

ACTIVITY 3 – Assigning AOs to questions

Assign an AO to each of the following questions/part questions

1 Which statement is **not** true for sodium chloride?

- ☐ A sodium chloride conducts electricity in aqueous solution
- ☐ B sodium chloride conducts electricity when molten
- ☐ C sodium chloride has a molecular structure
- ☐ D sodium chloride has a giant structure

12 In an experiment, 50.0 cm^3 of 1.0 mol dm^{-3} HCl(aq) reacts with 50.0 cm^3 of 1.0 mol dm^{-3} NaOH(aq) .

The energy released = 2500 J.

The specific heat capacity of the mixture is $4.18\text{ J g}^{-1}\text{ }^{\circ}\text{C}^{-1}$

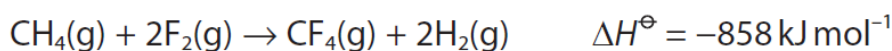
What temperature change occurs in the reaction?

- ☐ A an increase of 6.0°C
- ☐ B a decrease of 6.0°C
- ☐ C an increase of 12.0°C
- ☐ D a decrease of 12.0°C

8 Which of these sulfates is the **least** soluble in water?

- ☐ A CaSO_4
- ☐ B BaSO_4
- ☐ C K_2SO_4
- ☐ D Rb_2SO_4

9 Use the data shown.



What is the standard enthalpy change of formation of methane (CH_4) in kJ mol^{-1} ?

☐ A -1791

☐ B -75

☐ C +75

☐ D +1791

22 This question is about fuels and polymers.

Used coffee grounds have been suggested as a carbon-neutral fuel to replace some fossil fuels.

(a) (i) Explain why coffee grounds might be considered a carbon-neutral fuel. (2)

(ii) Explain how the use of fossil fuels causes climate change. (2)

22 (d) Alkenes, such as ethene, can be used to make polymers.

(i) Write a balanced equation for the polymerisation of ethene using displayed formulae. (1)

(ii) Bananas produce ethene as they ripen.

Suggest one advantage and one disadvantage of using ripening bananas as a source of ethene for polymer production. (2)

(d) A sample of ammonium carbonate was dissolved in distilled water and the solution tested.

Complete the table to give the expected observations and the identity of the observed products.

Test	Observation	Observed product
(i) About 1 cm ³ of barium chloride solution was added to 5 cm ³ of the ammonium carbonate solution	<div></div> <div></div> <div></div>	<div></div> <div></div> <div></div>
(ii) About 5 cm ³ of hydrochloric acid was added to the mixture from (i)	<div></div> <div></div> <div></div>	<div></div> <div></div> <div></div>

(2)

(2)