

EXERCISE - 5(C)

11

1. Element P has atomic number 19. To which group and period does P belong? Is it a metal or non-metal? Why?

Answer :- $P = 19 = 2, 8, 8, 1$

Group 1 and Period 4.

Element P is a metal. Metals are those elements which have a tendency to lose electrons. Here, element P has only one valence electron in the valence shell, so it will lose electron to attain stability. Hence, it is metal.

2. An element belongs to the 3rd Period and Group III A (13) of the periodic table. State :-

a) The no of valence electrons = 3

b) Valency = 3

c) Metal or non-metal = Metal

d) Name of the element = Aluminium (Al)

3. Name or state the following with reference to the elements of the 1st three periods of the periodic table.

a) Noble gas with duplet arrangement of electrons = Helium (He)

b) Metalloid in Period 3 = Silicon (Si)

c) Valency of elements in Group 14 and 15 = 4 and 3

d) Noble gas with electronic configuration 2, 8, 8 = Argon (Ar)

* from (e) to (l)

continued in next page.

4. Match the column :-

Column A	Column B
a) Elements short by 1 electron in octet	i) Transition Elements (d)
b) Highly reactive metals	ii) Noble Gases (e)
c) Non-reactive Elements	iii) Alkali Metals (b)
d) Elements of group 3 to 12	iv) Alkaline earth metals (f)
e) Radioactive Elements	v) Halogens (a)
f) Elements with 2 electrons in the outermost shell	vi) Actinides (e)

* 3. e) Group whose elements have zero valency = Group 18

12) f) A covalent compound formed by an element in Period 2 and a halogen = Carbon tetrachloride, CCl_4

g) Non-metallic element present in Period 3 of Groups 15 and 16 = Phosphorous (P) of Group 15 and Sulphur (S) of Group 16

h) An electrovalent compound formed by an alkaline earth metal and a halogen = Magnesium Chloride, MgCl_2

i) Bridge elements of Period 3 of Group 1, 2 and 3 = Sodium (Na), Magnesium (Mg), Aluminium (Al)

j) Alkaline metal in Period 3 that dissolves in water giving a strong alkali = Magnesium (Mg)

k) Typical elements of Group 14 and 15 = Silicon (Si) and Phosphorous (P)

l) Alkaline earth metal in Period 3 = Magnesium (Mg)

Atomic Number	Element	Electronic Configuration	Element of the Same group
11	Sodium	2, 8, 1	(Ca, N, K) → Potassium (K)
15	Phosphorous	2, 8, 5	(Ba, N, Rb) → Nitrogen (N)
16	Sulphur	2, 8, 6	(F, Cl, O) → Oxygen (O)
9	Fluorine	2, 7	(Ca, Cl, K) → Chlorine (Cl)

6. Write down the word that will correctly complete the sentences :-

a) Relative atomic mass of a light element upto calcium is approximately double its atomic number.

b) The horizontal rows in a periodic table are called periods.

c) Going across a period left to right, atomic size decreases.

d) Moving left to right in the 2nd period, number of valence electrons increases.

e) Moving down in the second group, no of valence electrons remains same.

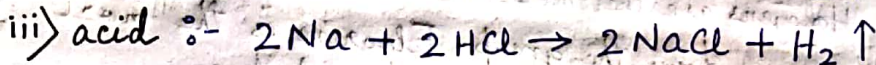
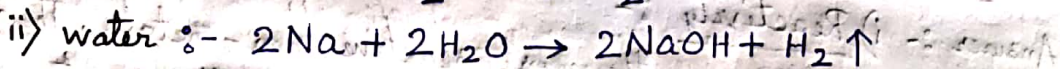
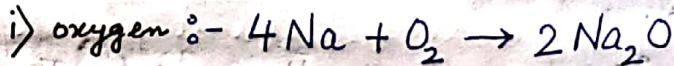
7. a) Name the alkali metals. How many electron(s) they have in their outermost orbit?

Answer :- Lithium (Li), Sodium (Na), Potassium (K), Rubidium (Rb), Caesium (Cs) and Francium (Fr).

(13)

They have one electron in their outermost shell.

b) Take any one alkali metal and write its reaction with



8 a) Name the method by which alkali metals can be extracted?

Answer :- Alkali metals are extracted by the process of electrolysis.

b) What is the colour of the flame of sodium and potassium?

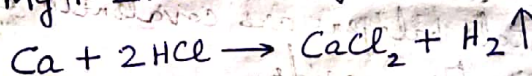
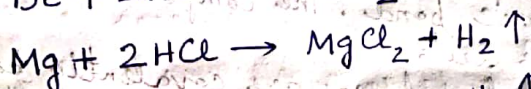
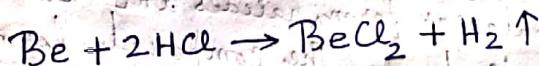
Answer :- Sodium = Golden yellow

Potassium = Pale violet

9 a) Name the first three alkaline earth metals.

Answer :- Beryllium (Be), Magnesium (Mg), Calcium (Ca)

b) Write their reactions with dilute HCl acid.



10 a) How do alkaline earth metals occur in nature?

Answer :- Alkaline earth metals are very reactive in nature, so they exist as oxides or hydroxides, i.e., in combined state in nature.

b) Write the electronic configuration of the 1st two alkaline earth metals.

Beryllium (Be) = 2, 2

Magnesium (Mg) = 2, 8, 2

11a) What is the name given to group 17 elements? Why are they called so?

(14)

Answer :- Group 17 elements are called 'halogens'.

'Halogen' is a Greek word which means 'salt producing'. All the halogens are non-metals and they react with metals to form salts.

b) Comment on the i) reactivity ii) colour iii) physical state of group 17 elements.

Answer :- i) Reactivity :-

Halogens are the most reactive non-metals. Their reactivity decreases down the group. Fluorine is the most reactive and iodine is the least reactive halogen.

ii) Colour :- The intensity of the colour of halogens increases from pale to dark.

Fluorine = Pale yellow gas

Chlorine = Greenish yellow gas

Bromine = Reddish brown liquid

Iodine = Violet solid

iii) Physical State :- Fluorine and chlorine is gas, bromine is liquid and iodine is solid.

12a) State the nature of compounds formed when group 17 elements combine with i) metals ii) non-metals metal

Answer :- i) With metals halogens form halides and are bonded by ionic bond. The compounds formed are known as salts.

ii) With non-metals halogens are covalently bonded. With hydrogen they mainly form acids.

b) Why group 17 elements are highly reactive?

Answer :- Halogens or Group 17 elements have 7 electrons in their outermost shell. So, to attain octet they need to gain only one electron.

Due to this reason they are the most reactive non-metals are highly reactive like alkali metals.

13a) How many electrons do inert gases have in their valence shell?

Inert gases have their valence shell fully filled.

They have eight electrons in their valence shell (except Helium which has two electrons in the valence shell.)

b) Name an element of group 18 which can form compounds.

Answer :- Xenon (Xe).

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14 a) Give one use of :-

i) Helium Gas :- It is used in airships and balloons because it is light and unreactive in nature.

ii) Neon Gas :- It is used in neon lights, a brightly coloured light used in advertising.

15) A element 'A' has 2 electrons in its fourth shell. state :-

i) its atomic no. = 20

ii) its electronic configuration = 2, 8, 8, 2

iii) its valency = 2

iv) position in the periodic table = Group 2, Period 4

v) is it metal or non-metal = Metal

vi) is it an oxidising or reducing agent = Reducing agent

1	2	3	4	5	6	7	8	9	10
Li	Be	B	C	N	O	F	Ne		
Na	Mg	Al	Si	P	S	Cl	Ar		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Cu	Zn
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt
Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt	