

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 $\frac{1}{4}$.*

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) Liquefaction.
 - (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 _____.

($12 \times \frac{1}{4} = 3$ 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 ?

($9 \times 1 = 9$ 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_3 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.

($5 \times 2 = 10$ 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 × 4 = 8 weightage)