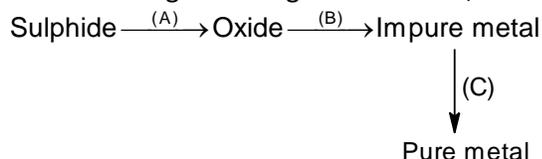


Class: 12
Subject: Chemistry
Topic: General principles and isolation of elements
No. of Questions: 27

1. What happens when zinc oxide is treated with excess of sodium hydroxide solution?
2. To prevent the air oxidation of aqueous solutions of Sn^{2+} to Sn^{4+} , sometimes metallic tin is kept in contact with the Sn^{2+} . Suggest how this helps to prevent the oxidation.

3. From the following metallurgical flow chart, identify steps A, B and C.



4. In what form carbon is present in white cast iron?
5. Write down the chemical formula of the following ores.
(i) Niccolite
(ii) Spodumene
(iii) Tinstone
6. What is the main difference between cupellation and poling?
7. A metal (A) with melting point 232°C when reacts with acid, dilute HNO_3 , produces (B) and a gas (C). (C) is brown coloured gas. (C) on reaction with water produces acids (D) and (E). (B) on heating decomposes to its oxide (F) which is a white coloured compound. Chloride of (A) will produce grey precipitate of (G) with mercurous chloride. Identify (A) to (G).

8. Match the following:

Column (I)	Column (II)
1. Pb_3O_4	a. Rust proofing
2. PbCrO_4	b. White lead
3. $\text{Pb}(\text{CO}_3)_2 \cdot \text{Pb}(\text{OH})_2$	c. Road signs
4. Ca_2PbO_4	d. Red lead

9. Explain the following:
(i) Why is chalcocite roasted and not calcined during recovery of copper?
(ii) Zinc and not copper is used for the recovery of Ag from the complex $[\text{Ag}(\text{CN})_2]^-$.
(iii) Magnesium oxide is used for the lining in steel making furnace.

10. Assign suitable terms to the following:
 (i) Materials which can withstand very high temperature without melting and softening.
 (ii) Sulphide ores are generally heated in a stream of air.
 (iii) The substances used for the removal of gangue from the ores in the form of slags.
 (iv) Two metals which are manufactured by the electrolysis of their fused salts.
 (v) Two metals used for reduction in metallurgical processes.
11. Dolomite can also be treated to get $MgCl_2$ which in turn is electrolysed to get Mg (Dow natural brine process). Give reactions of this process.
12. Ferrochrome, an iron-chromium alloy used in making stainless steel, is produced by reducing chromite ($FeCr_2O_4$) with coke:-

$$FeCr_2O_4(s) + 4C(s) \longrightarrow Fe(s) + 2Cr(s) + 4CO(g)$$

$\underbrace{\hspace{10em}}$
 Ferrochrome

 (i) How many kilograms of chromium can be obtained by the reaction of 236 kg of chromite with an excess of coke?
 (ii) How many litres of CO at $25^\circ C$ and 740 mm Hg are obtained as a by-product?
13. Explain the term Nitriding?
14. Explain the difference between leaching and levigation.
15. A sulfide ore (A) on roasting leaves a residue (B). (B) on heating with chlorine gives (C), soluble in water, addition of excess potassium iodide to a solution of (C) gives a solution (D). A brown precipitate (E) is formed when a solution of ammonium sulfate is added to an alkaline solution of (D). Identify (A) to (E).
16. (i) List three metals that are found in nature as oxide ores.
 (ii) If earth had the atmosphere that contained only O_2 and SO_2 and no CO_2 then what would be the composition of the minerals you would expect to find.
17. An ore which does not contain oxygen is
 (A) bauxite (B) haematite
 (C) chalcopryite (D) calamine

18. Match LIST-I, LIST-II and LIST - III.

LIST - I	LIST - II (Method of extraction)	LIST - III
(a) Iron	Self reduction process	Cryolite
(b) Silver	Electrolytic reduction	SiO_2
(c) Copper	Carbon reduction	CaO
(d) Aluminium	Cyanide process	None

19. The roasting of an ore of a metal usually results in conversion of the metal to the oxide. Why does the roasting of cinnabar, HgS, produce metallic mercury rather than an oxide of mercury?
20. Ore dressing of iron is done by
(A) froth floatation process (B) magnetic separation
(C) hand picking (D) all of the above
21. Describe the method of refining of nickel.
22. What is zone refining?
23. What is Van –Arkel process?
24. The value of $\Delta_f G^\circ$ for Cr_2O_3 is -540KJ/mole & that of Al_2O_3 is -827KJ/mole . Is the reduction Cr_2O_3 possible with aluminium?
25. Why is reduction of metal oxide easier if metal formed is in liquid state at temperature of reduction?
26. What is meant by tern chromatography?
27. Why copper matte is put in silica lined converter?