

Chapter 4: Structure of the Atom Quiz

Introduction to Structure of Atom

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

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

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-
- p+
- n
- E

Answer: e-

The Structure of an Atom

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

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

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

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

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

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

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

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

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

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

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

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