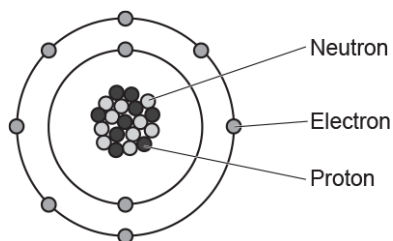


Atomic Structure (F)

1. The diagram shows an atom of an element.



What is the name of the element?

- A Boron
- B Beryllium
- C Fluorine
- D Neon

Your answer

[1]

2. A potassium isotope can be shown as:



What are the numbers of protons, neutrons and electrons in this potassium isotope?

- A 19 protons, 19 neutrons, 20 electrons
- B 19 protons, 20 neutrons, 19 electrons
- C 20 protons, 19 neutrons, 19 electrons
- D 20 protons, 20 neutrons, 19 electrons

Your answer

[1]

3. A sodium atom can be shown as:



How many protons, neutrons and electrons are in a sodium atom?

- A 11 protons, 12 neutrons, 11 electrons
- B 11 protons, 11 neutrons, 12 electrons
- C 12 protons, 12 neutrons, 11 electrons
- D 12 protons, 11 neutrons, 11 electrons

Your answer

[1]

4. In 1803 John Dalton suggested that all matter is made from atoms.

The electron was the first subatomic particle to be discovered by J.J. Thomson in 1897.

J.J. Thomson developed Dalton's model to show the presence of electrons.

What was J.J. Thomson's model called?

- A Bohr model
- B Particle model
- C Planetary model
- D Plum-pudding model

Your answer

[1]

5.

i. Mendeleev did not predict the existence of argon, neon, krypton or xenon.

The electron arrangement of argon is 2,8,8.

What does this tell you about the reactivity of argon?

Explain your answer.

----- [2]

ii. Neon is an element that has isotopes. Two of the isotopes are shown below.



Complete **Table 23.3** to show the number of protons, neutrons and electrons in each neon isotope.

	${}_{10}^{20}\text{Ne}$	${}_{10}^{22}\text{Ne}$
Proton		
Neutron		
Electron		

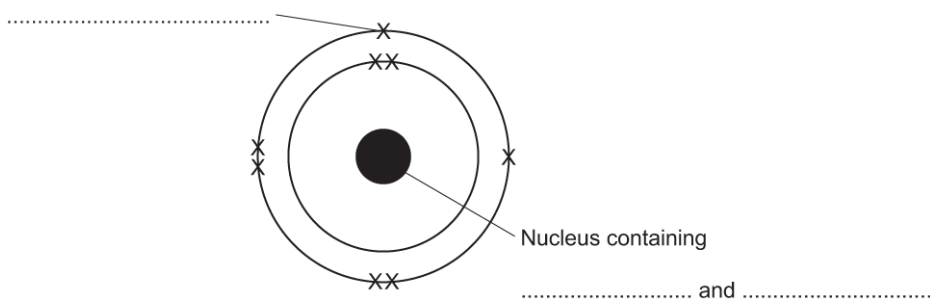
Table 23.3

[3]

6 (a). All elements are made of atoms.

Atoms are made of subatomic particles.

i. Complete the labels on the diagram of an atom.



[2]

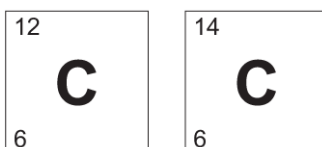
- ii. Atoms have no overall charge.

Explain why.

Use ideas about subatomic particles in your answer.

[1]

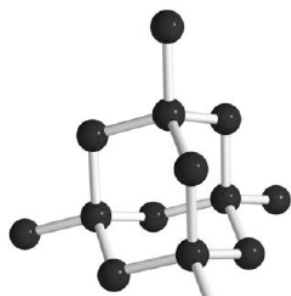
- (b). Look at the information about two **isotopes** of carbon.



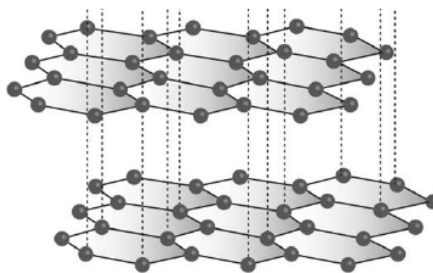
Explain why these are called isotopes.

[2]

- 7 (a). The diagrams show the structures of two forms of carbon.



diamond



graphite

Graphite is a good conductor of electricity.

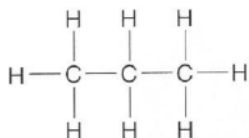
Diamond does not conduct electricity.

Use ideas about structure and bonding in diamond and graphite to explain these observations.

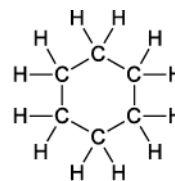
[3]

(b). Carbon can form many thousands of different compounds.

Two examples are shown below.



propane



cyclohexane

Why can carbon form many thousands of different compounds?

.....
 [1]

8 (a). Look at the table. It shows information about some atoms and ions.

Particle	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Electronic structure
A	11	23	11	.....	11	2.8.1
B	9	19	9	10	9	.....
C	.....	37	17	.....	17	2.8.7
D	13	27	.....	.....	10	2.8

Complete the table.

[4]

(b). Particle **A** is a metal **atom**, particle **D** is an **ion**.

Explain why.

.....

 [2]

(c). Element **C** has the electronic structure 2.8.7.

What does this tell you about the position of element **C** in the periodic table?

Explain your answer.

.....

 [4]

9. Tim is separating the colours in a sample of black ink using paper chromatography.

He puts a spot of black ink onto filter paper.

He dips the filter paper into ethanol in a beaker.

What is the name given to **ethanol** in this experiment?

- A. gas phase
- B. mobile phase
- C. solid phase
- D. stationary phase

Your answer

[1]

END OF QUESTION PAPER