**Chapter 3**

 **Metals and Non-metals**

 **(Deleted portion-Basic metallurgical process, Corrosion and its prevention)**

1. State 2 physical properties of gold which are useful for jewellers.
2. Name a metal that is non-lustrous and a non-metal that is lustrous.
3. Why Lithium metal is not kept in kerosene oil but is stored in paraffin wax strips?
4. A yellow coloured powder X is soluble in carbon disulphide. It burns with a blue flame forming suffocating smelling gas which turns moist blue litmus red. Identify X and state whether it is metal or non-metal. And write the equation for the reaction.
5. If a copper plate is dipped in the solution of silver nitrate. It is observed that after some time silver gets deposited on copper plate. Which metal is more reactive and how?
6. Four elements A, B, C, D have electronic configuration in their atoms as follows

A: 2,8,6; B: 2, 8,8; C : 2, 8, 8, 1; D: 2,7.

1. What kind of bond is formed between C and D when they combine?
2. Which element is inert?
3. What will be the formula of compound formed between C and D?
4. Name 2 metals that do not react with oxygen.
5. What changes in the colour of iron nail and copper sulphate solution do you observe after keeping the iron nails dipped in copper sulphate solution for about 30 minutes?
6. Name a non-metal that is solid at room temperature and metal that is in liquid state.
7. How many electrons does a metal have in outermost shell?
8. Reverse of the chemical reaction given below is not possible:

Zn(s) + CuSO4(aq)---🡪 ZnSO4 (aq)+Cu(s)

Justify the statement with reason.

1. Name a metal that
2. Is best conductor of heat
3. Has very low melting point
4. Does not react with oxygen at high temperature.
5. Aluminium or copper wire required for electric circuits are coated with rubber like material, why?
6. Why do ionic compounds have high melting point?
7. What type of oxides are formed when non-metal react with oxygen?
8. Carefully observe the table given below

|  |  |  |  |
| --- | --- | --- | --- |
| Metal | Reaction with water | Reaction with steam | Reaction with HCl(aq) |
|  A |  X |  / |  / |
|  B |  X |  X |  / |
|  C |  / |  / |  / |
|  D |  x |  X |  X |

1. Place the metals A, B, C, D in order starting with most reactive first.
2. Between which 2 metals should hydrogen be placed in series.
3. Aluminium is one of most widely used metal in making automobile parts, electrical wires, toys, doors and windows, channels etc as well as for welding broken parts of iron machinery.
4. Why should we prefer to buy anodized articles than unanodized articles of aluminium.
5. Oxygen of air attacks iron as well as aluminium. Then why aluminium is considered better than iron for number of purposes?
6. You want to get broken part of your iron machinery welded. If mechanic does it by thermite reaction. What material is he likely to use?
7. Give 2 examples where the aluminium foils are used.
8. A non-metal A exists in two forms B and C. B is the hardest natural substance whereas C is good conductor of electricity. Identify A, B and C.
9. Read the given passage and answer the following questions

The arrangement of metals in vertical column in the order of decreasing reactivity is called activity series of metals. The electropositive charactersof metal decreases as we go from top to bottom in the activity series. All the metals above hydrogen in the reactivity series are more reactive than hydrogen. All the metals below hydrogen are less reactive than hydrogen. More reactive metals have strong tendency to lose electrons and get oxidised. So, when a more reactive metal is placed in salt of less reactive metal, it loses electrons and get oxidised. The electrons so released are picked up by cation of less reactive metal present in the solution and get reduced to metal. Thus the more reactive metals goes into solution as cations and cations of less reactive metal get reduced to metal

1. Which of them is the most reactive metal in reactivity series?
2. Copper ii)Magnesium iii) Potassium iv) Iron
3. Which of the metal reacts vigorously with oxygen?
4. Zinc ii) Magnesium iii) Sodium iv) Copper
5. A student has been collecting silver and copper coins. One day she observed a black coating on the silver coin and a green coating on copper coins. Which chemical phenomenon is responsible for these coating? Write the name of black and green coatings.
6. Write chemical equations for the following
7. Magnesium ribbon is burnt in jar of oxygen.
8. Potassium metal falls into sink containing water.
9. Steam is passed over heated aluminium.
10. A)Write down the electronic configuration of magnesium and oxygen.

B) Give 2 general properties of a compound formed by combination of magnesium and oxygen.

C) Show the formation of this compound by the transfer of electrons.

1. List three chemical properties on the basis of which you can differentiate metal from non-metal. Ii) Most metals conduct electricity well. Iii) The reaction of iron (III) oxide (Fe2O3) with heated aluminium is used to join cracked machine parts.
2. Give reason for the following
3. Platinum, gold and silver are used to make jewellery.
4. Aluminium is highly reactive metal but is still used for making utensils.
5. Multiple choice questions
6. Which of the following pairs will give displacement reactions?
7. NaCl solution and copper metal b) MgCl2 solution and aluminium metal c) FeSO4 solution and silver metal d) AgNO3solution and copper metal
8. Beakers A, B, C, D contain zinc sulphate, silver nitrate and Iron sulphate respectively. Copper pieces are added to each beaker. Blue colour will appear in case o
9. Beaker A b)beaker B c) beaker C d) all the beakers
10. A particle contains 26 protons, 30 neutrons and 24 electrons. Which statement is true about this particle?
11. It is an atom of noble gas b) it is an atom of non metal c) it is negative ion d) it is positive ion
12. Assertion and Reason

In the following questions a statement of assertion is followed by statement of reason, mark the correct choice.

1. If both assertion and reason are true and reason is correct explanation of assertion
2. If both assertion and reason are true and reason is not correct explanation of assertion
3. If assertion is true but reason is false
4. If both assertion and reason is false
5. Assertion: Elements Cu, Ag, Au, Pt, noble gases, etc occur in native state in nature.

Reason: Elements which are not attacked by moisture, oxygen and carbon dioxide in air occur in native state.

1. Assertion: Different metals have different reactivities with water and dilute acids

Reason: Reactivity of a metal depends on its position in the reactivity series

1. Assertion: The composition of rust is Fe2O3.

Reason: Iron gets rusted in dry air

 **Chapter 4**

 **Carbon and its Compounds**

( Deleted topics Nomenclature of carbon compounds containing functional groups (halogen, alcohol, ketones, aldehyde, alkanes, and alkynes) difference between saturated and unsaturated hydrocarbons, Chemical Properties of C- compound (Combustion, oxidation, addition and substitution reaction) Ethanol and Ethanoic acid only property , uses, soaps and detergents)

1. What type of bonds exists in
2. CCl4 b) CaCl2
3. Why covalent compounds have low melting and boiling points?
4. Why does carbon form compounds mainly by covalent bonds?
5. Give different forms in which carbon occurs in nature.
6. What is catenation?
7. An allotrope of carbon has a molecular mass of 720 Discuss its structure
8. Two non-metals A and B combine with each other by sharing electrons to form compound C.
9. What is nature of compound C?
10. Will it dissolve in water or organic solvent?
11. a) which allotrope of carbon is used for making lead pencil?

b)Name all allotrope used for making jewellery

1. Draw the possible isomer of the compound with molecular formula C3H6O and also give their electron dot.
2. What are hydrocarbons? Explain with example
3. Why is homologous series of carbon so called? Write the chemical formula of 2 consecutive members of any 2 consecutive members of the series and state part of these compounds that decide physical and chemical properties.
4. Define the structural isomerism. Explain why propane cannot exhibit this property. Draw the structural isomers of butane C4H10
5. Give reason for the following
6. Acetylene burns with sooty flame
7. Kerosene does not decolourise bromine water while cooking oil does.
8. On dropping a small piece of sodium in a test-tube containing carbon compound X with molecular formula C3H6O a brisk effervescence is observed and gas Y is produced. On bringing a burning splinter at the mouth of test tube the gas evolved burns with pop sound. Identify X and Y. Also write the name and structure of the product formed when you heat X with excess of concentrated sulphuric acid.
9. LPG is used as fuel for cooking in homes. Why is LPG stored as a liquid?
10. You are given 2 liquid hydrocarbons A and B with molecular formula C6H14and C16H34.2 drops of each hydrocarbon is ignited. Which of these two hydrocarbons gives out more smoke?
11. Carbon mono oxide is a simple molecule. The arrangement of the valence electrons of carbon mono oxide is :C O:
12. Determine the number of pairs of electrons involved in bonding between C and oxygen.
13. How many pairs of electrons are not used for bonding purpose?
14. Carbon monooxide burns in oxygen to give carbon dioxide. Give equation.
15. A compound X on heating with excess conc. Sulphuric acid at 443Kgives an unsaturated compound Y. X also reacts with sodium metal to evolve a colourless gas Z. Identify X, Y and Z. Write equation of chemical reaction of formation of Y and also write the role of sulphuric acid.
16. A) State the reason why carbon can neither form C4+cations nor C4—anions but form covalent bonds. Also state reasons to explain why covalent compounds
17. Are bad conductors of Electricity.
18. Have low melting and boiling points.
19. Name reactions A, B and C as shown in the scheme

 A B

Ethanoic acid

Sugar Sol.

Ethanol

 C

Carbon dioxide and water

1. Write the chemical formula and name of the compound which is active ingredient of all alcoholic drinks. List it two uses. Write the equation and name of product formed when this compound reacts with sodium metal and hot conc. Sulphuric acid.
2. Multiple choice questions
3. Vast amount of energy needed to run factories is obtained from
4. Nuclear reactors b) hydroelectric dams c) coal and petroleum products d) tidal waves
5. When number of carbon atoms per molecule in alkanes increases
6. Viscosity increases b) flammability increases c) density decreases d) the boiling point decreases
7. A molecule of ammonia has
8. Only single bond b) only double bond c) only triple bonds d) two double bonds and one single bond
9. Which statement is not true?
10. Covalent compounds have low melting points and high boiling points
11. Covalent compounds have low density
12. Covalent compounds are generally volatile
13. Covalent compounds have low melting points and low boiling points
14. Assertion and Reasons
15. If both assertion and reason are true and reason is correct explanation of assertion.
16. If both assertion and reason are true and reason is not correct explanation of assertion.
17. If assertion is true but reason is false.
18. If both assertion and reason are false
19. Assertion: Carbon and its compound can be used as fuels.

Reason: They are highly inflammable and have high calorific value.

1. Assertion: As the number of carbon atoms increases, boiling point decreases.

Reason: Greater the molecular mass, lower will be boiling point.

1. Assertion: Diamond is good conductor of electricity.

Reason: It has no free electrons.

1. Assertion: Covalent compounds are generally poor conductor of electricity.

Reason: They consist of molecules and not ions which can transfer charges.

1. Assertion: Graphite is a good conductor of electricity.

Reason: It has one free valence electron.