

Short Answer Questions

Q1. Define metal. How metals, can be categorized?

Ans. Metals are the elements which are electropositive and form cations by losing electrons.

Metals can be categorized in followings.

1. Very reactive metals
2. Moderately metals
3. Least reactive metals

Q2. Write down any two physical properties of metals.

Ans. Physical properties of metals are:

- (i) Almost all metals are solids.
- (ii) All metals have high melting and boiling

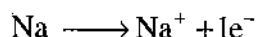
Q3. Write down any two chemical properties of metals.

Ans. Chemical properties of metals are:

- i. Metals can easily lose electrons
- ii. Metals readily react with oxygen to form basic oxides.

Q4. Define electropositive character.

Ans. Metals have the tendency to lose their valence electrons. This property of a metal is called electropositive character or metallic character e.g.



Q5. Write down the trends of electropositive character in periodic table.

Ans. Electropositive character increases down the group and decreases from left to right in a period.

Q6. Why the 2nd ionization energy of magnesium is very high than the first one?

Ans. The 2nd ionization energy of magnesium is very high because, it is difficult to remove second electron from the Mg ion as nuclear charge attracts the remaining electrons strongly. As a result of nuclear attraction size of the ion decreases. So, it is difficult to remove 2nd electron from magnesium ion.

Q7. What type of elements are metals?

Ans. The elements which are electropositive and form cation by losing electrons. This type of elements are metals.

Q8. Name the metal which exists in liquid form.

Ans. Mercury exists in liquid state at room temperature.

Q9. What is the nature of metallic oxides?

Ans. The metallic oxides are basic in nature because they change red litmus paper to blue.

Q10. Which group of metals is highly reactive?

Ans. Group-I of the periodic table is highly reactive in nature.

Q11. Sodium metal is more reactive than magnesium. Why?

Ans. Because sodium is oxidized easily and has low ionization energy where as magnesium is not easily oxidized and has high ionization energy that is why sodium is more reactive.

Q12. Name the metal which can be cut with knife?

Ans. Sodium metal can be cut with knife.

Q13. Name the best ductile and malleable metal

Ans. Cesium is the best ductile and malleable metal.

Q14. Name the metal which is the poorest Conductor of heat?

Ans. Lead metal is the poorest conductor of heat.

Q15. What do you mean by malleable and ductile?

Ans. Malleable means can be hammered into sheets and ductile means can be drawn into wires.

Q16. What do you mean by metallic character?

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

Q17. Why metallic character increases in group and decreases in a period?

Ans. Metallic character increases in group and decreases in a period because top to bottom in a group atomic size increases and left to right in a period atomic size decreases.

Q18. Define transition elements.

Ans. The elements in which d-orbitals are in the process of filling, constitute a group of metals called transition metals.

Q19. Give the application of silver

Ans. Silver has important applications in mirror industry Q20.

Why silver is not used in pure form?

Ans. *Because, the formation of oxide or sulphide layer on the surface of silver, makes it relatively inactive in nature, therefore, silver is not used in pure form.

Q21. What do you mean by 24 carat of Gold?

Ans. Purity of gold is shown by carats. That indicates the number of parts by weight a gold that is present is 24 parts of alloy. 24 carat gold is pure in nature.

(222. Why gold is used to make jewelry?

Ans. Because of its inertness in atmosphere, it is an ornamental metal so it is used to make jewelry

Q23. Why platinum is used for making jewelry?

Ans. Platinum is used to make jewelry items because of its unique strength, flexibility and resistance to tarnish.

Q24. Write down the difference between steel and stainless steel.

Ans. Difference between steel and stainless steel

Steel	Stainless steel
Pure steels is the alloy of iron with other metals like nickel, tungston etc.	Stainless steel is the alloy of iron with chromium

Q25 How platinum is used as a catalyst in automobile and what we advantage of this

Ans. Platinum alloyed with palladium and rhodium is used as catalyst in automobiles as catalytic converter. They convert most of the gases being emitted by vehicles into less harmful carbon dioxide, nitrogen and water vapours.

(226. What are non-metals?)

Ans. Non-metals form negative ions (anions) by gaining electrons. In this way non met Is are electronegative in nature and form acidic oxides.

Q27. On what factor non-metallic character depends?

Ans. The non-metallic character depends upon the electron affinity and electronegativity of the atom.

Q28. Write down the non-metallic character in periodic table

Ans. Non-metallic character decreases from op to bottom in any group and increases left to right in a period.

Q29. Write down two physical properties of non metals.

Ans. Physical properties of non metals are:

i. Non metals are non conductor of heat and electricity.

ii. Non metals have low melting and boiling points.

Q30 Write down two chemical properties of non letals. Ans.

Chemical properties of non metals are:

i. Non metals form ionic compounds with metals and covalent compounds by reacting with one another e.g. CO_2 , NO etc.

ii. Non metals usually do not react with water.

(231. What are halogens?)

Ans. Halogen means salt former. Elements of group-17 of the periodic table consist of fluorine, chlorine, bromine iodine and astatine. They are collectively called halogens.

Q32. Write down the physical properties of halogens.

Ans. Both fluorine and chlorine exist in gases form, bromine exists in liquid form and iodine exists in solid form.

Q33 Why valency of chlorine is 1?

Ans. Valency of chlorine atom is 1 because it accepts only 1 electron in its outermost shell.

Q34. Which factor controls the non metallic character of the elements?

Ans. The non metallic character depends upon the electron affinity and electronegativity of the atom.

Q35. Why fluorine is more non-metallic than chlorine?

Ans. Because non-metallic character decreases in a group downward and increases in a period from left to right. Fluorine is the first member of group 17 and non metallic character decreases down the group that is why fluorine is more non metallic than chlorine.

Q36. Iodine exists in solid state; can it be beaten with hammer to form sheets?

Ans. No, only solid substances or metals that have the ability to change in sheets by beaten with hammer.

Q37. Can liquids and gases be brittle?

Ans. No, because it is not the property of liquids and gases.

(238. Why the oxygen is called non-metal?

Ans. Oxygen is non metal because all non metals form negative ions by gaining electrons. 🐦

Q39. Name two non metals which are both brittle and non ductile.

Ans. Silicon and graphite are two non metals

Q40. Name the most abundant

Ans. Oxygen has the highest percentage in earth

Q41. Give the non metallic trend of halogenç.*

Ans. Non metallic character decreases from top to bottom in halogens because of increasing atomic size of atoms.

Q42. Why do the non metals accept electrons readily?

Ans. The non metals accept electrons readily because non metals are electronegative in nature and electron deficient in nature so they form an anion by gaining electrons.

(243. Why non metals do not react with dilute acids while metals do react with acid? Ans. The non metals do not react with dilute acids because non metals are themselves electron acceptors and metals lose electrons readily.

Q44. How can we distinguish a metal from a non metal by simple physical method? Ans. Difference between metals and non metals are

	Metal		Non metal
	Metals are good conductor of heat and electricity	i.	Non Metals are bad conductor of heat and electricity
n.	Metals possess high melting and boiling points.	ii.	Non Metals possess low melting and boiling points.
iii.	Metals bear positive charge	iii.	Non metals bear Negative charge

Q45. How we can distinguish a substance is metal or non metals with the help of an acid?

Ans. Yes, we can distinguish a substance is metal or non metal with the help of an acid

Metal	Non metals
Metals react with dilute acids because metals are themselves electron donors.	Non metals do not react with dilute acids because non metals are themselves electron acceptors.

Q46. Why is HCl a weak acid?

Ans. Because HCl does not release its acidity due to presence of hydrogen bonding Q47. Write down the names of very reactive metals.

Ans. Potassium, sodium, calcium, magnesium and aluminum are the very reactive metals.

(248. Write down the names of moderately reactive metals.

Ans. Zinc, iron, tin and lead are the moderately reactive metals.

(249. Write down the names of least Reactive or Noble metals.

Ans. Copper, mercury, silver and gold are the least reactive metals.

(250. Why reactivity of metals increase down the group?

Ans. The reactivity of metals increases down the group because of increasing atomic size,

(251. State the physical properties of metals

Ans. i. Metals have high melting and boiling point ii.

Metals are good conductor of heat and electricity

(252. Why nitrogen forms compounds with alkaline earth metals directly?

Ans. Because alkaline earth metals form stable nitride when heated with nitrogen directly.

Q53. Why the second ionization energy of magnesium is higher than the first one?

Ans. It becomes very difficult to remove the second electron from the magnesium ion Mg^{+1} because nuclear charge attracts the remaining electrons strongly as the result of this attraction the size of the ion decreases.

Q54. How does oxygen react with group II metals?

Ans. Alkaline earth metals are less reactive towards oxygen. They form oxides when heated with oxygen.



Q55. What is the relationship between electro positivity and ionization energy?

Ans. Electro positivity depends upon the ionization energy which in turn depends upon size and nuclear charge of the atoms. So smaller sized atoms with high nuclear charge have high ionization energy. Atoms having high ionization energy are less electro positive or metallic.

(256. Why does electro positivity decrease from left to right in a period?

Ans. Because electro positive character depends upon the size of the atom. Electro positive character decreases across the period due to decrease in atomic size.

Q57. How does electro positivity depend upon the size and nuclear charge of an atom? Ans. Electro positive character depends upon the size of the atom, greater the size of the atom, greater will be the electro positive character and less nuclear charge. Smaller the size of the atom, smaller will be the electro positive character and greater nuclear charge.

Q58. Why ionization energies of alkaline earth metals are higher than alkali metals? Ans.
Ionization energy of alkaline earth metals is high than alkali metals because the atomic size of alkaline earth metals are smaller and ocenter nuclear charge.

Q59 Why silver and gold are less reactive?

Ans. Silver and oold are less reactive becausc gold and silver are relatively inactive metals and they do not loss electron easily that's why gold and silver are less reactive, Q60. Can pure gold be used lbr making ornaments? If not why?

Ans. No, pure gold cannot be used for making ornaments because gold is too soft and it always used in alloy form With copper, silver or some other metals.

Q61. Why copper is used for making electrical wire?

Ans. Because it is good conductor of heat and electricity.

Q62. What is the trend of variation of in densities of alkali metals?

Ans. Densities of alkali metals increasc down the group -z in atomic mass.

Q63. Which metal is used for metal work?

Ans. Metal work means fire work. The metals used for the metal works or fire work due to its characteristics flame colour when they ignite in atr for example sodium gives golden yellow colour and calcium gives red colour flame. ■

Q64. Why magnesium is harder than sodium?

Ans. Magnesium is harder than sodium because magnesium has high ionization energy and styonger metallic bond than sodium.

(265. Why calcium is more electropositive than magta'sium?)

Ans. Calcium and magnesium are belonged to the same group and electro positivity of met', s increases when we move from top to bottom in a group, that is why calcium is more electropositive than magnesium.

Q66. Why ionization energy of sodium is less than magnesium?

Ans. Because sodium has greater size than magnesium that is why the ionization of sodium is less than maanesiurn,

Q67. Why the ionization energy of sodium is more than potassium?

Ans. Because electro positive character depends upon the ionization energy which in turn depends on size and nuclear charge of the atom. So the electro positive character increases down the group and ionization value decreases, it become easier to lose their electrons.

That' s why ionization energy of sodium is more than potassium.

Q68. Write down the uses of Sodium

Ans. Uses of Sodium

- i. Sodium-potassium alloy is used as a coolant in nuclear reactor.

ii. It is used to produce yellow light in sodium vapour lamp.

iii. It is used as a reducing agent in the extraction of metals like Ti.

Q69. Write down the uses of Calcium.

Ans. Uses of Calcium

i. It is used to remove sulphur from petroleum products.

ii. It is used as reducing agent to produce Cr,U,Zr.

(270. Write down the uses of Magnesium.

Ans. Uses of Magnesium

1. Magnesium is used in flash lights and in fire works.

2. It is used in the manufacture of light alloys.

3. Magnesium ribbon is used in Thermite process to ignite aluminum powder.