

Chapter 3

Metals and Non-metals

Intext Questions Page No. 40

Question 1.

Give an example of a metal which:

1. Is a liquid at room temperature.
2. Can be easily cut with a knife.
3. Is the best conductor of heat.
4. Is a poor conductor of heat.

Answer:

1. Metal that exists in a liquid state at room temperature → Mercury.
2. Metal that can be easily cut with a knife → Sodium.
3. Metal that is the best conductor of heat → Silver.
4. Metals that are poor conductors of heat → Lead.

Question 2.

Explain the meanings of malleable and ductile.

Answer:

1. Malleable: Materials that can be beaten into thin sheets are called malleable.
2. Ductile: Materials that can be drawn into thin wires are called ductile.

Metals can be hammered into thin sheets. This property of a metal is called malleability and the metals showing this property are called malleable. Gold, Silver, Copper, aluminium etc are malleable metals.

Metals can be drawn into wires. The ability of metals to be drawn into thin wires is called ductility. Gold is the most ductile metal. It is interesting to know that a wire of about 2 km length can be drawn from one gram of gold.

Intext Questions Page No. 46

Question 1.

Why is sodium kept immersed in kerosene oil?

Answer:

Sodium is highly reactive metal. It catches fire if kept in the open. Hence, to protect this to prevent accidental fires, it is kept immersed in kerosene oil.

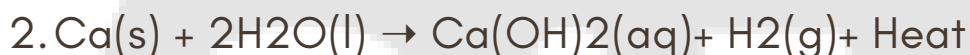
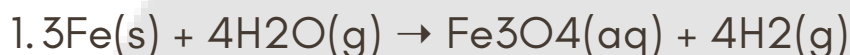
Question 2.

Write equations for the reactions of:

Iron with steam.

Calcium and potassium with water.

Answer:



Question 3.

Samples of four metals A, B, C and D were taken and added to the following solution one by one. The results obtained have been tabulated as follows.

Metal	Iron (II) sulphate	Copper (II) sulphate	Zinc sulphate	Silver nitrate
A	No reaction	Displacement		
B	Displacement		No reaction	
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Use the table above to answer the following questions about metals A, B, C and D.

1. Which is the most reactive metal?
2. What would you observe if B is added to a solution of Copper(II) sulphate?
3. Arrange the metals A, B, C and D in the order of decreasing reactivity.

Answer:

1. B is most reactive metal.
2. If B is added to a solution of copper sulphate it displaces copper from copper sulphate.
3. If metals are written in the order of decreasing reactivity it is $B > A > C > D$.

Question 4.

Which gas is produced when diluting hydrochloric acid is added to a reactive metal? Write the chemical reaction when iron reacts with dilute H_2SO_4 .

Answer:

Hydrogen gas is evolved when diluting hydrochloric acid is added to a reactive metal. When iron reacts with dilute H_2SO_4 , Iron(II) sulphate with the evolution of hydrogen gas is formed.



Question 5.

What would you observe when zinc is added to a solution of iron(II) sulphate? Write the chemical reaction that takes place.

Answer:

Zinc is more reactive than iron. When zinc is added to iron (II) sulphate, then it will displace the iron from iron sulphate solution as shown in the following chemical reaction,

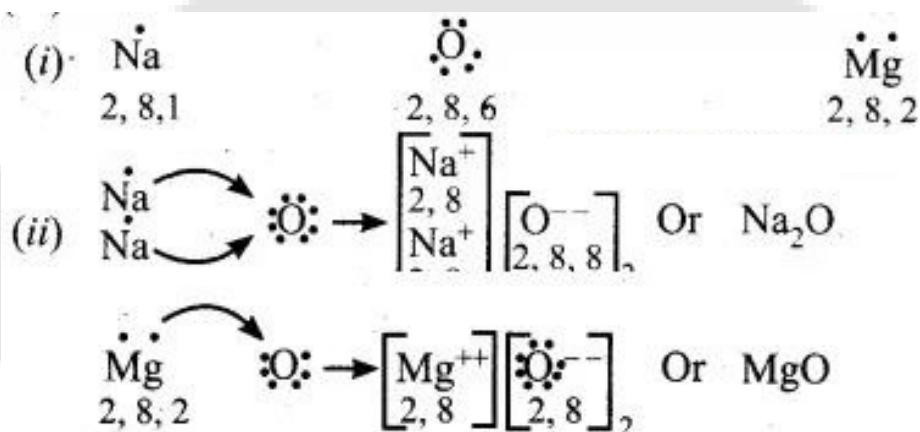


Intext Questions Page No. 49

Question 1.

- (i) Write the electron-dot structures for sodium, oxygen and magnesium.
- (ii) Show the formation of Na_2O and MgO by the transfer of electrons.
- (iii) What are the ions present in these compounds?

Answer:



Question 2.

Why do ionic compounds have high melting points?

Answer:

Ionic compounds have high melting points because there is electrostatic forces of attraction between their charges.

Intext Questions Page No. 53

Question 1.

Define the following terms:

1. Mineral
2. Ore
3. Gangue

Answer:

1. Mineral: Compounds which occur Naturally are called minerals.
2. Ore: Metals can be obtained from minerals. These are called ores.
3. Gangue: Ores mined from the earth are usually contaminated with large amounts of impurities such as soil, sand etc., called gangue.

Question 2.

Name two metals which are found in nature in the free state.

Answer:

The metals at the bottom of the reactivity series are mostly found in a free state. For example gold, silver, and platinum.

Question 3.

What chemical process is used for obtaining a metal from its oxide?

Answer:

Metal can be extracted from its oxide by the process of reduction.

Intext Questions Page No. 55

Question 1.

Metallic oxides of zinc, magnesium and copper were heated with the following metals.

Metal	Zinc	Magnesium	Copper
Zinc oxide	—	—	—
Magnesium oxide	—	—	—
Copper oxide	—	—	—

In which cases will you find displacement reactions taking place?

Answer:

Metal	Zinc	Magnesium	Copper
Zinc oxide	No reaction	Displacement	No reaction
Magnesium oxide	No reaction	Displacement	No reaction
Copper oxide	Displacement	Displacement	No reaction

Question 2.

Which metals do not corrode easily?

Answer:

Silver and Gold are not corrode easily.

Question 3.

What are alloys?

Answer:

An alloy is a homogeneous mixture of two or more metals, or a metal and a non-metal. For example, brass is an alloy of copper and zinc.

Ncert Textbook Exercise

Question 1.

Which of the following pairs will give displacement reactions?

- (a) NaCl solution and copper metal.
- (b) MgCl₂ solution and aluminium metal.
- (c) FeSO₄ solution and silver metal.
- (d) AgNO₃ solution and copper metal.

Answer:

- (d) AgNO₃ solution and copper metal.

Question 2.

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 of the above.

Answer:

- (c) Applying a coating of zinc

Question 3.

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

- (a) Calcium
- (b) Carbon
- (c) Silicon
- (d) Iron

Answer:

- (a) Calcium

Question 4.

Food cans are coated with tin and not with zinc because:

- (a) Zinc is costlier than tin.
- (b) Zinc has a higher melting point than tin.
- (c) Zinc is more reactive than tin.
- (d) Zinc is less reactive than tin.

Answer:

- (c) Zinc is more reactive than tin.

Question 5.

You are given a hammer, a battery, a bulb, wires and a switch.

1. How could you use them to distinguish between samples of metals and non-metals?
2. Assess the usefulness of these tests in distinguishing between metals and non-metals.

Answer:

1. Metals can be spread into sheets with the help of a hammer while non metals give powder. When metals are connected into circuit using battery, bulb, wires and a switch current passes through the circuit and the bulb glows.
2. Hammer is a reliable method because no non metal can be spread into sheet.

Question 6.

What are amphoteric oxides? Give two examples of amphoteric oxides.

Answer:

Metal oxides which react with both acids as well as bases to produce salt and water are known as amphoteric oxides.

Eg: Al_2O_3 - Aluminium oxide

ZnO - Zinc Oxide.

Question 7.

Name two metals which will displace hydrogen from dilute acids, and two metals which will not.

Answer:

Iron and Aluminium are more reactive than Hydrogen and displace hydrogen from dilute acids. Mercury and copper re less reactive and these do not displace hydrogen from dilute acids.

Question 8.

In the electrolytic refining of a metal M, what would you take as the anode, the cathode and the electrolyte?

Answer:

In the electrolytic refining of a metal, M:

1. Anode → Impure metal, M.
2. Cathode → Thin strip of pure metal, M.
3. Electrolyte → Aqueous solution of a salt of the metal, M.

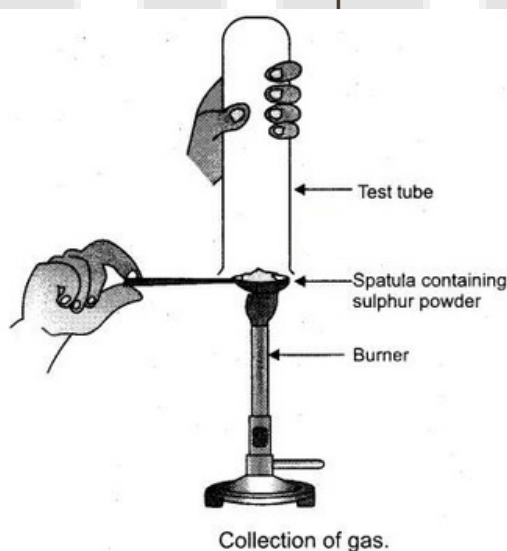
Question 9.

Pratyush took sulphur powder on a spatula and heated it. He collected the gas evolved by inverting a test tube over it, as shown in the figure below.

(a) What will be the action of gas on:

1. Dry litmus paper?
2. Moist litmus paper?

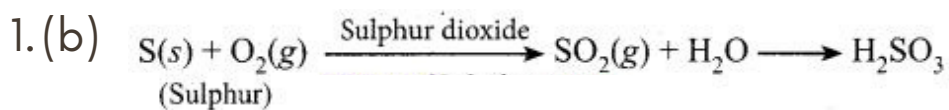
(b) Write a balanced chemical equation for the reaction taking place.



Answer:

(a)

1. There will be no action on dry litmus paper.
2. The colour of litmus paper will turn red because sulphur is a non-metal and the oxides of non-metal are acidic in nature.



Question 10.

State two ways to prevent the rusting of iron.

Answer:

Two ways to prevent the rusting of iron are

(a) Applying oil, paint and grease we can prevent rusting.

(b) By coating with zinc to iron, we can prevent rusting. This is called Galvanisation.

Question 11.

What type of oxides are formed when non-metals combine with oxygen?

Answer:

When non-metals are combined with oxygen then neutral or acidic oxides are formed. Examples of acidic oxides are NO_2 , SO_2 and examples of neutral oxides are NO , CO etc.

Question 12.

Give reasons:

1. Platinum, gold and silver are used to make jewellery.
2. Sodium, potassium and lithium are stored under oil.
3. Aluminium is a highly reactive metal, yet it is used to make utensils for cooking.
4. Carbonate and sulphide ores are usually converted into oxides during the process of extraction.

Answer:

1. Platinum, gold and silver are used to make jewellery because they are very lustrous. Also, they are very less reactive, ductile and do not corrode easily.

2. Sodium, potassium, and lithium are very reactive metals and react very vigorously with air and water. Therefore, they are kept immersed in oil.

3. Though aluminium is a highly reactive metal, it is resistant to corrosion. This is because aluminium reacts with oxygen present in the air to form a thin layer of aluminium oxide. This oxide layer is very stable and prevents further reaction of aluminium with oxygen. Also, it is light in weight and a good conductor of heat.

Hence, it is used to make cooking utensils.

4. Carbonate and sulphide ores are usually converted into oxides during the process of extraction because metals can be easily extracted from their oxides rather than from their carbonates and sulphides.

Question 13.

You must have seen tarnished copper vessels being cleaned with lemon or tamarind juice. Explain why these sour substances are effective in cleaning the vessels.

Answer:

Copper reacts with moist carbon dioxide in the air and slowly loses its shiny brown surface and gains a green coat. This green substance is basic copper carbonate. Citric acid and tartaric acid neutralise copper carbonate. Hence citric or tartaric acid are effective in cleaning the vessel.

Question 14.

Differentiate between metal and non-metal on the basis of their chemical properties.

Answer:

S.No.	Metal	Non-metal
1.	Metals are electro-positive.	Non-metals are electro-negative.
2.	Oxides of metals are basic in nature.	Oxides of non-metals are acidic in nature.
3.	Metals displace hydrogen from dilute acids.	They can't replace hydrogen from dilute acids.
4.	Metals form chlorides which are electro-valent or ionic compounds.	Non-metals form chlorides which are covalent compounds.

Question 15.

A man went door to door posing as a goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was upset but after a futile argument, the man beat a hasty retreat. Can you play the detective to find out the nature of the solution he had used?

Answer:

The solution he had used was Aqua regia. Aqua regia is a Latin word which means 'Royal Water'. It is the mixture of concentrated hydrochloric acid and concentrated nitric acid in the ratio of 3:1. It is capable of dissolving metals like Gold and Platinum. Since the outer layer of the gold bangles is dissolved in aqua regia, so their weight was reduced drastically.

Question 16.

Give reasons why copper is used to making hot water tanks and not steel (an alloy of iron).

Answer:

Iron do not react with hot water, but reacts with steam and forms metallic oxide and Hydrogen. But copper do not reacts with water. Hence copper is used to make hot water tanks and not steel (an alloy of iron).

MP Board Class 10th Science Chapter 3 Additional Questions

Multiple Choice Questions

Question 1.

What kind of element is carbon?

- (a) Metal (b) Metalloid (c) Non-metal (d) An alloy

Answer: (c) Non-metal

Question 2.

A metal of daily use which does not get rusted is:

- (a) Steel (b) Iron (c) Gold (d) Silver

Answer: (a) Steel

Question 3.

Liquid non-metal at room temperature:

- (a) Oxygen (b) Nitrogen (c) Mercury (d) Bromine

Answer: (c) Mercury

Question 4.

Steel is primarily made up of:

- (a) Fe and C (b) Cu and C (c) Fe and S (d) Zn and C

Answer: (a) Fe and C

Question 5.

Silver is coated over iron in electroplating, it represents:

- (a) Silver is more reactive than Iron. (b) Iron is more reactive than silver. (c) Both are equally reactive (d) None of above.

Answer: (b) Iron is more reactive than silver.

Question 6.

Brass is an alloy of:

- (a) Cu and Mn (b) Cu and Zn (c) Cu and Fe (d) Cu, Fe and Zn.

Answer: (b) Cu and Zn

Question 7.

During electrolytic refining of a metal, metal gets deposited at:

- (a) Anode (b) Cathode (c) Solution (d) None

Answer: (b) Cathode

Question 8.

What basic physical property can differentiate metal and non-metal?

- (a) Hardness (b) Lustre (c) Both (a) and (b) (d) None

Answer: (c) Both (a) and (b)

Question 9.

We can cut metal with an ordinary knife:

- (a) Sodium (b) Carbon (c) Gold (d) Silver

Answer: (a) Sodium

Question 10.

Hardest metal present in our nature is:

- (a) Gold (b) Diamond (c) Tungsten (d) Copper

Answer: (c) Tungsten

Question 11.

Lustrous non-metal is:

- (a) Oxygen (b) Nitrogen (c) Iodine (d) Gold

Answer: (c) Iodine

Question 12.

Iron pyrites contain which constituent other than Fe:

- (a) Co (b) Cl (c) S (d) Pt

Answer: (c) S

Question 13.

When a metal reacts with water, it forms:

- (i) Metal (ii) H₂ (iii) Metal hydroxide

Choose the best combination:

- (a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) All

Answer: (c) (ii) and (iii)

When a metal reacts with water, it forms:

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- (a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) All

Answer: (c) (ii) and (iii)

Question 14.

Metal forms salts when it reacts with:

- (a) Acid (b) Water (c) Another Metal (d) Oxygen

Answer: (a) Acid

Question 15.

What kinds of metals are coin metals (Cu, Ag, Au)?

- (a) Most reactive (b) Non-reactive (c) Least reactive (d) None

Answer: (c) Least reactive

Question 16.

What kinds of metals are noble metals?

- (a) Most reactive (b) Non-reactive (c) Least reactive (d) None

Answer: (b) Non-reactive

Question 17.

Arrange the following metals in descending order of reactivity - Na, Al, Au, H:

- (a) $\text{Na} > \text{Al} > \text{Au} > \text{H}$. (b) $\text{H} < \text{Au} < \text{Al} < \text{Na}$.
(c) $\text{Au} > \text{Al} > \text{Na} > \text{H}$. (d) $\text{Na} > \text{Al} > \text{H} > \text{Au}$.

Answer: (b) $\text{H} < \text{Au} < \text{Al} < \text{Na}$.

Question 18.

When a metal reacts with oxygen, it forms:

- (a) Hydrated metals (b) Metal oxides (c) Non-metals (d) Oxygen

Answer: (b) Metal oxides

Question 19.

Which metal violently reacts with cold water?

- (a) Cu and Ag (b) Au and Ag (c) K and Na (d) Hg

Answer: (c) K and Na

Question 20.

Metals that do not react with water at all are:

- (a) Alkali metal (b) Alkaline eater (c) Lanthanides (d) Coin metals

Answer: (d) Coin metals

Question 21. Aluminium develops a thin layer of oxide when exposed to air, this process is called:

- (a) Anodization (b) Amalgamation (c) Corrosion (d) Rancidity

Answer: (c) Corrosion

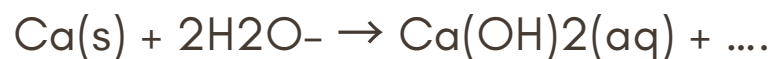
Question 22. When water reacts with metal, which gas is evolved in the reaction?

- (a) Oxygen (b) Hydrogen (c) Nitrogen (d) Sulphur dioxide

Answer: (b) Hydrogen

Question 23.

What will be the missing product of the following reaction?



- (a) O₂ (b) CaO (c) H₂ (d) O₃

Answer: (c) H₂

Question 24.

Which solution or reagent can dissolve gold and platinum?

- (a) Conc. H₂SO₄ (b) Conc. HCl (c) Conc. HNO₃ (d) Aqua regia

Answer: (d) Aqua regia

Question 25.

Benchmark element of the reactivity series is -

- (a) Au (b) H (c) Na (d) Fe

Answer: (b) H

Question 26.

Elements more electropositive in nature are:

- (a) Metals (b) Non-metals (c) Metalloids (d) None

Answer: (a) Metals

Question 27.

Ionic solids are:

- (a) Solid and hard (b) Having high boiling and melting point
(c) Both (a) and (b) (d) None

Answer: (c) Both (a) and (b)

Question 28. Which one of the following represents electron dot structures of sodium?

- (a) M•
(b) M••••
(c) •M•
(d) M

Answer: (d) M

Question 29.

Carefully observe the given diagram below:



Choose the best compound to show above electron-dot structure bonding:

- (a) NaCl (b) MgCl₂ (c) H₂O (d) None

Answer: (c) H₂O

Question 30.

Ore of metals with high reactivity can be separated by:

- (a) Roasting (b) Calcination (c) Electrolysis (d) Reduction process

Answer: (c) Electrolysis

Question 31.

Thermionic reactions are:

- (a) Displacement reactions of highly exothermic nature
(b) Endothermic reaction (c) Both (a) and (b)
(d) Electrolytic reduction reactions.

Answer: (c) Both (a) and (b)

Question 32.

Rusting is an example of:

- (a) Electrolysis (b) Calcination (c) Corrosion (d) None

Answer: (c) Corrosion

Question 33.

Which compounds of metals are basic in nature?

- (a) Hydrides (b) Chlorides (c) Cyanides (d) Oxides

Answer: (d) Oxides

Question 34.

When metal reacts with water which gas is liberated?

- (a) Oxygen (b) Hydrogen (c) Metal oxide (d) All of these

Answer: (b) Hydrogen

Question 35. Which of the following gas is produced when dilute H_2SO_4 reacts with iron?

- (a) Oxygen gas (b) Hydrogen gas (c) Both (d) None of these

Answer: (b) Hydrogen gas

Question 36. What happen when Zinc is added to iron (II) sulphate $Zn(s) + Fe(s)$:

- (a) $ZnSO_2 + FeO_2$ (b) $ZnSO_2(aq) + Fe(s)$ (c) $ZnFe + 2Ov$ (d) None

Answer: (b) $ZnSO_2(aq) + Fe(s)$

Question 37. Choose the best reason from the following for why ionic compounds have high melting points:

- (a) Electrostatic forces (b) Low magnetic forces
(c) (a) and (b) both (d) None of these

Answer: (a) Electrostatic forces

Question 38. Which of the following is gangue?

- (a) Water (b) Metals (c) Rocks (d) CO_2

Answer: (c) Rocks

Question 39.

Sodium, potassium and lithium are: (a) Very less reactive (b) More reactive and react with air (c) Easily converted to oxides (d) None

Answer: (b) More reactive and react with air

Question 40. Choose from following ways to prevent the rusting of iron: (a) Oiling (b) Greasing (c) Galvanisation
(d) All (a), (b) and (c)

Answer: (d) All (a), (b) and (c)

Fill in the blanks:

1. Metal generally give Oxides when dissolved in water.
2. Li, Na and K are metals.
3. K and Na catch fire when exposed to
4. Ag and Au react with water at all.
5. Aluminium is positioned hydrogen in reactivity series.
6. is called royal water.
7. Metal is displaced from their or form.
8. Metal gives salt when it reacts with.....
9. Hydrogen is not liberated when metal reacts with acid.
10. Ionic compounds are in water.
11. Ionic compounds are hard but in nature hence break into pieces when pressure is applied.
12. Earth's is main source of metal.
13. Minerals containing metals are called
14. Sulphide ores contain metals with reactivity.
15. Carbonate ore is converted to their metal oxides by the process of
16. Electrolysis is done to the ores of reactivity to obtain pure metal.
17. Impurities such as soil, sand etc. are called in the ore.
18. Bronze is a homogeneous mixture of and

Answers:

1. basic, 2. soft, 3. air, 4. do not, 5. above, 6. Aqua regia,
7. solution, molten, 8. alkali, 9. nitric acid, 10. soluble, 11. brittle ,
12. crust, 13. Ores, 14. low, 15. Calcination, 16. high, 17. gangue,
18. copper, tin.

Very Short Answer Type Questions

Question 1.

Which one is the most abundant element in our earth crust?

Answer: Oxygen.

Question 2.

Write the names of two diatomic gaseous elements.

Answer:

1. Oxygen, O₂.
2. Nitrogen, N₂.

Question 3.

Is any metal known in gaseous form, in its natural conditions?

Answer: No.

Question 4.

Name two naturally occurring soft metals.

Answer: Sodium, magnesium.

Question 5.

Which metal shows poor conductivity?

Answer: Tungsten [W] or Bismuth (Bi).

Question 6.

Which non-metal conducts electricity?

Answer: Graphite.

Question 7.

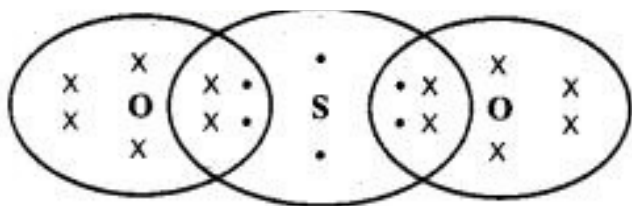
Which metal forms amphoteric oxides when reacted with oxygen?

Answer: Aluminium, Zinc, etc.

Question 8.

Draw an electron dot structure of SO₂.

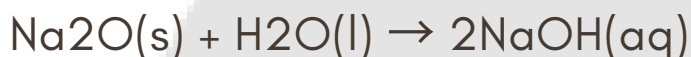
Answer:

**Question 9.**

Give an example of metal oxide's reaction with water.

Answer:

All metal oxides do not react with water but some metal oxides react with water to give alkali. For example, Na and K.

**Question 10.**

Give an example of amphoteric oxides.

Answer: Al₂O₃.

Question 11. Give a term to the following:

A process in which a carbonate ore is heated at very high temperature to get metal oxide.

Answer: Roasting.

Question 12. How less reactive metal oxides are reduced?

Answer:

Less reactive metal oxides are reduced by reducing agents like aluminium.

Question 13. Give a reaction in which metal hydroxide is formed.

Answer:

'Na' directly reacts with hydrogen gas and forms sodium hydride.



Question 14. Give an example for each an alloy and amalgam.

Answer:

1. Alloy – Steel.
2. Amalgam – Sodium Amalgam. (Alloy of mercury and sodium).

Question 15. What do we call the removal of gangue from the ore?

Answer: Enrichment of ores.

Question 16. What is the place of less reactive metals in metal reactivity series?

Answer: Less reactive metals are arranged at the bottom of the series.

Question 17. Name two metals which can replace iron in electroplating.

Answer: Gold and silver.

Question 18.

What kind of compounds has the highest melting and boiling points?

Answer: Ionic compounds.

Question 19. What corrodes copper?

Answer: Moist carbon-dioxide corrodes copper.

Question 20. Iron pillar of Qutub Minar, Delhi is prevented against rusting. Why?

Answer: The corrosion-resistant nature is due to protective film at the non-rust interface because of high phosphorus content.

Question 21. Why every metal has a different rate of reactivity with the same chemical or reactant? (HOTS)

Answer: Every metal has different electronic configuration and different electro-positivity or ion forming capability, so metal reactivity differs from each other.

Short Answer Type Questions

Question 1. Why can we draw gold to thin wire form?

Answer:

Gold is a metal and metal has the ability to be drawn in very thin wire or sheets without being broken, this property of a metal is called ductility. Gold is the most ductile metal.

Question 2. What is a semiconductor?

Answer:

There are some elements known to us which are neither metal nor nonmetals, they alter their properties with the different physical and chemical environment provided. Normally, they behave as non-metals and show insulation property but when provided with extra energy, they start behaving as metal and show conduction. Example: Silicon.

Question 3. What do you know about amphoteric oxides?

Answer: Metal oxides which produce salts in both cases, either react with acid or base are termed amphoteric oxides.

Question 4. What is gangue? Why is it important to remove them before the extraction process?

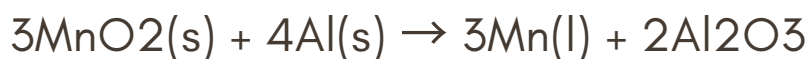
Answer:

Impurities associated with ores such as sand, soil etc. are called gangue. The original compound becomes bulkier with their presence and extraction of pure metal consumes lots of energy and time.

Hence, gangue is removed before the extraction process.

Question 5. Give an example of displacement reaction used for extraction of metal from its oxide.

Answer: Highly reactive metals are used to reduce metal oxide to the metal in an electrolytic displacement reaction.

Example:

Here, aluminium helps in extraction of pure Mn.

Question 6. Explain the reactivity series of metals in brief.

Answer:

All metals are arranged in an order on the basis of reactivity. This series represents displacing ability of one metal to displace other from its compound form when it undergoes an electrolytic displacement reaction.

Question 7. How metal and non-metal interact to form salts?

Answer:

When metal and non-metal interact, they form ionic compounds. Metal tends to lose an electron and form positive ion while non-metal forms a negative ion and a bond is formed due to strong electrostatic forces of attraction among two ions.

Question 8. How can we protect metals corrosion?

Answer;

Prevention from corrosion can be done by painting, oiling, greasing, galvanizing and electroplating etc. on the metal. All these processes stop the interaction of outer layer of air with metal.

Question 9.

What is galvanisation?

Answer:

Galvanisation is a protection technique against metal corrosion. In this process, metal is coated with a thin layer of zinc.

Question 10.

Why pure gold is mixed with silver or copper while making jewellery?

Answer:

Pure gold metal is very soft. So, jewellery will be brittle if used in the same form. Impurity of other metal in nominal percentage makes the metal harder and ready to use and it does not appear very different than the pure one.

Question 11.

What is an amalgam?

Answer:

When one component of any alloy is mercury it is called amalgam.

Question 12.

Why alloys are not used as conductance medium of electricity?

Answer:

Alloys are not used as conductance medium of electricity because of electrical conductivity and melting point of an alloy is lesser than the pure metal.

Question 13.

Why cooking utensils are made up of metals and their handle or knobs with non-metal materials? (HOTS)

Answer:

Metals are good conductors of heat. So, when utensil made of metals are pulled over a flame, they spread heat energy evenly and food gets cooked properly. But handles or knobs are made of non-metals because they are bad conductors of heat and give us ease to work with highly heated utensils so that we can hold them easily while cooking.

Question 14.

Why ageing is a natural phenomenon? (HOTS)

Answer:

The oxygen of the atmosphere react with the outer skin of body fat and carbohydrate, hence continuously degrade it. Similarly inside the body for the energy need, carbohydrate and body fat undergo oxidation process and get continuously decomposed which causes ageing, so ageing is a natural phenomenon.

Question 15.

Neha went to market with her grandmother to purchase some cooking utensils for their family's wedded couple. Grandmother started buying cooking utensils made of copper and iron but Neha suggested her to take utensils made of steel. (VBO)

1. How is steel better than copper?
2. What kind of corrosion occurs in Cu?
3. What values does Neha show in this act?

Answer:

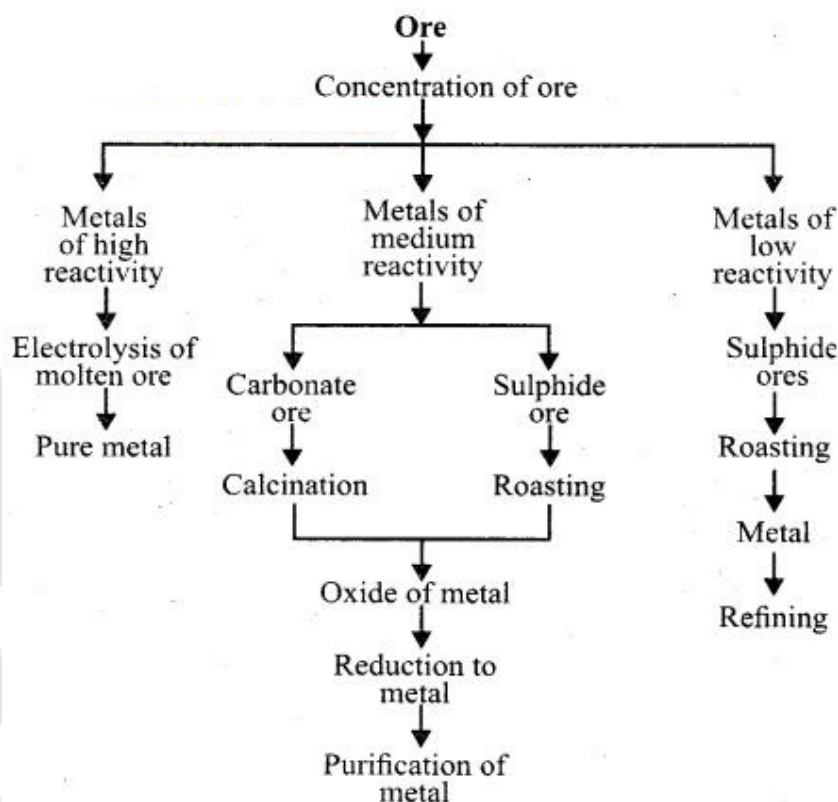
1. Steel is an alloy. It does not get corroded or spoiled with time and it is cheap too.
2. Cu forms its oxide when it comes in contact with oxygen and turns green in colour.
3. Neha shows awareness about metal of more usability and durability.

Long Answer Type Questions

Question 1.

Draw line diagrams for the steps involved in the extraction of metals.

Answer:



Steps involved in the extraction of metals from ores.

Question 2.

Write short notes on the following:

1. Roasting
2. Calcination
3. Mineral
4. Anodising

Answer:

1. Roasting:

To extract metal of medium reactivity from its sulphide ore, the ore is heated strongly in the presence of air and this extraction process is called roasting.

2. Calcination:

When medium reactivity metal is extracted from its carbonate ore by heating moderately, the process is known as calcination.

3. Mineral:

Naturally occurring compounds of metals and non-metals in various combinations are called minerals.

4. Anodising:

When aluminium is exposed to air it develops a thick layer of oxides and turns green in colour.

Question 3.

Rupam was painting the garden chair and other pots made with iron at his home, his younger brother asked him why he is doing so and wasting his time:

1. What is your view about his work?
2. What are other methods to protect the metal from corrosion?
3. What values does Rupam express in this way?

Answer:

1. Rupam was painting the garden's metal objects to protect them from corrosion.
2. Oiling, euchre plating, anodizing etc. are other methods.
3. Rupam was doing a great job protecting the metal from degrading because it can give a long life to objects and save money.

Class 10 Science Activity 3.1 Page No. 37

1. Take samples of iron, copper, aluminium and magnesium. Note the appearance of each sample.
2. Clean the surface of each sample by rubbing them with sandpaper and note their appearance again.

Observations:

Iron, copper, aluminium and magnesium have lustre which clearly appears on rubbing them with sandpaper.

Class 10 Science Activity 3.2 Page No. 37

1. Take small pieces of iron, copper, aluminium, and magnesium. Try to cut these metals with a sharp knife and note your observations.
2. Hold a piece of sodium metal with a pair of tongs.

Caution:

1. Always handle sodium metal with care. Dry it by pressing between the folds of a filter paper.
2. Put it on a watch-glass and try to cut it with a knife.
3. What do you observe?

Observations:

Only Na and Mg are soft metals and we can cut them with a knife but other metals are hard. de

Conclusion

Hope you are get help with this Solution pdf . if you have any issue so just drop a comment we will reply shortly.

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