

In class Activity 8^o - April 19-23th 2021

Exam preparation activities: Atomic theory, Isotopes and Classification of Matter

1. Answer if true or false.

- In an atom electrons revolve around the nucleus in fixed orbits.
- Isotopes of different elements have different atomic numbers.
- Electrons have negligible mass.
- The nucleus of an atom possesses three subatomic particles.
- Calcium-40 and calcium-41 are examples of isotopes.
- Isotopes with a huge number of neutrons are considered radioactive.
- The atomic number stands for the number of neutrons.
- Pure substances have definite chemical and physical properties.
- Elements can exist as atoms (H) and molecules (H₂).
- Molecules can only be separated with chemical means.
- A chemical combination of two elements results in a compound.

2. Complete the following table. (use the periodic table)

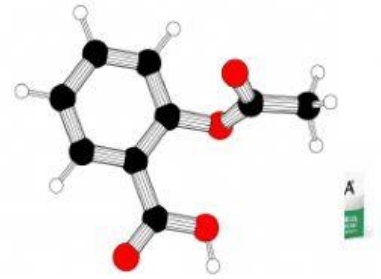
Element	Symbol	Z	A	#P	#E	#N
		9				10
		16				20
	Mo	42	96			
Francium			223			
				1	1	0

3. Match the following:

- | | |
|---------------|---|
| a) Dalton | Electrons orbit according to the uncertainty principle. |
| b) Thompson | First atomic theory, atoms are indivisible. |
| c) Rutherford | Different energy levels in which electrons spin. |
| d) Neils Bohr | Determines the existence of electrons using cathode rays. |
| e) Heisenberg | The existence of a nucleus with protons and neutrons. |

4. Classify the following substances as:

Compound, homogeneous mixture, heterogeneous mixture, element.



5. Calculate the average atomic mass of the following element.



What is the atomic mass of hafnium if, out of every 100 atoms, 5% have a mass of 176, 19% have a mass of 177, 27% have a mass of 178, 14% have a mass of 179, and 35% have a mass of 180.0?

$$(5 \times) + (\times 177) + (\times) + (14 \times) + (\times 180)$$

100

=