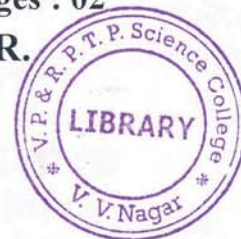


V. P. & R. P. T. P. SCIENCE COLLEGE, V. V. NAGAR.

INTERNAL TEST: MARCH-2017

S. Y. B. Sc. Semester-IV

Sub.:- Inorganic Chemistry (US04CCHE01)



Date:- 09/03/2017

Total Marks:-25

Day:-Thursday

Time: 03:00 P.M. To 04:30 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.** [3]

- (i) Which of the following oxides of manganese is strongly acidic and react with KOH (base) to form oxo salt?  
(a)  $\text{MnO}_3$       (b)  $\text{Mn}_2\text{O}_7$       (c)  $\text{Mn}_2\text{O}_3$       (d)  $\text{Mn}_3\text{O}_4$
- (ii) 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)  $4f^n \rightarrow 5f^1$
- (iii) In the metal carbonyl \_\_\_\_\_ bond form between metal and carbonyl.  
(a)  $\text{M} \rightarrow \text{CO}$       (b)  $\text{M} \rightarrow \text{OC}$       (c)  $\text{M} \leftarrow \text{CO}$       (d)  $\text{M} \leftarrow \text{OC}$

**Q : 2 Answers the following short questions(any two).** [4]

- (i) Give the evidences for metallic properties of *d*-block elements.  
(ii) Give general electronic configuration of Lanthanides and Actinides.  
(iii) Draw the structure of  $\text{Fe}_3(\text{CO})_{12}$ .

**Q : 3[A]** Give the name, atomic number, symbol, complete and valence shell electronic configuration of 2<sup>nd</sup> transition(4*d*) series elements. [3]

**[B]** The purple colour of  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  ion attributed to d-d transition. Explain. [3]

OR

**Q : 3[A]** Deduce the formula for calculating the magnetic moment of 3*d*-series transition metal complexes. [3]

**[B]** Discuss the variable oxidation states shown by d-block elements of 1<sup>st</sup> transition series. [3]

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

lanthanides. [3]

[B] Discuss the magnetic properties of actinides. [3]

OR

Q : 4 [A] Describe the ion-exchange method for separation of lanthanides. [3]

[B] Discuss the various oxidation states exhibited by actinides. [3]

Q : 5 [A] Give the general methods of preparation and chemical properties of Metal carbonyls. [3]

[B] Discuss the preparation, properties and structure of  $[\text{Fe}_2(\text{CO})_9]$ . [3]

OR

Q : 5 [A] Discuss the structure and nature of M – CO bond in metal carbonyls. [3]

[B] Give the preparation, properties and structure of sodium nitroprusside. [3]

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