



CHEMISTRY

BOOKS - U-LIKE CHEMISTRY (HINGLISH)

GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Ncert Intext Questions

1. Which of the ores mentioned in Table 6.1 can be concentrated by magnetic separation method?

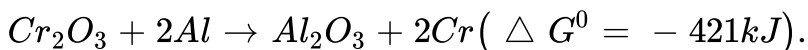


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2. What is the significance of leaching in the extraction of aluminium?

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3. The reaction :



is thermodynamically feasible as is apparent from the gibbs energy value. Why does it not take place at room temperature ?

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4. Is it true that under certain conditions, Mg can reduce Al_2O_3 and Al can reduce MgO? What are those conditions?

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1. Copper can be extracted by hydrometallurgy but not zinc. Explain.

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2. What is the role of depressant in froth floatation process?

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3. Why is the extraction of copper from pyrites more difficult than that from its oxide ore through reduction?

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4. Out of C and CO, which is a better reducing agent at 673K?



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5. Name the common elements present in the anode mud in electrolytic refining of copper. Why are they so present?

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6. Write down the reactions taking place in different zones in the blast furnace during the extraction of iron.

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7. Write chemical reactions taking place in the extraction of zinc from zinc blende.

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8. State the role of silica in the metallurgy of copper.

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9. What is meant by the term "chromatography"?

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10. What criterion is followed for the selection of the stationary phase in chromatography?

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11. Describe a method for refining nickel.

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12. How can you separate alumina from silica in a bauxite ore associated with silica? Give equations, if any.

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13. Giving examples, differentiate between 'roasting' and 'calcination'.

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14. How is 'cast iron' different from 'pig iron'?

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15. Differentiate between "minerals" and "ores".

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16. Why copper matte is put in silica lined converter?

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17. What is the role of cryolite in the metallurgy of aluminium?

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18. How is leaching carried out in case of low grade copper ores?

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19. Why is zinc not extracted from zinc oxide through reduction using CO?

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20. The value of $\Delta_f G^0$ for formation of Cr_2O_3 is $-540kJmol^{-1}$ and that of Al_2O_3 is $-827kJmol^{-1}$.

. Is the reduction of Cr_2O_3 possible with Al?

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21. Out of C and CO, which is a better reducing agent for ZnO?

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22. The choice of a reducing agent in a particular case depends on thermodynamic factor. How far do you agree with this statement? Support your opinion with two examples.

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23. Name the processes from which chlorine is obtained as a by-product. What will happen if an aqueous solution of NaCl is subjected to electrolysis?

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24. What is the role of graphite rod in the electrometallurgy in aluminium?

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25. Predict conditions under which Al might be expected to reduce MgO.

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1. Read the given passage and answer the questions number 1 to 5 that follow :

Froth floatation method is used for removing gangue from sulphide ores. In this process, a suspension of the powdered ore is made with water. Collectors and froth stabilisers are added to it. Collectors (for examples, pine oils, fatty acids, xanthates etc.) enhance non-wettability of the mineral particles by water and froth stabilisers (for example, cresols, aniline) stabilise the froth. The mineral particles become wet by oil while the gangue particle by water. A rotating paddle agitates the mixture and draws air in it. As a result, froth is formed which carries the mineral particles. The froth is light and is skimmed off. It is then dried for recovery of ore particles.

Which type of ores are concentrated by froth floatation method?



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2. Read the given passage and answer the questions number 1 to 5 that follow :

Froth floatation method is used for removing gangue from sulphide ores. In this process, a suspension of the powdered ore is made with water. Collectors and froth stabilisers are added to it. Collectors (for examples, pine oils, fatty acids, xanthates etc.) enhance non-wettability of the mineral particles by water and froth stabilisers (for example, cresols, aniline) stabilise the froth. The mineral particles become wet by oil while the gangue particle by water. A rotating paddle agitates the mixture and draws air in it. As a result, froth is formed which carries the mineral particles. The froth is light and is skimmed off. It is then dried for recovery of ore particles.

What is the principle of froth floatation method?



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3. Read the given passage and answer the questions number 1 to 5 that follow :

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Why are collectors used in froth floatation process?



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4. Read the given passage and answer the questions number 1 to 5 that follow :

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Give two examples of froth stabilisers.



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5. Read the given passage and answer the questions number 1 to 5 that follow :

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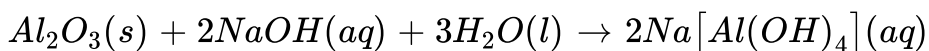
Which component is present in the froth?



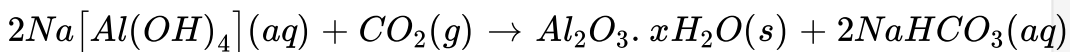
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6. Read the given passage and answer the questions number 1 to 5 that follow :

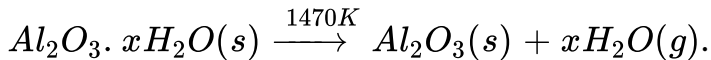
Bauxite is the principal ore of aluminium. It usually contains SiO_2 , iron oxides and titanium oxide (TiO_2) as impurities. Concentration is carried out by heating the powdered ore with a concentrated solution of NaOH at 473-523 K and 35-36 bar pressure. This process is called digestion. This way, Al_2O_3 is extracted out as sodium aluminate. The impurities, SiO_2 , too dissolves forming sodium silicate. Other impurities are left behind.



The sodium aluminate present in solution is neutralised by passing CO_2 gas and hydrated Al_2O_3 is precipitated. At this stage, small amount of freshly prepared sample of hydrated Al_2O_3 is added to the solution. This is called seeding. It induces the precipitation.



Sodium silicate remains in the solution and hydrated alumina is filtered, dried and heated to give back pure Al_2O_3 .



What are the impurities present in bauxite ore?

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7. Read the given passage and answer the questions number 1 to 5

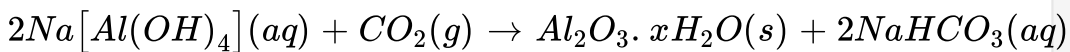
that follow :

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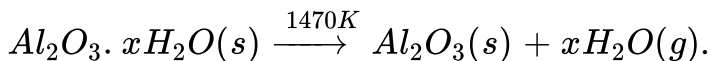


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the solution. This is called seeding. It induces the precipitation.



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Give the reaction conditions in the digestion of bauxite with sodium hydroxide.

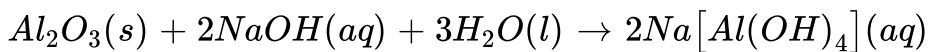


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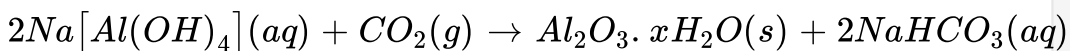
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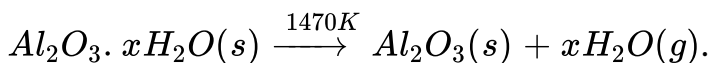
silicate. Other impurities are left behind.



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Sodium silicate remains in the solution and hydrated alumina is filtered, dried and heated to give back pure Al_2O_3 .



What happens to the impurity of silica on digesting the ore with NaOH?

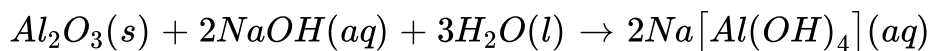


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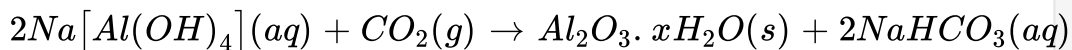
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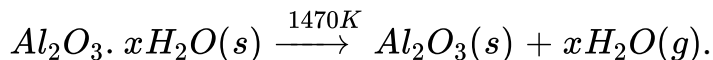
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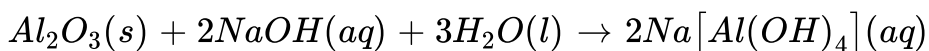


What is meant by the term seeding?

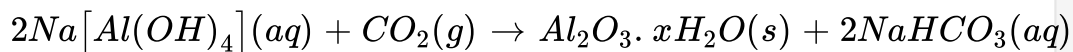
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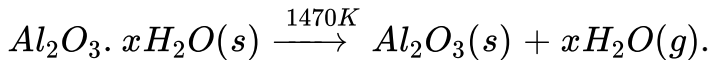
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Sodium silicate remains in the solution and hydrated alumina is filtered, dried and heated to give back pure Al_2O_3 .



Name another ore of aluminium.



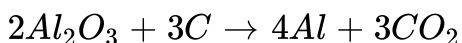
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11. Read the given passage and answer the questions number 1 to 5

that follow :

In the metallurgy of aluminium, purified Al_2O_3 is mixed with Na_3AlF_6 or CaF_2 which lowers the melting point of the mixture and brings conductivity. The fused matrix is electrolysed. Steel vessel with lining of carbon acts as cathode and graphite anode is used.

The overall reaction may be written as :



This process of electrolysis is widely known as Hall-Heroult process.

Thus electrolysis of the molten mass is carried out in an electrolysis cell using carbon electrolysis. The oxygen liberated at anode reacts with the carbon of anode producing CO and CO_2 . This way for each kg of aluminium produced, about 0.5kg of carbon anode is burnt

away.

What is the role of Na_3AlF_6 or CaF_2 in the metallurgy of aluminium, Al?

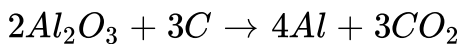


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12. Read the given passage and answer the questions number 1 to 5 that follow :

In the metallurgy of aluminium, purified Al_2O_3 is mixed with Na_3AlF_6 or CaF_2 which lowers the melting point of the mixture and brings conductivity. The fused matrix is electrolysed. Steel vessel with lining of carbon acts as cathode and graphite anode is used.

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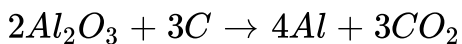
Describe the composition of cathode and anode in the metallurgy of aluminium.

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with the carbon of anode producing CO and CO_2 . This way for each kg of aluminium produced, about 0.5kg of carbon anode is burnt away.

Write the equation for the reduction of alumina to aluminium.

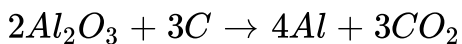


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In Hall-Haroult's process for the extraction of Al, 10kg of carbon anode was burnt. Approximately, how much of Al metal was obtained?

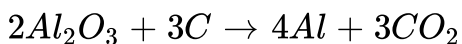


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Which gases are evolved at the anode in Hall-Heroult's method?

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Multiple Choice Questions

1. Which of the following is not a seven metals of antiquity?

- A. Gold
- B. Silver
- C. Chromium
- D. Tin

Answer: C



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2. Which of the following is not a concentration process?

A. Hydraulic washing

B. Magnetic separation

C. Liquation

D. Froth floatation

Answer: C



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3. Mond's process is carried out for the purification of

A. Ni

B. Fe

C. Co

D. Pt

Answer: A



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4. Hematite is an ore of

A. Co

B. Ni

C. Mn

D. Fe

Answer: D



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5. Mond's process can be used for the refining of

- A. iron
- B. cobalt
- C. nickel
- D. copper

Answer: C



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6. The relation between ΔG , ΔH and ΔS is given by

- A. $\Delta G = \Delta H + T \Delta S$
- B. $\Delta H = \Delta G + T \Delta S$

C. $\Delta G = \Delta H - T \Delta S$

D. $\Delta H = \Delta G - T \Delta S$

Answer: C

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7. Which of the metals cannot be obtained by the process of leaching?

A. Aluminium

B. Zinc

C. Gold

D. Silver

Answer: B

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8. A low melting metal can be refined by

- A. distillation
- B. liquation
- C. electrolytic method
- D. chromatographic method

Answer: B



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9. Heating an ore in a regular supply of air in a furnace at a temperature below the melting point is called

- A. calcination
- B. roasting

C. sublimation

D. smelting

Answer: B



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10. The present form of commercial iron is

A. pig iron

B. cast iron

C. steel

D. wrought iron

Answer: D



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11. In the extraction of copper from its sulphide ore, the metal is formed by the reduction of Cu_2O with

A. FeS

B. CO

C. Cu_2S

D. SO_2

Answer: C



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12. Which of the following elements is present as impurity to the maximum extent in the pig iron?

A. Manganese

B. Carbon

C. Silicon

D. Phosphorus

Answer: B

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13. A number of elements are available in earth's crust but most abundant elements are.....

A. Al and Fe

B. Al and Cu

C. Fe and Cu

D. Cu and Ag

Answer: A

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14. In the matallurgy of aluminium.....

A. Al^{3+} is oxidised to Al (s).

B. Graphite anode is oxidised to carbon monoxide and carbon dioxide.

C. Oxidation state of oxygen changes in the reaction at anode.

D. Oxidation state of oxygen changes in the overall reaction involved in the process.

Answer: B



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15. Which one of the following does not occur as sulphide ore?

A. Zn

B. Cr

C. Ag

D. Fe

Answer: B



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16. Zone refining is based on the principle that.....

A. impurities of low boiling metals can be separated by distillation

B. impurities are more soluble in molten metal than in solid metal.

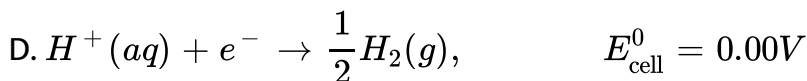
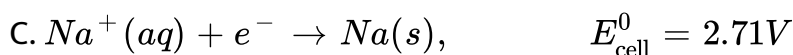
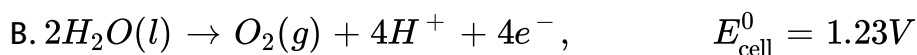
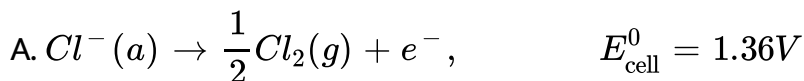
C. different components of a mixture are differently adsorbed on an adsorbent.

D. vapours of volatile compound can be decomposed in pure metal.

Answer: B

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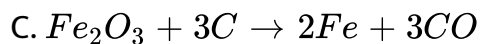
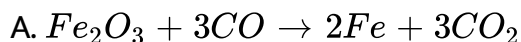
17. Brine is electrolysed by using inert electrodes. The reaction at anode is.....



Answer: A

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18. The main reactions occurring in blast furnace during extraction of iron from hematite are.....



Answer: A::D



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19. In which of the following method of purification, metal is converted to its volatile compound which is decomposed to give pure metal?

A. heating with stream of carbon monoxide

B. heating with iodine

C. liquation

D. distillation

Answer: A:B



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20. Electrolytic refining is used to purify which of the following metals?

A. Cu and Zn

B. Ge and Si

C. Zr and Ti

D. Zn and Hg

Answer: A



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Assertion Reason Questions

1. Assertion (A) : Bauxite is purified by leaching.

Reason (S) : Aluminium oxide reacts with sodium hydroxide to form soluble sodium meta aluminate.

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. A is correct, but the R is incorrect statement.
- D. A is incorrect, but the R is correct statement.

Answer: A

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2. Assertion (A) : Ores containing magnetic impurities can be purified by magnetic separation process.

Reason (S) : Removal of unwanted materials from the ore is called concentration.

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. A is correct, but the R is incorrect statement.
- D. A is incorrect, but the R is correct statement.

Answer: B



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3. Assertion (A) : Brass contains 60% zinc and 40% copper.

Reason (S) : Formula for haematite is Fe_2O_3 .

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. A is correct, but the R is incorrect statement.
- D. A is incorrect, but the R is correct statement.

Answer: D



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4. Assertion (A) : Many gemstones are impure form of Al_2O_3 .

Reason (S) : A downward stream of running water is used in hydraulic washing.

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. A is correct, but the R is incorrect statement.
- D. A is incorrect, but the R is correct statement.

Answer: C



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Fill In The Blanks

1. Sometimes, it is possible to separate two sulphide ores by using.....

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2. Cast iron is made by melting.....with scrap iron and coke using hot air blast.

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3. Removal of unwanted material from the ore is called.....

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4. If coupling of reduction and oxidation results in.....value of ΔG for overall reaction, the final reaction becomes feasible.



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5. In vapour phase refining, the metal is converted into its.....compound which is collected and decomposed to give pure metal.

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6. Principles of thermodynamics can be applied to.....

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7.diagrams normally consist of plots of $\Delta_f G^0$ vs T for the formation of oxides of common metals.

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1. Haematite and magnetic are ores of iron.

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2. Copper is used for making wires used in electrical industry and for water and steam pipes.

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3. The reducing agents to convert metal oxides to metals are carbon, carbon monoxide or even some metals.

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4. Refining process for a metal depends upon the difference in properties of the metal and the impurities.

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5. Extraction of copper from pyrites is more difficult than that from its oxide ore through reduction.

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6. The concept of electrode potential is useful in the isolation of metals.

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1. Name two metals which have significant ancient Indian contribution.

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2. Write the overall reaction taking place in the process used for the electrolysis of alumina by Hall-Heroult's process.

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3. What is the role of zinc metal in the extraction of silver?

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4. Name the method used for the refining of Nickel metal.

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5. Why is it that only sulphide ores are concentrated by froth floatation method?

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6. Copper matte is charged into a silica lined converter in the extraction of copper. What is the role of silica lining there?

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7. Why are sulphide ores converted to oxide before reduction?

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8. An ore sample of galena (PbS) is contaminated with zinc blende (ZnS). Name one chemical which can be used to concentrate galena selectively by froth floatation method?

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9. The mixture of compounds A and B is passed through a column of Al_2O_3 by using alcohol as eluent. Compound A is eluted in preference to compound B. Which of the two compounds A or B is more readily adsorbed on the column?

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10. What is the role of flux in metallurgical process?

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11. Under which conditions, do we use magnetic separation for concentration of ore?

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12. What is benefaction?

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13. Which types of ores are concentrated by froth floatation method?

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14. Alumina is concentrated by dissolving in concentrated solution of NaOH and then by passing CO_2 through it. What is this process

known as?

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15. What is Ellingham diagram?

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16. Give the equation of formation of slag from FeO.

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17. In electrolytic refining of copper, what would be the anode?

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18. Which electrochemical equation is used in the reduction of molten metal salt?

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19. Name two refining techniques of metals.

 [View Text Solution](#)

20. What do you mean by gangue?

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21. Define the term metallurgy.

 [View Text Solution](#)

22. Name one ore each of zinc and iron.

 [View Text Solution](#)

23. Give the composition of calamine and zincite.

 [View Text Solution](#)

24. Name two reducing agents which are used as reducing agents for the reduction of oxides into metals.

 [View Text Solution](#)

25. What is calcination?

 [View Text Solution](#)

26. Which furnace is used in the isolation of iron from its ores?

 [View Text Solution](#)

27. Which scientists' names are associated with the isolation of aluminium from its ore?

 [View Text Solution](#)

28. Give the composition of bauxite and malachite.

 [View Text Solution](#)

29. Which is the most abundant metal in earth's crust?

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30. Name the process for isolation of metal from its ore.

 [View Text Solution](#)

31. Name an ore of aluminium.

 [View Text Solution](#)

32. In the separation of ZnS and PbS by froth floatation process, which depressant is used?

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33. Give the name of the process used in the extraction of aluminium from bauxite.

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34. Name the metallurgical process used where the ore is heated in a regular supply of air in a furnace at a temperature below the melting point of the metal.

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35. What is the name of the diagram that helps in predicting the feasibility of thermal reduction of an ore?

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36. Name the electrolytic process for the extraction of aluminium from Al_2O_3 .

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37. What is added to Al_2O_3 in the electrolytic extraction of aluminium?

 [View Text Solution](#)

38. Name the process involved in the extraction of copper from low grade ore.

 [View Text Solution](#)

39. Name the refining process where a low melting metal can be made to flow on a sloping surface.

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Short Answer Questions

1. What are the percentages of carbon in pig iron and cast iron?

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2. Gibbs energies for the oxidation of Fe and C around 1400° are -341kJmol^{-1} and -447kJmol^{-1} . Will C be a suitable reducing agent in the metallurgy of Fe? Give reason.

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3. What is a flux? What is the role of flux in the metallurgy of iron and copper?

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4. Free energies of formation ($\Delta_f G$) of $MgO(s)$ and $CO(g)$ at 1273 K and 2273 K are given below :

$$\Delta_f GMgO(s) = -941kJ/mol \text{ at } 1273K$$

$$\Delta_f GMgO(s) = -314kJ/mol \text{ at } 2273K$$

$$\Delta_f GCO(g) = -439kJ/mol \text{ at } 1273K$$

$$\Delta_f GCO(g) = -6287kJ/mol \text{ at } 2273K$$

On the basis of above data, predict the temperature at which carbon can be used as a reducing agent for MgO (s).

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5. What is the role of depressant in froth floatation process?

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6. Out of C and CO which is a better reducing agent for FeO :

In the lower part of blast furnace (Higher temperature).

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7. Out of C and CO which is a better reducing agent for FeO :

In the upper part of blast furnace (Lower temperature).

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8. Outline the principles behind the refining of metals by the following methods :

Zone refining method.

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9. Outline the principles behind the refining of metals by the following methods :

Chromatographic method.

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10. Name the method used for removing gangue from sulphide ores.

 [View Text Solution](#)

11. How is wrought iron different from steel?

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12. Which solution is used for the leaching of silver metal in the presence of air in the metallurgy of silver?

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13. Out of C and CO, which is a better reducing agent at lower temperature range in the blast furnace to extract iron from the oxide ore?



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14. Describe the principle involved in each of the following processes

:

Mond's process for refining of nickel.

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15. Describe the principle involved in each of the following processes

:

Column chromatography for purification of rare elements.

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16. Which methods are usually employed for purifying the following

metals :

Nickel.



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17. Which methods are usually employed for purifying the following metals :

Germanium.



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18. Describe the principle controlling each of the following processes :

Zone refining of metals.



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19. Describe the principle controlling each of the following processes :

Electrolytic refining of metals.

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20. Describe the principle controlling each of the following processes :

Vapour phase refining of titanium metal.

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21. Describe the principle controlling each of the following processes

:

Froth floatation method of concentration of a sulphide ore.

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22. How is chemical reduction different from electrolytic reduction ?

Name a metal each which is obtained by

Electrolytic reduction.



[View Text Solution](#)

23. How is chemical reduction different from electrolytic reduction ?

Name a metal each which is obtained by

Chemical reduction.



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24. Which is better reducing agent, C or CO at $710^{\circ}C$ ($983K$)?



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25. Explain the role of :

Cryolite in the electrolytic reduction of alumina.

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26. Explain the role of :

Carbon monoxide in the purification of nickel.

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27. The choice of a reducing agent in a particular case depends the thermodynamic factors. How far do you agree with this statement?

Support your opinion with examples.

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28. How can you obtain pure alumina from bauxite ore? Write the chemical equations involved.

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29. Describe the role of the following :

NaCN in the extraction of silver from a silver ore.

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30. Describe the role of the following :

Cryolite in the extraction of aluminium from pure alumina.

 [View Text Solution](#)

31. Describe the underlying principle of each of the following metal refining methods :

Electrolytic refining of metals.

 [View Text Solution](#)

32. Describe the underlying principle of each of the following metal refining methods :

Vapour phase refining of metals.

 [View Text Solution](#)

33. Give two requirements for vapour phase refining.

 [View Text Solution](#)

34. Although carbon and hydrogen are better reducing agents, by they are not used to reduce metallic oxides at high temperature.

Why?



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35. Why is sulphide ore of copper heated in a furnace after mixing with silica?



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36. Is it true that certain conditions Mg can reduce SiO_2 and Si can reduce MgO? What are those conditions?



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37. Write the chemical reactions involved in the extraction of gold by cyanide process. Also give the role of zinc in the extraction.

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38. Write down the reactions taking place in Blast furnace related to the metallurgy of iron in the temperature range 500-800K.

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39. Giving appropriate examples (at least three), explain how the reactivity of a metal is related to its mode of occurrence in nature.

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40. How to we separate two sulphide ores by Froth Floatation Method? Explain with an example.

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41. Which method is used for refining Zr and Ti? Explain with equation.

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42. Copper and silver are below hydrogen in the electrochemical series and yet they are found in the combined state as sulphides. Comment.

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43. Wrought iron is the purest form of iron. Write a reaction used for the preparation of wrought iron from cast iron. How can the impurities of sulphur, silicon and phosphorus be removed from cast iron?

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44. Write two basic requirements for refining of a metal by Mond process and by van Arkel method.

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45. What should be the considerations during the extraction of metals by electrochemical method?

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46. At temperatures above 1073K, coke can be used to reduce FeO to Fe. How can you justify this reduction with Ellingham diagram?

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47. How is copper extracted from low grade copper ores?

 [View Text Solution](#)

48. Why is an external emf of more than $2.2V$ required for the extraction of Cl_2 from brine?

 [View Text Solution](#)

49. Explain the process of zone refining. Give two examples of elements purified by this process.



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50. What is electro-refining? Explain with the help of example.

 [View Text Solution](#)

51. From the Ellingham diagram, predict the temperature above which aluminium can reduce MgO .

 [View Text Solution](#)

52. From the Ellingham diagram, predict the temperature above which C can reduce Al_2O_3 .

 [View Text Solution](#)

53. Why is Fe an abundant element on earth, and why are the elements with higher atomic numbers increasingly rare?

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54. Describe the principle of froth floatation process. What is the role of a stabiliser and of a depressant ? Give one example each.

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55. Name along with the formulae one prominent ore of the following metals :

Al, Fe, Cu and Zn.

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Long Answer Questions I

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

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2. Write the principle of method used for the refining of germanium.

 [View Text Solution](#)

3. Out of PbS and $PbCO_3$ (ores of lead), which one is concentrated by froth floatation process preferably?

 [View Text Solution](#)

4. What is the significance of leaching in the extraction of aluminium?

 [View Text Solution](#)

5. Write the principle of the following :

Zone refining.

 [View Text Solution](#)

6. Write the principle of the following :

Froth floatation process.

 [View Text Solution](#)

7. Write the principle of the following :

Chromatography.

 [View Text Solution](#)

8. Write the principle of the vapour phase refining.

 [View Text Solution](#)

9. What is the role of depressant in froth floatation process?

 [View Text Solution](#)

10. Write the name of reducing agent to obtain iron from Fe_2O_3 at high temperature.

 [View Text Solution](#)

11. Name the method of refining of metals such as Germanium.

 [View Text Solution](#)

12. 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 this process?

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13. What is the role of coke in the extraction of iron from its oxides?

 [View Text Solution](#)

14. Name the method of refining of nickel.



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15. What is the role of cryolite in the extraction of aluminium?



[View Text Solution](#)

16. What is the role of limestone in the extraction of iron from its oxides?



[View Text Solution](#)

17. Write the role of

I_2 in the Arkel method of refining.



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18. Write the role of

Cryolite in the extraction of aluminium.

 [View Text Solution](#)

19. Write the role of

Dilute NaCN in the extraction of silver.

 [View Text Solution](#)

20. Indicate the principle behind the method used for the refining of

Nickel.

 [View Text Solution](#)

21. What is the role of dilute NaCN in the extraction of gold?

 [View Text Solution](#)

22. What is 'copper matte'?

 [View Text Solution](#)

23. Indicate the principle behind the method used for the refining of zinc.

 [View Text Solution](#)

24. What is the role of silica in the extraction of copper?

 [View Text Solution](#)

25. Which form of the iron is the purest form of commercial iron?

 [View Text Solution](#)

26. Name the method of refining to obtain silicon of high purity.

 [View Text Solution](#)

27. What is the role of SiO_2 in the extraction of copper?

 [View Text Solution](#)

28. What is the role of depressant in froth floatation process?

 [View Text Solution](#)

29. Explain the principle and working of the method of electrolytic refining of metals. Give one example.



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30. State the role of

Depressant in froth floatation process.



[View Text Solution](#)

31. State the role of

Silica in the metallurgy of copper.



[View Text Solution](#)

32. State the role of

Graphite rod in the electrolytic reduction of alumina.



[View Text Solution](#)

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

CO in the extraction of nickel.

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

Zinc in the extraction of silver.

 [View Text Solution](#)

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

Silica in the extraction of copper.

 [View Text Solution](#)

36. Write down the reactions which occur in upper, middle and lower zones in the blast furnace during the extraction of iron from iron ore.

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37. Describe the role of NaCN in the extraction of gold from gold ore.

Write chemical equations for the involved reactions.

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38. Describe the role of SiO_2 in the extraction of copper from copper matte.

Write chemical equations for the involved reactions.

 [View Text Solution](#)

39. Describe the role of

Iodine in the refining of zirconium.

Write chemical equations for the involved reactions.

 [View Text Solution](#)

40. State briefly the principle involved in the following operations in metallurgy. Give an example.

Hydraulic washing.

 [View Text Solution](#)

41. State briefly the principle involved in the following operations in metallurgy. Give an example.

Zone refining.

 [View Text Solution](#)

42. Account for the following facts :

The reduction of a metal oxide is easier if the metal formed is in the liquid state at the temperature of reduction.

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43. Account for the following facts :

The reduction of Cr_2O_3 with Al is thermodynamically feasible, yet it does not occur at room temperature.

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44. Account for the following facts :

Pine oil is used in froth floatation method.

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45. What are the limitations of Ellingham diagram?

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46. Outline the principle of the method used for refining of Nickel.

 [View Text Solution](#)

47. Outline the principle of the method used for refining of Zirconium.

 [View Text Solution](#)

48. Outline the principle of the method used for refining of Tin.

 [View Text Solution](#)

49. Explain column chromatography with the help of a suitable diagram.

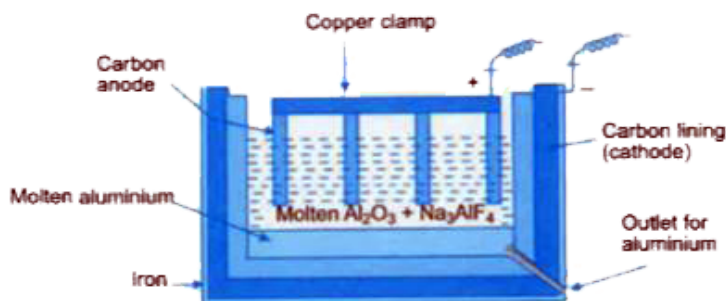
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50. Draw a schematic diagram illustrating magnetic separation. Can we use this method of concentration when the impurity in the ore is of magnetic nature?

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51. Look at the following diagram and answer the questions given below :

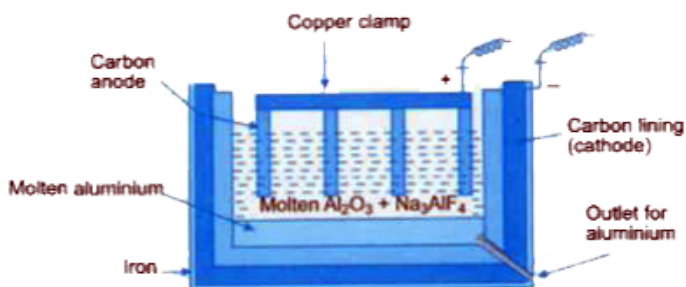
What is this process of extraction of Al known as ?



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52. Look at the following diagram and answer the questions given below :

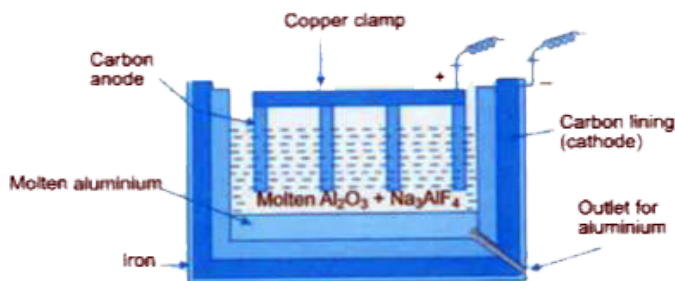
What is the function of Na_3AlF_6 ?



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53. Look at the following diagram and answer the questions given below :

Write the overall reaction taking place in the extraction of metal.



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54. Why is the reduction of a metal oxide easier if the metal formed is in liquid state at the temperature of reduction?

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55. A mixture of X and Y was loaded in the column of silica. It was eluted by alcohol water mixture. Compound Y eluted in preference to compound X. Compare the extent of adsorption of X and Y on column.



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56. Why copper matte is put in silica lined converter? Write reactions involved.



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57. Name the method used for the refining of Zr.



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1. The most abundant metal in the earth's crust is

- A. iron
- B. aluminium
- C. cobalt
- D. manganese

Answer: B



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2. Calamine has the formula

- A. Fe_2O_3
- B. $CuFeS_2$
- C. $ZnCO_3$

D. ZnO

Answer: C

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3. The plots of ΔG versus T in the metallurgical processes are called

- A. Helmholtz diagram
- B. Kelvin diagram
- C. Pauling's diagram
- D. Ellingham diagram

Answer: D

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4. Froth floatation process for the concentration of ores is carried out in the case of the following ore

- A. oxides
- B. sulphides
- C. sulphates
- D. nitrate

Answer: B



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5. The melleable form of iron is

- A. wrought iron
- B. pig iron
- C. cast iron

D. steel

Answer: A



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6. Assertion : Pig iron can be moulded into a variety of shapes.

Reason : Zinc is obtained hydrometrically from low grade ores.

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. Assertion is correct, but Reason is incorrect statement.
- D. Assertion is correct, but Reason is correct statement.

Answer: C



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7. Assertion : Zinc foils are used as wrappers for chocolates and chapatis.

Reason : Ores which are magnetic in nature can be separated from non-magnetic impurities by magnetic separation.

- A. Both A and R are correct statement, and R is the correct explanation of the A.
- B. Both A and R are correct statement, but R is not the correct explanation of the A.
- C. Assertion is correct, but Reason is incorrect statement.
- D. Assertion is correct, but Reason is correct statement.

Answer: D



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