

7. (a) Differentiate between : 4
 (i) Mineral and ore
 (ii) Calcinations and ore
 (iii) Gangue and flux
 (b) How will you extract Ni from its ore ? 4

SECTION - D

8. (a) Explain the following : $4 \times 2 = 8$
 (i) Filling of 4f sublevel is not regular in lanthanides
 (ii) +3 oxidation state is the characteristic oxidation state of lanthanides though their atoms contain only 2 electron ($6s^2$) in outermost shell
 (b) (i) Describe the separation of lanthanides by ion-exchange chromatography.
 (ii) What are double salts of lanthanides ?

9. Discuss actinides : 4×2
 (i) Oxidation state
 (ii) Paramagnetism
 (iii) Complex ion formation
 (iv) Transuranic elements

Roll No.

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B. Sc. (Hons.) Chemistry 4th Semester
 Examination – May, 2019

INORGANIC CHEMISTRY

Paper : CH(H)-401

Time : Three hours / [Maximum Marks : 40

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Section. Question Number 1 is compulsory. All questions carry equal marks.

1. Compulsory Question : $8 \times 1 = 8$
 (a) Why are salts of Zn, Cd and Hg white ?
 (b) Write the disproportionation reaction of Cu^+ and Au^+ .
 (c) Give two examples of Mo compounds in oxidation state II.

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- (d) Classify the following as :
- (i) Lewis acids
 - (ii) Border line Lewis acids
 $CS_2, TeCl_4, SO_3, CO_2, Mg^{2+}, GaCl_3$
- (e) Which is stronger acid HCN or HOOCN ?
- (f) What is froth floatation process ?
- (g) Why do Ce and Tb exhibit +4 oxidation states ?
- (h) Give one use of UF_6 .

SECTION - A

2. (a) Compare the second and third transition series with those of first transition series in following properties : 4
- (i) Magnetic properties
 - (ii) Oxidation states
- (b) (i) Write the electronic configuration of Pd($Z = 46$) and Nb($Z = 41$). 4
- (ii) Densities of 3rd transition series metals double than those of second transition series metals. Explain.
3. (a) Explain the stereochemistry of following : 4
- (i) $[Mn(CN)_2]^+$
 - (ii) $[HgI_3]^+$
- (2)

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- (b) Give two examples of Mo(II) compounds. Also write their coordination and geometry. 4

SECTION - B

4. (a) Write short note on isopoly acids. 4
- (b) Discuss acids and bases according to Bronsted-Lowry definition with suitable examples. 4
5. (a) Explain acidity trends : 4
- (i) $H_3PO_4 > H_3AsO_4$
 - (ii) $H_3PO_4 > H_2SO_3$
- (b) In each pairs, state which is stronger and why ? 4
- (i) HF and HCl
 - (ii) CH_3COOH and $HCOOH$

SECTION - C

6. (a) How do metals occur in nature ? Describe the general procedure of extracting a metal from its ores. 4
- (b) Write a short note on : 4
- (i) Electro refining
 - (ii) Zone refining

(3)

P. T. O.