EXERCISE - 1

A. Very Short Answer Type Questions

Q.1 Name the metal which is the best conductor of electricity.

Q.2 Which metal is used to coat iron objects in galvanizing ?

Q.3 Name two metals that can be easily cut with a knife.

Q.4 Name the metal which exists in the liquid state.

Q.5 Name the lightest & heaviest metals.

Q.6 Name two important magnetic ores.

Q.7 Name two important reducing agent used in metallurgy.

Q.8 Name the method of concentration of sulphide ores.

Q.9 Name the substance which reacts with gangue to form fusible material.

Q.10 Name the process which converts hydrated alumina to anhydrous alumina.

Q.11 Which metal is added to gold to make it hard.

Q.12 Write the chemical composition of magnetite.

B. Short Answer Type Questions

Q.13 Define metallurgy.

Q.14 Why Al_2O_3 cannot be reduced to Al by using carbon?

Q.15 Differentiate between calcination and roasting.

C. Long Answer Type Questions

Q.16 Differentiate between physical and chemical properties of metals and non-metals.

Q.17 What is meant by rusting of iron ? What are necessary conditions for rusting of iron ? How can rusting be prevented ?

Q.18 What is the activity series of metals ? Rearrange the following metals in an increasing order of reactivity: Aluminium, Zinc, Mercury.

D. Fill in the Blanks

Q.19 Calcination of aluminium hydroxide produces pure.....

Q.20 Calcination is the process of heating the ore strongly in the ..... of air.

Q.21 The undesired impurities present in the ores are called .....

Q.22 ..... ore is concentrated by froth floatation method.

E. True /False Type Questions

Q.23 Magnesium is more reactive than calcium.

Q.24 Aluminium is the more metallic than sodium.

Q.25 Argentite is an oxide ore of silver.

EXERCISE - 2

Q.1 What is the difference between metals and non-metals with respect to their physical existence in three state of matter?

Q.2 Name two metals which are most malleable and ductile both ?

Q.3 Generally, when metals are treated with mineral acids, hydrogen gas is liberated but when metals (except Mn and Mg), treated with HNO_3, hydrogen is not liberated, why ?

Q.4 Why should the metal sulphides and carbonates be converted to metal oxides in the process of extraction of metal from them?

Q.5 A non-metal X exists in two different forms Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Identify X, Y and Z.

Q.6 An element forms an oxide A_2O_3 which is acidic in nature. Identify A is a metal or non-metal.

Q.7 What is the difference between metals and non-metals with respective to the oxides formed by them?

Q.8 Give two examples each of the metals that are good conductors and poor conductors of heat respectively.

Q.9 Name one metal and one non-metal that exist in liquid state at room temperature. Also, name two metals having melting point less than 310 K (37ºC).

Q.10 Give the reaction involved during extraction of zinc form its ore by :

(a) roasting of zinc ore

(b) calcinations of zinc ore

Q.11 A metal M does not liberate hydrogen from acids but reacts with oxygen to give a black colour product. Identify M and black coloured product and also explain the reaction of M with oxygen.

Q.12 Iqbal treated a lustrous, divalent element M with sodium hydroxide. If observed the formation of bubbles in reaction mixture. He made the same observations when this element was treated with hydrochloric acid. Suggest how can he identify the produced gas. Write chemical equations for both the reactions.

Q.13 During extraction of metals, electolytic refining is used to obtain pure metal. (a) Which material will be used as anode and cathode for refining of silver metal by this process? (b) Suggest a suitable electrolyte also. (c) In this electrolytic cell, where do we get pure silver after passing electric current?

Q.14 Compound X and aluminium are used to join railway tracks. (a) Identify the compound X. (b) Name the reaction. (c) Write down its reaction.

Q.15 When a metal X is treated with cold water, it gives a basic salt Y with molecular formula XOH (Molecular mass = 40) and liberates a gas Z which easily catches fire. Identify X, Y and Z and also write the reaction involved.

Q.16 An element A reacts with water to form a compound B which is used in white washing. The compound B on heating forms an oxide C which on treatment with water gives back B. Identify A, B and C and give the reactions involved.

Q.17 An alkali metal A gives a compound B (molecular mass = 40) on reacting with water. The compound B gives a soluble compound C on treatment with aluminium oxide. Identify A, Band C and give the reaction involved.

Q.18 No chemical reaction takes place when granules of a solid, A, are mixed with the powder of another solid, B. However when the mixture is heated, a reaction takes place between its components. One of the products, C, is a metal and settles down in the molten state while the other product, floats. over it. It was observed that the reaction is highly exothermic.

(i) Based on the given information make an assumption about A and B and write a chemical equation for the chemical reaction indicating the conditions of reaction, physical state of reactants and products and thermal status of reaction.

(ii) Mention any two types of reaction under which above chemical reaction can be classified.

Q.19 A non-metal A which is the largest constituent of air, when heated with H_2 in 1 : 3 ratio in the presence of catalyst (Fe) gives a gas B. On heating with O_2 it gives an oxide C. If this oxide is passed into water in the presence of air it gives an acid D which acts as a strong oxidising agent.

(a) Identify A, B, C and D.

(b) To which group of Periodic Table does this non-metal belong?

Q.20 Explain the following:

(a) Reactivity of Al decreases if it is dipped in HNO_3.

(b) Carbon cannot reduce the oxides of Na or Mg.

(c) NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as well as in molten state.

(d) Iron articles are galvanised

(e) Metals like Na, K, Ca and Mg are never found in their free states in nature.

Q.21 What happens when an iron strip is put into separate beakers containing aqueous solutions of copper sulphate and zinc sulphate ? Where is iron placed in the activity series with respect to copper and zinc ? Describe the steps involved in the extraction of zinc from its sulphide and carbonate ores. Support your answer with balanced chemical equation for the chemical reactions involved in the process.

Q.22 (a) Give an example of a metal which:

(i) is a liquid at room temperature.

(ii) is kept immersed in kerosene for storing.

(iii) is both malleable and ductile.

(iv) is the best conductor of heat.

(b) Name the process of obtaining a pure metal from an impure metal through electrolysis. Suppose you have to refine copper using this process, then explain with the help of a labelled diagram the process of purification, mentioning in brief the materials used as

(i) anode,

(ii) cathode and

(iii) electrolyte.

Q.23 Write the names and symbols of two most reactive metals belonging to group I of the periodic table. Explain by drawing electronic structure how either one of the two metals reacts with a halogen. With which name is the bond formed between these elements known and what is the class of the compound so formed known ? State any four physical properties of such compounds.

Q.24 What is meant by refining of a metals?