



UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Sixth Semester – 2019

Paper: Inorganic Chemistry

Course Code: CHEM-315 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct choice.

(1x10=10)

1. The hybridization of Ni in $\text{Ni}(\text{CO})_4$ is

a) sp^3

b) dsp^2

c) sp

d) sp^2

2. which one is a high spin or outer orbital complex?

a) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$

b) $[\text{Co}(\text{CN})_6]^{3-}$

c) $[\text{CoF}_6]^{3-}$

d) $[\text{Co}(\text{CN})_6]^{2+}$

3. Which one of the following statement is false

a) weak ligand like F^- , Cl^- form high spin complexes. b) strong ligand like CN^- form low spin complexes.

c) $[\text{FeF}_6]^{3-}$ is high spin complex.

d) $\text{Ni}(\text{CO})_4$ is high spin complex

4. Octahedral complex (C.N=6) show cis-trans isomerism if they are of type

a) Ma_4b_2

b) Ma_3b_3

c) Ma_5

d) M_5b

5. The red phosphor in colour screen is

a) CaO

b) CuSO_4

d) Eu

d) Xe

6. The most common oxidation state of actinide are

a) +5

b) +7

c) zero

d) +3

7. All lanthanides are non-radioactive except

a) promethium

b) actinium

c) uranium

d) thorium

P.T.O.

8. Which theory is unable to predict the shapes of molecule having extensive delocalized π -electrons system

- a) CFT
- b) VBT
- c) MOT
- d) Warner's theory

9. Which of the following compound show intermolecular hydrogen bonding

- a) p-nitrophenol.
- b) m-hydroxy benzaldehyde
- c) o-hydroxy benzoic acid
- d) none of the above.

10. YH₃ is used as

- a) hydrogen moderator carrier .
- b) diluents.
- c) structural component.
- d) radiation source.



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. 2 SHORT QUESTIONS

(2x10=20 marks)

- (i) How VSEPR theory explain the shape of SO_3 and SO_4^{2-} ?
- (ii) Explain the shape of AB_9 molecules with examples?
- (iii) What is the shape of XeF_2 and XeF_6 molecule?
- (iv) Explain the structure of heteronuclear diatomic molecule by MOT.
- (v) Explain John-Teller distortion with example
- (vi) Differentiate between Hybrid and molecular orbital?
- (vii) What are the different oxidation states of Actinides?
- (viii) Give some examples of ores of Lanthanides.
- (ix) What are the applications of Uranium?
- (x) Explain preparation of metals of individual Lanthanide after separation.

Q. 3 Long Questions

(10x3=30 marks)

- (i) Explain the isomerism in coordination compounds with suitable examples? (10)
- (ii) How Thorium can be extracted from monazite ore by acid cracking? (10)
- (iii) What are the role of Lanthanides in industry and chemistry? (10)