



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 33

1 Key words**[4]**

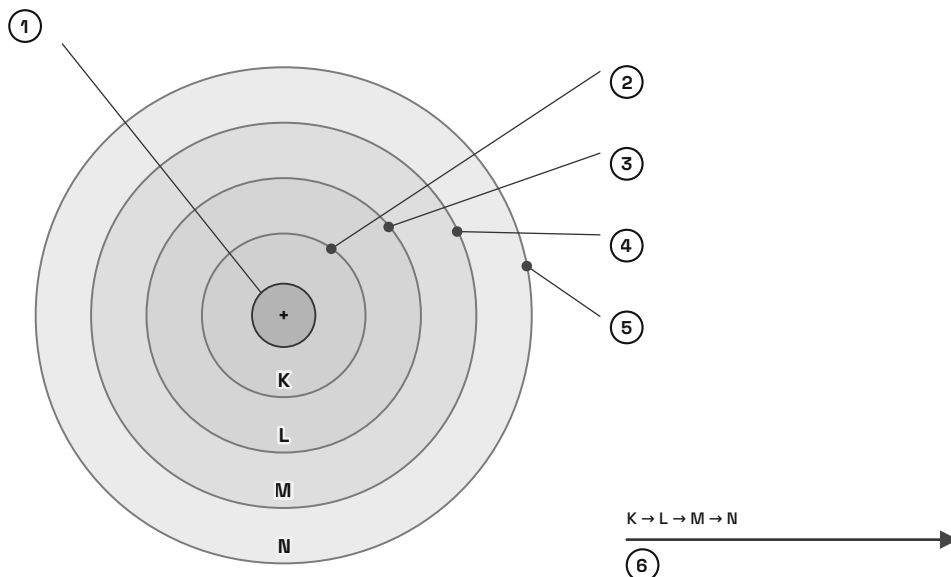
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

atomic number atomic weight matter molecular formula neutrons nucleus period
shells valence electrons valency

Anything that has mass and volume is called _____. The tiny, heavy center of an atom is its _____, which holds the protons and the _____. The number of protons in an atom is its _____. Electrons move around the nucleus in fixed paths called _____. The electrons in the outermost shell of an atom are its _____. The number of electrons an atom loses, gains or shares to become stable is its _____. The short way of writing one molecule with symbols and numbers, such as H_2O , is its _____.

2 Label the diagram**[3]**

The diagram shows the shells (energy levels) of an atom. Write the name, or the shell and the most electrons it can hold (from the $2n^2$ rule), that belongs in place of 1 to 6. Each carries 0.5 mark.



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____



[5]

Choose the correct option for each of the following questions.

- i. Which subatomic particles are in the nucleus of an atom? [1]
 - a. proton and electron
 - b. electron and neutron
 - c. neutron and proton
 - d. proton, neutron and electron
- ii. Which of these elements has a valency of zero? [1]
 - a. hydrogen
 - b. sodium
 - c. neon
 - d. calcium
- iii. Sulphur has 16 electrons. What is its electronic configuration? [1]
 - a. 2, 14
 - b. 2, 8, 6
 - c. 8, 8
 - d. 2, 6, 8
- iv. What is the molecular formula of calcium oxide? [1]
 - a. CaO
 - b. CaO₂
 - c. Ca₂O
 - d. CaCO₃
- v. The table gives the numbers of protons, electrons and neutrons in four elements. Which has the highest atomic weight? [1]

Element	Protons	Electrons	Neutrons
Potassium	19	19	20
Carbon	6	6	6
Oxygen	8	8	8
Argon	18	18	22

- a. potassium b. carbon
c. oxygen d. argon

[3]

Write very short answers to the following questions.

- What is the outermost shell of an atom called? [1]

- How many electrons can the M shell of an atom hold at most? [1]

- An atom has 11 protons and 12 neutrons. What is its atomic weight? [1]



5 Short answers

[6]

Write short answers to the following questions.

- a. Write any two differences between a proton and an electron.

[2]

- b. Give a reason: an atom is electrically neutral.

[2]

- c. What will be the valency of an element whose electronic configuration is 2, 8, 8, 1? Give reasons.

[2]

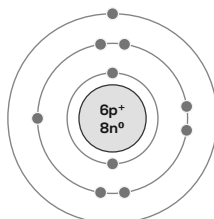
6 Long answers

[8]

Write long answers to the following questions.

- a. Anju drew the atomic structure of sodium as below.

[4]



- i. Find three mistakes in her drawing.
ii. Write the correct electronic configuration of sodium.

- b. The nucleus of an atom has 19 protons and 20 neutrons. Which element is it? Draw the atomic structure of its atom. What information is needed to calculate the atomic weight of an element? Give reasons.

[4]



7 Numerical problem

[2]

Solve the following problem. Show your working.

Fill in the table for one molecule of sulphuric acid, H_2SO_4 , and find its molecular weight. (H = 1, S = 32, O = 16)

Element	Number of atoms	Mass (amu)
H		
S		
O		

Answer: _____

8 Think

[2]

Think, then answer.

Can an atom exist without electrons? Give reasons.

9 Activity: Shells and valency

(not marked)

Use the atomic numbers to fill in the table. Then circle the elements that lose electrons, and underline those that gain them.

Element	Atomic number	Electrons in K, L, M, N	Valence electrons	Valency
Lithium	3			
Nitrogen	7			
Neon	10			
Magnesium	12			
Sulphur	16			
Calcium	20			

