1. What is the correct order, from oldest to newest model, for the development of the atomic theory?

A Bohr → Thomson → Rutherford
B Rutherford → Bohr → Thomson
C Thomson → Bohr → Rutherford
D Thomson → Rutherford → Bohr

Your answer ☐ **[1]**

2. An object has a mass of 37.5 kg and a volume of 0.15 m^3.

What is the density of the object?

Use the equation: $\text{density} = \frac{\text{mass}}{\text{volume}}$

A 0.0040 kg / m^3
B 2.5 kg / m^3
C 5.6 kg / m^3
D 250 kg / m^3

Your answer ☐ **[1]**

3. Which word describes the charge on the **nucleus** of an atom?

A Negative
B Neutral
C Positive
D Zero

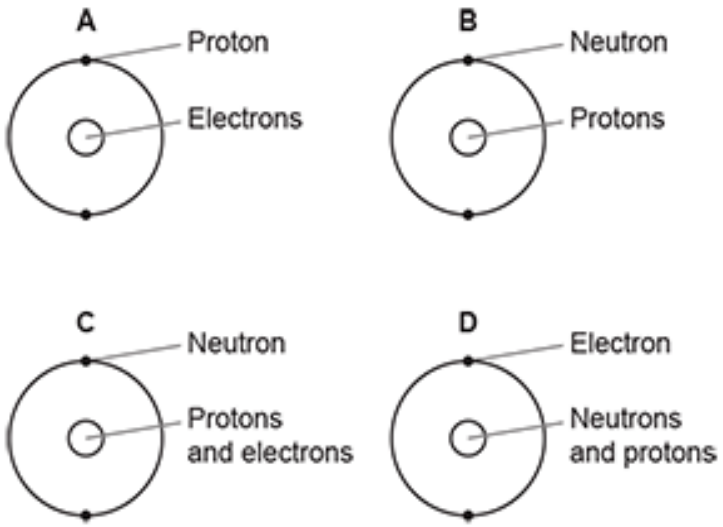
Your answer ☐ **[1]**

4. Which statement describes the nucleus of an atom?

A It contains electrons and protons only.
B It contains neutrons only.
C It contains protons and neutrons only.
D It contains protons, neutrons and electrons.

Your answer ☐ **[1]**

5. Which diagram shows the correct model of an atom?



Your answer ☐ **[1]**

6. Which row describes the particles in a **gas**?

	Distance between particles	Arrangement of particles
A	close together	random
B	close together	regular
C	far apart	random
D	far apart	regular

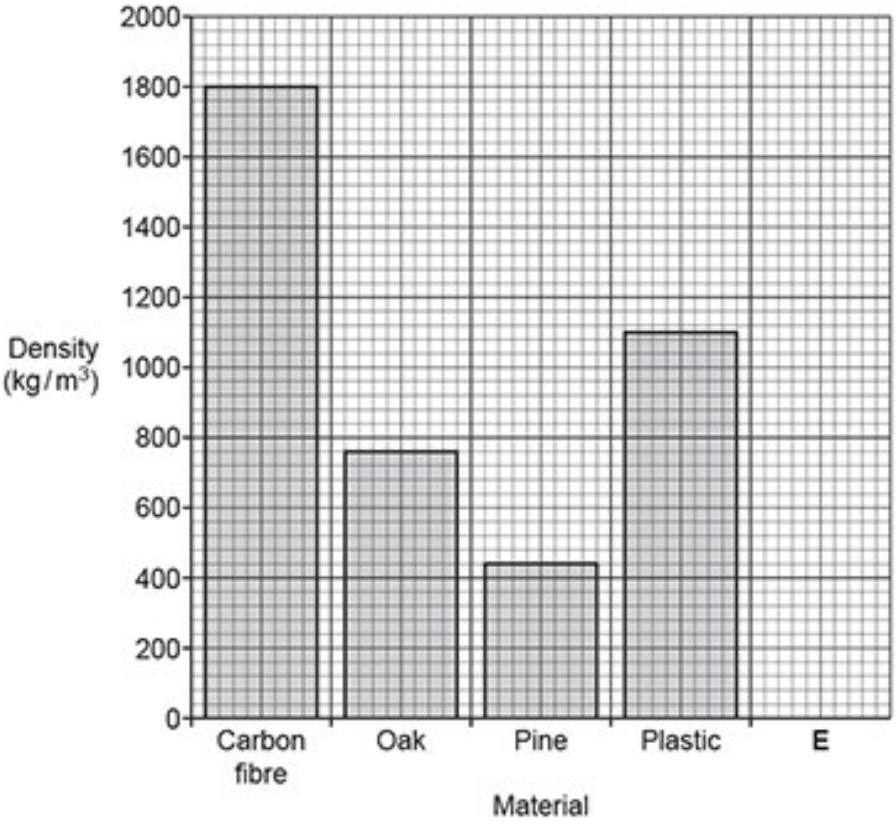
Your answer ☐ **[1]**

7(a). A student investigates density using cubes made of different types of material.

Each cube has dimensions of 5 cm × 5 cm × 5 cm.

The table and the bar chart show the student's results.

Material	Density (kg / m^3)
carbon fibre	1800
oak	760
pine	520
plastic	1100



i. The student makes a mistake when drawing one of the bars.
Identify the mistake that the student has made.

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[1]

ii. Water has a density of 1000 kg / m^3. Draw a bar for water in space **E** on the bar chart.

[1]

iii. The student wants to make a simple solid toy boat which can carry a heavy load.

Suggest which material the student should use. Explain your answer.

Material: _____

Explanation: _____

_____

[2]

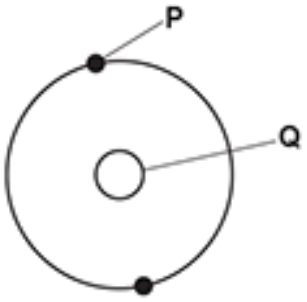
(b). Which **two** properties affect the density of an object?

Put a (ring) around the **two** correct answers.

mass of particles	**particle arrangement**	**position on Earth**	**specific heat capacity**

[2]

8. The diagram shows a simple model of an atom.



Suggest why the model of the atom has changed over time.

_____

_____

_____

_____**[2]**

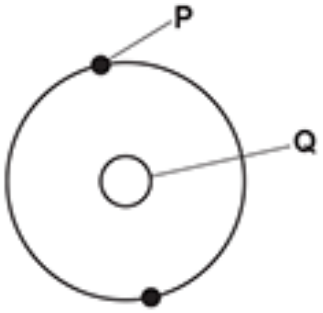
9. A student investigates density using cubes made of different types of material.

Each cube has dimensions of 5 cm × 5 cm × 5 cm.

Calculate the volume of **one** cube.

Volume = ... cm^3 **[1]**

10. The diagram shows a simple model of an atom.



Answer the questions using words from the list.

electron	**negative**	**neutral**	**neutron**	**nucleus**	**proton**

i. What is the name of the part of the atom labelled **Q**?

_____ **[1]**

ii. Which **two** particles are found within part **Q**?

_____ and _____ **[2]**

iii. What is the name of the particle labelled **P**?

_____ **[1]**

iv. What is the overall charge on an atom?

_____ **[1]**

END OF QUESTION PAPER