Atomic structure and the periodic table

Chemistry Paper 1 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 A science museum in Leeds is making a wall display called *How our picture of the atom changed*.

Describe how the model of the atom developed from the plum pudding model to the model used today. Include the evidence that led to each change.

(6 marks)

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2 Oliver investigated three group 1 metals. He dropped a 0.1 g piece of each metal into a large trough of water and timed how long it took to react completely.

Metal	Melting point in °C	Time to react completely in s
lithium	181	85
sodium	98	22
potassium	63	3

Use the data to describe the trends in group 1. Predict the results for rubidium, which is below potassium. Explain the trend in reactivity in terms of the structure of the atoms.

(6 marks)

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3 A heritage railway in Cornwall uses iron for its rails, bolts and wheels. Sodium is also a metal, but it could never be used to build anything like this.

Sodium is in group 1. Iron is a transition metal. Compare the physical and chemical properties of sodium and iron.

Separate science only

(6 marks)

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4 **Higher tier**

Priya added a few drops of halogen solutions to solutions of potassium halides.

Halogen added	potassium chloride	potassium bromide	potassium iodide
chlorine	-	turns orange	turns brown
bromine	no change	-	turns brown

Explain these results. In your answer include the trend in reactivity in group 7 in terms of electrons, an ionic equation for one reaction, and which species are oxidised and reduced. (6 marks)

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5 After a storm, a camping group in Snowdonia collects water from a puddle near the coast. The water contains mud and dissolved salt.

Three members suggest ways to get drinkable water:

- **Femi:** pour the water through filter paper.
- **Grace:** let the mud settle, then heat the water in an open pan until only salt is left.
- **Tariq:** filter the water, then use simple distillation, collecting the liquid that condenses.

Evaluate the three methods and decide which is best. (6 marks)

End of questions | Total 30 marks

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