Chemical analysis

Chemistry Paper 2 | 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 food lab in Bristol buys benzoic acid, a preservative, from three suppliers. Pure benzoic acid melts at 122 °C. A technician, Ewan, measures the melting range of each sample.

Sample	Starts to melt in °C	Fully melted in °C
X	122	122
Y	114	119
Z	108	117

The label on sample Y says "100% pure, nothing added".

Use the data to decide which samples are pure. Explain what the word "pure" means to a chemist and why the label on Y may be misleading.

(6 marks)

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2 Trading standards officers in Cardiff test the red colouring in a bag of imported sweets. They suspect it contains dye D, which is not allowed in UK food. They run a paper chromatogram with water as the solvent. The solvent moves 8.0 cm.

Substance	Number of spots	Distance moved by spots in cm
sweet colouring	2	2.4 and 5.6
allowed dye A	1	2.4
allowed dye B	1	4.8
banned dye D	1	5.6

Evaluate whether the sweets contain the banned dye. Include R_f values in your answer. (6 marks)

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3 A teacher in Belfast has four racks of sealed test tubes, labelled 1 to 4. All the tubes in one rack contain the same gas, but the labels saying which gas it is have fallen off. She knows the gases are hydrogen, oxygen, carbon dioxide and chlorine. All four gases are colourless or nearly colourless in a test tube.

Plan how a student could identify each gas safely. Give the result expected for each gas. (6 marks)

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4 Aisha works in a school prep room in Leicester. She has four white solids in unlabelled jars. They are lithium chloride, sodium bromide, magnesium sulfate and potassium carbonate. All four dissolve in water.

Plan a series of tests Aisha could use to identify each solid. Give the result expected for each test.

Separate science only

(6 marks)

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5 A water company in Yorkshire needs to check the amounts of sodium, potassium and calcium ions in drinking water samples. A trainee, Tomasz, suggests using flame tests. His supervisor says the lab should use flame emission spectroscopy.

Compare flame tests with flame emission spectroscopy for this job.

Separate science only

(6 marks)

End of questions | Total 30 marks

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