

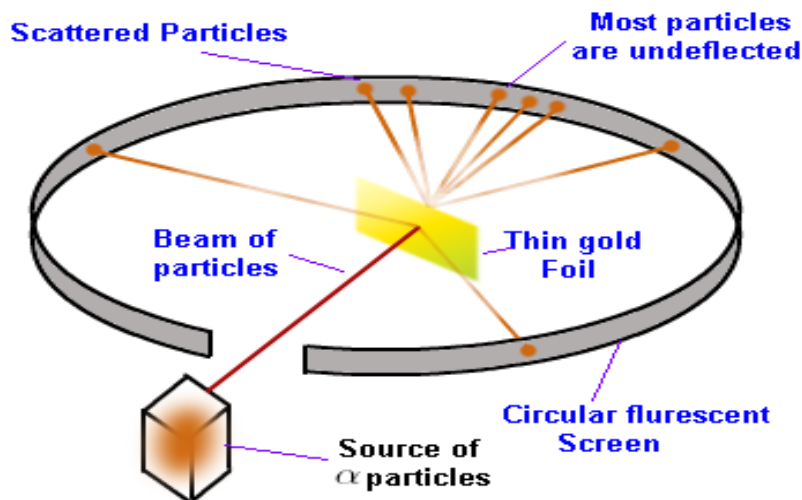
Atomic Model notes

Atomic model: Model used to demonstrate what particles are in the atom.

Past knowledge: An atom is generally in a neutral state. This means it has the same amount of p^+ and e^- .

Rutherford: 1911

Rutherford used a gold foil experiment to come up with his theories.



His theories:

1. The atom is very big and almost empty. T or F?

Why?

2. The atom has a small dense nucleus in the middle. T or F?

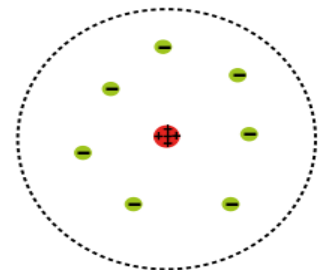
Why?

3. The nucleus is positively charged. T or F?

Why?

4. Electrons revolve around the nucleus and are freely moving. T or F

Why?



Bohr: 1913

Agreed with all of Rutherford's theories except for the placement of the electrons.

Bohr's theory on e⁻:

Electrons were found on orbits which were continually moving. The orbits can hold a specific number of e⁻

Orbit 1 holds up to:

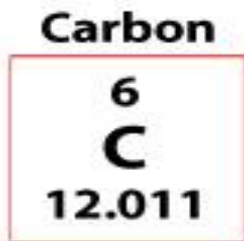
Orbit 2 holds up to:

Orbit 3 holds up to:

Orbit 4 holds up to:

Electrons stick to the orbits because of the speed the orbit is moving at. Electrons can move from one orbit to another when stimulated by heat or electricity.

Rutherford-Bohr Model



Making models

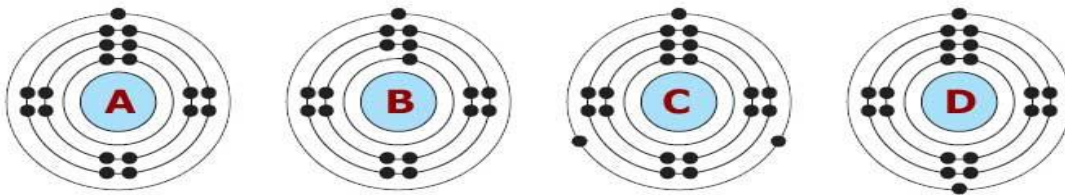
He

B

P

Ca

Which picture is incorrect?



Which elements are the correct pictures?

Past exam questions

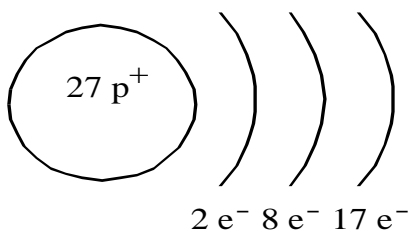
1. Rutherford modified the atomic model after doing experiments where the alpha particles were dispersed by a sheet of gold foil. Considering the statements below, which statements are based on Rutherford's experiments only?

- 1- The number of protons is equal to the number of electrons.
- 2- Protons are concentrated in a small positive space at the center of the atom.
- 3- Atoms consist of mostly empty space.
- 4- Electrons are contained in a positive sphere made up of protons.
- 5- Electrons move about in specific energy levels.

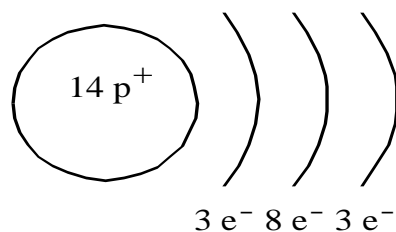
A) 1 and 2 B) 1 and 4 C) 2 and 3 D) 2, 3 and 5

2. Which of the following best represents the aluminum (Al) atom according to the Rutherford-Bohr model?

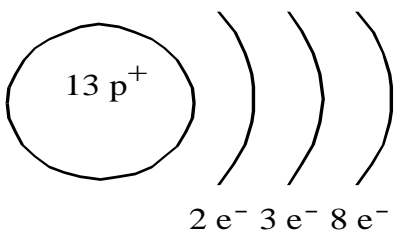
A)



C)



B)



D)

