

**AQA, OCR, Edexcel**

**GCSE Science**

# **GCSE Chemistry**

Alkenes, Alcohols and  
Carboxylic Acids  
Answers

**M M E**

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Total Marks: /41

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### **Structure and formulae of alkenes**

Q1: What is an alkene?

A= Hydrocarbon (1 mark) with a double carbon to carbon bond (1 mark).

(2 marks)

Q2: What is the general formula for the homologous series of alkenes?

A =  $C_nH_{2n}$

(1 mark)

Q3: Describe why an alkene is unsaturated?

A= They contain fewer hydrogens/ have capacity to bond to more hydrogens (1 mark)

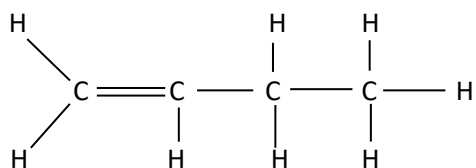
(2 marks)

Q4: Complete the table with the names of the first four alkenes.

Member of homologous series	Alkene
1.	Ethene (1 mark)
2.	Propene (1 mark)
3.	Butene (1 mark)
4.	Pentene (1 mark)

(4 marks)

Q5: Draw a diagram of the alkene  $C_4H_8$ .



(2 marks)

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### Reactions of alkenes

Q6: What is the functional group of an alkene?

A= C = C or carbon- carbon double bond

(1 mark)

Q7: Describe what the combustion reaction of alkenes looks like and why?

A= They burn in air with smoky flames (1 mark) because of incomplete combustion (1 mark).

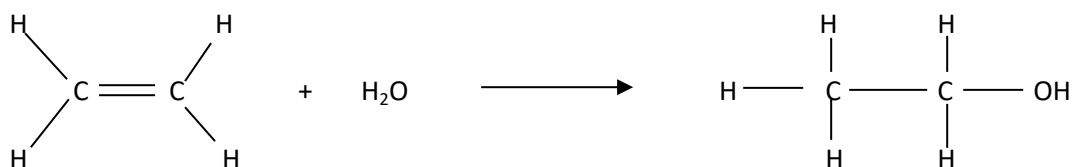
(2 marks)

Q8: When alkenes react with hydrogen, water or the halogens, describe what happens to the double carbon to carbon bond?

A= The addition of atoms (1 mark) so the double carbon to carbon bond becomes single (1 mark).

(2 marks)

Q9: Complete the diagrams for this reaction.



(2 marks)

### Alcohols

Q10: What is the alcohol functional group?

A= OH / hydroxyl (1 mark)

Q11: What are the first four members of the alcohol homologous series?

1. Methanol (1 mark)
2. Ethanol (1 mark)
3. Propanol (1 mark)
4. Butanol (1 mark)

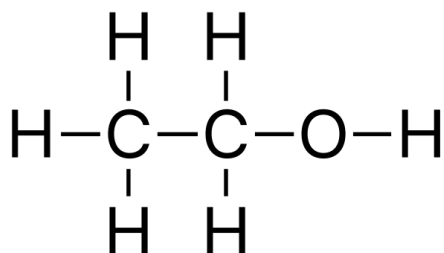
(4 marks)

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Q12: Write the formula and draw the diagram for ethanol.

Formula:  $C_2H_6O$  or  $C_2H_5OH$  (1 mark)

Diagram:



(2 marks)

Total = (3 marks)

Q13: Complete these equations for the reaction of methanol with oxygen.

Complete combustion:



(4 marks)

Q14: Complete the word equation for ethanol and sodium.



(2 marks)

Q15: How are aqueous solutions of ethanol produced?

A= sugar solutions are fermented (1 mark) using yeast (1 mark)

(2 marks)

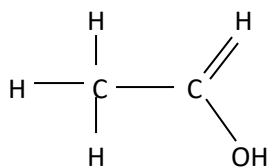
### ***Carboxylic acids***

Q16: What is the functional group of carboxylic acids?

A= COOH

(1 mark)

Q17: The formula for ethanoic acid is  $\text{CH}_3\text{COOH}$ . Draw a diagram of it below.



(2 marks)

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Q18: Carboxylic acids have typical properties of acids; therefore when they react with carbonates what do they produce?

A= a salt (1 mark) carbon dioxide (1 mark) and water ( 1 mark) (3 marks)

Q19: When carboxylic acids react with alcohols, what do they produce?

A= ester (1 mark) and water (1 mark) (2 marks)