

INDIAN SCHOOL MUSCAT
CHEMISTRY DEPARTMENT
QUESTION BANK

General principles and Processes of isolation of elements

VSA QUESTIONS (1 - MARK QUESTIONS)

1. Sulphide ores are subjected to roasting, while carbonate ores are subjected to calcination. Comment on the statement
2. The reduction of the metal oxide is easier if the metal formed is in liquid state, at the temperature of reduction. Give reason
3. How is copper extracted with a low grade ore of it?
4. What are collectors in froth flotation process? Give one example
5. Name the most important form of iron. Mention its one use.
6. What are froth stabilizers? Give two examples
7. What are the constituents of German silver?
8. Write the reaction involved in the extraction of copper from low grade ores
9. The graphite electrodes in the extraction of 'aluminium' by Hall-Heroult process need to be changed frequently. Why?
10. Mention the role of following : (Each question carries one mark)
 - i. SiO_2 in the extraction of Cu from copper matte.
 - ii. CaCO_3 in the metallurgy of Fe.
 - iii. CO in the metallurgy of iron .

- iv. I_2 in the purification of zirconium.
- v. NaCN in the extraction of gold from gold ore.
- vi. Cryolite in the metallurgy of Al.

SA (I) QUESTIONS (2 - MARK QUESTIONS)

11. i. How is chemical reduction different from electrolytic reduction?
ii. Name a metal each is obtained by
(a) electrolytic reduction
(b) chemical reduction.
12. Write the Chemical reactions taking place in different zones in the blast furnace for the extraction of iron from its ore.
13. Give equations for the industrial extraction of zinc from calamine.
14. Gibbs energies of formation $\Delta_f G$ of MgO(s) and CO(g) at 1273K and 2273 K are given below:
 $\Delta_f G [\text{MgO(s)}] = -941 \text{ kJ mol}^{-1}$ at 1273 K.
 $\Delta_f G [\text{CO(g)}] = -439 \text{ kJ mol}^{-1}$ at 1273 K.
 $\Delta_f G [\text{MgO(s)}] = -314 \text{ kJ mol}^{-1}$ at 2273 K. $\Delta_f G [\text{CO(g)}] = -628 \text{ kJ mol}^{-1}$ at 2273 K.
On the basis of above data, predict the temperature at which carbon can be used as a reducing agent for MgO(s).
15. The choice of a reducing agent in a particular case depends on thermodynamic factor. How far do you agree with this statement?
Support your opinion with two examples.

SA (II) TYPE QUESTIONS (3 - MARK QUESTIONS)

16. i. Name the principal ore of Aluminium.

- ii. Write the equation for the reactions taking place at the anode and the cathode during the extraction of aluminium by the electrolytic process
17.
 - i. Write the name or formula of any two sulphide ores of copper.
 - ii. Explain the froth floatation process
18. Describe how the following changes are brought about
 - i. Pig iron into steel
 - ii. Zinc Oxide into metallic zinc
 - iii. Impure titanium into pure titanium
19. Describe the principle behind each of the following processes
 - i. Vapour phase refining of a metal
 - ii. Electrolytic refining of a metal
 - iii. Recovery of silver after silver ore was leached with NaCN.
20. State the principles of the following methods of refining crude metals
 - i. Zone refining
 - ii. Liquation method
 - iii. Chromatographic method.