TEST YOUR SELF

TEST YOURSELF 8.1 METALS

i. What type of elements are metals?

Ans. *The elements which are electropositive and form cations by losing electrons are metals.* They form basic oxide with oxygen, good conductor of heat and electricity and are usually hard.

Examples: Sodium, Potassium, Calcium, Magnesium and Aluminum etc.

ii. Name a metal which exists in liquid form?

Ans: The only metal which exist in liquid form at room temperature is mercury (Hg)

iii. What is the nature of a metal oxide?

Ans: Metal oxides are basic in nature because they change red litmus paper to blue

Examples: Na_2O, CaO, K_2O, MgO,

iv. Which group of metal is highly reactive?

Ans. Alkali metals of group I (Li, Na, K, Rb, Cs, Fr) of the periodic table are highly reactive because they are highly electro positive in nature.

v. Why sodium metal is more reactive than magnesium metal?

Ans. Sodium metal is more reactive than magnesium metal because sodium has larger size, low ionization energy than magnesium and thus can lose electrons more easily than magnesium.

vi. Name a metal which can be cut with knife?

Ans. Sodium is that metal which can be cut with knife, because it is soft due to weak metallic bonding.

vii. Name the best ductile and malleable metal?

Ans. The best ductile and malleable metal is gold.

viii. Name the metal which is the poorest conductor of heat?

Ans. The poorest conductor of heat is lead (Pb).

ix. What do you mean by malleable and ductile?

Ans. **Malleable:** Malleability is the property of metals due to which they can be beater in the sheets.

Ductile: Ductility is the property of the metals due to which they can be drawn into wires

x. Why alkali metals are more reactive than alkaline earth metals?

Ans. Alkali metals are more reactive than alkaline earth metals because alkali metals have the largest size and the lowest ionization energy in their respective periods therefore alkali metals have highest metallic character, so these are more reactive than alkaline earth metals.

xi. What do you mean by metallic character?

Ans. **Metallic Character:**

Metals have the tendency to lose their valence electrons. This property of a metal is termed as metallic character or electropositivity.

Examples: Metallic character increases from top to bottom and decreases from left to right in the periods of the periodic table, as sodium is less electropositive than potassium.

xii. Why metallic character decreases along a period and increases in a group 1?

Ans. **a. Trend Along the Period:**

Metallic character decreases across the period from left to right

Reason:

From left to right in the periods of periodic table size of atoms decreases and nuclear charge increases.

b. Trend along the Group:

Metallic character increases from top to bottom in a group of periodic table

Reason:

From top to bottom in the groups of the periodic table size of atoms increases and nuclear charge decreases

TEST YOURSELF 8.2 NON METALS

i. Give the applications of silver?

Ans. Following are the important applications of silver.
Alloys of silver with copper are used in making coins, silver ware and ornaments. Compounds of silver are used in photographic films, sun glasses, burn care medicines and dental preparations. Its is also use in Mirer industry.

ii. Why silver is not used in pure form?

Ans. Silver is not used in pure form because it is very soft metals. It is alloyed with copper.

iii. What do you mean by 24 carat gold?

Ans. Purity of gold is shown by carat that indicates the number of parts by weight of gold that is present in 24 parts of alloy. Twenty four carat gold means pure gold.

iv. Why gold is used to make jewelry?

Ans. Gold is the most malleable and ductile of all the metals. It has not affected by atmosphere even by single mineral acid or base it has beautiful yellow colour. All these properties of gold are responsible for its use in making jewlry.

v. Why platinum is used for making jewelry?

Ans. Platinum is used to make jewelry items because of its unique characteristics like colour, beauty, strength, flexibility and resistance to tarnish. It provides a secure setting for diamonds and other gemstones, enhancing their brilliance.

vi. Why the second ionization energy of Mg is higher than its first ionization energy?

Ans. Second ionization of energy if magnesium is very high. It becomes very difficult to remove second electron from the Mg+ ions as nuclear charge attracts the remaining electrons strongly. As a result of this attraction size of the ion decreases and energy required to loss second electron is also high.

vii. What is difference between steel and stainless steel?

Ans.

Steel	Stainless Steel
Steel is an alloy of iron containing 0.25 to 2.5% of carbon and traces of S, P, Si and Mn.	Stainless steel is an alloy of iron with chromium and nickel.

viii. How platinum is used as a catalyst in automobiles and what are the advantages of this use?

Ans. Platinum alloyed with palladium and rhodium are used as catalyst in automobiles as catalyst converter. The convert most of the harmful gases (NO, NO_2, CO) emitted by the vehicles into less harmful CO_2, N_2 and H_2O vapours

TEST YOURSELF 8.3 NON METALS

i. Why valency of chlorine is 1?

Ans: Valency of chlorine is one because chlorine has seven electrons in its valence shell and it can accept only one electron to complete its valence shell or octet.

ii. Which factor controls the non-metallic character of the elements?

Ans: The non-metallic character of elements is controlled by electron affinity and electronegativity of atoms. Greater the electron affinity and electronegativity, more non-metallic character of elements will be.

iii. Why fluorine is more non-metallic than chlorine?

Ans: Fluorine is more nonmetallic than chlorine because it has smaller size more nuclear attraction are valance electrons.

iv. Iodine exists in solid state, can it be beaten with hammer to form sheets?

Ans: No, only solid things or metals have the characteristics to be beaten with hammer to form sheet. Iodine is a non metal and brittle.

v. Can liquids and gases be brittle?

Ans: Liquid and gases cannot be brittle be causes it is only the property of solids especially ionic solids.

vi. Why the oxygen is called non-metal?

Ans. Oxygen is non-metal because it form negative ion by gaining electrons like other non-metals

vii. Name two non-metals which are both brittLe and non-ductile

Ans. Graphite and iodine are two non-metals which are brittle and non-ductile in nature.

viii. Name the most abundant non-metal in the earth's crust

Ans. The most abundant non-mental in the earth crust is oxygen. It is 47 % of earth's crust.

ix. Give the non-metallic trend in halogens

Ans. The non-metallic trend in halogens decreases from top to bottom because of increasing atomic sizes.

x. Why do the non-metals accept electrons readily?

Ans. Non-metals accept electrons readily because they are more electronegative and are usually electron deficient in nature. So they form anions by gaining electrons.

$$Cl + 1e^- \longrightarrow Cl^-$$

xi. Why non-metals do not react with dilute acids while metals do react?

Ans. Non-metals do not react with dilute acids because non-metals are itself electron acceptors while metals react readily because they lose electrons readily.

xii. How can we distinguish a metal from a non-metal by simple physical methods?

Ans.

Metals	Non-metals
i. Metals are good conductor of heat and electricity. **ii.** Metals possess high melting and boiling points. **iii.** They are lustrous.	**i.** Non metals are bad conductor of heat and electricity. **ii.** Non metals, possess low melting and boiling points. **iii.** They are dull.

xiii. How we can distinguish a substance is metal or non-metals with the help of an acid?

Ans.

Metal	Non metal
Metals react with dilute acids easily because metals are itself electron donors $Zn + 2HCl \longrightarrow ZnCl_2 + H_2$ $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$	Non-metals or usually do not react with dilute acids because non-metals are itself electron accepters.

xiv. Why is HF a weak acid?

Ans. HF is a weak acid because it does not release its proton easily due to presence of strong hydrogen bonding and it ionizes to a small extant in aqueous solution.

Fig: H- bonding in HF molecules