CHEMISTRY

BOOKS - OSWAL PUBLICATION

METALS AND NON - METALS

Stand Alone Mcqs

1. Which one of the following metals do not react with cold as well as hot water ?

A. Na

B. Ca

C. Mg

D. Fe

Answer: D

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2. What happens when calcium is treated with water?

(i) It does not react with water.

(ii) It reacts violently with water.

(iii) It reacts less violently with water.

(iv) Bubbles of hydrogen gas formed stick to the surface of calcium.

A. (i) and (iv)

B. (ii) and (iii)

C. (i) and (ii)

D. (iii) and (iv)

Answer: D

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3. Generally, non-metals are not lustrous. Which of the following non-metals is lustrous?

A. Sulphur

B. Oxygen

C. Nitrogen

D. Iodine

Answer: D

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4. An element A is soft and can be cut with a knife. This is very reactive to air and cannot be kept open in air. It reacts vigorously with water. Identify the element from the following.

A. Mg

B. Na

C. P

D. Ca

Answer: B

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5. Which among the following statements is incorrect for magnesium metal?

A. It burns in oxygen with a dazzling white flame

B. It reacts with cold water to form magnesium oxide and evolves hydrogen

gas

C. It reacts with hot water to form magnesium hydroxide and evolves hydrogen gas

D. It reacts with steam to form magnesium hydroxide and evolves hydrogen gas

Answer: B

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6. Electrical wires have a coating of an insulating material. The material, generally used is

A. Sulphur

B. Graphite

C. PVC

D. All can be used

Answer: C

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7. Food cans are coated with tin and not with zinc because

A. zinc is costlier than tin

B. zinc has a higher melting point than tin

C. zinc is more reactive than tin

D. zinc is less reactive than tin

Answer: C

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8. Which of the given metals is stored under kerosene to prevent oxidation?

A. Copper

B. Potassium

C. Magnesium

D. Calcium

Answer: B

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9. Which of the followmg metals exist in their native state in nature?

A. (i) and (ii)

B. (ii) and (ii)

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C

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10. Galvanisation is a method of protecting iron from rusting by coating it with a thin layer of

A. Gallium

B. Aluminium

C. Zinc

D. Silver

Answer: C

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11. Which of the following metals are obtained by electrolysis of their chlorides in molten state?

A. (i) and (iv)

B. (iii) and (iv)

C. (i) and (iii)

D. (i) and (ii)

Answer: D

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12. An electrolytic cell consists of

(i) positively charged cathode

(ii) negatively charged anode

(iii) positively charged anode

(iv) negatively charged cathode

A. (i) and (ii)

B. (iii) and (iv)

C. (i) and (iii)

D. (ii) and (iv)

Answer: B

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13. Alloys are homogeneous mixtures of a metal with a metal or non-metal. Which among the following alloys contain non-metal as one of its constituents?

A. Brass

B. Bronze

C. Amalgam

D. Steel

Answer: D

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14. Which of the following are not ionic compounds?

(i) KCl (ii) HCl

(iii) CCl_4 (iv) NaCl

A. (i) and (ii)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (iii)

Answer: B

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15. Metals are refined by using different methods. Which of the following metals are refined by electrolytic refining?

A. (i) and (ii)

B. (ii) and (iii)

C. (ii) and (iii)

D. (iii) and (iv)

Answer: A

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16. During electrolytic refining of zinc, it gets

A. deposited on cathode

B. deposited on anode

C. deposited on cathode as well as anode

D. remains in the solution

Answer: A

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Assertion And Reason

1. Assertion (A): When a piece of copper metal is added to dilute sulphuric acid, the solution turns blue.

Reason (R): Copper reacts with dilute

sulphuric acid to form blue copper (II) sulphate solution.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: D

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2. Assertion (A): Metals are sonorous.

Reason (R): They are generally brittle in the solid state, they break into pieces when hammered.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: C

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3. Assertion (A): Gas bubbles are observed when sodium carbonate is added to dilute hydrochloric acid.

Reason (R): Carbon dioxide is given off in the reaction.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: A

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4. Assertion (A): A mineral is called ore, when metal is extracted from it conveniently and economically.

Reason (R): All ores are minerals but all minerals are not ores.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: B

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5. Assertion (A): Usually the sulphide ore is converted to oxide before reduction.

Reason (R): Reduction of oxides occurs easier.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: A

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6. Assertion (A): While the extraction of copper, one of the steps involved is

$Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$

Reason (R): In this reaction Cu_2S is the reducing agent whereas Cu_2O is the oxidising agent.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: C

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7. Assertion (A): In alumino thermite process, the metals like iron melts due to the heat evolved in the reaction.

Reason (R): The reaction is: $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A

C. A is true but R is false

D. A is false and R is true.

Answer: A

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Case Based Mcqs

1. Read the following ans answer any four metals A,B,C and D added following solutions one. The results obtained have tabulated as follows :

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Choose the most reactive metal:

A. A

B. B

C. C

D. D

Answer: B

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2. Read the following ans answer any four metals A,B,C and D added following solutions one. The results obtained have tabulated as follows :

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Which of the following will displace Cu from its solution of sulphate:

A. A only

B. B only

C. Both A and B

D. None of the above

Answer: B

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3. Read the following ans answer any four metals A,B,C and D added following solutions one. The results obtained have tabulated as

follows :

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Which is the correct decreasing order of reactivity?

A. $B > A > C > D$

B. $A > B > D > C$

C. $D > B > A > C$

D. $B > A > D > C$

Answer: A

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4. Read the following ans answer any four metals A,B,C and D added following solutions one. The results obtained have tabulated as follows :

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

The gas produced when dil. HCl is added to a reactive metal:

A. Oxygen

B. Nitrogen

C. Hydrogen

D. None of the above

Answer: C

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5. Read the following ans answer any four metals A,B,C and D added following solutions one. The results obtained have tabulated as follows :

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

On the basis of sequence of reactions, identify the most and least reactive elements

$A + BX \rightarrow AX + B$

$C + AY \rightarrow CY + A$

A. Most reactive: C, Least reactive: B

B. Most reactive: B, Least reactive: C

C. Most reactive: A, Least reactive: B

D. Most reactive: B, Least reactive: A

Answer: A

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6. Read the following and answer any four questions

When a silvery grey powder of a solid (A) is mixed with a powder of solid (B) no reaction occurs. But if the mixture is ignited and lighted using magnesium ribbon a reaction occurs with evolution of large amount of heat forming product (C) which settles down as liquid metal and the solid product (D) formed floats on the liquid (C). (C) in solid form reacts with moisture to form rust. The amount of

heat generated during the reaction is so high that the reaction is used in welding of electric conductors, joints in railway tracks. Based on this information, Identify A and C?

A. A-Al and C-Fe

B. A-Fe and C-Al

C. A-Mg and C-Al

D. A-Al and C-Cu

Answer: A

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7. Read the following and answer any four questions

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heat generated during the reaction is so high that the reaction is used in welding of electric conductors, joints in railway tracks. Based on this information, Identify B and D which are oxides of:

A. B-Fe, D-Al

B. B-Mg, D-Al

C. B-Al, D-Cu

D. B-Al, D-Fe

Answer: A

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8. Read the following and answer any four questions

When a silvery grey powder of a solid (A) is mixed with a powder of solid (B) no reaction occurs. But if the mixture is ignited and lighted using magnesium ribbon a reaction occurs with evolution of large amount of heat forming product (C) which settles down as liquid metal and the solid product (D) formed floats on the liquid (C). (C) in solid form reacts

with moisture to form rust. The amount of heat generated during the reaction is so high that the reaction is used in welding of electric conductors, joints in railway tracks. Based on this information, answer any four questions

Amphoteric oxides are:

A. Metal oxides which do not react with acids but reacts with bases.

B. Metal oxides which reacts with both acids as well as bases.

C. Metal oxides which reacts with acids but do not react with bases.

D. Metal oxides which shows no reaction with either acids or bases.

Answer: B

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9. Read the following and answer any four questions

When a silvery grey powder of a solid (A) is

mixed with a powder of solid (B) no reaction occurs. But if the mixture is ignited and lighted using magnesium ribbon a reaction occurs with evolution of large amount of heat forming product (C) which settles down as liquid metal and the solid product (D) formed floats on the liquid (C). (C) in solid form reacts with moisture to form rust. The amount of heat generated during the reaction is so high that the reaction is used in welding of electric conductors, joints in railway tracks. Based on this information, answer any four questions

Which of the following is amphoteric in nature

?

A. Both aluminium oxide and zinc oxide

B. Only zinc oxide

C. Only aluminium oxide

D. Neither of them.

Answer: A

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10. Read the following and answer any four questions

When a silvery grey powder of a solid (A) is mixed with a powder of solid (B) no reaction occurs. But if the mixture is ignited and lighted using magnesium ribbon a reaction occurs with evolution of large amount of heat forming product (C) which settles down as liquid metal and the solid product (D) formed floats on the liquid (C). (C) in solid form reacts with moisture to form rust. The amount of heat generated during the reaction is so high

that the reaction is used in welding of electric conductors, joints in railway tracks. Based on this information, answer any four questions

The reaction in which heat is generated is called as:

A. Exothermic reaction

B. Endothermic reaction

C. Decomposition reaction

D. Precipitation reaction

Answer: A

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11. Read the following and answer any four questions

Sohan went door to door posing as a goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was sad but after a futile argument, the man

beat a hasty retreat.

Which of the following is used for dissolution of gold?

A. Hydrochloric acid

B. Sulphuric acid

C. Nitric acid

D. Aqua regia

Answer: D

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12. Read the following and answer any four questions

Sohan went door to door posing as a goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was sad but after a futile argument, the man beat a hasty retreat.

The composition of aqua-regia is

A. Dil. HCl : Conc. HNO_3 3 : 2

B. Conc. HCl : Dil. HNO_3 3 : 1

C. Conc. HCl : Conc. HNO_3 3 : 1

D. Dil. HCl : Dil HNO_3 3 : 1

Answer: C

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13. Read the following and answer any four questions

Sohan went door to door posing as a

goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was sad but after a futile argument, the man beat a hasty retreat.

Which of the following is incorrect?

A. Aqua regia is a strong oxidising agent.

B. Aqua regia is a strong reducing agent.

C. Aqua regia dissolves gold in it.

D. Aqua regia is a mixture of hydrochloric acid and nitric acid.

Answer: B

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14. Read the following and answer any four questions

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unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was sad but after a futile argument, the man beat a hasty retreat.

Aqua regia dissolves:

A. Gold and platinum

B. Gold and silver

C. Platinum and silver

D. Only gold

Answer: A

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15. Read the following and answer any four questions

Sohan went door to door posing as a goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but

their weight was reduced drastically. The lady was sad but after a futile argument, the man beat a hasty retreat.

Examples of Noble metals are:

A. Gold

B. Silver

C. Platinum

D. All of the above

Answer: D

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16. Read the following and answer any four questions

During extraction of metals, electrolytic refining is used to obtain pure metals. During the process, the impure metal is made the anode and a thin strip of pure metal is made the cathode. The solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves from the electrolyte. An equivalent of pure metal from the electrolyte

is deposited on the cathode.

The process of purification of the metal obtained after reduction, is called:

A. Extraction

B. Refining

C. Froth floatation

D. Electrolysis

Answer: B

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17. Read the following and answer any four questions

During extraction of metals, electrolytic refining is used to obtain pure metals. During the process, the impure metal is made the anode and a thin strip of pure metal is made the cathode. The solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves from the electrolyte. An equivalent of pure metal from the electrolyte is deposited on the cathode.

Which of the metals are refined by electrolytic refining?

(i) Au (ii) Cu

(iii) Na (iv) K

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. (ii) and (iv)

Answer: A

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18. Read the following and answer any four questions

During extraction of metals, electrolytic refining is used to obtain pure metals. During the process, the impure metal is made the anode and a thin strip of pure metal is made the cathode. The solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves from the electrolyte. An equivalent of pure metal from the electrolyte

is deposited on the cathode.

During electrolytic refining of zinc, it gets

A. deposited on cathode

B. deposited on anode.

C. deposited on cathode as well as anode

D. remains in the solution.

Answer: A

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19. Read the following and answer any four questions

During extraction of metals, electrolytic refining is used to obtain pure metals. During the process, the impure metal is made the anode and a thin strip of pure metal is made the cathode. The solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves from the electrolyte. An equivalent of pure metal from the electrolyte is deposited on the cathode.

In electrolytic refining of copper, impure copper act as_____and pure copper as_____:

A. cathode, anode

B. cathode, electrolyte

C. anode, cathode

D. electrolyte, cathode

Answer: C

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20. Read the following and answer any four questions

During extraction of metals, electrolytic refining is used to obtain pure metals. During the process, the impure metal is made the anode and a thin strip of pure metal is made the cathode. The solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves from the electrolyte. An equivalent of pure metal from the electrolyte is deposited on the cathode.

The anode is _____ and the reaction at the anode is _____.

A. negative, oxidation

B. negative, reduction

C. positive, oxidation

D. positive, reduction

Answer: C

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21. Read the following and answer the question

Metallic Character:

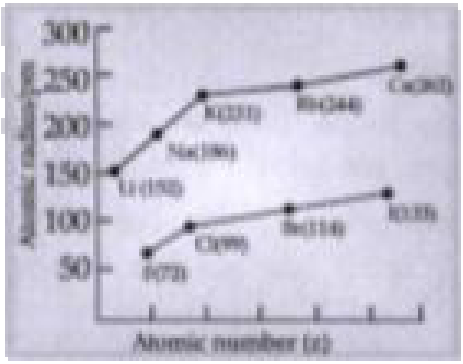
The ability of an atom to donate electrons and form positive ion (cation) is known as electro-positivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electro-positivity decreases due to decrease in atomic size

Non-Metallic Character:

The ability of an atom to accept electrons to

form a negative ion (anion) is called non-metallic character or electronegativity. The elements having high electro-negativity have a higher tendency to gain electrons and form anion.

Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electro-negativity increases due to decrease in atomic size.



Which of the following correctly represents the decreasing order of metallic character of Alkali metals plotted in the graph ?

A. $Cs > Rb > Li > Na > K$

B. $K > Rb > Li > Na > Cs$

C. $Cs > Rb > K > Na > Li$

D. $Cs > K > Rb > Na > Li$

Answer: C

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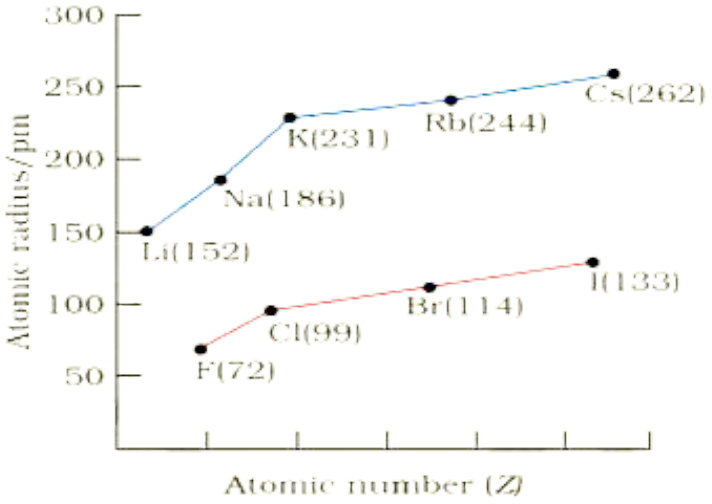
22. Metallic Character

The ability of an atom to donate electrons and form positive ion (cation) is known as electropositivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electropositivity decreases due to decrease in atomic size.

Non-Metallic Character

The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electronegativity. The

elements having high electro-negativity have a higher tendency to gain electrons and form anion.Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electronegativity increases due to decrease in atomic size



Hydrogen is placed along with Alkali metals in

the modern periodic table though it shows non-metallic character

A. as Hydrogen has one electron & readily loses electron to form negative ion.

B. as Hydrogen can easily lose one electron like alkali metals to form positive ion.

C. as Hydrogen can gain one electron easily like Halogens to form negative ion.

D. as Hydrogen shows the properties of non metals.

Answer: B

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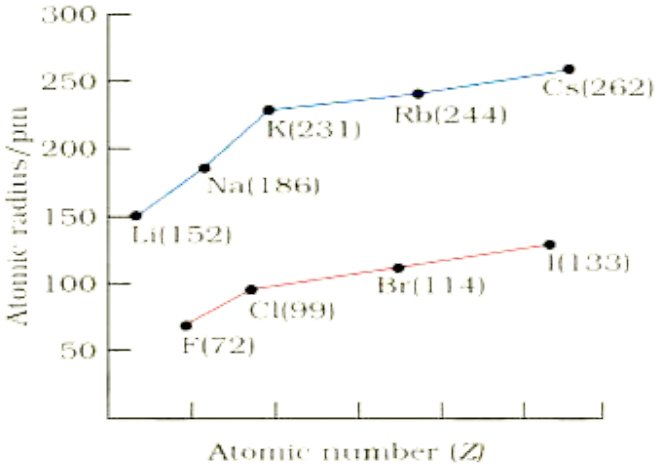
23. Metallic Character

The ability of an atom to donate electrons and form positive ion (cation) is known as electropositivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electropositivity decreases due to decrease in atomic size.

Non-Metallic Character

The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electronegativity. The elements having high electro-negativity have a higher tendency to gain electrons and form anion. Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electronegativity increases due to decrease in atomic size



Which of the following has highest electronegativity?

A. F

B. Cl

C. Br

D. I

Answer: A

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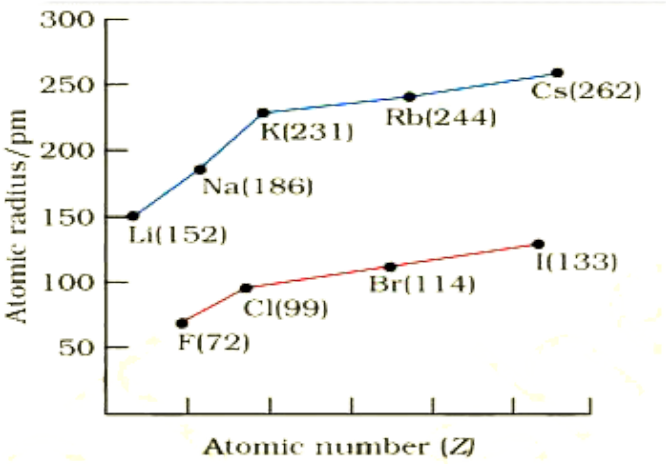
24. Metallic Character

The ability of an atom to donate electrons and form positive ion (cation) is known as electropositivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electropositivity decreases due to decrease in atomic size.

Non-Metallic Character

The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electronegativity. The elements having high electro-negativity have a higher tendency to gain electrons and form anion.Down the group, electronegativity decreases due to increase in atomic size andacross the period, from left to right electronegativity increases due to decreasein atomic size



Identify the reason for the gradual change in electronegativity in halogensdown the group.

A. Electronegativity increases down the group due to decrease in atomic size.

B. Electronegativity decreases down the group due to decrease in tendency to lose electrons.

C. Electronegativity decreases down the group due to increase in atomic radius/ tendency to gain electron decreases.

D. Electronegativity increases down the group due to increase in forces of attractions between nucleus & valence electrons

Answer: C

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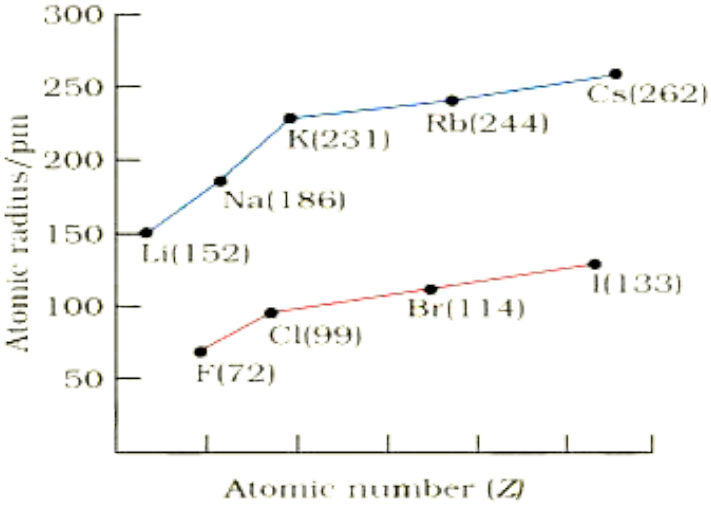
25. Metallic Character

The ability of an atom to donate electrons and form positive ion (cation) is known as electropositivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electropositivity decreases due to decrease in atomic size.

Non-Metallic Character

The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electronegativity. The

elements having high electro-negativity have a higher tendency to gain electrons and form anion. Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electronegativity increases due to decrease in atomic size



Which of the following reason correctly

justifies that “Fluorine (72pm) has smaller atomic radius than Lithium (152pm)”?

A. F and Li are in the same group. Atomic size increases down the group

B. F and Li are in the same period. Atomic size increases across the period due to increase in number of shells

C. F and Li are in the same group. Atomic size decreases down the group

D. Fa nd Li are in the same period and across the period atomic size/radius decreases from left to right.

Answer: D

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26. In a thermite reaction, a compound of iron reacts with a metal.

The metal used is:

A. Zinc

B. Aluminium

C. Magnesium

D. None of these.

Answer: B

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27. In a thermite reaction, a compound of iron reacts with a metal.

After completion of this reaction, a metal is

obtained in the molten state. Identify the metal:

A. Zinc

B. Aluminium

C. Iron

D. Magnesium

Answer: C

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28. In a thermite reaction, a compound of iron reacts with a metal.

The correct equation to justify thermite reaction is:

A.

$$Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3 - \text{Heat}$$

.

B.

$$Fe_2O_3 + 2Al \rightarrow 2Fe + Al2O_3 + \text{Heat}$$

.

C.

$$Al_2O_3 + 2Fe \rightarrow 2Al + Fe_2O_3 + \quad \text{Heat}$$

.

D. $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$.

Answer: B

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29. In a thermite reaction, a compound of iron reacts with a metal.

The correct name for Fe_2O_3 is :

A. Ferrous oxide

B. Ferric oxide

C. Ferrous hydroxide

D. Ferric hydroxide

Answer: B

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