



Unit 14 • Atomic Structure and Chemical Bond

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words

[4]

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

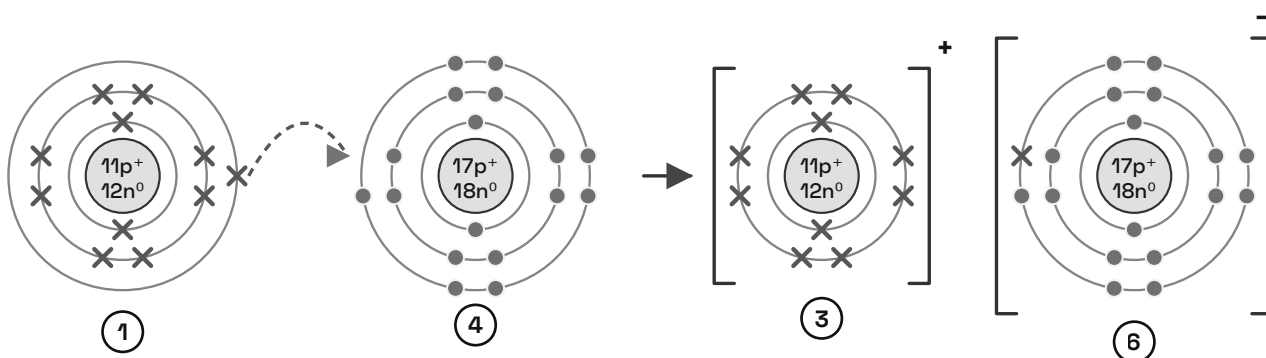
anion atomic number cation covalent nuclear fission nuclear fusion nucleus radical
valence shell valency

Protons and neutrons are packed together in the center of an atom, called the _____. The number of protons in an atom is its _____. The outermost shell of an atom is its _____, and the combining capacity of an atom with other atoms is its _____. An ion formed when an atom loses electrons is a positive ion, or _____. A bond formed by sharing pairs of electrons between two non-metal atoms is a _____ bond. A group of atoms, such as SO_4 or NH_4 , that carries a charge as one unit is a _____. Joining light nuclei to make a heavier one, as in the Sun, is called _____.

2 Label the diagram

[3]

The diagram shows how sodium chloride is formed. Write the atom or ion, with its electronic configuration, or the equation that belongs in place of 1 to 6. Each carries 0.5 mark.

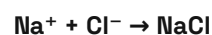


X sodium's electrons

● chlorine's electrons

②

⑤



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____



[5]

Choose the correct option for each of the following questions.

- What is the smallest particle of an element that can take part in a chemical reaction? [1]
 - molecule
 - atom
 - nucleus
 - proton
- Which of the following compounds has a covalent bond? [1]
 - NaCl
 - CaCl₂
 - MgO
 - H₂O
- Which of the following atoms has valency 3? [1]
 - oxygen
 - calcium
 - aluminium
 - chlorine
- What is the molecular formula of magnesium bicarbonate? [1]
 - Mg(HCO₃)₂
 - MgCO₃
 - MgHCO₃
 - Mg(CO₃)₂
- An atom has 12 protons and 10 electrons. What is it? [1]
 - a neutral magnesium atom
 - a neon atom, because it has 10 electrons
 - a negative ion, O²⁻
 - a magnesium ion, Mg²⁺

[3]

Write very short answers to the following questions.

- a. Which scientist showed that the electrons in an atom move in shells with fixed energy? [1]
-
-
- b. Write the electronic configuration of sulphur (atomic number 16). [1]
-
-
- c. How many electrons does a calcium atom (2, 8, 8, 2) lose from its valence shell to reach an octet? [1]

[8]

Write short answers to the following questions.

- a. Write any two differences between a duplet and an octet. [2]
-
-
-



[2]

[2]

[2]

[4]

Write a long answer to the following question.

Explain the formation of an electrovalent bond and a covalent bond, with one example of each.

[illegible]

[6]

Solve the following problems. Show your working. Atomic masses: H = 1, C = 12, N = 14, O = 16, Mg = 24, S = 32, Ca = 40.

[2]

[illegible]

Answer:



