



# 3055 BA SANGAM COLLEGE

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## WORKSHEET 7

School: Ba Sangam College

Year: 10

Subject: Basic Science

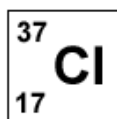
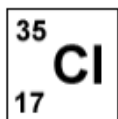
Name: \_\_\_\_\_

Strand	Matter
Sub Strand	Investigating Matter
Content Learning Outcome	Investigate the structure of an atom and explain the properties of common elements in relation to their position on the periodic table.

### Lesson Notes

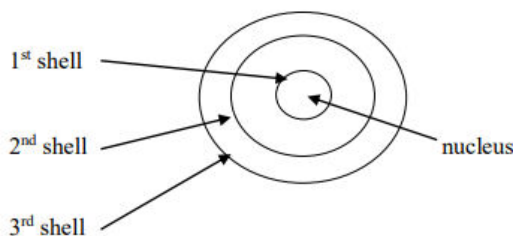
**Isotopes** – occurs when two atoms of the same element have different numbers of neutrons.

- They will have the same atomic number but a different mass number due to the differences in the number of neutrons.
- Example: Compare these two atoms – Chlorine



**Electron shells/Energy levels** - a region of space in which electrons move around the nucleus of an atom.

- The 1<sup>st</sup> shell is close to the nucleus and has room for only 2 electrons.
- The 2<sup>nd</sup> and 3<sup>rd</sup> shell can contain up to 8 electrons in each shell
- The 4<sup>th</sup> shell can hold 18.
- The shell nearest to the nucleus fills up first.



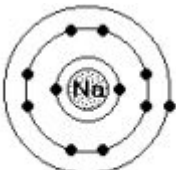
- **Outer shell/valence shell** – the last electron shell in which there are electrons.
- **Valence electrons** – the electrons present in the outer/last shell
- **Octet** – a group of 8 electrons in a single electron shell.
- **Electron configuration** – a group of numbers which shows the arrangement of the electrons in an atom. Example: For the element sodium (Na) .Find the number of energy shells and electrons in each shell. Write the electron configuration.

Sodium (Na) Protons (atomic number) = 11 Electrons = 11

1 st shell = 2 electrons, 2 nd shell = 8 electrons, 3rd shell = 1 electron (Total electrons = 11)

Electron configuration: Na (2, 8, 1)

Electron structure diagram



Na (11) 2.8.1

1<sup>st</sup> shell: 2 e  
2<sup>nd</sup> shell: 8 e  
3<sup>rd</sup> shell: 1 e

Exercise

1. The electrons in the outer shell are called \_\_\_\_\_ electrons. (1 mark)

2. Write down the electron configuration for the given elements.

a. Oxygen (Atomic No=8)

Electron configuration: \_\_\_\_\_ (1 mark)

b. Neon (Atomic No= 10)

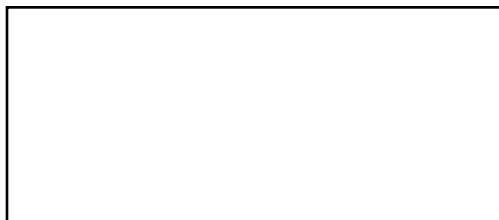
Electron configuration: \_\_\_\_\_ (1 mark)

c. Nitrogen (Atomic number= 7)

Electron configuration: \_\_\_\_\_ (1 mark)

3. Draw the electron structure diagram for:

a. Carbon [Atomic No. = 6] (2 marks)



b. Sulphur [Atomic No. =16] (2 marks)

