1 Compound Q decolourises bromine water.

Compound Q has two carbon atoms in each molecule.

Which statement about compound Q is correct?

A It contains carbon-hydrogen double bonds.

B It has six hydrogen atoms per molecule.

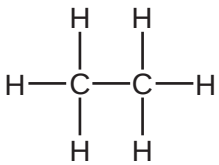
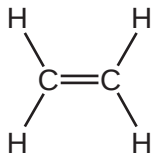
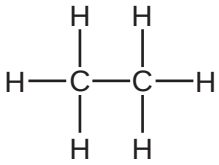
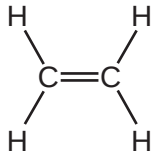
C It has two carbon-carbon double bonds.

D It is produced by cracking alkanes.

2 A hydrocarbon W burns to form carbon dioxide and water.

W decolourises bromine water.

What is the name of W and what is its structure?

	name of W	structure of W
A	ethane	
B	ethane	
C	ethene	
D	ethene	

3 Which reaction is used as a test for alkenes?

A Alkenes burn in air to give carbon dioxide and water.

B Alkenes decolourise aqueous bromine.

C Alkenes form polymers when heated in the presence of a catalyst.

D Alkenes react with steam to form alcohols.

4 Liquid W burns completely to give carbon dioxide and water.

Liquid W is a compound containing carbon, hydrogen and oxygen.

A solution of liquid W in water is pH 7.

What is liquid W?

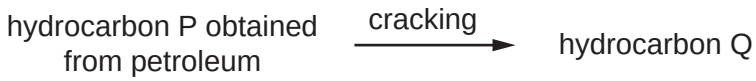
A ethanoic acid

B ethanol

C gasoline

D methane

5 Alkenes are manufactured by cracking hydrocarbons obtained from petroleum.



Which row describes the size of the molecules in hydrocarbons P and Q and the effect of Q on aqueous bromine?

	size of P molecules	size of Q molecules	effect of Q on aqueous bromine
A	large	small	decolourises
B	large	small	no effect
C	small	large	decolourises
D	small	large	no effect

6 Hydrocarbons obtained by fractional distillation of petroleum can be cracked to make useful products.

Which substance could **not** be obtained by cracking propane, M_r 44?

A C_2H_4 **B** C_3H_6 **C** C_4H_8 **D** H_2

7 During the process of cracking hydrocarbons, an ..... 1 ..... is converted into an ..... 2 ..... .

The presence of an ..... 3 ..... can be shown by a visible reaction with ..... 4 ..... .

Which words complete gaps 1, 2, 3 and 4?

	1	2	3	4
A	alkane	alkene	alkene	bromine
B	alkane	alkene	alkene	steam
C	alkene	alkane	alkane	bromine
D	alkene	alkane	alkane	steam

8 Which statement about alkenes is **not** correct?

A They are hydrocarbons.

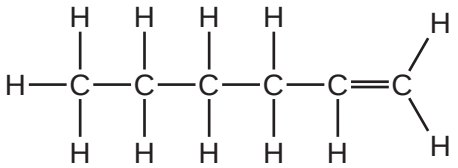
B They are saturated.

C They contain a C=C bond.

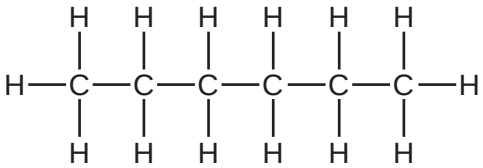
D They form polymers.

9 Which molecular structure shows hexene?

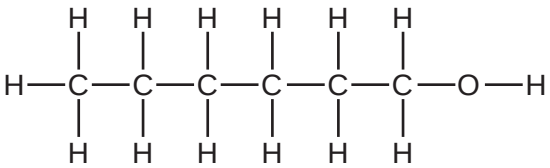
A



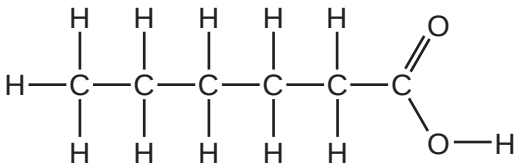
B



C



D



10 Which statement about alkenes is **not** correct?

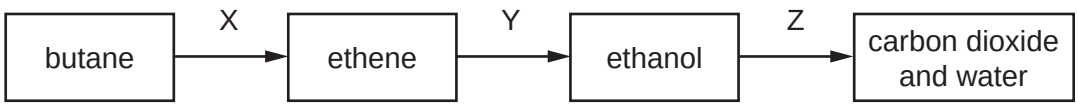
A The functional group is C=C.

B The structural difference between one member and the next is $-CH_3-$.

C They form a homologous series.

D They turn aqueous bromine from brown to colourless.

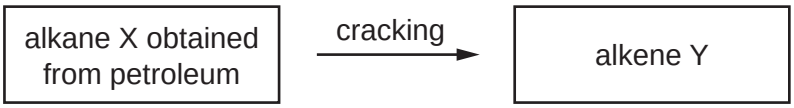
11 The diagram shows a reaction sequence.



Which row names the processes X, Y and Z?

	X	Y	Z
A	cracking	fermentation	respiration
B	cracking	hydration	combustion
C	distillation	fermentation	respiration
D	distillation	hydration	combustion

12 Alkenes are manufactured by cracking hydrocarbons obtained from petroleum.



Which row describes the process of cracking?

	size of X molecules	size of Y molecules	catalyst required	temperature required
A	large	small	no	low
B	large	small	yes	high
C	small	large	no	low
D	small	large	yes	high

13 X, Y and Z are three hydrocarbons.

X $C_2=CH_2$ Y $CH_3–CH=CH_2$ Z $CH_3–CH_2–CH=CH_2$

What do compounds X, Y and Z have in common?

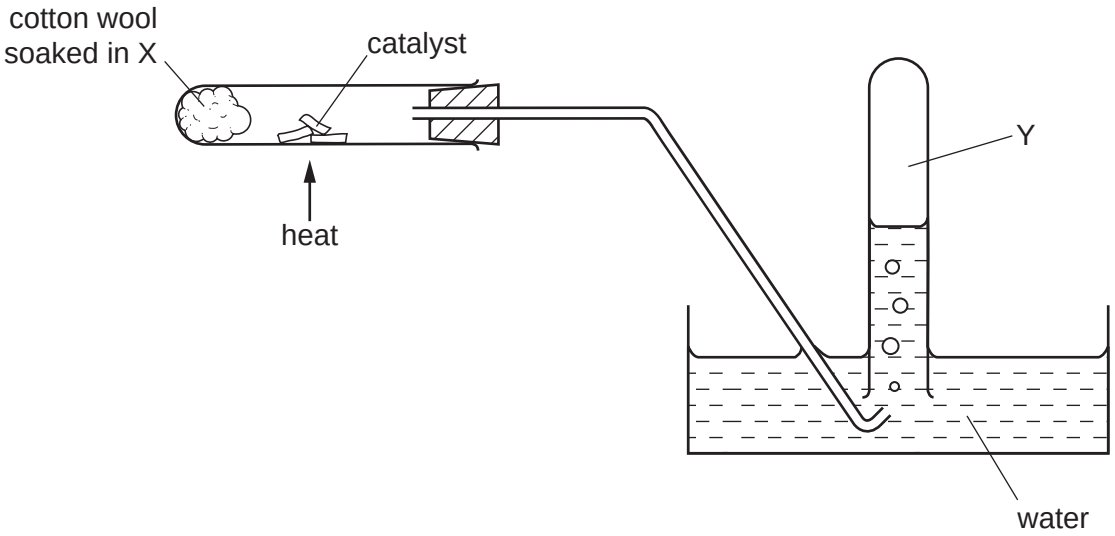
1 They are all alkenes.

2 They are all part of the same homologous series.

3 They all have the same boiling point.

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

14 The diagram shows the cracking of substance X.



Which type of organic compound is found in Y, which is **not** present in X?

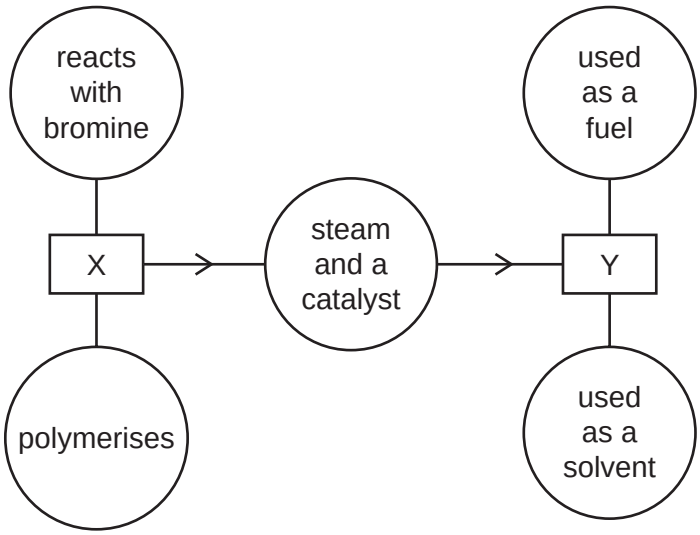
A acid

B alcohol

C alkane

D alkene

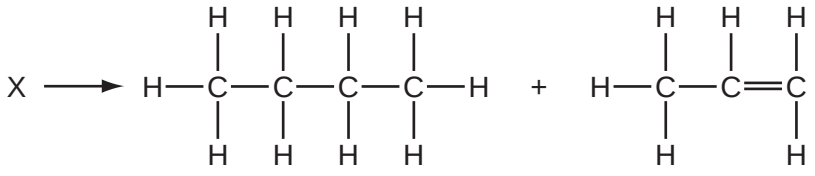
15 The diagram shows some properties of two organic compounds X and Y.



What are X and Y?

	X	Y
A	ethane	ethanoic acid
B	ethane	ethanol
C	ethene	ethanoic acid
D	ethene	ethanol

16 A chemist carried out a cracking reaction on a hydrocarbon, X, and obtained two products, Y and Z.



The chemist then wrote the following statements in his notebook.

1 A molecule of X has 7 carbon atoms.

2 Y is unsaturated.

3 Z will decolourise bromine water.

Which statements are correct?

A 3 only **B** 1 and 2 **C** 1 and 3 **D** 1, 2 and 3

17 Molecule X is both an alkene and a carboxylic acid.

Which row describes X?

	saturated	–COOH present
A	no	no
B	no	yes
C	yes	no
D	yes	yes

18 Which hydrocarbon reacts with steam to produce ethanol?

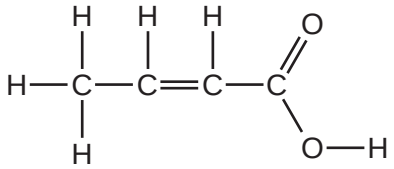
A C_2H_4 **B** C_2H_6 **C** C_3H_6 **D** C_3H_8

19 Alkenes have the general formula C_nH_{2n}.

Which of the following is an alkene?

A CH_2 **B** CH_4 **C** C_3H_6 **D** C_6H_6

20 The structure of a compound is shown.



Which functional groups are present in this compound?

	alcohol	alkene	carboxylic acid
A	✓	✓	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✗	✓

21 When a long chain hydrocarbon is cracked, the following products are produced.

1 C_3H_8

2 C_2H_4

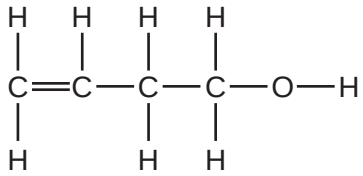
3 C_3H_6

4 C_2H_6

Which products would decolourise bromine water?

A 1 and 4 **B** 2 and 3 **C** 2 only **D** 3 only

22 The diagram shows the structure of a compound.

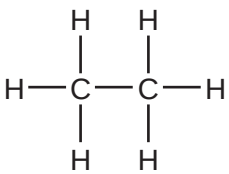


To which classes of compound does this molecule belong?

	alkane	alkene	alcohol
A	no	no	no
B	no	yes	yes
C	yes	no	yes
D	yes	yes	yes

23 Which structure is **incorrect**?

A



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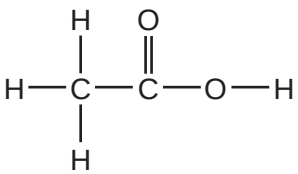

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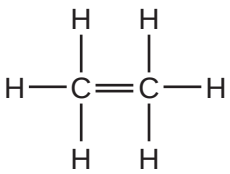

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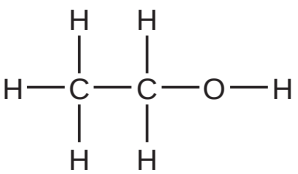
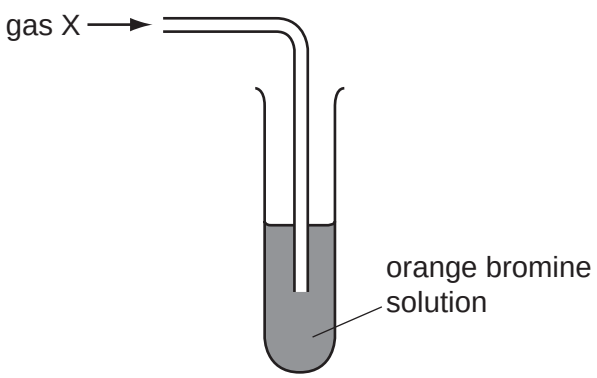


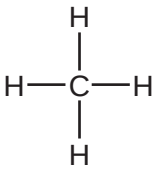
24 The apparatus shows an experiment used to test gas X.



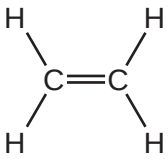
The bromine solution quickly becomes colourless.

What is the structure of gas X?

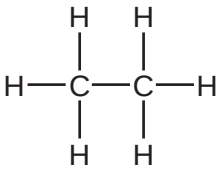
A



B



C



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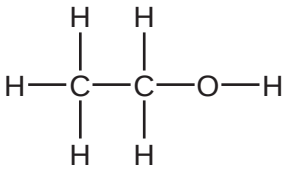

25 Which element is **not** added to a fertiliser?

A aluminium

B nitrogen

C phosphorus

D potassium