

TEST PAPER NO.06

TOPIC : GENERAL PRINCIPLE OF EXTRACTION

M.M. 50

TIME: 3 HRS.

Name of Student _____ Roll No. _____

Q.NO. 1-10 carries 1 mark, 11-20 2 marks, 21-25 carries 3 marks, 26 carries 5 marks.

1. What is the difference b/w ore and mineral?
2. What is meant by metallurgy and gangue?
3. What are depressant and activators in Froth Flotation Process?
4. What is the significance of leaching in the extraction of Aluminium?
5. Why is the reduction of a metal oxide easier if the metal formed is in liquid state at the temperature of reduction?
6. At a site, low grade copper ores are available and zinc and iron scraps are also available. Which of the two scraps would be more suitable for reducing the leached copper ore and why?
7. Copper can be extracted by hydrometallurgy but not Zinc. Explain.
8. Why is the extraction of copper from pyrites more difficult than that from its oxide ore through reduction?
9. Name the common elements present in the anode mud in electrolytic refining of copper. Why are they so present?
10. State the role of silica in metallurgy of copper?
11. What is meant by the term "Chromatography"? What criterion is followed for the selection of the stationary phase in chromatography?
12. Give examples, differentiate b/w roasting and calcination?
13. The value of $\Delta_f G$ for formation of Cr_2O_3 is -540 kJmol^{-1} and that of Al_2O_3 is -827 kJmol^{-1} . Is the reduction of Cr_2O_3 possible with Al?
14. a. Why copper matte is put in silica lined convertor?
b. What is the role of cryolite in the metallurgy of aluminium?
15. a. What is the role of graphite rod in the electrometallurgy of Aluminium?
b. Predict the conditions under which Al might be expected to reduce MgO .
16. a. Out of C and CO, which is a better reducing agent at 673 K.
b. Write reactions taking place in the extraction of Zinc from blende
17. Write reactions in different zones in blast furnace during the iron extraction?
18. Write 2-2 uses of : Al, Cu, Zinc and Iron.
19. Suggest with equation, condition under which Mg could reduce Alumina.
20. What is Ellingham Diagram? What are its limitations.
21. Write short notes on:
a. Froth Flotation b. Leaching c. Liquation
22. Define the following terms:
a. Electrolytic refining b. Zone refining c. Vapor phase refining
23. Explain: a. Mond Process b. Van Arkel c. Metallurgy of Al
24. Explain the equations involved in extraction of Copper with 2 ores.
25. Explain the electrochemical and thermodynamic principles of Metallurgy?

- 26 Write a summary of the occurrence and extraction of Al, Fe, Cu and Zinc in the form of table with following heads: Metal, Occurrence, Common Extraction method and remarks including method and limitations.

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