

# Chapter 4: Structure of the Atom Quiz

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## Introduction to Structure of Atom

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**1. What are the fundamental building blocks of matter?**

- ☐ Atoms and molecules
- ☐ Cells
- ☐ Tissues
- ☐ Organs

**Answer: Atoms and molecules**

**2. Did Dalton propose that atoms are indivisible?**

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Only for gases

**Answer: Yes**

**3. Are atoms really indivisible?**

- ☐ No, they have smaller constituents
- ☐ Yes, absolutely
- ☐ Only hydrogen atoms
- ☐ Only metal atoms

**Answer: No, they have smaller constituents**

**4. What makes atoms of different elements different?**

- ☐ Different constituents
- ☐ Color
- ☐ Smell
- ☐ Taste

**Answer: Different constituents**

**5. When did scientists face the challenge of revealing atom structure?**

- ☐ End of 19th century
- ☐ End of 20th century
- ☐ Beginning of 18th century
- ☐ Middle of 19th century

**Answer: End of 19th century**

# Charged Particles in Matter

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## 1. What happens when you rub a glass rod with silk?

- ☐ It becomes electrically charged
- ☐ It melts
- ☐ It breaks
- ☐ Nothing

**Answer: It becomes electrically charged**

## 2. Where does the charge come from?

- ☐ From within the atom
- ☐ From the air
- ☐ From the silk
- ☐ Magic

**Answer: From within the atom**

## 3. Is an atom divisible?

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Only in space

**Answer: Yes**

## 4. Comb attracting paper pieces is an example of?

- ☐ Static electricity
- ☐ Magnetism
- ☐ Gravity
- ☐ Friction

**Answer: Static electricity**

## 5. Charged particles indicate that atoms have?

- ☐ Internal structure
- ☐ No structure
- ☐ Hard shell
- ☐ Liquid core

**Answer: Internal structure**

# Discovery of Sub-atomic Particles

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**1. Who identified the electron?**

- ☐ J.J. Thomson
- ☐ E. Goldstein
- ☐ Rutherford
- ☐ Bohr

**Answer: J.J. Thomson**

**2. Canal rays led to the discovery of?**

- ☐ Proton
- ☐ Electron
- ☐ Neutron
- ☐ Nucleus

**Answer: Proton**

**3. What is the charge of a proton?**

- ☐ Positive
- ☐ Negative
- ☐ Neutral
- ☐ Variable

**Answer: Positive**

**4. The mass of a proton is approximately \_\_\_\_ times that of an electron.**

- ☐ 2000
- ☐ 100
- ☐ 10
- ☐ 10000

**Answer: 2000**

**5. In general, an electron is represented as?**

- ☐ e<sup>-</sup>
- ☐ p<sup>+</sup>
- ☐ n
- ☐ E

**Answer: e<sup>-</sup>**

## The Structure of an Atom

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**1. Dalton's theory failed because?**

- ☐ Atom is divisible
- ☐ Atom is indivisible
- ☐ Matter is continuous
- ☐ Elements are same

**Answer: Atom is divisible**

**2. Which particles are inside the atom?**

- ☐ Electrons and protons
- ☐ Only electrons
- ☐ Only protons
- ☐ Dust

**Answer: Electrons and protons**

**3. Who was the first to propose a model for atom structure?**

- ☐ J.J. Thomson
- ☐ Rutherford
- ☐ Bohr
- ☐ Dalton

**Answer: J.J. Thomson**

**4. Understanding atom structure required?**

- ☐ New models
- ☐ Better microscopes
- ☐ More elements
- ☐ Less elements

**Answer: New models**

**5. Protons are located?**

- ☐ In the interior of the atom
- ☐ On the surface
- ☐ Outside the atom
- ☐ Nowhere

**Answer: In the interior of the atom**

## Thomson's Model of an Atom

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**1. Thomson compared the atom to a?**

- ☐ Christmas pudding
- ☐ Solar system
- ☐ Brick wall
- ☐ Cloud

**Answer: Christmas pudding**

**2. In Thomson's model, the positive charge is?**

- ☐ Spread all over like a sphere
- ☐ Concentrated in center
- ☐ Absent
- ☐ Negative

**Answer: Spread all over like a sphere**

**3. According to Thomson, the atom as a whole is?**

- ☐ Electrically neutral
- ☐ Positively charged
- ☐ Negatively charged
- ☐ Unstable

**Answer: Electrically neutral**

**4. Electrons in Thomson's model are like?**

- ☐ Seeds in a watermelon
- ☐ Planets around sun
- ☐ Birds in sky
- ☐ Fish in water

**Answer: Seeds in a watermelon**

**5. Did Thomson's model explain experimental results of other scientists?**

- ☐ No
- ☐ Yes
- ☐ Perfectly
- ☐ Mostly

**Answer: No**

## Rutherford's Model of an Atom

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**1. Rutherford used which particles for his experiment?**

- ☐ Alpha particles
- ☐ Beta particles
- ☐ Gamma rays
- ☐ X-rays

**Answer: Alpha particles**

**2. He selected a foil made of?**

- ☐ Gold
- ☐ Silver
- ☐ Aluminium
- ☐ Copper

**Answer: Gold**

**3. Most alpha particles?**

- ☐ Passed straight through
- ☐ Deflected back
- ☐ Stopped
- ☐ Disappeared

**Answer: Passed straight through**

**4. The positively charged centre is called?**

- ☐ Nucleus
- ☐ Orbit
- ☐ Shell
- ☐ Proton

**Answer: Nucleus**

**5. The size of the nucleus is \_\_\_ compared to the atom.**

- ☐ Very small
- ☐ Very large
- ☐ Equal
- ☐ Half

**Answer: Very small**

## Drawbacks of Rutherford's Model

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**1. A particle in circular orbit would undergo?**

- ☐ Acceleration
- ☐ Deceleration
- ☐ Rest
- ☐ Linear motion

**Answer: Acceleration**

**2. During acceleration, charged particles?**

- ☐ Radiate energy
- ☐ Gain energy
- ☐ Stop moving
- ☐ Become neutral

**Answer: Radiate energy**

**3. If Rutherford's model was fully correct, atoms would be?**

- ☐ Unstable
- ☐ Stable
- ☐ Invisible
- ☐ Solid

**Answer: Unstable**

**4. The revolving electron would eventually?**

- ☐ Fall into the nucleus
- ☐ Escape the atom
- ☐ Stop moving
- ☐ Grow larger

**Answer: Fall into the nucleus**

**5. Are atoms actually stable?**

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Only in gas

**Answer: Yes**

## Bohr's Model of Atom

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**1. Bohr proposed that electrons revolve in?**

- ☐ Discrete orbits
- ☐ Random paths
- ☐ Nucleus
- ☐ Straight lines

**Answer: Discrete orbits**

**2. While revolving in discrete orbits, electrons?**

- ☐ Do not radiate energy
- ☐ Radiate energy
- ☐ Lose mass
- ☐ Gain charge

**Answer: Do not radiate energy**

**3. These orbits are also called?**

- ☐ Energy levels
- ☐ Roads
- ☐ Tracks
- ☐ Waves

**Answer: Energy levels**

**4. Which letter represents the first shell?**

- ☐ K
- ☐ L
- ☐ M
- ☐ N

**Answer: K**

**5. Bohr's model explained the?**

- ☐ Stability of the atom
- ☐ Color of atom
- ☐ Weight of atom
- ☐ Speed of atom

**Answer: Stability of the atom**

## Neutrons

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**1. Who discovered the neutron?**

- ☐ J. Chadwick
- ☐ Bohr
- ☐ Rutherford
- ☐ Thomson

**Answer: J. Chadwick**

**2. Neutrons have?**

- ☐ No charge
- ☐ Positive charge
- ☐ Negative charge
- ☐ Variable charge

**Answer: No charge**

**3. Mass of a neutron is nearly equal to?**

- ☐ Proton
- ☐ Electron
- ☐ Alpha particle
- ☐ Atom

**Answer: Proton**

**4. Neutrons are present in the nucleus of all atoms except?**

- ☐ Hydrogen
- ☐ Helium
- ☐ Carbon
- ☐ Oxygen

**Answer: Hydrogen**

**5. Mass of an atom is sum of?**

- ☐ Protons and neutrons
- ☐ Electrons and protons
- ☐ Electrons and neutrons
- ☐ Only protons

**Answer: Protons and neutrons**

## Distribution of Electrons

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**1. The maximum number of electrons in a shell is given by?**

- ☐  $2n^2$
- ☐  $n^2$
- ☐  $2n$
- ☐  $n$

**Answer:  $2n^2$**

**2. Max electrons in K shell ( $n=1$ ) is?**

- ☐ 2
- ☐ 8
- ☐ 18
- ☐ 1

**Answer: 2**

**3. Max electrons in L shell ( $n=2$ ) is?**

- ☐ 8
- ☐ 2
- ☐ 18
- ☐ 32

**Answer: 8**

**4. The outermost shell can hold a maximum of?**

- ☐ 8 electrons
- ☐ 18 electrons
- ☐ 2 electrons
- ☐ 32 electrons

**Answer: 8 electrons**

**5. Shells are filled in a?**

- ☐ Step-wise manner
- ☐ Random manner
- ☐ Reverse manner
- ☐ Fast manner

**Answer: Step-wise manner**

## Valency

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**1. Electrons in the outermost shell are called?**

- ☐ Valence electrons
- ☐ Core electrons
- ☐ Free electrons
- ☐ Nuclear electrons

**Answer: Valence electrons**

**2. Combining capacity of an atom is?**

- ☐ Valency
- ☐ Atomicity
- ☐ Atomic mass
- ☐ Atomic number

**Answer: Valency**

**3. An outermost shell with 8 electrons possesses?**

- ☐ An octet
- ☐ A doublet
- ☐ A triplet
- ☐ Zero

**Answer: An octet**

**4. If an atom has 1 electron in outermost shell, its valency is?**

- ☐ 1
- ☐ 7
- ☐ 0
- ☐ 8

**Answer: 1**

**5. If an atom has 7 electrons in outermost shell, its valency is?**

- ☐ 1
- ☐ 7
- ☐ 8
- ☐ 0

**Answer: 1**

## Atomic Number

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**1. Atomic number is denoted by?**

- ☐ Z
- ☐ A
- ☐ N
- ☐ X

**Answer: Z**

**2. Atomic number is equal to?**

- ☐ Number of protons
- ☐ Number of neutrons
- ☐ Number of electrons
- ☐ Mass number

**Answer: Number of protons**

**3. Elements are defined by?**

- ☐ Number of protons
- ☐ Number of neutrons
- ☐ Mass
- ☐ Valency

**Answer: Number of protons**

**4. Atomic number of Carbon is?**

- ☐ 6
- ☐ 12
- ☐ 14
- ☐ 1

**Answer: 6**

**5. Do all atoms of an element have the same atomic number?**

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Only isotopes

**Answer: Yes**

## Mass Number

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**1. Mass number is denoted by?**

- ☐ A
- ☐ Z
- ☐ M
- ☐ N

**Answer: A**

**2. Mass number is the sum of?**

- ☐ Protons and neutrons
- ☐ Protons and electrons
- ☐ Neutrons and electrons
- ☐ Only protons

**Answer: Protons and neutrons**

**3. Protons and neutrons are collectively called?**

- ☐ Nucleons
- ☐ Electrons
- ☐ Isotopes
- ☐ Ions

**Answer: Nucleons**

**4. Mass of Carbon (6 protons + 6 neutrons) is?**

- ☐ 12 u
- ☐ 6 u
- ☐ 18 u
- ☐ 0 u

**Answer: 12 u**

**5. Where does the mass of an atom reside?**

- ☐ Nucleus
- ☐ Shells
- ☐ Electrons
- ☐ Space

**Answer: Nucleus**

## Isotopes

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**1. Isotopes have same atomic number but different?**

- ☐ Mass numbers
- ☐ Protons
- ☐ Electrons
- ☐ Chemical properties

**Answer: Mass numbers**

**2. Protium, Deuterium, and Tritium are isotopes of?**

- ☐ Hydrogen
- ☐ Carbon
- ☐ Oxygen
- ☐ Chlorine

**Answer: Hydrogen**

**3. Chemical properties of isotopes are?**

- ☐ Similar
- ☐ Different
- ☐ Opposite
- ☐ None

**Answer: Similar**

**4. Isotope of Uranium is used in?**

- ☐ Nuclear reactors
- ☐ Treating cancer
- ☐ Treating goitre
- ☐ Fertilizers

**Answer: Nuclear reactors**

**5. Isotope of Iodine is used for?**

- ☐ Treating goitre
- ☐ Treating cancer
- ☐ Fuel
- ☐ Dating

**Answer: Treating goitre**

## Isobars

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**1. Isobars have same mass number but different?**

- ☐ Atomic numbers
- ☐ Neutrons
- ☐ Protons
- ☐ All of the above

**Answer: All of the above**

**2. Calcium (20) and Argon (18) are?**

- ☐ Isobars
- ☐ Isotopes
- ☐ Isomers
- ☐ Allotropes

**Answer: Isobars**

**3. Do isobars belong to the same element?**

- ☐ No
- ☐ Yes
- ☐ Sometimes
- ☐ Always

**Answer: No**

**4. Isobars have different?**

- ☐ Chemical properties
- ☐ Mass number
- ☐ Nucleon number
- ☐ Nothing

**Answer: Chemical properties**

**5. Mass number of Calcium and Argon pair is?**

- ☐ 40
- ☐ 20
- ☐ 18
- ☐ 38

**Answer: 40**