



# expertTUT

## METALS AND NON METALS

### 3.1 Introduction

1.How can we classify elements?

### 3.1 Physical properties

1.What is metallic lustre?

2.Define 'hardness' .

3.What is malleability?

4.Name the most malleable metals?

5.What is ductility?

6.Which is the most ductile metal?

7.Why can metals be given different shapes?

8.Which property of metals are utilised when they are used for making vessels?

9.Name some metals which are good and poor conductors of heat respectively?

10.Why are metals generally good conductors of heat?

11.Why are electric wires coated with substances like PVC or rubber like materials?

12.Are metals a good conductor of electricity? Why ?

13.Which metals are called 'sonorous'?

14.Give some examples of non metals?

15.Can we group elements as metals or non metals on the basis of physical properties alone?

16.Name a metal that exists as liquid at room temperature.

17.Name two metals that have very low melting points.

18.Name a non metal which is lustrous.

19.What is an allotrope?

20.Name different allotropes of carbon and their remarkable properties.

21.How are alkali metals different from normal metals?

22.What is the difference between metals and non metals wrt the oxides they produce when they are dissolved in water?

### 3.2 Chemical properties of metals

- 1.How metals react with oxygen? Illustrate taking copper and aluminium as examples.
- 2.What are amphoteric oxides?Give examples which show their amphoteric nature.
- 3.What are alkalis?Give examples.
- 4.Do all metals react with oxygen at the same rate?
- 5.Why metals like potassium and sodium are kept immersed in kerosene oil?
- 6.Explain how the behaviour of metals like Mg,Al,Zn,PbCu,Ag,Au is different wrt reactivity towards oxygen and the type of resulting products formed on oxidation?
- 7.What is anodising?How is it done?
- 8.How metals react with water generally?
- 9.Describe with equations how metals like potassium and sodium react with cold water?
- 10.Describe with an equation,how calcium reacts with water?
- 11.Describe with equations,how metals like aluminium,iron and zinc react with steam?
- 12.What happens when metals react with acids?
- 13.Write equations for the reactions of magnesium,aluminium,zinc and iron with dilute hydrochloric acid?
- 14.Why hydrogen gas is not evolved when a metal reacts with nitric acid?
- 15.Write the following metals in increasing order of their reactivity with dilute hydrochloric acid  
Al,Fe,Mg,Zn,Cu
- 16.Name a liquid that can dissolve gold and how is it prepared?
- 17.How do metals react with solutions of other metal salts?
- 18.What is the reactivity series? Name some reactive,moderately reactive and non reactive metals.

### 3.3 How do metals and non metals react?

- 1.Why do elements react?
- 2.Write down the electronic configuration of Ne,Ar,Mg,Ca,O,Cl
- 3.Explain the formation of NaCl and MgCl<sub>2</sub> with the help of electron dot structure.
- 4.How does sodium chloride exist?
- 5.State the general properties of ionic compounds.
- 6.Why are ionic compounds hard?
- 7.Why ionic compounds have high melting and boiling point?
- 8.Why ionic compounds in the solid state don't conduct electricity but conduct in the molten state?

### 3.4 Occurrence of metals

1. What are the major sources of metals?
2. What are minerals?
3. What are ores?
4. Which metals are found in a free state and why?
5. Which type of elements are never found in nature as free elements and why?
6. Why ores of many metals are oxides?
7. On the basis of reactivity, what are the different groups in which metals are placed?
8. Show by a flow chart the different steps involved in the extraction of i) high reactivity ii) moderate reactivity iii) low reactivity
9. What are gangue?
10. Can the ores mined from earth be directly used for extraction of metal. Give reasons
11. How are metals lying low in the activity series extracted? Give examples
12. How are metals in the middle of the activity series extracted?
13. What is roasting? Give example
14. What is calcination? Give example
15. How are the metal oxides reduced to metals? Give examples
16. What is thermite reaction? Write down the reaction
17. Why can't carbon reduce the oxides of sodium, magnesium, calcium etc?
18. How are metals located at the top of the activity series extracted? Show how Na is extracted
19. Why metals should be refined?
20. Which is the most widely used method for refining impure metals?
21. Explain the electrolytic refining of copper

### 3.5 Corrosion

1. What is corrosion? Give some examples
2. What are the required conditions for rusting of iron?
3. What are the different ways to prevent rusting?
4. What is galvanisation?
5. What is alloying?
6. What is steel?
7. What is stainless steel?
8. What is an alloy? How is an alloy prepared
9. Why is pure gold not suitable for making jewellery? What is done to make it suitable?
10. What is amalgam?
11. Write the constituents of brass, bronze, solder?