CHEMISTRY CHAPTER 5 P BLOCK ELEMENTS

Question # 1

Define boron family.

Answer:

In Boron family, we have five elements Boron, Aluminum, Gallium, Indium, and Thallium. All five have three electrons in their outermost or valence shell. Only one member of this family is a metalloid i.e. Boron.

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Question # 2

Identify the position of boron family in the periodic table.

Answer:

Boron is located in Group 13.

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Question # 3

Write at least three physical properties of boron family?

Answer:

1. Boron has a high melting point.
2. Aluminium is amphoteric.
3. Indium has a lesser nuclear radius than Thallium

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Question # 4

State at least three common uses of boron family.

Answer:

1. Aluminium is used for making cooking utensils.
2. Thalium is extremely toxic and has no commercial use.
3. Indium is also used in making semi-conductor devices.

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Question # 5

Define noble gases?

Answer:

Noble gases are inert gases. They do not react to make compounds because they have no free electrons in its outmost shell. These gases are, Helium, Neon, Argon, Krypton, Xenon, Radon are these 6 gases.

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Question # 6

What is the position of noble gases in the periodic table?

Answer:

Noble gases are lying in 18^{th} Group.

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Question # 7

Write at least three the physical properties of noble gases?

Answer:

Noble gases are colorless, odorless, tasteless, and nonflammable gases under standard conditions.

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Question # 8

State three common uses of noble gases.

Answer:

1. Helium is used in filling balloons.
2. Oxygen -Helium mixture is used in the treatment of asthma.
3. Neon is used for filling sodium vapour lamps.
4. Argon is used as a carrier gas in gas chromatography.
5. Krypton is used in high efficiency miner's cap lamps.
6. Radon is used in radioactive research.

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Question # 9

Choose two elements from the group and write notes about them.

Answer:

Aluminium is the third most abundant element in the earth's crust. It is commonly used in the household as aluminum foil, in crafts such as dyeing and pottery, and also in construction to make alloys. In its purest form the metal is bluish-white and very ductile. It is an excellent conductor of heat and electricity and finds use in some wiring.

Indium has atomic number 49. It has the +1 or +3 oxidation state but the +3 state is more common. It is a soft, malleable metal that is similar to gallium. Indium found in photoconductors in optical instruments. Indium is soluble in acids, but does not react with oxygen at room temperature.

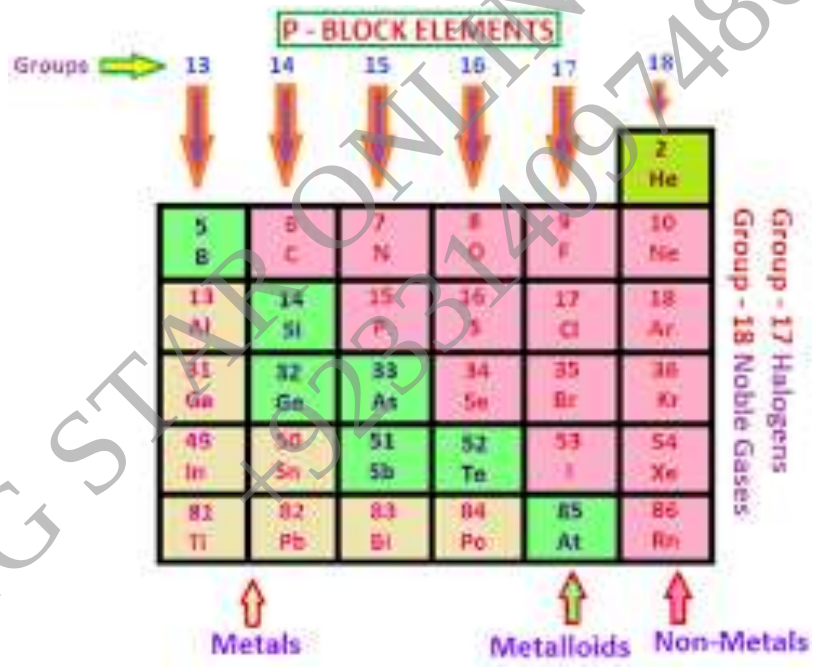
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Question # 10

Define p-block elements?

The p-block elements are found on the right side of the periodic table. There are 35 p-block elements, all of which are in p orbital with valence electrons. They include the boron, carbon, nitrogen, oxygen and flourine families in addition to the noble gases.



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Question # 11

What are the types of elements in p-block elements?

Answer:

The p block consists of non-metals at the right, metalloids in the middle, and metals at the left.

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Question # 12

What is the valence shell electronic configuration

a) Boron family: ns^2np^1

b) Carbon family: ns^2np^2

c) Nitrogen family: ns^2np^3

e) Halogens: ns^2np^5

d) Oxygen family: ns^2np^4

f) Noble gases: ns^2np^6

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Question # 13

What elements of boron family do not react with nitrogen?

Answer:

Gallium (Ga), Indium (In), Thallium (Tl)

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Question # 14

List the element of

a) Carbon family

Carbon, Silicon, Germanium, Tin, Lead, and Flerovium.

b) Oxygen family

Oxygen, Sulfur, Selenium, Tellurium and Polonium.

c) Halogens

Fluorine, Chlorine, Bromine, Iodine, Astatine

d) Noble gases

Helium, Neon, Argon, Krypton, Xenon, Radon

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Question # 15

Why are noble gases chemically stable?

Answer:

They are the most stable due to having the maximum number of valence electrons **OR** having no free electron in its outermost or valence shell to make bond.

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Question # 16

What happens to melting points, boiling points and density of noble gases?

Answer:

The melting point of noble gases increases down the group.
The boiling point of noble gases increases down the group.
The density of noble gases increases down the group.

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Choose the circle the correct answer:

1. Boron Group
2. 3
3. ns^2np^1
4. In
5. Al
6. Noble gases
7. Noble gases
8. Halogens
9. Alkali metals
10. VIIIA
11. The electronic configuration of their outermost electrons is ns^2np^6.

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