

Sadiq Public School

Do the right, fear no man

Subject: Chemistry

Class: S1

Day: Saturday 16th Nov, 2024

This lesson is about isotopes

A. Inquiry

Do you have an apple today? How about yesterday? A lot of the apples you've eaten may all look the same - red and round - but when you cut them apart, you'll see they're all slightly different. For example, let's say one apple has two seeds, a second apple has four seeds, and a third apple has six seeds. But even though each one has a different number of seeds, they are all the same thing: red delicious apples! These apples are a lot like the isotopes found in chemistry. **Isotopes** are atoms with the same number of protons and electrons, but a different number of neutrons. The number of protons in an atom can tell you what element it is. Changing the number of protons an atom has changes what element it is. In this lesson you will learn in detail about isotopes.

B: Information:

1. Definition:

- Isotopes are the atoms of an element which have same atomic number but different mass number.
- Isotopes have same electronic configuration.
- They have same number of protons but different number of neutrons.
- They have similar chemical properties because these depend upon electronic configuration.
- They have different physical properties because these depend upon mass number.



2. Examples:

i. Isotopes of hydrogen:

- The naturally occurring hydrogen is combination of its three isotopes, present in different abundance.
- The three isotopes of hydrogen are named as protium, deuterium, and tritium.

Three Isotopes of Hydrogen



ii. Isotopes of carbon:

- There are two stable isotopes of carbon C-12 and C-13 and one is radioactive isotope C-14. •
- All of them have same number of protons and electrons but different number of neutrons. •



WH



6P + 6NA.Number = 6 Units A.Number = 6 Units A.Number = 6 Units

6P + 7N



6P + 8N A.Mass = 12 Units A.Mass = 13 Units A.Mass = 14 Units

iii. Isotopes of Chlorine:

• There are two isotopes of chlorine Cl-35 and Cl-37.



iv. Isotopes of Uranium:

- There are three isotopes of uranium.
- U-234, U-235 and U-238.



- 1- Please read from your textbook about isotopes and learn by heart (Page 38-39)
- 2- Please watch this brief animated YouTube video on isotopes https://youtu.be/Qd5qoE8mXeU

C: Synthesising/ absorbing information

1. Write in your own words isotopes and different examples in your notes book based on the information you read in the above lesson and what you saw on YouTube video.

2. Define isotopes?

3. Why do the isotopes of an element have different atomic masses?

D: Practising

- 1. How many neutrons are present in C-12 and C-13?
- 2. Which of the isotopes of hydrogen contains greater number of neutrons?
- 3. What are the two isotopes of chlorine?

F: Feedback

• It is essential for all students to access the portal during this period to review the lesson and complete the assigned homework.

Students: Please if you have any question at all about this topic, any words you didn't understand, anything at all please sends me an email and I will reply ASAP.

Class	Teachers' Names	Teachers' Abbreviations	Teachers' Email Addresses	Instructions
S1B, S1C	Samina Aijaz	SA	Saminaijaz907@gmail.com	S1B, S1C students will send their home assignments to their subject teacher (SA) for checking and getting feedback.
S1A	Ali Gull	AG	<u>Aligul313@gmail.com</u>	S1A students will send their home assignments to their subject teacher (AG) for checking and getting feedback.
S1GA ,S1GB	Saba Khawar	SKS	Sabakhawar45@gmail.com	S1GA, S1GB students will send their home assignments to their subject teacher (SKS) for checking and getting feedback.