YEAR QUESTIONS AND ANSWERS

YEAR - 2007

(arranged according to the PT)

For the group of elements given below, answer :-

Boron, Aluminium, Gallium, Indium, Thallium

a) Which element has the most metallic character? Thallium

b) Which element has the highest electronegativity? Boron

c) Electronic configuration of Aluminium is 2, 8, 3 ; how many electrons are there in the valence shell of Thallium? 3

d) The atomic no of Boron is 5. Write the chemical formulae of the compound when boron reacts with chlorine. BCl_3

e) Will the elements present to the right of boron be more or less metallic? Justify your answer. Less metallic.

This is because the metallic character decreases on moving from left to right in a period.

YEAR - 2008

Select the correct answer :-

A) Atomic size increases across a period.

(B) Ionisation potential increases across a period. ← Correct

C) Electron affinity increases down the group.

D) Electronegativity increases down the group.

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YEAR - 2009

a) Which one has the highest electron affinity :-

i) Lithium ii) Carbon (iii) Fluorine iv) Neon

b)

IA	IIA	IIIA	IVA	VA	VIA	VIIA	O
1	2	13	14	15	16	17	18
Li		D			O	J	Ne
A	Mg	E	Si		H	K	
B	C		F	G			L

Select from the table and answer:-

i) Which is most electronegative? Element J (Fluorine)

ii) How many valence electrons are present in G? 5

iii) Write the formulae of the compound between B and H. B_2H

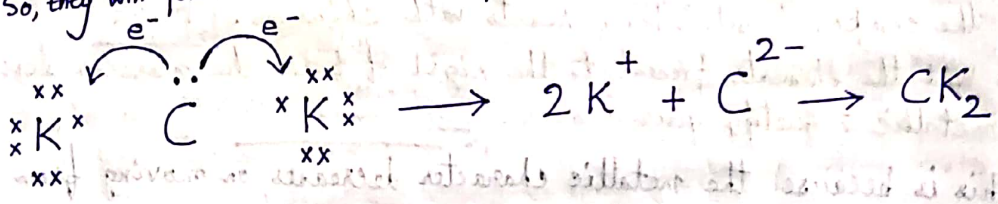
iv) In the compound between F and J what type of bond will be formed? Covalent Bond

v) Draw the electron dot structure for the compound between C and K.

→ In Element C, no of valence electrons = 2

In element K, no of valence electrons = 7

So, they will form electrovalent compound, CK_2.



YEAR - 2010

a) The number of valence electrons in the valence shell of halogen is seven.

b) Electronegativity across the period increases.

c) Non-metallic character down the group decreases.

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d) Atomic number of an element is 16. State,

i) To which period it belongs? 3

ii) The number of valence electrons in the element. 6

iii) Is it metal or non-metal? Non-metal

YEAR - 2011

a) Give reason –

'The oxidising power of elements increases from left to right across the period.'

Answer :- When any element oxidises others and itself gets reduced, they are known as oxidising agent. Now, as we move across the period, the atomic size decreases and nuclear charge increases, so, the tendency to lose electrons decreases. Hence, the oxidising power increases from left to right in a period.

b) i) Across the period, the ionization potential increases.

ii) Down the group, electron affinity decreases.

c) i) In the periodic table, alkali metals are placed in Group 1

ii) Which of the following property dont match with halogen family:

a. They have seven electrons in the valence shell

b. They are highly reactive

(c) They are metallic in nature ← incorrect

d. They are diatomic in molecular form

d) State the group and period of the element having three shells with three electrons in the valence shell.

Electronic Configuration = 2, 8, 3

So, Period = 3 and Group = 13 (III A)

YEAR - 2012

a) An element in period 3 whose electron affinity is zero –

b) Give reason :-

i) Ionisation potential of the element increases across the period.

Answer :- Across the period, the atomic size decreases and nuclear charge increases, so, tendency to lose electron decreases as the electrons are strongly held by the nucleus. So, I.E. increases across the period as more energy is required to remove one electron from its valence shell.

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ii) Alkali metals are good reducing agents.

Answer :- Alkali metals have only one electron in their valence shell and so they easily loses the electron to become stable. Hence, they itself get oxidised and reduces others. For this reason, alkali metals are good reducing agents.

c) Three elements E, F, G with atomic number 19, 8, 17. Classify them as metals and non-metals.

Metals – E. , Non-metals = F and G

d) Name a metal in period 3 and group 1 of the periodic table – Sodium (Na)

YEAR - 2013

a)

Group No.	1	2	13	14	15	16	17	18
2nd Period	Li		D			O	i	Ne
3rd Period	A	Mg	E	Si		h	M	
4th Period	R	T	I		Q	u		Y

i) Identify the most electronegative element. – i (Fluorine)

ii) Most reactive element in Group 1 – Element R (Potassium)

iii) The element from Period 3 with least atomic size. Element M (Chlorine)

iv) No of valence electrons in Q – Five (5)

v) Element from Group 2 with least I.E :– Element R (Potassium)

vi) Noble Gas of 4th Period – Krypton (Kr)

vii) Molecular formulae and type of bond formed between element A and H – A_2h, Ionic Bond.

(Answer with respect to the elements given in the table)

b) Element with highest I.E. – Helium (He).

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YEAR-2014

a) Ionisation potential increases from left to right across the period because atomic radius decreases and nuclear charge increases.

b) An element 'A' belonging to period 3 and group 2 will have, 3 shells and 2 valence electrons.

c) Atomic no of 'Z' is 16.
State the formulae of the compound formed between 'Z' and hydrogen – H_2Z

d) M_2O when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity.
i) what kind of combination exists between M and O?
Ionic or electrovalent bond
ii) State the number of electrons in the outermost shell of M.
one
iii) Name the group to which M belongs – Group 1

e) 'The amount of energy released when an atom in the gaseous state accepts an electron to form an anion.' – Electron affinity

f) i) Metal – An element with electronic configuration 2,8,8,3
ii) Iron – The metal that forms two types of ion.

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