

Chapter – 06

General Principles and Processes of Isolation of Elements

Very Short Answer Type Questions

01. Write the principle of chromatography.
02. Name the method used for refining copper metal.
03. What is the role of collectors in the froth floatation process?
04. Giving examples differentiate between roasting and calcination.
05. (i) Indicate the principle behind the method used for the refining of zinc.
(ii) What is the role of silica in the extraction of copper?
06. Why is the froth floatation method selected for the concentration of sulphide ores?
07. What is meant by the term pyrometallurgy?
08. Name two metals that occur in nature as oxides.
09. Differentiate between a mineral and an ore.
10. What type of ores can be concentrated by the magnetic separation method?

Short Answer Type Questions

11. (i) Write the principle of the method used for the refining of germanium.
(ii) PbS & PbCO₃ Out of (ores of lead) which one is concentrated by froth floatation process preferably.
12. Describe the role of the following.
(i) Silica in the extraction of copper from copper matte.
(ii) NaCN in the froth floatation process.
13. Write the principle of the following.
(i) Hydraulic washing (ii) Vapour phase refining
14. Name the principal ore of aluminum, explain the significance of leaching in the extraction of aluminum.
15. (i) Name the method of refining to obtain silicon of high purify.

(ii) What is the role of SiO_2 the extraction of copper?

(iii) What is the role of depressants in the froth floatation process?

16. (i) Name the method of refining of nickel.

(ii) What is the role of cryolite in the extraction of aluminum?

(iii) What is the role of limestone in the extraction of iron from its oxides?

17. Write the chemical reactions involved in the process of extraction of gold. Explain the role of dilute NaCN and Zn in this process.

18. What is the role of a graphite rod in the metallurgy of 'Al'?

19. Describe the role of the following:

(i) NaCN in the extraction of silver. (ii) CO in the purification of Nickel.

20. Describe the role of the following:

(i) Iodine in the refining of titanium

(ii) Cryolite is the metallurgy of aluminum.

Long Answer Type Questions:

21. (i) Name the method of refining of metals such as Germanium.

(ii) In the extraction of Al, impure Al_2O_3 is dissolved in conc. NaOH to form sodium aluminate and leaving impurities behind. What is the name of the process?

(iii) What is the role of coke in the extraction of iron from its oxides

22. Give a reason for the following.

(i) Alumina is dissolved in cryolite for electrolysis instead of being electrolyzed directly.

(ii) Zinc oxide can be reduced to metal by heating with carbon but Cr_2O_3 can't be reduced by heating with carbon

23. Outline the principles of refining of metals by

(i) Distillation (ii) Electrolytic refining.

24. State briefly the principles which serve as the basis for the following operations in metallurgy:

(i) Froth floatation process

(ii) Zone refining (iii) Refining by liquation.

25. Write the chemical reactions which take place in the following operations:

(i) Electrolytic reduction of Al_2O_3

(ii) Isolation of zinc from zinc blende

(iii) Mond's process for refining of nickel.

26. Give reasons for the following:

- (i) Alumina is dissolved in cryolite for electrolysis instead of being electrolyzed directly.
- (ii) Zinc oxide can be reduced to the metal by heating with carbon but not Cr_2O_3 .
- (iii) The extraction of copper directly from sulphide ores is less favorable than that from its oxide through reduction.

27. Describe how the following changes are brought about

- (i) Pig iron into steel
- (ii) Bauxite into pure alumina
- (iii) Impure copper into pure copper.

28. Explain the role of each of the following in the extraction of metals from their ores:

- (i) CO in the extraction of nickel
- (ii) Zinc in the extraction of silver.
- (iii) Silica in the extraction of copper.

29. Write the reactions involved in the following processes:

- (i) Leaching of bauxite ore to prepare pure alumina
- (ii) Refining of zirconium by Van Arkel method.
- (iii) Recovery of gold after gold ore has been leached with NaCN solution.

30. Describe the role of

- (i) NaCN in the extraction of gold from gold ore.
- (ii) Iodine in the refining of zirconium.
- (iii) SiO_2 in the extraction of copper from copper matte.

Write chemical equations for the involved reactions.