

**FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, OCTOBER 2012**

(CCSS)

Chemistry (Core Course)

CH 5B 09—INORGANIC CHEMISTRY—I

Time : Three Hours

Maximum : 30 Weightage

**Section A***Answer all questions.**Each question has a weightage*

Choose the correct answer :

1. Bohn Haber cycle is used to calculate :  
(a) **Electronegativity.** (b) Electron affinity.  
(c) Lattice energy. (d) Oxidation potential.
2. Hybridization of oxygen in  $H_2O$  is :  
(a)  $sp^3$ . (b)  $sp^2$ .  
(c)  $sp$ . (d) None of the above.
3. The structure of boron nitride is similar to that of  
(a) diamond. (b) graphite.  
(c) **borazine.** (d) **fullerene.**
4. Purification of Nickel is done by .  
(a) Mond's process. (b) Oxford process.  
(c) Electrolytic method. (d) **Kroll process.**
5. The reduction of an oxide by aluminium is called  
(a) Smelting. (b) **Liquation.**  
(c) Amalgamation. (d) **Thermite** process.
6. Rutile is **the** ore of :  
(a) Ti. (b) **Ni.**  
(c) **Zr.** (d) Al.

**Turn over**

Fill in the blanks :

7. ~~\_\_\_\_\_ is called inorganic~~ benzene.
8. ~~\_\_\_\_\_ is an example for redox~~ indicator.
9. The first transition series begins with \_\_\_\_\_
10. Most common valency of actinides is \_\_\_\_\_
11. Full name of **EDTA** is \_\_\_\_\_
12. A substance gets precipitated when its ionic product exceeds the \_\_\_\_\_

(12 x ¼ = 3 weightage)

### Section B

Answer **all** questions.  
Each question has a **weightage** 1.

13. Define dipole moment. Give one application.
14. Name the factors which favours the formation of ionic bond.
15. What is **Hydrometallurgy** ?
16. What is meant by roasting and calcination ?
17. Explain electropositive character of iodine with suitable example.
18. What is lanthanide contraction ? Explain.
19. What is meant by co-precipitation ? How can it be minimized ?
20. Comment on the oxidation state of cerium.
21. The end point in the titration of boric acid against **NaOH** is not sharp. Why ?

(9 x 1 = 9 weightage)

### Section C

Answer any **five** questions.  
Each question has a **weightage** 2.

22. State and explain **Fajan's** rules.
23. The dipole moment of **BF<sub>3</sub>** is zero. Explain.
24. What is lattice energy ? How does it influence the solubility of a compound.
25. Actinides have greater tendency to form complex formation than lanthanides. Why ?
26. Explain zone refining.
27. Explain the application of solubility product in the group separation of cations.
28. Give a method for the elimination of phosphate present in an inorganic mixture.

(5 x 2 = 10 weightage)

**Section D**

*Answer any **two** questions.  
Each question has a **weightage** 4.*

29. What are the different methods of ore concentration ? Explain.
30. Discuss the general characteristics of transition elements.
31. Give the preparation, properties and structure of **borazine**.

**(2 x 4 = 8 weightage)**