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