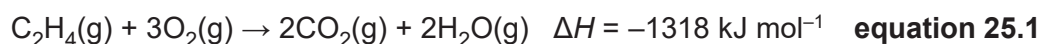


AS Level Chemistry A
H032/01 Breadth in chemistry

Question Set 12

1. This question is about alkenes.

(a) The combustion of ethene is shown in **equation 25.1** below.



(i) Explain, in terms of bond breaking and bond forming, why a reaction can be exothermic.

[1]

(ii) Average bond enthalpies are shown in the table.

Bond	Average bond enthalpy /kJ mol ⁻¹
O–H	+464
O=O	+498
C–H	+413
C=O	+805

Calculate the average bond enthalpy, in kJ mol⁻¹, of the C=C bond.

Use the average bond enthalpies in the table and **equation 25.1**.

[3]

(b) An alkene **D** is a liquid at room temperature and pressure but can easily be vaporised.

When vaporised, 0.1881 g of **D** produces 82.5 cm³ of gas at 101 kPa and 373 K.

Determine the molar mass and molecular formula of alkene **D**.

Show all your working.

[5]

Total Marks for Question Set 12: 9

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