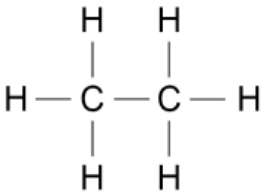
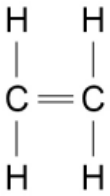
From page 9

Q5.b) Ethane is an alkane and ethene is an alkene. Below is the displayed structural formulae of ethane and of ethene



Ethane



Ethene

Compare ethane with ethene. You should refer to:
· their structure and bonding · their reactions.

Indicative content

Structure and bonding

- both are hydrocarbons
- both contain two carbon atoms (per molecule)
- ethane contains six hydrogen atoms (per molecule)
- (but) ethene contains four hydrogen atoms (per molecule)

- both have covalent bonds
- ethane contains a single C—C bond
- (but) ethene contains a double bond
- both contain C—H bonds

- both small molecules

Reactions

- both react with oxygen in complete combustion reactions
- to produce water and carbon dioxide
- both react with oxygen in incomplete combustion reactions
- to produce water, carbon monoxide and carbon
- incomplete combustion is more likely with ethene

- ethene decolourises bromine water
- (but) ethane does not decolourise bromine water

- ethene is more reactive (than ethane)
- ethene can react with hydrogen (to produce ethane)
- ethene can react with water (to produce ethanol)
- ethene can react with halogens (to produce halogenoalkanes)
- ethene can undergo addition reactions
- ethene can polymerise (to produce poly(ethene))

ignore physical properties
ignore references to flammability

[6 marks]

AQA June 20 H Q3.3