Edexcel GCSE Physics

Topic 6.1-6.9 - The Nucleus

Flashcards

Give an approximation for the radius of an atom.

Give an approximation for the radius of an atom.

1×10^{-10} metres

What are the three subatomic constituents of an atom?

What are the three subatomic constituents of an atom?

1. Proton
2. Neutron
3. Electron

Where is most of the mass of an atom concentrated?

Where is most of the mass of an atom concentrated?

In the nucleus.

Approximately what proportion of the total radius of an atom is the radius of the nucleus?

Approximately what proportion of the total radius of an atom is the radius of the nucleus?

1/10,000

Describe the arrangement of protons, neutrons and electrons in an atom.

Describe the arrangement of protons, neutrons and electrons in an atom.

- Protons and neutrons are found in the atom's nucleus
- Electrons are found in discrete energy levels around the nucleus

What type of charge does the nucleus of an atom have? Why?

What type of charge does the nucleus of an atom have? Why?

- **Positive charge**
- The nucleus contains protons and neutrons
- Protons have a positive charge
- Neutrons have no charge

Give two ways that an atom's electron arrangement can be changed.

Give two ways that an atom's electron arrangement can be changed.

1. Absorbing electromagnetic radiation
2. Emitting electromagnetic radiation

Explain how an atom's electron arrangement changes when it absorbs EM radiation.

Explain how an atom's electron arrangement changes when it absorbs EM radiation.

- Electrons move to higher energy levels
- They move away from the nucleus

Explain how an atom's electron arrangement changes when it emits EM radiation.

Explain how an atom's electron arrangement changes when it emits EM radiation.

- Electrons move to a lower energy level
- They move towards the nucleus

How does the ratio of electrons to protons in an atom result in the atom having no overall charge?

How does the ratio of electrons to protons in an atom result in the atom having no overall charge?

- The number of protons is equal to the number of electrons
- Protons and electrons have equal and opposite charges, so charge cancels

What do all forms of the same element have in common?

What do all forms of the same element have in common?

The number of protons.

What is the name given to the number of protons in an atom?

What is the name given to the number of protons in an atom?

Atomic Number

What is an atom's mass number?

What is an atom's mass number?

The total number of protons and neutrons in the atom.

What is an isotope of an atom?

What is an isotope of an atom?

An atom of an element that has a different number of neutrons, but the same number of protons.

What property differs between isotopes of an atom?

What property differs between isotopes of an element?

The mass of the atom.

How do atoms turn into positive ions?

How do atoms turn into positive ions?

- They lose one or more of their outer electrons
- Electrons are negatively charged, so the resultant charge of the atom is positive

What are the relative masses of a proton, neutron and electron?

What are the relative masses of a proton, neutron and electron?

- 1 - proton
- 1 - neutron
- 1/1850 - electron

What is the relative charge of a proton?

What is the relative charge of a proton?

+ 1

What is the relative charge of an electron?

What is the relative charge of an electron?

- 1