



## CHEMISTRY

### BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

## METALLURGY

#### Work Sheet 1 Fill In The Blanks

1. Activity series is a series in which the various metals have been arranged in .....order of their reactivity.

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2. Metals above hydrogen can ..... hydrogen from water.

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3. Reddish brown copper reacts with oxygen to form .... oxide.

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4. Oxides of sodium and potassium can be reduced ...

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5. .... metal does not form carbonate or hydroxide.

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6. Zinc oxide can be reduced only by ...

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7. Metals below copper do not ..... easily.

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8. Magnesium reacts with boiling water to form ..... and release hydrogen.

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9. Oxides of ..... and ..... can be reduced by heating.

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10. All compounds of sodium and potassium are soluble in .....

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1. Complete and balance the following equation :  $Ca(OH)_2 \xrightarrow{\Delta}$

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2. Complete and balance the following equation :  $Ca(NO_3)_2 \xrightarrow{\Delta}$

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3. Complete and balance the following equation :  $PbO + H_2 \rightarrow$

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4. Complete and balance the following equation :  $HgS + O_2 \rightarrow$

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5. Complete and balance the following equation :  $SnO + H_2 \rightarrow$

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6. Complete and balance the following equation :  $Fe + H_2O$

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7. Complete and balance the following equation :  $Ag + O_2 \rightarrow$

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8. Complete and balance the following equation :  $Mg + H_2O \rightarrow$

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9. Complete and balance the following equation :  $Al + O_2 \rightarrow$

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10. Complete and balance the following equation :  $K + O_2 \rightarrow$

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### Work Sheet 1 Give Your Observations For The Following

1. When iron rod is immersed in copper sulphate solution.

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2. When zinc rod is immersed in sulphuric acid.

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3. When a piece of sodium is dropped in water.

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4. When copper is heated in abundant supply of oxygen.

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5. When mercuric oxide is heated strongly.

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## Work Sheet 2 Give Two Examples For The Following

1. Metals purified by distillation. .... , .....



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2. Metals purified by liquation method. .... , .....

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3. Metals purified by electrorefining. .... , .....

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4. Elements removed by oxidation. .... , .....

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5. Metals which occur in free state. .... , .....

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## Work Sheet 2 Fill In The Blanks

1. Tin stone has the formula ....

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2. Aluminium is extracted from ..... ore

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3. .... act as a collector to make the ore particles water repellent.

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4. The process of heating the ore in the absence of oxygen is known as .....

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5. Both calcination and roasting are done in ..... furnace.

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## Work Sheet 2 Name The Process Of Purification Highlighted Below

1. The ore and gangue, particles have different densities.

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2. Different wetting properties of ore and gangue.

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3. Method employed for the purification of copper.

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4. Method in which aluminium is used as a reducing agent.

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5. Purification of impure alumina to pure alumina.

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**Work Sheet 2 State The Principle Underlying The Following Methods Of Concentrating The Ore And Name One Ore That Is Concentrated By The Said Method**

## 1. Hydraulic washing

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## 2. Froth floatation process

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## Work Sheet 2 Name Two Ores With The Chemical Formula Of

1. Symbol of zinc → .....

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2. What is the symbol for Iron → .....

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3. What is the electron configuration of Aluminium ?

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## Work Sheet 2 Complete And Balance The Following Equations

1.  $Fe_2O_3 + CO \rightarrow$

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2.  $HgS + O_2 \rightarrow$

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3.  $Al(OH)_3 \rightarrow$

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### Work Sheet 3

1. Give reasons for the following: Aluminium is used in light fixtures.

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2. Give reasons for the following: Aluminium is used in flash bulbs.

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3. Give reasons for the following: Aluminium containers are used as packaging containers.

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4. Give reasons for the following: Aluminium is used in transmission wires.

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5. Name an application where following property of aluminium is employed : Resists attack of food acid. ....

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6. Name an application where following property of aluminium is employed : Reduction of metal oxides by. ....

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7. Name an application where following property of aluminium is employed : Good conductor of heat. ....

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8. Name an application where following property of aluminium is employed : Reducing property of aluminium. ....

 [Watch Video Solution](#)



9. Name an application where following property of aluminium is employed : Resists corrosion. ....

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10. Complete the following equations :  $Al + Fe_2O_3 \rightarrow$

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11. Complete the following equations :  $Al + H_2O \rightarrow$

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12. Complete the following equations :  $Al + H_2SO_4 \rightarrow$

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13. Complete the following equations :  $Al + N_2 \rightarrow$

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14. Complete the following equations :  $Al + Zn(NO_3)_2 \rightarrow$

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### Work Sheet 3 Fill In The Blanks With Appropriate Words

1.  $Na_3AlF_6$  is the formula for ....

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2. Crystals of ..... are used for seeding.

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3. Impurities from anode falls down and collects at the bottom of tank as ....

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4. Process by which aluminium is refined is known as ...

 [Watch Video Solution](#)

5. Aluminium utensils are .... by food acids.

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**Work Sheet 3 With Respect To Hall And Herault S Process Answer The Following Questions**

1. Name the electrolyte taken in the open vessel.

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2. Why is powdered coke sprinkled over the electrolytic mixture ?

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3. Give the reactions occurring at both cathode and anode.

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4. Why anode has to be replaced from time to time during the electrolysis of alumina?

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5. How will you come to know whether the concentration of electrolyte has fallen down or not?

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## Work Sheet 4 Fill In The Blanks

1. An ..... is a homogeneous mixture of two or more metals and non-metals.

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2. .... is obtained by melting zinc and copper.

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3. .... has more resistance to electricity as compared to copper.

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4. ....resembles gold and it is bright yellow.

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5. .... steel is used for making utensils, cutlery, automobile parts and ornamental pieces.

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**Work Sheet 4 Complete The Following Table**

1. Complete the following table :

S.No.	Name of alloy	Composition	Properties	Uses
1.	Brass			Making utensils, electric switches etc.
2.	Solder		Low melting point, unaffected by air and water.	
3.				For making printing ink.
4.		Fe, Cr, Ni, & C		Utensils, cutlery, automobile parts etc.

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## Work Sheet 4 Name The Following

1. Mixtures of mercury with silver - tin alloy → .....

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2. Alloy of metal with mercury → .....

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3. Used for making coins, utensils and statues → .....

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4. Used for making bells and gongs → .....

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5. Used for making printers ink → .....

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### Additional Questions For Practice

1. Compare the properties of a typical metal and a nonmetal on the basis of the following:



## Electronic configuration

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2. Compare the properties of a typical metal and a nonmetal on the basis of the following:

Melting point and boiling point

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3. Compare the properties of a typical metal and a nonmetal on the basis of the following:

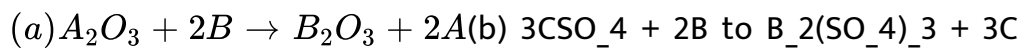
Solubility

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4. Differentiate calcination and roasting.

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5. A, B, and C are three elements which undergo chemical changes according to the following equations:



(c)  $3CO + 2A \rightarrow A_2O_3 + 3C$  Name the most reactive and the least reactive element.

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6. An element reacts with oxygen to form an oxide which dissolves in dilute hydrochloric acid. The oxide formed turns a solution of red litmus blue.

Is the element a metal or a non-metal ?

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7. An element reacts with oxygen to form an oxide which dissolves in dilute hydrochloric acid. The oxide formed turns a solution of red litmus blue.

State two reasons to support your answer.

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8. Give reasons :

Aluminium is more abundant than gold in the Earth's crust, yet it is the gold and not aluminium that has been known to man since ancient times.

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9. Give reasons :

Metal sulphides occur mainly in rocks and metal halides occur mostly in seas and lakes.



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**10.** Give reasons :

A sulphide ore is converted to its oxide to extract the metal.

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**11.** Explain why :

In the electrolysis of molten alumina, the carbon anode is gradually consumed.

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**12.** Explain why :

A layer of powdered coke is sprinkled on the surface of the electrolyte during the electrolysis of molten aluminium

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**13. Explain why :**

Aluminium cannot be extracted by reducing alumina with carbon.

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**14. Explain why :**

Aluminium is used for making cables for overhead electric transmission.

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**15. Explain why :**

Conc. nitric acid can be stored in aluminium containers.

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**16.** Explain why :

Aluminium is used for making cooking vessels.

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**17.** Name the steel alloy used for making the following articles. Also state the property of the alloy on which the use depends :

Utensils

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**18.** Name the steel alloy used for making the following articles. Also state the property of the alloy on which the use depends :

Parts of high speed machines

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**19.** Name the steel alloy used for making the following articles. Also state the property of the alloy on which the use depends :

Parts of air crafts

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**20.** State two properties of brass that render it more useful for some purposes than its components.

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**21.** What is an amalgam ? State its use with an example.

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**22.** Name an alloy of :

A. aluminium used in aircraft construction.

B. lead used in electrical wiring or electrical work in joining metals.

C. copper in electrical appliances or household vessels.

D. zinc used in simple voltaic cells.

**Answer:**

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**23.** Explain the following: A neutral gas other than oxygen is formed at the anode during electrolysis of fused alumina.

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24. Complete and balance the following equation :

$Al_2O_3 \cdot 2H_2O + NaOH \rightarrow$  The above reaction is the first step in a certain process.

Name the process and state its purpose.

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25. Complete and balance the following equation :

$Al_2O_3 \cdot 2H_2O + NaOH \rightarrow$

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26. Give the product when  $Al_2O_3 \cdot 2H_2O$  reacts with Sodium hydroxide

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27. Answer the following questions with respect to the electrolytic reduction of aluminium :

Name the process used for the reduction of alumina.

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28. Answer the following questions with respect to the electrolytic reduction of aluminium :

Name the anode, cathode and electrolyte used in the process named in

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29. Answer the following questions with respect to the electrolytic reduction of aluminium :

Explain the use of the following in the process:(a) powdered coke (b) cryolite

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**30.** Answer the following questions with respect to the electrolytic reduction of aluminium :

Explain why the anode has to be periodically replaced.

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**31.** Give reason why :

Do metal ions always get discharged at the cathode on electrolysis ?

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**32.** Give reason why :

Sodium and potassium cannot be exposed to air?

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**33.** Give reason why :

Is sodium more reactive than aluminium ?

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**34.** Give reason why :

Is roasting generally carried out on sulphide ores and not on carbonate ores ?

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**35.** Give reason why :

Is a neutral gas other than oxygen formed at the anode during electrolysis of fused alumina ?

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**36.** Starting from each of the following reactants, how would you obtain the relevant product is not more than two steps ?

Zinc sulphide to sulphur dioxide.

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**37.** Starting from each of the following reactants, how would you obtain the relevant product is not more than two steps ?

Iron to iron (II) chloride.

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**38.** Starting from each of the following reactants, how would you obtain the relevant product is not more than two steps ?

Aluminium to sodium aluminate.

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39. Starting from each of the following reactants, how would you obtain the relevant product is not more than two steps ?

Zinc blende to zinc.

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## Questions From Previous Icse Board Papers

1. This metal is a liquid at room temperature :

A. Na

B. Mg

C. Hg

D. Ag

**Answer:**

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2. This non-metal has an allotropic form which conducts electricity :

- A. Sulphur
- B. Carbon
- C. Chlorine
- D. Iodine

**Answer:**



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3. This non-metal is liquid at room temperature :

- A.  $F_2$
- B.  $Cl_2$

C.  $Br_2$

D.  $I_2$

**Answer:**



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4. The hydroxide of this metal is soluble in sodium hydroxide :

A. Calcium

B. Magnesium

C. Iron

D. Zinc

**Answer:**



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5. A to F below are related to the source and extraction of either Zinc or Aluminium. A. Bauxite B. Coke C. Cryolite D. Froth floatation E. Sodium hydroxide solution F Zinc blende

Write down the three letters each from the list above, which are relevant to :

1. Zinc 2. Aluminium



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6. A to F below are related to the source and extraction of either Zinc or Aluminium. A. Bauxite B. Coke C. Cryolite D. Froth floatation E. Sodium hydroxide solution F Zinc blende

Write down the three letters each from the list above, which are relevant to :

Aluminium



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7. A to F below are related to the source and extraction of either Zinc or Aluminium. A. Bauxite B. Coke C. Cryolite D. Froth floatation E. Sodium hydroxide solution F Zinc blende

The ore from which aluminium is extracted must first be treated with ..... so that pure aluminium oxide is obtained.

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8. A to F below are related to the source and extraction of either Zinc or Aluminium. A. Bauxite B. Coke C. Cryolite D. Froth floatation E. Sodium hydroxide solution F Zinc blende

Pure aluminium oxide is dissolved in to make a conducting solution.

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9. A to F below are related to the source and extraction of either Zinc or Aluminium. A. Bauxite B. Coke C. Cryolite D. Froth floatation E.

Sodium hydroxide solution F Zinc blende

Write the formula of cryolite.

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**10.** Calcium, Copper, Lead, Aluminium, Zinc, Chromium, Magnesium and Iron. Choose the major metals from the list given above to make the following alloys :

Stainless steel

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**11.** Calcium, Copper, Lead, Aluminium, Zinc, Chromium, Magnesium and Iron. Choose the major metals from the list given above to make the following alloys :

Brass

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**12.** Name the following:

A metal which is liquid at room temperature,

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**13.** Name the following:

A compounds which is added to lower the fusion temperature of the electrolyte bath in the extraction of aluminium.

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**14.** Name the following:

The process of heating an ore to a high temperature in the presence of air.

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**15.** Name the following:

The compound formed by the reaction between calcium oxide and silica. (not in syllabus)

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**16.** Name the following:

The middle region of the furnace. (not in syllabus)

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**17.** Name the oxide which acts as a flux in the blast furnace. (not in syllabus)

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18. is the amount of carbon in pig iron/cast iron more than, less than or the same as the amount of carbon is steel? (not in syllabus)

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19. Name an allotrope of a non-metal that allows electricity to pass through it.

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20. Carbon monoxide, carbon dioxide, coal, coke, lime, iron (II) oxide, iron (III) oxide, lime stone. The raw materials required for the extraction of iron from haematite are (i) ..... (ii) ..... and hot air. The mineral present in haematite is (iii) ..... which is reduced by (iv) ..... to iron

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**21.** From the list of characteristics given below, select the five which are relevant to non-metals and their compounds : A Ductile B Conduct electricity C Brittle D Acidic oxides E Basic oxides F Discharged at anode G Discharged at cathode H Ionic chlorides I Covalent chlorides J Reaction with dilute sulphuric acid yields hydrogen K 1, 2 or 3 valence electrons L 5, 6 or 7 valence electrons

(Write the five letters corresponding to the correct characteristics)



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**22.** The following is an extract from 'Metals in the Service of Man, Alexander and Street/Pelican 1976. 'Alumina (aluminium oxide) has a very high melting point of over  $2000^{\circ}\text{C}$  so that it cannot readily be liquefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance :

Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide ?

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**23.** The following is an extract from 'Metals in the Service of Man, Alexander and Street/Pelican 1976. 'Alumina (aluminium oxide) has a very high melting point of over  $2000^{\circ}\text{C}$  so that it cannot readily be liquefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance :

The aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide. Write the equation for this reaction.

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**24.** The following is an extract from 'Metals in the Service of Man, Alexander and Street/Pelican 1976. 'Alumina (aluminium oxide) has a very high melting point of over  $2000^{\circ}\text{C}$  so that it cannot readily be liquefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance :

Name the element which serves both as the anode and the cathode in the extraction of aluminium.



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**25.** The following is an extract from 'Metals in the Service of Man, Alexander and Street/Pelican 1976. 'Alumina (aluminium oxide) has a very high melting point of over  $2000^{\circ}\text{C}$  so that it cannot readily be liquefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance :

Write the equation for the reaction that occurs at the cathode during the extraction of aluminium by electrolysis.

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26. The following is an extract from 'Metals in the Service of Man, Alexander and Street/Pelican 1976. 'Alumina (aluminium oxide) has a very high melting point of over  $2000^{\circ}\text{C}$  so that it cannot readily be liquefied. However, conversion of alumina to aluminium and oxygen, by electrolysis, can occur when it is dissolved in some other substance :

Give the equation for the reaction which occurs at the anode when aluminium is purified by electrolysis.

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27. Brass is an alloy of :

A. Copper and Tin

B. Copper and Zinc

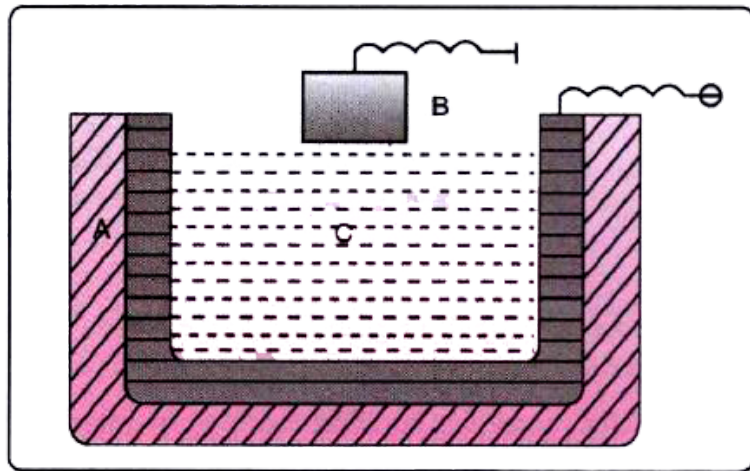
C. Zinc and Lead

D. Lead and Tin

**Answer:**

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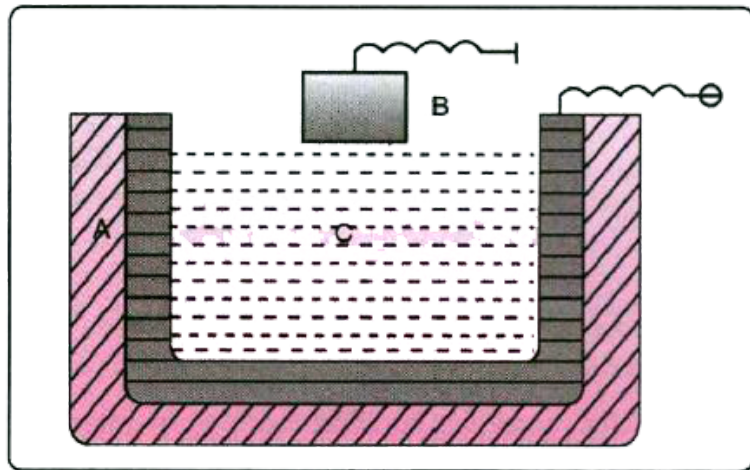
**28.** The following is a sketch of an electrolytic cell used in the extraction of aluminium.



What is the substance of which the electrode A and B are made ?

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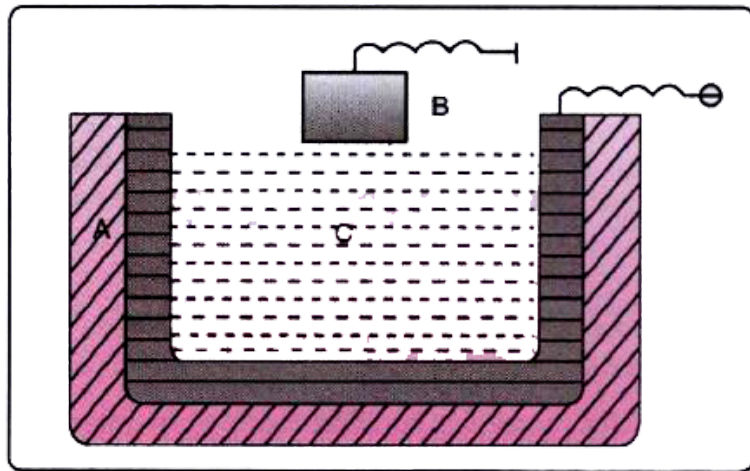
29. The following is a sketch of an electrolytic cell used in the extraction of aluminium.



At which electrode (A or B) is the aluminium formed ?

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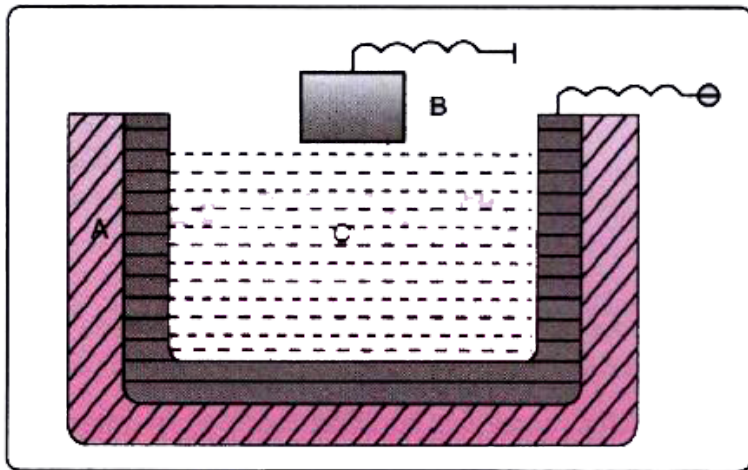
30. The following is a sketch of an electrolytic cell used in the extraction of aluminium.



What are the two aluminium compounds in the electrolyte C?

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**31.** The following is a sketch of an electrolytic cell used in the extraction of aluminium.



Why is it necessary for electrode B to be continuously replaced ?

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32. Find the odd one out and explain your choice (note:valency is not a criterion)

Sulphur, Phosphorus, Carbon, Iodine

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**33.** Find the odd one out and explain your choice (note:valency is not a criterion)

Copper, Lead, Zinc, Mercury

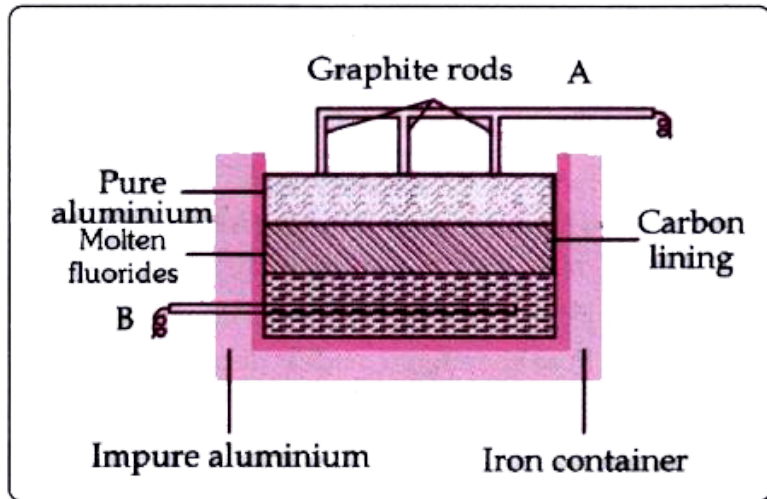
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**34.** Correct the following statements.For Example : "Chlorine is a bleaching agent'. Should read : "Moist chlorine is a bleaching agent'.  
Haematite is the chief ore of aluminium.

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**35.** The sketch below illustrates the refining of aluminium by Hoopes process.

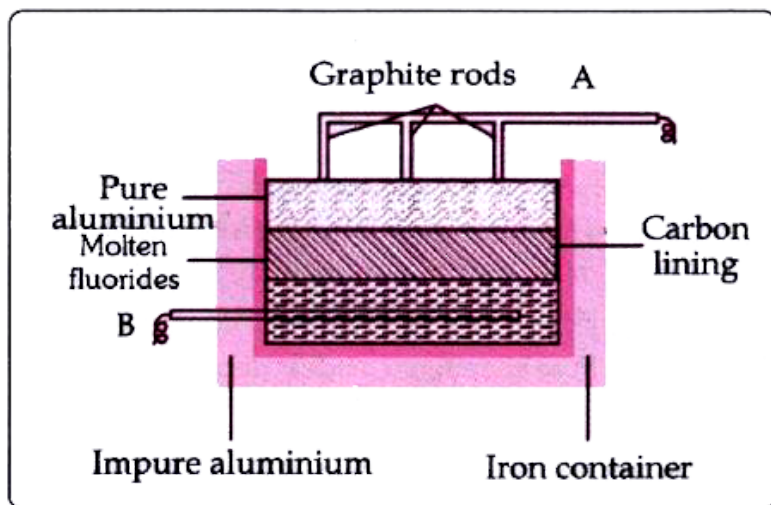




Which of A and B is the cathode and which one is the anode?

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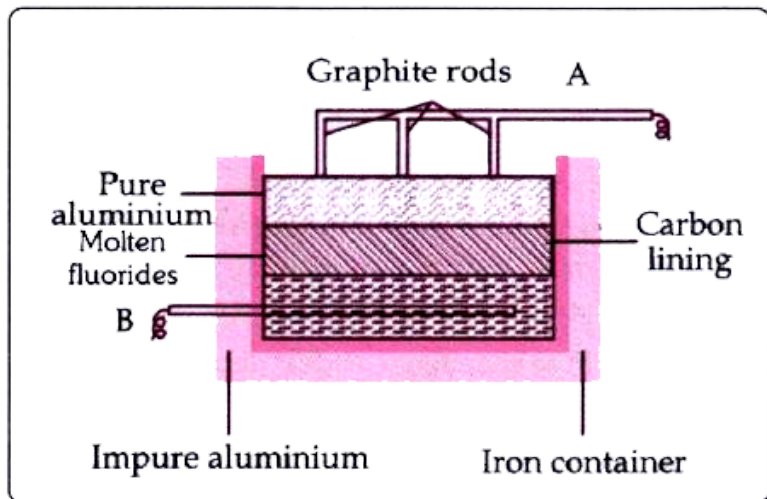
**36.** The sketch below illustrates the refining of aluminium by Hoopes process.



What is the electrolyte in the tank?

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37. The sketch below illustrates the refining of aluminium by Hoopes process.



What material is used for the cathode?

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38. State the property of the metal being utilised in the following:

Use of metal	Property
Zinc in Galvanisation	
Aluminium in Thermite welding	

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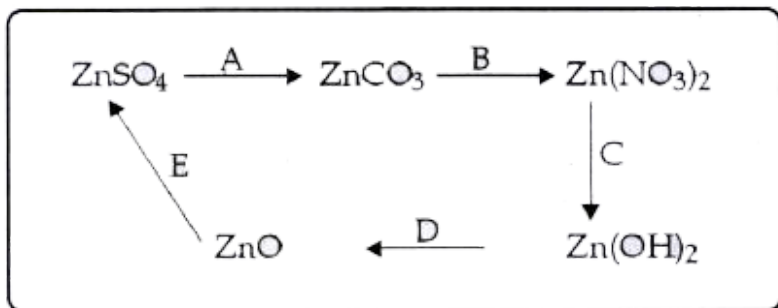
39. Which one of the following is not true of metals

- A. Metals are good conductors of electricity.
- B. Metals are malleable and ductile.
- C. Metals form non-polar covalent compounds.
- D. Metal will have 1, 2 or 3 electrons in their valence shell.

Answer:

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40. Give the equations for the following conversions A to E



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**41.** Name the main constituent metal in the following alloy :

Duralumin

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**42.** Name the main constituent metal in the following alloys :

Brass

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**43.** Name the main constituent metal in the following alloys :

Stainless steel

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**44.** Choose from the following list of substances, as to what matches the description given below: [Acetylene gas, aqua fortis, coke, brass, barium chloride, bronze, platinum]. (i) A black powdery substance used for the reduction of zinc oxide during its extraction. (ii) The substance is an alloy of zinc, copper and tin.

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**45.** What would you observe in each of the following cases?

When carbon monoxide is passed over heated copper oxide.

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**46.** This metal is a liquid at room temperature.

A. Potassium

B. Zinc

C. Gold

D. Mercury

**Answer:**

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**47.** Name a metal which is found abundantly in the earth's crust.

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**48.** What is the difference between calcination and roasting?

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**49.** Name the process used for the enrichment of sulphide ore.

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50. Write the chemical formulae of one main ore of iron and aluminium .

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51. Write the constituents of electrolyte for the extraction of aluminium.

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52. Which of the following metallic oxides cannot be reduced by normal reducing agents?

A. Magnesium oxide

B. Copper(II) oxide



C. Zinc oxide

D. Iron(III) oxide

**Answer:**

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53. Give reason for the following: Iron is rendered passive with fuming nitric acid.

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54. Match the properties and uses of alloys in List 1 with the appropriate answer from List 2.

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**55.** Name the following metals :

A metal present in cryolite other than sodium.

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**56.** Name the following metals :

A metal which is unaffected by dilute or concentrated acids.

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**57.** The following questions are relevant to the extraction of Aluminium:

State the reason for addition of caustic alkali to bauxite ore during purification of bauxite.

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58. The following questions are relevant to the extraction of Aluminium:

Give a balanced chemical equation for the above reaction

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59. The following questions are relevant to the extraction of Aluminium:

Along with cryolite and alumina , another substance is added to the electrolyte mixture Name the substance and give one reason for the addition .

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60. Identify the gas evolved in the following reaction when : a few crystals of  $\text{KNO}_3$  are heated in a hard glass test tube.

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**61.** The metals zinc and tin are present in the alloy :

A. Solder

B. Brass

C. Bronze

D. Duralumin

**Answer:**

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**62.** State two relevant observations for each of the following: Lead nitrate crystals are heated in a hard glass test tube.

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	X	Y
Normal Electronic Configuration	2,8,7	2,8,2
Nature of oxide	Dissolves in water and turns blue litmus red.	Very low solubility in water. Dissolves in hydrochloric acid.
Tendency for oxidising and reducing reactions	Tends to oxidise elements and compounds.	Tends to act as a reducing agent.
Electrical and Thermal conductivity	Very poor electrical conductor. Poor thermal conductivity.	Good Electrical conductor. Good Thermal conductor.
Tendency to form alloys and amalgams	No tendency to form alloys.	Forms alloys.

63.

Using the information above, complete the following:

..... is the metallic element.

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	X	Y
Normal Electronic Configuration	2,8,7	2,8,2
Nature of oxide	Dissolves in water and turns blue litmus red.	Very low solubility in water. Dissolves in hydrochloric acid.
Tendency for oxidising and reducing reactions	Tends to oxidise elements and compounds.	Tends to act as a reducing agent.
Electrical and Thermal conductivity	Very poor electrical conductor. Poor thermal conductivity.	Good Electrical conductor. Good Thermal conductor.
Tendency to form alloys and amalgams	No tendency to form alloys.	Forms alloys.

64.

Using the information above, complete the following:

Metal atoms tend to have a maximum of ..... electrons in the outermost energy level.

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	X	Y
Normal Electronic Configuration	2,8,7	2,8,2
Nature of oxide	Dissolves in water and turns blue litmus red.	Very low solubility in water. Dissolves in hydrochloric acid.
Tendency for oxidising and reducing reactions	Tends to oxidise elements and compounds.	Tends to act as a reducing agent.
Electrical and Thermal conductivity	Very poor electrical conductor. Poor thermal conductivity.	Good Electrical conductor. Good Thermal conductor.
Tendency to form alloys and amalgams	No tendency to form alloys.	Forms alloys.

65.

Using the information above, complete the following:

Non-metallic elements tend to form ..... oxides while metals tend to form ..... oxides.

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	X	Y
Normal Electronic Configuration	2,8,7	2,8,2
Nature of oxide	Dissolves in water and turns blue litmus red.	Very low solubility in water. Dissolves in hydrochloric acid.
Tendency for oxidising and reducing reactions	Tends to oxidise elements and compounds.	Tends to act as a reducing agent.
Electrical and Thermal conductivity	Very poor electrical conductor. Poor thermal conductivity.	Good Electrical conductor. Good Thermal conductor.
Tendency to form alloys and amalgams	No tendency to form alloys.	Forms alloys.

66.

Using the information above, complete the following:

Non-metallic elements tend to be ..... conductors of heat and electricity.

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	X	Y
Normal Electronic Configuration	2,8,7	2,8,2
Nature of oxide	Dissolves in water and turns blue litmus red.	Very low solubility in water. Dissolves in hydrochloric acid.
Tendency for oxidising and reducing reactions	Tends to oxidise elements and compounds.	Tends to act as a reducing agent.
Electrical and Thermal conductivity	Very poor electrical conductor. Poor thermal conductivity.	Good Electrical conductor. Good Thermal conductor.
Tendency to form alloys and amalgams	No tendency to form alloys.	Forms alloys.

67.

Using the information above, complete the following:

Metals tend to ..... electrons and act as .... agents in their reactions with elements and compounds.

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68. The following questions relate to the extraction of aluminium by electrolysis :

Name the other aluminium containing compound added to alumina and state its significance.

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**69.** The following questions relate to the extraction of aluminium by electrolysis :

Give the equation for the reaction that takes place at the cathode.

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**70.** The following questions relate to the extraction of aluminium by electrolysis :

Explain why is it necessary to renew the anode periodically.

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**71.** The main ore used for the extraction of iron is:

(a) Haematite

(b) Calamine



(c) Bauxite

(d) Cryolite

A. Haematite

B. Calamine

C. Bauxite

D. Cryolite

**Answer:**

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**72.** Heating an ore in a limited supply of air or in the absence of air at a temperature just below its melting point is known as:

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73. Aluminium powder is used in thermite welding because :

- A. it is a strong reducing agent
- B. it is a strong oxidising agent
- C. it is corrosion resistant
- D. it is a good conductor of heat

**Answer:**

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74. State the main components of the following alloys:

Brass

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**75.** State the main components of the following alloys:

Duralumin

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**76.** State the main components of the following alloys:

Bronze

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**77.** Name the

The property possessed by metals by which they can be beaten into sheets

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**78.** Name the

A compound added to lower the fusion temperature of electrolytic bath in the extraction of aluminium.

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**79.** Name the

The ore of zinc containing its sulphide.

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**80.** This is not an alloy of copper :

A. Brass

B. Bronze

C. Solder

## D. Duralumin

**Answer:**

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**81.** Give appropriate scientific reasons for the following statements:

Zinc oxide can be reduced to zinc by using carbon monoxide, but aluminium oxide cannot be reduced by a reducing agent.

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**82.** For each of the substance listed below, describe the role played in the extraction of aluminium. (1) Cryolite (2) Sodium hydroxide (3) Graphite.

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**83.** Explain why :

In the electrolysis of alumina using the Hall Heroult's Process, the electrolyte is covered with powdered coke.

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**84.** Explain why :

Iron sheets are coated with zinc during galvanization.

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**85.** The two main metals in Bronze are :

- A. Copper and zinc
- B. Copper and lead
- C. Copper and nickel
- D. Copper and tin

**Answer:**

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**86.** Identify the term/substance of the following: The method used to separate ore from gangue by preferential wetting.

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**87.** (i) Name the solution used to react with Bauxite as a first step in obtaining pure aluminium oxide, in the Baeyer's process.

(ii) Write the equation for the reaction where the aluminum oxide for the electrolytic extraction of aluminum is obtained by heating aluminium hydroxide.

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**88.** From the list of terms given, choose the most appropriate term to match the given description. (calcination, roasting, pulverisation, smelting)

1. Crushing of the ore into a fine powder.
2. Heating of the ore in the absence of air to a high temperature.

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**89.** Name the

The process of coating of iron with zinc.

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**90.** Name the

An alloy of lead and tin that is used in electrical circuits.

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**91.** Name the

An ore of zinc containing its sulphide.

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**92.** Name the

A metal oxide that can be reduced by hydrogen.

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**93.** Complete the following by selecting the correct option from the choices given :

The metal whose oxide, which is amphoteric, is reduced to metal by carbon reduction..... (Fe/Mg/Pb/Al)

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**94.** Complete the following by selecting the correct option from the choices given :

The divalent metal whose oxide is reduced to metal by electrolysis of its fused salt is ..... (Al/Na/Mg/K)

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**95.** Give one word or a phrase for the following statement: The process by which sulphide ore is concentrated.

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**96.** Fill up the blank with the correct choice given in bracket. The most common ore of iron is (Calamine / haematite)

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97. Name the main component of the following alloys : (i) Brass (ii)

Duralumin

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98. (i) Name the most common ore of the metal aluminum from which the metal is extracted. Write the chemical formula of the ore.

(ii) Name the process by which impure ore of aluminum gets purified by using concentrated solution of an alkali. (iii) Write the equation for the formation of aluminum at the cathode during the electrolysis of alumina.

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Questions

1. The main ore used for the extraction of iron is

- A. Calamine
- B. Haematite
- C. Bauxite
- D. Cryolite

**Answer:**

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2. Name the process used for the enrichment of sulphide ore.

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3. What is the difference between calcination and roasting ?



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4. Name the black powdery substance used for the reduction of zinc oxide during its extraction.

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5. What is observed when carbon monoxide is passed over heated copper oxide.

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6. To isolate active metals, water solution of the metal salt cannot be used for electrolysis. Give reason.

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7. Explain how the following metals are obtained from their compounds by the reduction process?

Metal X which is low in the reactivity series.

Give one example

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8. Explain how the following metals are obtained from their compounds by the reduction process?

Metal Y which is in the middle of the reactivity series.

Give one example of each type.

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9. Explain how the following metals are obtained from their compounds by the reduction process?

Metal Z which is high up in the reactivity series. Give one example of each type.

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**10.** Answer the following question related with the isolation of aluminium from bauxite:

Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide?

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**11.** Answer the following question related with the isolation of aluminium from bauxite:

The aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide. Write the equation for this reaction.



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**12.** Answer the following question related with the isolation of aluminium from bauxite:

Name the element which serves both as the anode and the cathode in the extraction of aluminium.

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**13.** Answer the following question related with the isolation of aluminium from bauxite:

Write the equation for the reaction that occurs at the cathode during the extraction of aluminium by electrolysis.

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**14.** Answer the following question related with the isolation of aluminium from bauxite:

Give the equation for the reaction which occurs at the anode when aluminium is purified by electrolysis.

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**15.** Write the constituents of electrolyte for the extraction of aluminium.

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**16.** Write the equation for the reaction when aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide.

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**17.** Name the compound added to pure alumina to lower the fusion temperature during the electrolytic reduction of alumina.

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**18.** Explain why it is preferable to use a number of graphite anodes instead of a single electrode during the electrolysis of aluminium.

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**19.** The following question relate to the extraction of aluminium by electrolysis.

Name the other aluminium-containing compound added to alumina and write its significance.

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20. The following question relate to the extraction of aluminium by electrolysis.

Give equation for the reaction that takes place at the cathode.

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21. The following questions relate to the extraction of aluminium by electrolysis :

Explain why is it necessary to renew the anode periodically.

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22. Answer the following questions with respect to the electrolytic process in the extraction of aluminium:

Identify the components of the electrolyte other than pure alumina and the role played by each.

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**23.** Answer the following questions with respect to the electrolytic process in the extraction of aluminium:

For the substance listed below explain the role played in the extraction of aluminium.

Cryolite

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**24.** Answer the following questions with respect to the electrolytic process in the extraction of aluminium:

For the substance listed below explain the role played in the extraction of aluminium.

Sodium hydroxide

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**25.** Answer the following questions with respect to the electrolytic process in the extraction of aluminium:

For the substance listed below explain the role played in the extraction of aluminium.

Graphite

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**26.** Aluminium powder is used in thermite welding because

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**27.** The two main metals in bronze are

A. copper and zinc

B. copper and lead

C. copper and nickel

D. copper and tin

**Answer:**



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28. \_\_\_\_\_ is an alloy of copper and tin. (Brass/Bronze)



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29. Name the main constituent metal in the following alloy:

Duralumin



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**30.** Name the main constituent metal in the following alloy:

Brass

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**31.** Name the main constituent metal in the following alloy:

Stainless steel

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**32.** Match the properties & uses of alloys in List 1 - with the correct answer from List 2



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**33.** Name the main components of the alloy:

Brass

 [Watch Video Solution](#)

**34.** Name the main components of the alloy:

Bronze

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**35.** Name the main components of the alloy:

Duralumin

 [Watch Video Solution](#)

**36.** Which one is not an alloy of copper ?



A. Brass

B. Bronze

C. Duralumin

D. steel

**Answer:**

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**37.** Name an alloy of copper and zinc.

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**38.** Element X is a metal with a valency 2. Element Y is a non - metal with a valency 3.

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39. Cations are formed by \_\_\_\_\_ (loss/gain) of electrons and anions are formed by \_\_\_\_\_ (loss/gain) of electrons.

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40. Write three balanced equations for purification of bauxite by Hall's process in extraction of Al.

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41. Name a chemical used for dissolving  $Al_2O_3$ . In which state of subdivision is the chemical used

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42. Write an equation for the reaction at the anode during the extraction of aluminium by the electrolytic process.

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43. Mention one reason for the use of aluminium in thermite welding.

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44. A to F below relate to the source & extraction of either Zinc or Aluminium.

A: Bauxite, B: Coke, C : Cryolite, D : Froth flotation, E : Sodium hydroxide solution, F: Zinc blende.

(i) Write down the three letters each from the above list which are relevant to - Aluminium

(ii) Fill in the blanks using the most appropriate words from A to F :

(a) The ore from which aluminium is extracted must first be treated with \_\_\_\_\_ so that pure Aluminium oxide can be obtained. (b) Pure Aluminium oxide is dissolved in \_\_\_\_\_ to make a conducting solution

(iii) Write the formula of Cryolite.

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45. Calcium, Copper, Lead, Aluminium, Zinc, Chromium, Magnesium, Iron Choose the major metals from the list given above to make the following alloys : (i) Stainless steel. (ii) Brass.

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46. Name the following :

A metal which is liquid at room temperature.

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47. Name the following :

A compound added to lower the fusion temp. of the electrolytic bath in the extraction of Al

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48. Name the following :

The process of heating an ore to a high temperature in the presence of air.

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49. A strip of copper is placed in four different colourless salt solutions. They are  $KNO_3$ ,  $AgNO_3$ ,  $Zn(NO_3)_2$ ,  $Ca(NO_3)_2$ . Which one of the solutions will finally turn blue.

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50. When a metal atom becomes an ion : -

- A. it loses electrons and is oxidized
- B. it gains electrons and is reduced
- C. it gains electrons and is oxidized
- D. it loses electrons and is reduced

**Answer:**

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51. Answer the following question related with the isolation of aluminium from bauxite:

Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide?

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52. Answer the following question related with the isolation of aluminium from bauxite:

The aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide. Write the equation for this reaction.

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53. Answer the following question related with the isolation of aluminium from bauxite:

Name the element which serves both as the anode and the cathode in the extraction of aluminium.

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**54.** In the extraction of aluminium : -

Write equation for the reaction at cathode during the extraction of aluminium by electrolysis.

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**55.** In the extraction of aluminium : -

Give the equation for the reaction at the anode when aluminium is purified by electrolysis.

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**56.** \_\_\_\_\_ is an alloy of copper and tin. (Brass/Bronze)

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57. The following is a sketch of an electrolytic cell used in the extraction of aluminium :

(i) What is the substance of which the electrodes of aluminium:

(ii) At which electrode (A or B) is the aluminium formed

(iii) What are the two aluminium compounds in the electrolyts C.

(iv) Why is it necessary for electrode B to be continuously replaced



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58. The metal oxide which can react with acid as well as alkali is :

A. Silver oxide

B. Copper [II] oxide

C. Aluminium oxide

D. Calcium oxide

**Answer:**

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**59.** Correct the following statement - Haematite is the chief ore of aluminium.

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**60.** 

The sketch illustrates refining of aluminium by Hoopes process  
[reference]

- (i) Which of A and B is the cathode and which one is the anode
- (ii) What is the electrolyte in the tank
- (iii) What material is used for the cathode

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61. State the property of the metal being utilised in the following:

Use of metal	Property
Zinc in Galvanisation	
Aluminium in Thermite welding	

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62. State the main constituent metal in each alloy i] Duralumin ii] Brass iii] Stainless steel.

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63. Select the property which is not for metals - A : Metals are good conductors of electricity B : Metals are malleable & ductile C: Non - polar covalent compounds are formed from metals D : Metals have 1, 2 or 3 valence electrons.

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**64.** Choose from the list of substances - Acetylene gas, ayua fortis, coke, brass, barium chloride, bronze, platinum The substance which is an alloy of zinc, copper and tin.

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**65.** Name a metal found abundantly in the earth's crust.

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**66.** Difference between calcination & roasting

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67. Name the process used for the enrichment of sulphide ore.

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68. Write the chemical formulae of one main ore of iron and aluminium .

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69. Write the constituents of electrolyte for the extraction of aluminium.

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70. Choose the correct answer

An alkaline earth metal .

A. Potassium

B. Calcium

C. Lead

D. Copper

**Answer:**

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**71.** Choose the correct answer

The metallic oxide/s which cannot be reduced by normal reducing agents.

A. Magnesium oxide

B. Copper (II) oxide

C. Zinc oxide,

D. Iron (III) oxide

**Answer:**

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**72.** Match the properties and uses of alloys in List 1 with the appropriate answer from List 2.

List 1. The alloy contains Cu and Zn, is List hard and is used in decorative articles

2. It is stronger than Aluminium, light and is used in making light tools.

3. It is lustrous, hard corrosion resistant and used in surgical instruments.

4. Tin lowers the melting point of the alloy and is used for soldering purpose

5. The alloy is hard, brittle takes up polish and is used for making statues.

List 2 : A. Duralumin B Brass C. Bronze D. Stainless Steel E. Solder



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**73.** Name the following metals :

A metal present in cryolite other than sodium.

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**74.** The following questions are relevant to the extraction of Aluminium :

State the reason for addition of caustic alkali to bauxite ore during purification of bauxite.

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**75.** The following questions are relevant to the extraction of Aluminium:

Give a balanced chemical equation for the above reaction



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**76.** The following questions are relevant to the extraction of Aluminium:

Along with cryolite and alumina , another substance is added to the electrolyte mixture Name the substance and give one reason for the addition .

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**77.** Choose the most appropriate answer from the following options :

Identify the metallic oxide which is amphoteric in nature :

Calcium oxide

Barium oxide

Zinc oxide

Copper(II)oxide

- A. Calcium oxide
- B. Barium oxide
- C. Zinc oxide
- D. Copper (II) oxide

**Answer:**



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**78.** The metals zinc & tin are present in the alloy :

- A. Solder
- B. Brass
- C. Bronze
- D. Duralumin

**Answer:**

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79. Using the information below about X and Y - complete the following questions :



(i) \_\_\_\_\_ is the metallic element. (ii) Metal atoms tend to have a maximum of \_\_\_\_\_ electrons in the outemost energy level. (iii) Non-metallic elements tend to form \_\_\_\_\_ oxides while metals tend to form energy level . (iii) Non - metallic elements tend to be \_\_\_\_\_ conductors of heat and electricity (v) Metals tend to \_\_\_\_\_ electrons and act as \_\_\_\_\_ eagents in their reactions with elements and compounds.

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80. The following questions relate to the extraction of aluminium by electrolysis :

Name the other aluminium containing compound added to alumina and state its significance.

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**81.** The following questions relate to the extraction of aluminium by electrolysis :

Give the equation for the reaction that takes place at the cathode.

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**82.** The following questions relate to the extraction of aluminium by electrolysis :

Explain why is it necessary to renew the anode periodically.

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**83.** Heating an ore in a limited supply of air or in the absence of air at a temperature just below its melting point is known as:

- A. Smelting
- B. Ore dressing
- C. Calcination
- D. Bessemerisation

**Answer:**



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**84.** Choose the correct answer from the choices :

Aluminium powder is used in thermite welding because

- A. it is strong reducing agent.
- B. it is strong oxidising agent

C. it is corrosion resistant

D. it is a good conductor of heat.

**Answer:**



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**85.** Name the main component of the following alloys : (i) Brass (ii)

Duralumin



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**86.** Name the

The property possessed by metals by which they can be beaten into sheets



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**87.** Name the

A compound added to lower the fusion temperature of electrolytic bath in the extraction of aluminium.

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**88.** Name the

The ore of zinc containing its sulphide.

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**89.** This is not an alloy of copper :

A. Brass

B. Bronze

C. Solder

## D. Duralumin

**Answer:**

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**90.** Give appropriate scientific reasons for the following statements:

Zinc oxide can be reduced to zinc by using carbon monoxide, but aluminium oxide cannot be reduced by a reducing agent.

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**91.** Choose the most appropriate answer from the following list of oxides which fit the description. Each answer may be used only once :

[ $SO_2$ ,  $SiO_2$ ,  $Al_2O_3$ ,  $MgO$ ,  $CO$ ,  $Na_2O$ ]

An amphoteric oxide.

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**92.** Element X is a metal with a valency 2, Y is a non metal with a valency 3.

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**93.** For each of the substance listed below, describe the role played in the extraction of aluminium. (1) Cryolite (2) Sodium hydroxide (3) Graphite.

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**94.** Explain why :

In the electrolysis of alumina using the Hall Heroult's Process, the electrolyte is covered with powdered coke.

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95. Fill in the blanks from the choices given : Metals are good \_\_\_\_\_ 'oxidizing agents /reducing agents because they are electron \_\_\_\_\_ [acceptors/donors].

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96. Select the correct answer from A,B,C & D: The two main metals in bronze are :

A. Copper & zinc

B. Copper & lead

C. Copper & nickel

D. Copper & tin

**Answer:**

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97. Identify the term/substance of the following: The method used to separate ore from gangue by preferential wetting.

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98. In the extraction of aluminium : -

Which soln. is used to react with bauxite as a first in obtaining pure aluminium oxide.

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99. Identify the term in the following : The method used to separate ore from gangue by preferential wetting

Write the equation for the reaction where the -

aluminum oxide for the electrolytic extraxtion of aluminum is obtained by heating aluminum hydroxide.

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**100.** Name the compound added to pure alumina to lower the fusion temperature during the electrolytic reduction of alumina.

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**101.** Identify the term/substance of the following: The method used to separate ore from gangue by preferential wetting.

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**102.** Explain why it is preferable to use a number of graphite anodes instead of a single electrode during the electrolysis of aluminium.

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**103.** From the list of term given, choose the most appropriate term to match the given description :

[clacination, roasting, pulverisation, emrlting] - (i) Crushing of the ore into a fine powder.

(ii) Heating of the ore in the absence of air to a high temperature.

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**104.** Name the following

An alloy of lead and tin that is used in electrical circuits.

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**105.** Name the following

An ore of zinc containing its sulphide.

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**106.** Name the following

A metal oxide that can be reduced by hydrogen.

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**107.** Answer the following questions with respect to the electrolytic process in the extraction of aluminium:

Identify the components of the electrolyte other than pure alumina and the role played by each.

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**108.** Answer the following questions with respect to the electrolytic process in the extraction of aluminum :

Explain why powdered coke is sprinkled over the electrolytic mixture.

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**109.** Complete the following by selecting the correct option from the choices given

The divalent metal whose oxide is reduced to metal by electrolysis of its fused salt is \_\_\_\_\_ [Al/Na/Mg/K].

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**110.** Complete the following by selecting the correct option from the choices given :

The divalent metal whose oxide is reduced to metal by electrolysis of its fused salt is ..... (Al/Na/Mg/K)

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**111.** Give reason:

Alkali metals are good reducing agents

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**112.** Give one word or a phrase for the following statement: The process by which sulphide ore is concentrated.

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**113.** Fill up the blank with the correct choice given in bracket. The most common ore of iron is (Calamine / haematite)

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**114.** Name the main component of the alloy - (i) Brass, (ii) Duralumin.

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**115.** (i) Name the most common ore of the metal aluminum from which the metal is extracted. Write the chemical formula of the ore.

(ii) Name the process by which impure ore of aluminum gets purified by using concentrated solution of an alkali. (iii) Write the equation for the formation of aluminum at the cathode during the electrolysis of alumina.

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**116.** Name the process by which the impure ore of aluminium gets purified by using a conc. Soln. of an alkali.

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**117.** Write a balanced chemical equation for - (i) The formation of aluminium at the cathode, during the electrolysis of alumina. (ii) Action of heat on aluminium hydroxide.

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**118.** Choose the correct answer from the options A,B,C & D given : The reason for using aluminium in the alloy duralumin is :

- A. Aluminium is brittle
- B. Aluminium gives strength
- C. Aluminium brings lightness
- D. Aluminium lowers melting point .

**Answer:**

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**119.** Write balanced chemical equation for the following reaction :  
Reduction of copper [II] oxide by hydrogen.

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**120.** Give the appropriate term defined by the statement given : The process by which certain ores, specially carbonates, are converted to oxides in the absence of air.

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**121.** Arrange the following according to the instruction given in bracket : K, Pb, Ca, Zn

[In the increasing order of reactivity].

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**122.** Give the chemical formula of : (i) Bauxite (ii) Cryolite (iii) Sodium aluminate

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**123.** Answer the following questions based on the extraction of aluminium from alumina by Hall - Heroult's Process.

What is the function of cryolite used along with alumina as the electrolyte.

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**124.** Answer the following questions based on the extraction of aluminium from alumina by Hall - Heroult's Process.

Why is powdered coke sprinkled on top of the electrolyte.

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**125.** Answer the following questions based on the extraction of aluminium from alumina by Hall - Heroult's Process.

Name the electrode from which aluminium is collected.

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126. Match the alloys given in column I with the uses given in column II.

Column I	Column II
(i) Duralumin	A. Electrical fuse
(ii) Solder	B. Surgical instruments
(iii) Brass	C. Aircraft body
(iv) S tainless Steel	D. Decorative articles

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127. Name the gas evolved when : Alumina undergoes electrolytic reduction.

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1. Name two metals which occur in native state in nature

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2. Write one difference between a mineral and an ore.

 [Watch Video Solution](#)

3. Name an ore of aluminium and write its formula.

 [Watch Video Solution](#)

4. Name the stages of metallurgy (do not describe).

 [Watch Video Solution](#)

5. Name the type of ore which is concentrated by froth floatation process.

 [Watch Video Solution](#)

6. Name the products obtained when zinc blende is roasted .

 [Watch Video Solution](#)

7. Name the products obtained when limestone is calcined.

 [Watch Video Solution](#)

8. An ore when heated in air gives sulphur dioxide. Name the process that would be used for its concentration.

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9. Show by chemical equations how roasting can convert sulphide ore into an oxide?

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10. Name the metal which is extracted from bauxite.

 [Watch Video Solution](#)

11. Define the term used in metallurgy.

Gangue

 [Watch Video Solution](#)



**12.** Define the term used in metallurgy.

Roasting

 [Watch Video Solution](#)

**13.** Define the term used in metallurgy.

Calcination

 [Watch Video Solution](#)

**14.** Define the term used in metallurgy.

Electrolytic reduction

 [Watch Video Solution](#)

**15.** Carbon can reduce copper oxide but not aluminium oxide. Give reason.

 [Watch Video Solution](#)

**16.** Define calcination and write its purpose.

 [Watch Video Solution](#)

**17.** Aqueous solution of NaCl is not used for electrolytic isolation of sodium metal. Give reason.

 [Watch Video Solution](#)

**18.** Name an ore of iron.

 [Watch Video Solution](#)

19. Write the differences between electrolytic reduction and reduction with carbon.

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20. Explain how the following metal are obtained from their compounds by reduction process?

Metal X which is low in the reactivity series.

Give one example of each type.

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21. Explain how the following metal are obtained from their compounds by reduction process?

Metal Y which is in the middle of the reactivity series.

Give one example of each type.

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22. Explain how the following metal are obtained from their compounds by reduction process?

Metal Z which is high up in the reactivity series.

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23. Which one of Zn, Al and Fe will satisfy the following? Answer with justification.

One of its ores is rich in  $M_2O_3$ .

 [Watch Video Solution](#)

24. Which one of Na, Al and Fe will satisfy the following? Answer with justification.

$M_2O_3$ , is not affected by water.

 [Watch Video Solution](#)

25. Which one of Zn, Al and Fe will satisfy the following? Answer with justification.

It is the most abundant metal in the earth's crust.

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26. An ore gives  $CO_2$  on treatment with dilute acid. Identify the type of ore and name the process that should be used to convert this ore into oxide.

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27. A trivalent metal X is isolated by the process of electrolytic reduction. It is the most abundant metal in the earth's crust. Identify the metal and state its two uses.

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28. Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

When bauxite is treated with sodium hydroxide solution, what happens to the aluminium oxide and iron (III) oxide?

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29. Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following

question:

Name the process used for the purification of bauxite.

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**30.** Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

Write the equation for the action of heat on aluminium hydroxide.

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**31.** Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

Write the formula of cryolite.

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**32.** Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

Write down the word which correctly completes the following sentence:

"By dissolving aluminium oxide in cryolite a \_\_\_\_\_ solution is produced. (nonconducting/conducting)"

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**33.** Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

Why is so much graphite required for this electrolytic process?

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**34.** Aluminium is extracted from bauxite by the electrolysis of aluminium oxide dissolved in cryolite. Now answer the following question:

Write the reactions at cathode in the electrolytic reduction of alumina.

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**35.** Name the metals present in bronze, and write its one use.

 [Watch Video Solution](#)

**36.** Name the alloy whose constituents are iron, nickel and chromium.

 [Watch Video Solution](#)

**37.** Name the constituents of duralumin. What are the uses of this alloy?

 [Watch Video Solution](#)

**38.** Which element is alloyed with copper to make bronze?

 [Watch Video Solution](#)

**39.** Fill in the blanks by selecting correct word/term given in the brackets.

Froth floatation process is used to concentrate \_\_\_\_\_ ores.  
(oxide/sulphide)

 [Watch Video Solution](#)

40. Fill in the blanks by selecting correct word/term given in the brackets.

Impure \_\_\_\_\_ is used as anode in the electrolytic refining of copper. (zinc/copper)

 [Watch Video Solution](#)

41. Fill in the blanks by selecting correct word/term given in the brackets.

Zinc carbonate is converted into \_\_\_\_\_ by calcination. (ZnO/ZnS)

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42. Fill in the blanks by selecting correct word/term given in the brackets.

An alloy of copper and tin is called \_\_\_\_\_. (brass/bronze)

 [Watch Video Solution](#)

43. Fill in the blanks by selecting correct word/term given in the brackets.

Brass is an alloy of copper and \_\_\_\_\_ (zinc/tin)

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44. Fill in the blanks by selecting correct word/term given in the brackets.

The metal which does not react with water or dilute  $H_2SO_4$  but reacts with concentrated  $H_2SO_4$  is \_\_\_\_\_ (Al/Cu/Zn/Fe)

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45. Complete the following by selecting the correct option from the choices given :

The metal whose oxide, which is amphoteric, is reduced to metal by carbon reduction..... (Fe/Mg/Pb/Al)

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**46.** Complete the following by selecting the correct option from the choices given :

The divalent metal whose oxide is reduced to metal by electrolysis of its fused salt is ..... (Al/Na/Mg/K)

 [Watch Video Solution](#)

**47.** Name the following

A metal which is a liquid at room temperature and is isolated by heating its ore .

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**48.** Name the following

A compound which is added to lower the fusion temperature of the electrolytic bath in the extraction of aluminium .

 [Watch Video Solution](#)

**49.** Name the following

The process of heating an ore to a high temperature in the presence of air.

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**50.** Name the following

The compound formed by the reaction between calcium oxide and silica.

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**51.** Name the following

An alloy of lead and tin that is used in electrical circuits.

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**52.** Name the following

An ore of zinc containing its sulphide.

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**53.** Name the following

A metal oxide that can be reduced by hydrogen.

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1. Which one of the following metals is most ductile?

A. Aluminium

B. Copper

C. Silver

D. Gold

**Answer: D**



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2. Which one of the following is least dense?

A. Mercury

B. Gold

C. Sodium

D. Aluminium



**Answer: C**

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**3.** Which one of the following metals is most reactive and stored in kerosene?

A. Iron

B. Gold

C. Copper

D. Potassium

**Answer: D**

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4. Which one of the following metals will not liberate hydrogen gas when treated with dilute hydrochloric acid?

A. Magnesium

B. Zinc

C. Copper

D. Iron

**Answer: C**

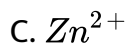


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5. Which one of the following will be displaced from its salt solution by copper?

A.  $Fe^{2+}$

B.  $Ag^+$



**Answer: B**

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6. Which one of the following is most reactive towards water?

A. Sodium

B. Potassium

C. Calcium

D. Aluminium

**Answer: B**

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7. Which one will not displace copper from copper sulphate?

A. Iron

B. Zinc

C. Aluminium

D. Silver

**Answer: D**



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8. Which metal will react readily with cold water?

a. Gold

b. Silver

c. Magnesium

d. Calcium

A. Gold

B. Silver

C. Magnesium

D. Calcium

**Answer: D**

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**9. Which oxide will turn red litmus solution blue ?**

A.  $MgO$

B.  $SO_2$

C.  $CO_2$

D.  $NO_2$

**Answer: A**

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10. Which metal is highly resistant to corrosion?

A. Fe

B. Cu

C. Ti

D. Al

**Answer: C**

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11. Which nonmetal is octatomic?

A. Helium

B. Iodine

C. Phosphorus

D. Sulphur

**Answer: D**

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**12.** Froth floatation process is used for the concentration of which ore?

A. Sulphide

B. Oxide

C. Carbonate

D. Chloride

**Answer: A**

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**13.** Brass is an alloy of Cu and which one of the following?

A. Sn

B. Fe

C. Zn

D. Cr

**Answer: C**



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**14.** Cinnabar is an ore of

A. Hg

B. Ag

C. Cu

D. Fe



**Answer: A**

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**15.** Calcination is employed to concentrate which ore?

- A. Sulphide
- B. Oxide
- C. Bauxite
- D. Carbonate

**Answer: D**

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**16.** An ore gives  $CO_2$  on being treated with dilute hydrochloric acid.

Which process should be used to convert this ore into oxide?

A. Calcination

B. Roasting

C. Froth floatation

D. Sedimentation

**Answer: A**



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**17. Iron will displace which one from its compound?**

A. Zn

B. Al

C. Cu

D. Mg

**Answer: C**



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18. Which of the following pairs will give displacement reaction? NaCl solution and copper metal,  $MgCl_2$  solution and aluminium metal,  $FeSO_4$  solution and silver metal,  $AgNO_3$  solution and copper metal.

- A. NaCl solution and copper metal
- B.  $MgCl_2$  solution and aluminium metal
- C.  $FeSO_4$  solution and silver metal
- D.  $AgNO_3$  solution and copper metal.

Answer: D



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19. Which of the following methods is suitable for preventing an iron frying pan from rusting?

- A. Applying grease
- B. Applying paint
- C. Applying a coating of zinc
- D. All the above

**Answer: C**



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20. An element combines with oxygen to give a compound with a high melting point. The compound is also soluble in water. The element is likely to be

- A. calcium

B. carbon

C. silicon

D. iron

**Answer: A**



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**21.** Food cans are coated with tin and not with zinc because

A. zinc is costlier than tin

B. zinc has a high melting point than tin

C. zinc is more reactive than tin

D. zinc is less reactive than tin

**Answer: C**



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22. Select odd one out which does not fit as required and justify your answer

Na, Cu, Mg, Hg      Solid state

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23. Select odd one out which does not fit as required and justify your answer

H, F, Cl, Br      Gaseous state

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24. Select odd one out which does not fit as required and justify your answer

H, Li, Na, K      Metallic nature

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25. Select odd one out which does not fit as required and justify your answer

Fe, Zn, Cu, Al          Reaction with dil. HCl

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26. Select odd one out which does not fit as required and justify your answer

K, Zn, Cu, Al          Reaction with water

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27. Select odd one out which does not fit as required and justify your answer

Fe, Zn, Mg, Au          Corrosion

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28. Select odd one out which does not fit as required and justify your answer

Si, S, P, C      Electrical conductivity

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29. Select odd one out which does not fit as required and justify your answer

$MgO$ ,  $CaO$ ,  $K_2O$ ,  $P_2O_5$       Basic nature

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30. Select odd one out which does not fit as required and justify your answer

Al, Mg, Ca, Hg      Isolation



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**31.** Match (A) cathode, (B) bauxite, (C) electrolytic reduction, (D) fuse metal, (E) gold, (F) cinnabar with its most correct description (i) - (vi) as given below.

(i) It is an ore of a metal which is the major constituent of magnalium.

(ii) Cations are reduced here.

(iii) It is used to solder metal wires.

(iv) It is an ore of metal which exists as liquid at room temperature.

(v) It is most malleable.

(vi) It is employed to isolate the metals high up in the activity series.

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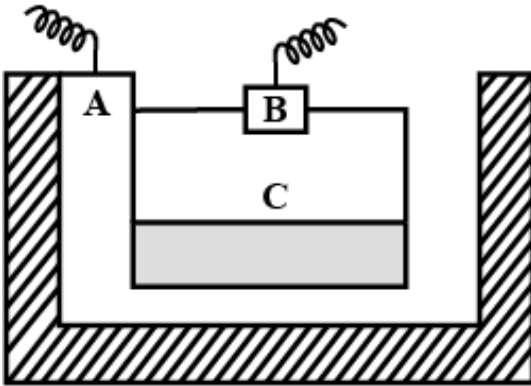
**32.** The following is a sketch of an electrolytic cell used in the extraction of aluminium.



What is the substances of which the electrodes A and B are made.

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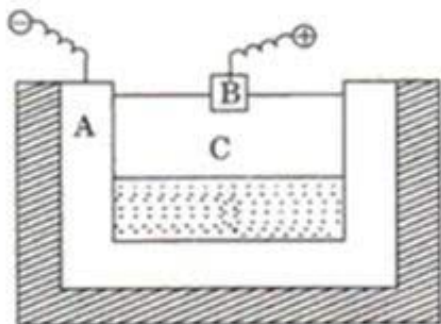
33. The alongside figure is of an electrolytic cell used in the extraction of aluminium.



At which electrode (A or B) is the aluminium formed?

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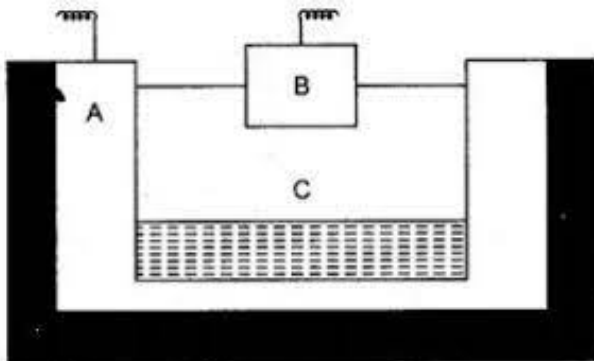
34. The alongside figure is of an electrolytic cell used in the extraction of aluminium.



What are the two aluminium compounds in the electrolyte C?

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35. The alongside figure is of an electrolytic cell used in the extraction of aluminium.



Why is it necessary for electrode B to be continuously replaced?

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36. The sketch below illustrates the refining of aluminium by Hoopes process.



Of A and B which is the cathode and which is the anode?

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37. The sketch below illustrates the refining of aluminium by Hoopes process.



What is the electrolyte in the tank?

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**38.** The sketch below illustrates the refining of aluminium by Hoopes process.



What material is used for the cathode?

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**Questions For Practice On Examination Pattern Answer The Following Question In One Word Or One Sentence**

**1.** Sulphide ore is concentrated by which method?

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2. Name a nonmetal which exists as liquid under normal conditions.

 [Watch Video Solution](#)

3. Name a metal which is liquid at room temperature.

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4. Name a nonmetal which is good conductor of electricity.

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5. Write the name and formula of an ore of aluminium.

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6. Which metal is isolated from cinnabar?

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7. Which one of Cu, Ag and Au is most malleable?

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8. Which one of Fe, Ag and Pb is best conductor of heat?

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9. Which one of Cu, Fe and Ag offers great resistance to the flow of electric current?

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10. Which one of Na, Cu and Zn can be easily cut with a knife?

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11. Which one of Cu, Mg and K is stored in kerosene?

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12. Which one of Na, K and Ca is most reactive towards water?

 [Watch Video Solution](#)

13. Froth floatation process is employed to enrich which type of ores?

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14. Which one of K, Ca and Mg does not react readily with cold water?

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## Additional Questions

1. State the position [group] in the periodic table to which the following metals belong (i) Na-alkali metal (ii) Mg-alkaline earth metal (iii) Fe & Zn transition elements (iv) inner transition elements [metals]. (v) Al

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2. Metals occur in the free state and in the combined state. Name two metals which occur in the free or native state. In the combined state metals occur in the form of compounds. Name two different

metallic compounds in each case which occur as (i) halides (ii) oxides (iii) sulphides.

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3. Differentiate between (i) mineral & ore (ii) matrix & flux.

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4. Give the (i) common (ii) chemical name (iii) formula of two common ores each of aluminium zinc & iron.

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5. In the stages involved in the extraction of metals in general - give reasons for following

Dressing of the ore is an essential process in the extraction of metal from its ore.

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6. In the stages involved in the extraction of metals in general - give reasons for following

An electromagnetic when is used in the magnetic separation process of ore from gangue.

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7. In the stages involved in the extraction of metals in general - give reasons for following

In the froth flotation process, the ore floats on the top & the gangue settles down.

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**8.** In the stages involved in the extraction of metals in general - give reasons for following

Magnetic separation is not used during the dressing of bauxite ore in the extraction of aluminium.

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**9.** In the stages involved in the extraction of metals in general - give reasons for following

Conversion of concentrated ore to its oxide is an essential step in the extraction of metals from the ore, even the step is not necessary in the metallurgy of aluminium.

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**10.** In the stages involved in the extraction of metals in general - give reasons for following

Roasting of the concentrated ore is carried out in the presence of excess air, while calcination of the concentrated ore in the absence or limited supply of air.

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**11.** In the stages involved in the extraction of metals in general - give reasons for following

Roasting the ore generally results in evolution of sulphur dioxide gas, while calcination of the ore evolves carbon dioxide gas.

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**12.** In the stages involved in the extraction of metals in general - give reasons for following

Reduction of metallic oxides to metal in the extraction of metals from the ores - is based on the position of the metal in the activity series.

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**13.** In the stages involved in the extraction of metals in general - give reasons for following

Oxide or halides of highly electropositive metals e.g. K, Na, Ca, Al are reduced to metals by electrolysis and not by reduction with coke.

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**14.** In the stages involved in the extraction of metals in general - give reasons for following

Coke is not preferred as a reducing agent in the reduction of the

oxide of mercury to its metal, but is preferred in the reduction of the oxide of zinc to its metal.

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**15.** In the extraction of aluminium from bauxite the first step is the dressing of the ore by Baeyer's process. Give balanced equations for the conversion of impure bauxite to pure alumina using a concentrated solution of  $NaOH$ .

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**16.** In the electrolytic reduction of pure alumina to pure aluminium - by Hall Herault's process, give the electrolytic reaction involved in the same, resulting in formation of aluminium at the cathode.

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17. State the function of (i) Sodium hydroxide (ii) Cryolite (iii) Fluorspar - in the metallurgy of aluminium in Hall Herault's process.

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18. Give reasons for the following - pertaining to Hall Herault's process.

The fusion temperature of the electrolyte has be lowered before conducting the electrolytic reduction.

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19. Give reasons for the following - pertaining to Hall Herault's process.

The constituents of the electrolyte in addition to one part of fused alumina contains three parts of crylite and one part of fluorspar.

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20. Give reasons for the following - pertaining to Hall Herault's process.

A layer of powdered coke sprinkled over the electrolytic mixture, protects the carbon electrodes.

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21. Give reasons for the following - pertaining to Hall Herault's process.

It is preferred to use a number of graphite electrodes as anode, instead of a single graphite electrode.

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22. Define - (a) alloy, (b) amalgam



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23. State (i) composition (ii) reason for alloying (iii) one use of each of the following alloys.

(i) Brass (ii) Bronze (iii) Duralumin (iv) Solder (v) Stainless steel

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## Unit Test Paper 6 Metallurgy

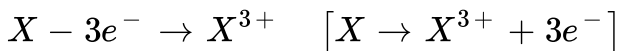
1. Loss of electrons from an element 'X' is represented by :



X \_\_\_\_\_ is [metal/non-metal] and will form \_\_\_\_\_ [electrovalent/covalent] compounds only

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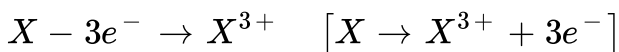
2. Loss of electrons from an element 'X' is re[resented by :



$X^{3+}$  formed is a \_\_\_\_\_ [cation/anion] and element 'X' has a valency of \_\_\_\_\_ [ + 2/ + 3/ - 3].

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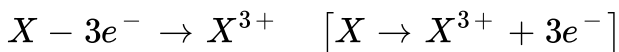
3. Loss of electrons from an element 'X' is re[resented by :



If  $X^{3+}$  combines with oxygen the formula of the product is \_\_\_\_\_ [ $X_2O_3$  /  $XO$  /  $X_3O_2$ ]

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4. Loss of electrons from an element 'X' is re[resented by :



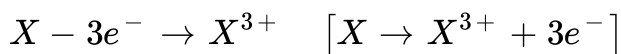
If the above product in the \_\_\_\_\_ [solid/molten] state is

electrolysed the ion  $X^{3+}$  will get discharged at the \_\_\_\_\_

[anode/cathode].

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5. Loss of electrons from an element 'X' is represented by :



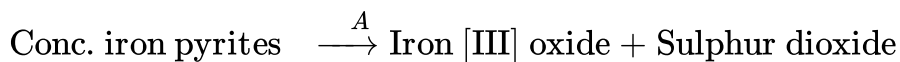
The ion  $X^{3+}$  \_\_\_\_\_ [accepts/loses] electrons and gets

\_\_\_\_\_ [oxidised/reduced] to neutral \_\_\_\_\_

[ions/atoms/molecules].

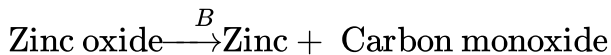
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6. Name the substance A to E, reacted with each reactant below to give the respective product/s.



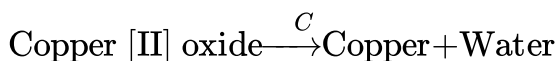
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7. Name the substance A to E, reacted with each reactant below to give the respective product/s.



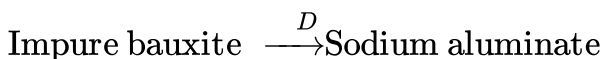
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8. Name the substance A to E, reacted with each reactant below to give the respective product/s.



 [Watch Video Solution](#)

9. Name the substance A to E, reacted with each reactant below to give the respective product/s.



 [Watch Video Solution](#)

10. Name the substance A to E, reacted with each reactant below to give the respective product/s.

Sodium aluminate  $\xrightarrow{E}$  Aluminium hydroxide

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11. Name the following :

A metallic ore converted to its oxide - iron [II] oxide on heating the concentrated ore.

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12. Name the following :

A black metallic oxide reduced to metal on heating with coke.

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**13.** Name the following :

The compound which on ignition at elevated temperatures gives pure alumina.

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**14.** Name the following :

The non-metal which forms the anode during electrolytic reduction of fused alumina in Hall Heroult's process.

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**15.** Name the following :

A metal other than manganese, present in duralumin but not in magnalium.

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16. Match the properties & uses of alloys in List 1 - with the correct answer from List 2



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## Unit Test Paper 6 Metallurgy Select The Correct Answer From The List A B C Given In Each Statement

1. The oxide of the metal which reacts with both acids and alkalis-to give salt & water

(a)  $MgO$

(b)  $CuO$

(c)  $Al_2O_3$

(d)  $K_2O$



A.  $MgO$

B.  $CuO$

C.  $Al_2O_3$

D.  $K_2O$

**Answer:**

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2. The common name of the ore of iron - whose chemical formula is

$Fe_3O_4$

A. Iron pyrites

B. Magnetite

C. Haematite

D. Spathic iron ore

**Answer:**



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**3.** The chemical name - of the main ore of aluminium.

- A. Aluminium fluoride
- B. Aluminium oxide
- C. Sodium aluminium fluoride
- D. Hydrated aluminium oxide

**Answer:**



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**4.** The process of dressing of the ore which involves separation ore & gangue - due to preferential wetting

- A. Magnetic separation
- B. Hydrolytic method
- C. Froth floatation method
- D. Chemical method

**Answer:**



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5. The metallic oxide reduced to metal generally by - thermal decomposition.

- A.  $ZnO$
- B.  $MgO$
- C.  $HgO$
- D.  $Al_2O_3$

**Answer:**



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