co}(\text{en})_2\text{Cl}_2]^+$
- (d)  $[\text{Cr}(\text{en})_3]^{3+}$

(iv) Strong and broader Laporte-permitted bands have been observed due to \_\_\_\_\_ transitions in  $\text{Ce}^{3+}$ ,  $\text{Tb}^{3+}$ ,  $\text{Sm}^{2+}$ ,  $\text{Eu}^{2+}$  &  $\text{Yb}^{2+}$

- (a)  $5f^n \rightarrow 6d$
- (b)  $5d^n \rightarrow 6d^1$
- (c)  $4f^n \rightarrow 5d^1$
- (d)  $4f^n \rightarrow 5f^1$

(v) Which of the following metallic carbonyl is not diamagnetic?

- (a)  $[\text{Cr}(\text{CO})_6]$
- (b)  $[\text{Fe}(\text{CO})_5]$
- (c)  $[\text{V}(\text{CO})_6]$
- (d)  $[\text{Ni}(\text{CO})_4]$

**Q : 2** Discuss the periodic variations of acidic properties of hydrides and oxy acids. [5]

**OR**

**Q : 2** Describe liquid sulphur dioxide as a non aqueous solvent under different headings. [5]

**Q : 3**  $[\text{NiCl}_4]^{2-}$  ion is tetrahedral and paramagnetic while  $[\text{Ni}(\text{CN})_4]^{2-}$  is square planar and diamagnetic. Explain. [5]

**OR**

**Q : 3** How Infra-red spectroscopic technique and Grinberg's method are useful to distinguish between cis and trans isomers? [5]

**Q : 4** Give the name, symbol, atomic number and electronic configuration of lanthanides. [5]

**OR**

**Q : 4** Give an account on various oxidation states exhibited by actinides. [5]

**Q : 5** Discuss the preparation, properties and structure of  $[\text{Fe}(\text{CO})_5]$ . [5]

**OR**

**Q : 5** Describe the structure and nature of M – CO bonding in various types of metal carbonyls. [5]

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