

General principles of extraction of metals Assignment

- Copper pyrites are concentrated by
 - Electromagnetic method
 - Gravity method
 - Froth floatation process
 - All the above methods
- Froth-floatation method is successful in separating impurities from ores because
 - The pure ore is lighter than water containing additives like pine oil, cresylic acid etc.
 - The pure ore is soluble in water containing additives like pine oil, cresylic acid etc.
 - The impurities are soluble in water containing additives like pine oil, cresylic acid etc.
 - The pure ore is not as easily wetted by water as by pine oil, cresylic acid etc.
- In the metallurgy of zinc, flux is not used because
 - Zinc ore has no impurities
 - Zinc is volatile hence easily separated
 - Zinc reacts with flux
 - Flux is volatile
- Ores like magnetite or tungsstates in tin ores are concentrated by
 - Froth-floatation
 - Magnetic separation
 - Gravity separation
 - Electrostatic separation
- CN^- solution used in extraction of which metal
 - Ag
 - Ti
 - Zn
 - Sn
- An ore like zinc blende is concentrated by
 - Froth floatation
 - Magnetic separation
 - Leaching
 - Washing with water
- The process used of the extraction of sodium is called
 - Serpeck's process
 - Baeyer's process
 - Thermite process
 - Down's process
- Which statement is correct
 - Gangues are carefully chosen to combine with the slag present in the ore to produce easily fusible flux to carry away the impurities
 - Slags are carefully chosen to combine with the flux present in the ore to produce easily fusible gangue to carry away the impurities
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 - Fluxes are carefully chosen to combine with the gangue present in the ore to produce easily fusible slag to carry away the impurities
- Roasting of copper pyrites ores is for the following purposes
 - To burn off sulphur, arsenic, antimony etc. as oxides and convert all the iron and copper to their oxides
 - To burn off arsenic, antimony etc. as oxides and burn off sulphur so that enough of it remains to combine with all the copper
 - To burn off sulphur partially to leave enough to combine with arsenic, antimony etc. and to convert all the iron and copper to oxides
 - To melt arsenic and antimony sulphides etc. and remove them by liquation and to burn off sulphur partially to leave enough to combine with copper and iron
- In the smelting of roasted copper pyrites ore, melting occurs so that the first reaction is
 - All the sulphur preferentially combines with iron to form FeS and CuO
 - All the sulphur preferentially combines with copper to form CuS and FeO
 - All the sulphur preferentially combines with iron to form FeS and Cu_2O
 - All the sulphur preferentially combines with copper to form Cu_2S and FeO
- Silica is added to roasted copper ore during smelting in order to remove
 - Cuprous sulphide
 - Cuprous oxide
 - Ferrous oxide
 - Ferrous sulphide
- When a metal is to be extracted from its ore, if the gangue associated with the ore is silica, then
 - An acidic flux is needed
 - A basic flux is needed
 - Both acidic and basic flux are needed
 - Neither of them is needed
- The impurities associated with minerals used in metallurgy are collectively called
 - Slag
 - Flux
 - Gangue
 - Ore
- The process of roasting of an ore is carried out in the
 - Absence of air
 - Presence of air
 - Limited supply of air
 - None of these
- Flux is used to remove
 - Acidic impurities
 - Basic impurities
 - All impurities from ores
 - Both (a) and (b)
- Identify the reaction that doesn't take place during the smelting process of copper extraction
 - $2FeS + 3O_2 \rightarrow 2FeO + 2SO_2 \uparrow$
 - $Cu_2O + FeS \rightarrow Cu_2S + FeO$
 - $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2 \uparrow$
 - $FeO + SiO_2 \rightarrow FeSiO_3$

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17. In smelting of iron, which of the following reactions takes place in Blast furnace at $400^{\circ}\text{C} - 600^{\circ}\text{C}$
- (a) $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3$ (b) $2\text{FeS} + 3\text{O}_2 \rightarrow 2\text{Fe} + 3\text{SO}_2$
(c) $\text{FeO} + \text{SiO}_2 \rightarrow \text{FeSiO}_3$ (d) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$
18. In the commercial electrochemical process for aluminium extraction, the electrolyte used is
- (a) $\text{Al}(\text{OH})_3$ in NaOH solution (b) An aqueous solution of $\text{Al}_2(\text{SO}_4)_3$
(c) A molten mixture of Al_2O_3 and Na_3AlF_6 (d) A molten mixture of $\text{AlO}(\text{OH})$ and $\text{Al}(\text{OH})_3$
19. Roasting involves
- (a) Only volatilisation of volatile impurities
(b) Only volatilisation of volatile impurities and decomposition of the ore
(c) Volatilisation of volatile impurities and decomposition and oxidation of the ore
(d) Oxidation and reduction of the ore and slag formation
20. Which of the following ores is subjected to roasting during metallurgical operations for getting the metal oxide
- (a) Horn silver (b) Zinc blende (c) Malachite (d) Limonite
21. Roasting is done in
- (a) Blast furnace (b) Open hearth furnace (c) Electric furnace (d) None of these
22. Sodium metal is extracted by
- (a) Electrolysis of aqueous solution of sodium chloride (b) Electrolysis of fused sodium chloride
(c) Heating sodium oxide with carbon (d) Heating sodium oxide with hydrogen
23. Cryolite is used in the extraction of
- (a) Al (b) Pb (c) Fe (d) Cu
24. Which metal is used as a reducing agent in smelting
- (a) C (b) Al (c) Zn (d) None of these
25. During extraction of Fe slag obtained is
- (a) FeO (b) FeSiO_3 (c) MgSiO_3 (d) CaSiO_3
26. Alumino-thermic process is used for metallurgy of
- (a) Pb (b) Ag (c) Al (d) None of these
27. In Goldschmidt aluminothermic process, thermite contains
- (a) 3 parts of Al_2O_3 and 4 parts of Al (b) 3 parts of Fe_2O_3 and 2 parts of Al
(c) 3 parts of Fe_2O_3 and 1 part of Al (d) 1 part of Fe_2O_3 and 1 part of Al
28. Which of the following is slag
- (a) CaO (b) CaSO_4 (c) CaSiO_3 (d) SiO_2
29. A metal obtained directly by roasting of its sulphide ore is
- (a) Cu (b) Pb (c) Hg (d) Zn
30. Calcination is used in metallurgy for removal of
- (a) Water and sulphide (b) Water and CO_2 (c) CO_2 and H_2S (d) H_2O and H_2S
31. Thomas slag is
- (a) CaSiO_3 (b) $\text{Ca}_3(\text{PO}_4)_2$ (c) MnSiO_3 (d) CaCO_3
32. In the hope's process for refining of aluminium, the fused materials form three different layers and they remain separated during electrolysis also. This is because
- (a) The upper layer is kept attracted by the cathode and the lower layer is kept attracted by the anode
(b) There is special arrangement in the cell to keep the layers separate
(c) The 3 layers have different densities
(d) The 3 layers are maintained at different temperatures
33. For purification of alumina, the modern processes most useful when (i) the impurities present is a lot of iron oxides and (ii) the impurities present is a lot of silica, are
- (a) For (i) Hall's process; for (ii) Baeyer's process (b) For (i) Hall's process; for (ii) Serpeck's process
(c) For (i) Serpeck's process; for (ii) Baeyer's process (d) For (i) Baeyer's process; for (ii) Serpeck's process
34. Electric refining is used for refining of
- (a) Lead (b) Copper (c) Iron (d) Sodium
35. MacArther process is used for
- (a) Hg (b) Fe (c) Cl (d) O_2
36. Electrometallurgy is used for
- (a) Transition metals (b) Most reactive metals (c) Noble metals (d) Soft metals
37. Iron is manufactured from the ore

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- (a) Cryolite (b) Haematite (c) Bauxite (d) Chaleopyrite
38. How is limestone used in *Fe* extraction
(a) Oxidation of *Fe* ore (b) Reduction of *Fe* ore (c) Formation of slag (d) Purification of *Fe* formed
39. *Pb* and *Sn* are extracted from their chief ore by
(a) Carbon reduction and self reduction (b) Self reduction and carbon reduction
(c) Electrolysis and self reduction (d) Self reduction and electrolysis
40. In froth floatation process for the purification of ores, the particles of ore float because
(a) Their surface is not easily wetted by water (b) They are light
(c) They are insoluble (d) They bear electrostatic charge
41. Mond's process is used for
(a) *Ni* (b) *Al* (c) *Fe* (d) *Cu*
42. Bessemer converter is used of
(a) Steel (b) Wrought iron (c) Pig iron (d) Cast iron
43. Colemanite is
(a) $Ca[B_3O_4(OH)_2] \cdot 2H_2O$ (b) $Ca_2B_6O_{11} \cdot 5H_2O$ (c) $Ca(OH)_2$ (d) $Na_2B_4O_7 \cdot 2H_2O$
44. Which process of purification is represented by the following scheme
$$\underset{\text{Impure}}{Ti} + 2I_2 \xrightarrow{250^\circ C} TiI_4 \xrightarrow{1400^\circ C} \underset{\text{Pure}}{Ti} + I_2$$

(a) Cupellation (b) Poling (c) Electrolytic refining (d) Zone refining
(e) Van-Arkel process
45. Which of the following is not a mineral of iron
(a) Magnetite (b) Siderite (c) Smithsonite (d) Limonite
(e) Haematite
46. Which one of the following ores is best concentrated by froth-flotation method
(a) Galena (b) Cassiterite (c) Magnetite (d) Malachite
47. Which one of the following is an ore of aluminium
(a) Bauxite (b) Silver sulphate (c) Silver chloride (d) Sodium sulphate
48. Which one of the following ores is a chloride
(a) Horn silver (b) Zincite (c) Bauxite (d) Felspar
49. Corundum is an ore of
(a) Copper (b) Boron (c) Aluminium (d) Sodium
50. Aluminium is most abundant in earth crust yet it is obtained from bauxite because
(a) Bauxite is available in larger quantity (b) Of easy extraction of aluminium from it
(c) Bauxite contains maximum aluminium (d) Bauxite is less impure