**Atomic Structure**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Instructions**

Label the parts of an atom, answer questions related to atomic structure, and use the periodic table to find information about elements.

 **Open ended questions**

1. What are the three main subatomic particles of an atom?

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2. Where are protons and neutrons located in an atom?

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3. What is the charge of an electron?

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4. Using the periodic table, find the atomic number and atomic mass of Carbon (C).

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5. How do you determine the number of neutrons in an atom?

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6. Label the following diagram of a Carbon atom with the correct number of protons, neutrons, and electrons.

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7. Explain the historical significance of one scientist who contributed to the discovery of atomic structure.

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 **Multiple Choice Questions**

1. Which subatomic particle has a positive charge?

a) Proton

b) Neutron

c) Electron

d) Photon

2. Which scientist is credited with the discovery of the electron?

a) John Dalton

b) J.J. Thomson

c) Ernest Rutherford

d) Niels Bohr

3. What is the main difference between protons and neutrons?

a) Protons have a positive charge, while neutrons have no charge.

b) Protons have no charge, while neutrons have a positive charge.

c) Protons are found outside the nucleus, while neutrons are inside the nucleus.

d) Protons are heavier than neutrons.

4. Which part of the atom contains most of its mass?

a) Electron cloud

b) Nucleus

c) Protons

d) Neutrons

5. How many protons does a carbon atom have?

a) 6

b) 12

c) 14

d) 8

6. What would happen if atoms didn't exist?

a) Nothing would change.

b) All matter would cease to exist.

c) Only living things would be affected.

d) The universe would expand.

7. Which element has an atomic number of 8?

a) Nitrogen

b) Oxygen

c) Hydrogen

d) Carbon

8. Which model of the atom is often referred to as the 'planetary model'?

a) Dalton's model

b) Thomson's model

c) Rutherford's model

d) Bohr's model

9. What is the charge of a neutron?

a) Positive

b) Negative

c) Neutral

d) Depends on the atom

10. Who proposed that atoms are indivisible and indestructible particles?

a) John Dalton

b) J.J. Thomson

c) Ernest Rutherford

d) Niels Bohr

**Atomic Structure - Answers**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Instructions**

Label the parts of an atom, answer questions related to atomic structure, and use the periodic table to find information about elements.

 **Open ended questions**

1. What are the three main subatomic particles of an atom?

**Answer:** The three main subatomic particles of an atom are protons, neutrons, and electrons.

2. Where are protons and neutrons located in an atom?

**Answer:** Protons and neutrons are located in the nucleus at the center of the atom.

3. What is the charge of an electron?

**Answer:** An electron has a negative charge.

4. Using the periodic table, find the atomic number and atomic mass of Carbon (C).

**Answer:** The atomic number of Carbon (C) is 6 and its atomic mass is approximately 12.

5. How do you determine the number of neutrons in an atom?

**Answer:** The number of neutrons in an atom can be determined by subtracting the atomic number from the atomic mass (rounded to the nearest whole number).

6. Label the following diagram of a Carbon atom with the correct number of protons, neutrons, and electrons.

**Answer:** The diagram should show 6 protons and 6 neutrons in the nucleus, and 6 electrons in the electron cloud.

7. Explain the historical significance of one scientist who contributed to the discovery of atomic structure.

**Answer:** Ernest Rutherford is historically significant for his gold foil experiment, which led to the discovery of the nucleus and the realization that atoms are mostly empty space.

 **Multiple Choice Questions**

1. Which subatomic particle has a positive charge?

a) Proton

b) Neutron

c) Electron

d) Photon

**Answer: a**

2. Which scientist is credited with the discovery of the electron?

a) John Dalton

b) J.J. Thomson

c) Ernest Rutherford

d) Niels Bohr

**Answer: b**

3. What is the main difference between protons and neutrons?

a) Protons have a positive charge, while neutrons have no charge.

b) Protons have no charge, while neutrons have a positive charge.

c) Protons are found outside the nucleus, while neutrons are inside the nucleus.

d) Protons are heavier than neutrons.

**Answer: a**

4. Which part of the atom contains most of its mass?

a) Electron cloud

b) Nucleus

c) Protons

d) Neutrons

**Answer: b**

5. How many protons does a carbon atom have?

a) 6

b) 12

c) 14

d) 8

**Answer: a**

6. What would happen if atoms didn't exist?

a) Nothing would change.

b) All matter would cease to exist.

c) Only living things would be affected.

d) The universe would expand.

**Answer: b**

7. Which element has an atomic number of 8?

a) Nitrogen

b) Oxygen

c) Hydrogen

d) Carbon

**Answer: b**

8. Which model of the atom is often referred to as the 'planetary model'?

a) Dalton's model

b) Thomson's model

c) Rutherford's model

d) Bohr's model

**Answer: d**

9. What is the charge of a neutron?

a) Positive

b) Negative

c) Neutral

d) Depends on the atom

**Answer: c**

10. Who proposed that atoms are indivisible and indestructible particles?

a) John Dalton

b) J.J. Thomson

c) Ernest Rutherford

d) Niels Bohr

**Answer: a**