WORKSHEET ❶

A. Tick (✓) the correct option.

1. Which of the following statements regarding the properties of metals is correct?
   - a. Metals are bad conductors of heat.
   - b. Metals usually have low melting points.
   - c. Metals can be easily drawn into thin wires.
   - d. Metals do not conduct electricity.

2. The only non-metal to exist as a liquid at room temperature is
   - a. bromine.
   - b. nitrogen.
   - c. oxygen.
   - d. helium.

3. Which of the following is an amphoteric oxide?
   - a. MgO
   - b. ZnO
   - c. H_2O
   - d. SO_2

4. Which of the following elements will not displace hydrogen from dilute HCl?
   - a. Calcium
   - b. Magnesium
   - c. Lead
   - d. Copper

5. Sodium is obtained by
   - a. heating its oxide.
   - b. reduction of its oxide with carbon.
   - c. electrolysis of molten NaCl.
   - d. None of these.

B. Fill in the blanks.

1. Metal oxides are _____ in nature.

2. Calcium chloride is a/an _____ compound.

3. Aqua regia is a mixture of concentrated HCl and concentrated HNO_3 in the ratio _____

4. Gold occurs _____ hydrogen in the activity series.

5. The reaction of Fe_2O_3 with Al is known as _____ reaction.

C. State whether the given statements are true or false.

1. Non-metals are sonorous.

2. Calcium is more reactive than iron.

3. Formation of ionic compounds takes place by transfer of electron(s) from one atom to another.

4. NaCl conducts electricity in aqueous solution but not in molten state.

5. Platinum and gold occur in free state in nature.

D. Match the following.

1. Iron   Completely filled valence shell
2. Diamond   Only non-metal which conducts electricity
3. Argon   Alloy of copper, zinc and nickel
4. German silver   Allotrope of carbon
5. Graphite   Sonorous

Name: ....   Teacher's signature: ....

Class: .... X ....   Date: ....

E. Answer the following questions.

Very Short Answer Questions

1. What is an alloy? Give two examples.

2. Why ionic compounds have high melting and boiling points?

Short Answer Questions

1. Why electric wires are coated with polyvinyl chloride (PVC)?

2. Why hydrogen gas is not evolved when a metal reacts with nitric acid?

Long Answer Questions

1. Giving reasons, predict whether the following displacement reactions will occur or not:
   a. $Cu + ZnSO_4 \rightarrow CuSO_4 + Zn$
   b. $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
   c. $2Ag + H_2SO_4 \rightarrow Ag_2SO_4 + H_2$

2. What is meant by concentration of ore? Write a short note on froth floatation process.

ANSWERS

A. Tick (✓) the correct option.

1. c   2. a   3. b   4. d   5. c

B. Fill in the blanks.

1. basic   2. ionic   3. 3 : 1   4. below   5. thermite

C. State whether the given statements are true or false.

1. F   2. T   3. T   4. F   5. T

D. Match the following.

1. Iron	Sonorous
2. Diamond	Allotrope of carbon
3. Argon	Completely filled valence shell
4. German silver	Alloy of copper, zinc and nickel
5. Graphite	Only non-metal which conducts electricity

E. Answer the following questions.

Very Short Answer Questions

1. In ionic compounds, the constituent ions are held together by strong electrostatic forces of attraction. Hence, a large amount of energy is required to break these inter-ionic attractions. This is why ionic compounds have high melting and boiling points.

2. A homogeneous mixture of two or more metals, or a metal and a non-metal is known as an alloy. For example, bronze, solder, steel, etc.

Short Answer Questions

1. Electric wires are coated with polyvinyl chloride (PVC) because these wires are made of metals, which are good conductors of electricity. PVC, which is an insulator, is coated on the wires so that the user does not get a shock on touching them, and also to prevent the positive and negative terminals from coming in contact with each other.

2. Hydrogen gas is not evolved when a metal reacts with nitric acid because nitric oxide is a strong oxidising agent. It oxidises the hydrogen produced in the reaction to water and itself gets reduced to any of the nitrogen oxides (N_2O, NO, NO_2). However, magnesium and manganese react with very dilute nitric acid to evolve hydrogen gas.

Long Answer Questions

1. a. $Cu + ZnSO_4 \rightarrow CuSO_4 + Zn$

   The given reaction will not occur. This is because copper lies below zinc in the reactivity series. Hence, it is less reactive than zinc and so will not be able to displace zinc from its salt solution.

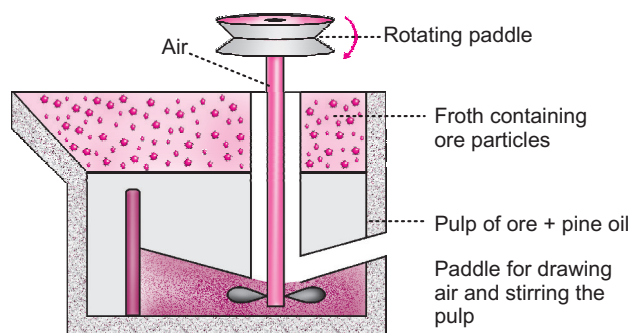   b. $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

   Iron is more reactive than copper and so is placed above copper in the reactivity series. Hence, it can displace copper from $CuSO_4$ solution. Thus, the given reaction will occur.

c. $2Ag + H_2SO_4 \rightarrow Ag_2SO_4 + H_2$
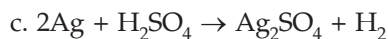
Silver lies below hydrogen in the activity series. So, it is less reactive than hydrogen and cannot displace hydrogen from acids. Thus, the given reaction will not occur.

2. The process of removal of unwanted gangue particles from an ore is called concentration of an ore. It is also known as dressing or benefaction of ore.

The froth floatation process is a method for concentration of sulphide ores. It is based on the principle that the ore particles are preferentially wetted by oil while the gangue particles are wetted by water. The powdered ore is mixed with water and a small quantity of pine oil in a tall tank. The mixture is agitated by blowing compressed air through it when froth is formed. The froth carries with it the ore particles. The froth floats on the surface and is skimmed off. The gangue particles settle at the bottom of the tank. The froth is allowed to settle and dry for recovery of ore particles. This method is used for the concentration of low grade sulphide ores such as zinc blende, galena and copper pyrites.

Air
Rotating paddle
Froth containing ore particles
Pulp of ore + pine oil
Paddle for drawing air and stirring the pulp

Enlarged view of an air bubble showing
the ore particles attached to it.