WORKSHEET 2

CHAPTER 7 – METALLURGY

A. Name the following.

1. A metal which is a liquid at room temperature.
2. A compound which is added to lower the fusion temperature of the electrolytic bath in the extraction of aluminium.
3. The process of heating an ore to a high temperature in the presence of air.
4. The compound formed by the reaction between calcium oxide and silica.
5. The middle region of the blast furnace.

B. X is an element in the form of a powder. X burns in oxygen and the product is soluble in water. The solution is tested with litmus. Write down only the word which will correctly complete each of the following sentences.

1. If X is a metal, then the litmus will turn _____
2. If X is non-metal, then the litmus will turn _____
3. If X is a reactive metal, then _____ will be evolved when X reacts with dilute sulphuric acid.
4. If X is a metal it will form _____ oxide, which will form solution with water.
5. If X is a non-metal it will not conduct electricity unless it is carbon in the form of _____

C. Match the following.

Metal/Alloy	*Uses*
1. Aluminium	steel making
2. Lead	aeroplane wings
3. Brass	galvanizing
4. Iron	radiation shield
5. Zinc	electrical fittings

D. State the composition, reason for alloying and one use for the following alloys.

1. Gun metal
2. German silver
3. Magnalium
4. Bell metal
5. Duralumin

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

Class: X Date: .....

E. 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 °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.'

1. Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide?
2. The aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide. Write the equation for this reaction.
3. Name the element which serves both as the anode and the cathode in the extraction of aluminium.
4. Write the equation for the reaction that occurs at the cathode during the extraction of aluminium by electrolysis.
5. Give the equation for the reaction which occurs at the anode when aluminium is purified by electrolysis.

ANSWERS

WORKSHEET 2

A. Name the following.

1. Mercury
2. Cryolite
3. Roasting
4. Slag
5. Zone of reduction

B. X is an element in the form of a powder. X burns in oxygen and the product is soluble in water. The solution is tested with litmus. Write down only the word which will correctly complete each of the following sentences.

1. red to blue
2. blue to red
3. hydrogen gas
4. basic
5. carbonate

C. Match the following.

Metal/Alloy	*Uses*
1. Aluminium	aeroplane wings
2. Lead	radiation shield
3. Brass	electrical fittings
4. Iron	steel making
5. Zinc	galvanizing

D. State the composition, reason for alloying and one use for the following alloys.

1. **Gun metal:** It contains copper, tin, zinc and lead. It is very hard and takes a good cast. It is used for making bells and gongs.
2. **German silver:** It contains copper, zinc and nickel. It is white as silver and is malleable and ductile. It is used for making imitation silver jewellery.
3. **Magnalium:** It contains magnesium and aluminium. It is light weight, strong and resists corrosion. It is used for making household appliances and scientific instruments.
4. **Bell metal:** It contains copper and tin. It is hard and brittle, but produces sonorous sound. It is used for making bells and gongs.
5. **Duralumin:** It contains Al, Cu, Mn and Mg. It is light weight and as strong as steel. It is used for making aircraft frames.

E. The following is an extract from *'Metals in the Service of Man*, Alexander and Street/Pelican 1976'.

1. Conc. NaOH
2. $2Al(OH)_3 \rightarrow Al_2O_3 + 3H_2O$
3. Anode $\rightarrow$ graphite

   Cathode $\rightarrow$ gas carbon
4. $Al^{3+} + 3e^- \rightarrow Al$
5. $O^{2-} - 2e^- \rightarrow O$

   $O + O \rightarrow O_2\uparrow$