



INDIAN SCHOOL AL WADI AL KABIR

Class X	Department of Science 2020-2021 Subject: Chemistry	
Worksheet No.: 05 With Answers	Chapter: Metals and Non-metals	Note: A4 File format
Name of the student:	Class & Section:	Roll No.

Objective type Questions (1 mark)

1. Choose one most suitable word for the following property.
Metal oxides which show both acidic as well as basic behaviour
(a) Lustrous (b) amphoteric (c) Malleable (d) ductile
2. Choose the metal which reacts with water only on boiling
(a) Copper (b) Sodium (c) Magnesium (d) Calcium
3. A metal which does not react even with the steam
(a) Copper (b) Sodium (c) Magnesium (d) Aluminium

Assertion reasoning type Questions

4. Assertion: Elements Pt, Ag, and Au occur in native state in nature.
Reason: Elements which are attacked by moisture, oxygen and CO₂ of air occur in native state.
5. Assertion : Sodium and Potassium is stored under kerosene
Reason : Sodium and Potassium belong to group I and are alkali metals
6. Assertion : Aluminium oxide is an amphoteric oxide
Reason : Aluminium oxide reacts with both base and acid to form salt and water.

Three marks Questions

7. Explain the following statements
 - (a) Most metal oxides are insoluble in the water. But some of these dissolve in water
What are these oxides and the solution in water known as?
 - (b) At ordinary temperature, the surface of metals like Magnesium, Aluminium, Zinc etc. is covered with a thin layer. What is the composition of this layer and what is its importance?
 - (c) Some alkali metals can be cut with a knife.
8. Write one example of each of the following
 - (a) Most malleable and ductile metal
 - (b) The best conductor of heat and poorest conductor of heat
 - (c) The metal with the highest melting point and the metal with the lowest melting point
9. Aluminium oxide and Zinc oxide react with both acids and bases to produce salt and water. What are these oxides known as? Write a chemical equation for these reactions.
10. Describe an activity to show that metals are good conductors of electricity

11. Give reason
- We can store Copper sulphate solution in a Silver vessel but not Silver nitrate solution in a Copper vessel
 - The reaction of Zinc with dilute HNO_3 doesn't produce Hydrogen gas
 - Food cans are coated with Tin rather than Zinc
12. Name a metal in each case
- It displaces Hydrogen gas on reaction with dilute Nitric acid
 - It does react with any physical state of water
 - It does not react with cold water or hot water but it reacts with steam
13. State three reasons for the following facts.
- Sulphur is a non-metal
 - Magnesium is a metal
14. Explain the following
- Sodium chloride is an ionic compound which does not conduct electricity in solid state whereas it does conduct electricity in molten state as well as in aqueous solution
 - Reactivity of aluminium decreases if it is dipped in nitric acid
 - Metals like magnesium and Calcium are never found in their free state in nature

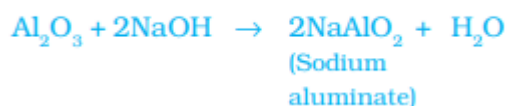
Five marks Questions

15. State the reason for the following:
- Aluminium oxide is called an amphoteric oxide.
 - An iron strip dipped in a blue copper sulphate solution turns the blue solution pale green.
 - Hydrogen gas is not evolved when most metals react with nitric acid.
 - Calcium does not occur in a free state in nature.
 - Sodium or Potassium metals are kept immersed under kerosene.
16. (a) Explain the formation of Al_2O_3 with electron-dot structure.
(Given atomic number of Al and O are 13 and 8 respectively)
- What happens when (report only observations)
 - a reactive metal reacts with a dilute mineral acid
 - an amphoteric oxide reacts with NaOH solution
 - a less reactive metal is dropped in a solution of high reactive metal salt solution
 - a metal carbonate is treated with acid.
17. (a) Write electron dot diagrams of Chlorine (atomic number 17) and Calcium (Atomic number 20). Show the formation of Calcium chloride by the transfer of electrons.
- Identify the nature of the above compound and explain three physical properties of this compound.
18. (a) Define reactivity series of metals.
- Arrange the metals Gold, Copper, Iron and Magnesium in the order of their increasing reactivity
 - What will you observe when
 - Some Zinc pieces are placed in copper sulphate solution
 - Some silver pieces are placed in green coloured Ferrous sulphate solution
19. A metal E is stored under kerosene oil. when a small piece of it is exposed in air it catches fire. When the product formed is dissolved in water it turns red litmus blue.
- Name the metal E

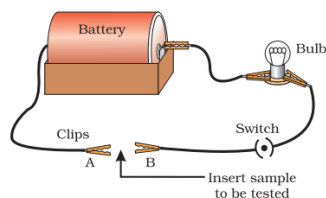
- b. Write the chemical equation for the reaction when the metal is exposed to air and the product is dissolved in water.

Answers

1. (b) amphoteric
2. (c) Magnesium
3. (a) Copper
4. (c) Assertion is correct ;Reason is wrong
5. (b) Both assertion and reason are correct but reason is not the correct explanation for Assertion
6. (a) Both assertion and reason are correct and reason is the correct explanation of assertion
7. (a) Metal Oxides are basic in nature. Alkali
(b) Metal oxides and they protect the metal from corrosion
(c) Alkali metals are soft metals
8. (a) Gold
(b) Copper is the best conductor and Lead is the poor conductor of heat
(c) Melting point of Tungsten highest and Mercury the lowest
9. Amphoteric oxides

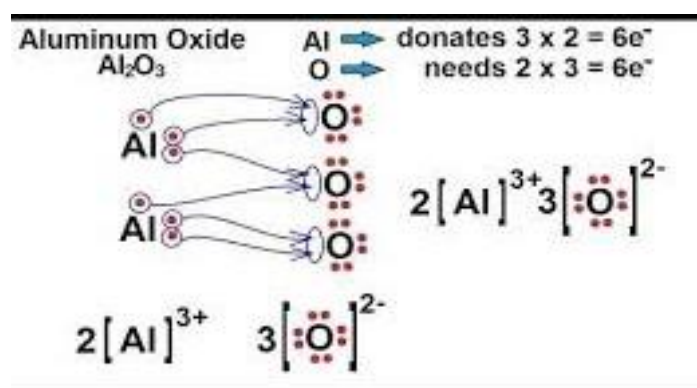


10. Place the metal to be tested in between the terminals as shown in the figure given below. If the bulb glows it indicates that the metal sample is a good conductor of the heat

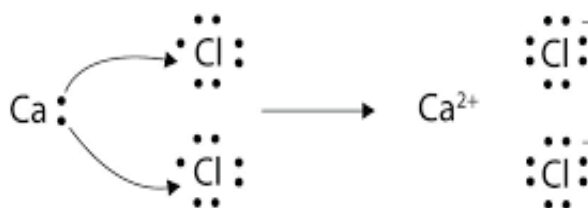


11. (a) Copper is more reactive than silver it will displace silver from silver nitrate solution . As Silver is less reactive than copper, copper sulphate solution can be stored in a silver vessel
(b) Dilute HNO₃ is an oxidizing agent
(c) Tin is less reactive and less expensive than Zinc
12. (a) Magnesium Or Manganese
(b) Copper
(c) Iron
13. (a) Forms acidic oxides on burning with oxygen
(b) Magnesium reacts with oxygen to form a basic oxide which dissolves in water to form alkaline solutions
14. (a) In Solid-state the ions are not free to move to conduct electricity. In the molten state, the free-moving ions present in NaCl helps in conducting electricity
(b) Al reacts with dilute Nitric acid to form an oxide. This layer prevents further reaction of Aluminium
(c) Metals like Magnesium and Calcium are very reactive that they are never found in a free state in nature.
15. (i) Aluminium oxide has the nature of acidic as well as basic oxide as it reacts with acids and bases to produce salt and water

- (ii) Iron being more reactive than copper displaces copper from its solution forming iron sulphate solution. iron sulphate solution is green in colour.
- (iii) Nitric acid being a strong oxidizing agent oxidises the hydrogen produced to water
- (iv) Calcium is a fairly reactive metal hence it forms compounds easily and is not seen in free state in nature.
- (v) Sodium and potassium are highly reactive. These metals react with oxygen in the air and may catch fire. Hence kept immersed in kerosene oil
16. (a) Each Aluminium atom contains three electrons in its outermost shell . While each oxygen atom requires two more electrons to attain octet. Aluminium atom donates its electrons such that each atom attains octet as shown in the figure.



- (b) (i) a colourless and odourless gas is evolved
- (ii) soluble salt is formed; heat is evolved
- (iii) No characteristic observation
- (iv) a colourless and odourless gas is evolved



17. (a)

- (b) It is an ionic compound
 Calcium chloride is Solid at room temperature
 High melting and boiling point
 Conducts electricity in molten and in solution form

18. (a) The series of metals arranged in the decreasing order of reactivity is known as the reactivity series of metals.
- (b) Magnesium, Iron, Copper, Gold
- (c) (i) The blue colour of the Copper sulphate solution fades because zinc displaces copper from copper sulphate solution and makes zinc sulphate solution which is colourless. Reddish brown deposit of copper is formed on Zinc.
- (ii) No characteristic observation as silver is less reactive than iron.

19. a. Sodium

