SRIGAYATRI EDUCATIONAL INSTITUTIONS

INDIA

SR MPC JEE MAINS UT-2 QB

GENERAL PRINCIPLE AND PROCESS OF ISOLATION OF ELEMENTS

1. Which of the following is not an ore of magnesium

   1) Carnallite 2) Dolomite 3) Magnesite 4) Gypsum

2. Pyrolusite is

   1) An oxide are of Mn 2) A chloride are of Zn

   3) A carbide ore of P 4) A sulphidee ore of Mn

3. Which of the following is most common impurities present in bauxite ore ?

   1) CuO 2) ZnO 3) CaO 4) SiO_2

4. Which of the following metal is not extracted by leaching ?

   1) Aluminium 2) Mercury 3) Silver 4) Gold

5. For which of the following ore, froth flotation method is used for concentration ?

   1) Haematite 2) Zinc blende 3) Magnetite 4) Carnallite

6. Which is not correctly mached for refining of crude metals ?

   1) Van Arkel : Zirconium 2)Mond's process : lead

   3) Liquation : Tin 4) Distillation : Zinc and Mercury

7. Impure $Ni + 4CO \xrightarrow{(60-80\%)} Ni(CO) \xrightarrow{180^0} Ni + 4CO$. The process of purification of the metal is known as :

   a) Van-Arkel process b) Pyrometallargy

   . c) Zone refining d) Mond process

8. Which of the following is the purest commercial form of irons ?

   1) Wrought iron 2) Pig iron 3) Cast iron 4) Steal

9. In haematite extraction, limestone is used as

1) Flux 2) Slag 3) Reducing agent 4) Gangue

10. Carbon cannot reduce Fe_2O_3 to Fe at a temperature below 983 K because

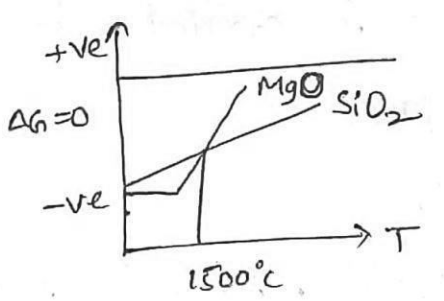
1) 'C' has highest affinity towards oxygen than iron

2) Iron has highest affinity towards oxygen than C

3) Free energy change for the formation of CO is more negative than that of Fe_2O_3

4) CO is the thermodynamically more stable than Fe_2O_3

11. For this graph which option is correct



1) At more than 1500^0C Si acts a reducing agent for MgO

2) At less than 1500^0C Mg acts as reducing agent for SiO_2

3) Both (1) and (2) 4) none of these

12. Which of the following are correctly matched?

a) Malachite : $CuCO_3 : Cu(OH)_2$ b) Chalcopyrite : $CuFeS_2$

c) Copper glance : Cu_2S d) Azurite : Cu_2O

1) a only 2) b only 3) a,b,c only 4) None

13. The auto-reduction process is not used in the metallurgy y of

1) Hg 2) Cu 3) pb 4) Fe

14. Sulfide ores are common for the metals.

1)Ag, Cu and Sn 2) Ag, Cu and Pb 3) Ag, Mg and Pb 4) Al, Cu and Pb

15. Electrolytic reduction of alumina to aluminium by hall-heroult process is carried out

1) In the presence of NaCl 2) In the presence of Fluoride

3) In the presence of cryolite, which forms a melt with lower melting temperature

4) In the presence of cryolite, which forms a melt with higher melting temperature

16. Which of the following statement is correct ?

1) Ores may not be mineral 2) Sphalerite is the ore of Zinc

3) Roasting is unnecessarily done for Fe extraction because there is no sulphide ore

4) In the smelting step of Cu extraction, reduction of the ore takes place.

17. $Ag_2S + NaCN \rightarrow A, A + Zn \rightarrow (B)$ B is a metal. Hence, (a) and (b) are

1) $Na_2\left[Ag(CN)_4\right], Ag$ 2) $Na_3\left[Ag(CN)_4\right], Ag$

3) $Na_2\left[Zn(CN)_4\right], Zn$ 4) $Na\left[Ag(CN)_2\right], Ag$

18. $\Delta f^{G^\ominus}$ Vs T plot in the Ellingham diagram slopes downward for the reaction

1) $Mg + \frac{1}{2}O_2 \rightarrow MgO$ 2) $2Ag + \frac{1}{2}O_2 \rightarrow Ag_2O$

3) $C + \frac{1}{2}O_2 \rightarrow CO$ 4) $CO + \frac{1}{2}O_2 \rightarrow CO_2$

19. Identify the reaction that does not take place in a blast furnace.

1) $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ 2) $CO_2 + C \rightarrow 2CO$

3) $CaCO_3 \rightarrow CaCo + CO_2$ 4) $FeO + SiO_2 \rightarrow FesiO_3$

20. Casseterite ore consists of magnetic impurity named as

1) Chromite 2) Wolframite 3) Magnetite 4) Limonite

21. Which of the following statement is incorrect ?

1) Siderite and Casseterite are carbonite ore

2) Tin is extracted from its chief ore by carbon monoxide reaction

3) In hall-heroult process, the electrolyte used is a maten mixture of alumina,sodium hydroxide and cryolite

4) Lead is extracted from its chief ore by both carbon reduction and salt reduction

22. The pair that does not require calcination is

1) $ZnCO_3$ and CaO 2) ZnO and MgO

3) ZnO and $Fe_2O_3.xH_2O$ 4) Fe_2O_3 and $CaCO_3.MgCO_3$

23. Gold is leached using CN^- solution followed by reduction with Zn. What is the coordination number of Zn in the final product?

1) 2 2) 1 3) 5 4) 4

24. How many of the following metals can be extracted by auto-reduction?

Fe, Zn , Pb, Al, Hg, Cu, K , Ca

1) 3 2) 2 3) 4 4) 1

25. What is the value of x in $CaSO_4.xH_2O$, gypsum

1) 2 2) 0 3) 4 4) 6

26. Find the number of basic flux from the given compounds; $SiO_2.MgO, CaO, FeO, CaCO_3$ ores

1) 2 2) 4 3) 6 4) 8

27. Amongst the following ores, how many can be concentrated by froth flotation process; Galena, Sphalerite, Casseterite, Calamine , Chalcocite, Heamatite, Argentite

1) 2 2) 3 3) 4 4) 5

KEY

1) **4**	2) **1**	3) **4**	4) **2**	5) **2**	6) **2**	7) **4**	8) **1**	9) **1**	10) **2**
11) **3**	12) **3**	13) **4**	14) **2**	15) **3**	16) **2**	17) **4**	18) **3**	19) **2**	20) **2**
21) **1**	22) **2**	23) **4**	24) **1**	25) **1**	26) **2**	27) **2**			

HINTS

1. $CaSO_4, 2H_2O$

2. Conceptual

3. Conceptual

4. Conceptual

5. Conceptual

6. Conceptual

7. Conceptual

8. Conceptual

9. Conceptual

10. Conceptual

11. Conceptual

12. Conceptual

13. Fe, has high oxidation potential

14. Conceptual

15. Conceptual

16. Conceptual

17. $Ag_2S + NaCN \rightarrow Na\left[Ag\left(CN\right)_2\right] \& Na\left[Ag\left(CN\right)_2\right] + Zn \rightarrow Ag + Na\left[Zn\left(CN_2\right)\right]$

18. Conceptual

19. Conceptual

20. Conceptual

21. Conceptual

22. Calcination is required for carbonate and hydrated oxides ores . ZnO and MgO both are oxides, So then donot require calcination.

23. $4Au + 8C\overline{N} + 2H_2O + O_2 \rightarrow 4\left[Au\left(CN\right)_2\right] + 4O\overline{H}$

    $2\left[AuCN_2\right]^- + Zn \rightarrow \left[Zn\left(CN\right)_4\right]^{2-} + 2Au$

24. Pb, Cu and Hg can be extracted by self or auto reduction

25. Gypsum is $CaSO_4.2H_2O$

26. Basic flux : MgO, CaO, FeO, $CaCO_3$

27. Galena (Pbs) , Sphalerite (Zn,Fe) S Chalcocite $\left(Cu_2S\right)$.

$\left(Ag_2S\right) \rightarrow$ by leaching with NaCN