

Chemistry
Assignment: 6

(General Principles and Process of Isolation of elements)

- Q1. What is meant by pyro-metallurgy?
- Q2. Why flux is added during metallurgy?
- Q3. What is the role of depressant in froth floatation process?
- Q4. Out of C and CO, which is a better reducing agent at 637K?
- Q5. How is 'cast iron' different from 'pig iron'?
- Q6. The value of $\Delta_f G^0$ for formation of Cr_2O_3 is -540KJmol^{-1} and that of Al_2O_3 is -827K J mol^{-1} . Is reduction of Cr_2O_3 is possible with Al ? Prove it.
- Q7. Give reason for bleaching action of Cl_2 ?
- Q8. Account for the following?
- The reduction of a metal oxide is easier if the metal formed is in liquid state at the temperature of reduction.
 - Pine oil is used in froth floatation method.
- Q9. Explain the role of CO_2 in purification of Ni.
- Q10. Write the reactions involved in the extraction of Fe from iron oxides ores in blast furnace.
- Q11. Write all the reactions involved in extraction of Al from bauxite ore?
- Q12. State briefly the principles which serve as basis for the following operations in metallurgy:-
- Zone refining
 - Refining by liquation
 - Froth floatation
- Q13. Giving examples differentiate between roasting and calcinations.
- Q14. Describe a method for refining:
- Ni
 - Ti or Zr
- Q15. Free energies of formation ($\Delta_f G$) of MgO (s) and CO (g) at 1273 K and 2273 K are given below:
- $(\Delta_f G)$ of MgO (s) = -941KJ/mol at 1273K
 $(\Delta_f G)$ of MgO (s) = -314 KJ/mol at 2273K
 $(\Delta_f G)$ (CO (g)) = -439 KJ/mol at 1273K
 $(\Delta_f G)$ (CO (g)) = -628 KJ/mol at 2273K

On the basis of above data, predict the temperature at which carbon can be used as reducing agent for MgO(S).

Q16. The reaction $\text{Cr}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Cr}$, $\Delta G^0 = -421 \text{ KJ}$ is thermodynamically feasible as is apparent from ΔG . Why it does not takes place at room temp.

Q17. Describe the role of NaCN in extraction of Ag from a silver ore.

Q18. Give one limitation of Ellingham Diagram.

Q19. Describe how chromatography can be used for purification of elements.

Q20. What is meant by stationary phase in chromatography and how it is selected?