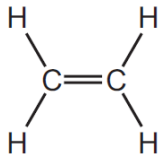
Organic Chemistry – 2019 June

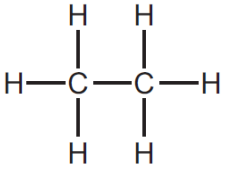
1. 0620/11/M/J/19/No.34

What is the structure of ethanol?

A



B



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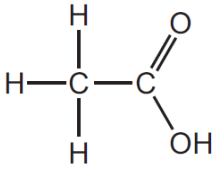

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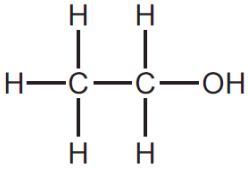
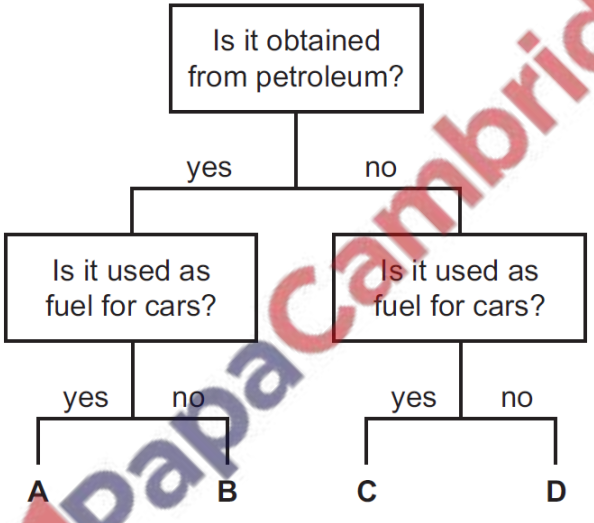


2. 0620/11,12,13,21,22,23/M/J/19/No.35

Which fuel could be gasoline?



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3. 0620/11/M/J/19/No.37

Why is ethanol a member of the homologous series of alcohols but propane is **not**?

A Ethanol has two carbon atoms per molecule but propane has three.

B Ethanol can be made from ethene but propane is obtained from petroleum.

C Ethanol is a liquid but propane is a gas.

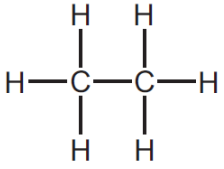
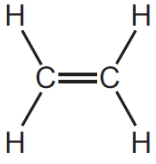
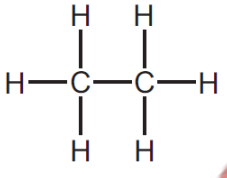
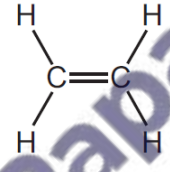
D Ethanol contains the same functional group as other alcohols but propane does not.

4. 0620/11,12,13/M/J/19/No.36

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	

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5. 0620/11,12,13/M/J/19/No.38

Which statements about ethanol are correct?

1 It can be made by fermentation.

2 It is an unsaturated compound.

3 It burns in air and can be used as a fuel.

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

6. 0620/11,21/M/J/19/No.39,38

Which statements about aqueous ethanoic acid are correct?

1 Ethanoic acid contains the functional group –COOH.

2 Ethanoic acid reacts with carbonates to produce hydrogen.

3 Ethanoic acid turns Universal Indicator paper blue.

4 Ethanoic acid has a pH lower than pH 7.

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

7. 0620/11/M/J/19/No.40

Which naturally occurring polymers are found in foods?

1 complex carbohydrates

2 nylon

3 salts

4 proteins

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

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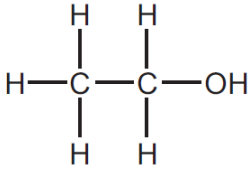
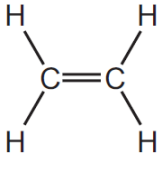
8. 0620/12/M/J/19/No.34

What is the structure of ethanoic acid?

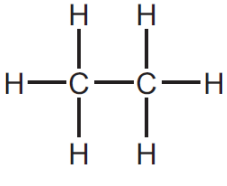
A



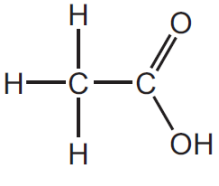
B



C



D



9. 0620/12/M/J/19/No.37

Which statement about homologous series is **not** correct?

A All homologous series are hydrocarbons.

B Members of a homologous series have the same functional group.

C Members of a homologous series have similar chemical properties.

D The alkanes are an example of a homologous series.

10. 0620/12/M/J/19/No.39

What are the properties of aqueous ethanoic acid?

	decolourises bromine water	reacts with calcium carbonate to make carbon dioxide	turns damp red litmus blue
A	✓	✓	✗
B	✓	✗	✓
C	✗	✓	✗
D	✗	✗	✓

11. 0620/12/M/J/19/No.40

Which polymers are found in foods?

1 carbohydrates

2 poly(ethene)

3 protein

4 *Terylene*

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

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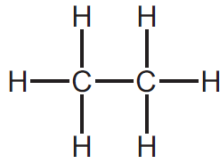
12. 0620/13/M/J/19/No.34

The structures of four compounds are shown.

1



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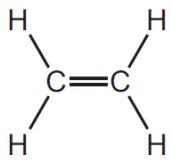
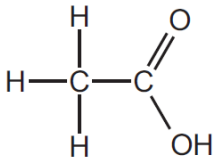


3



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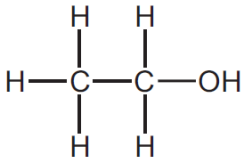

Which row gives the names of the compounds?

	1	2	3	4
A	ethene	ethane	ethanol	ethanoic acid
B	ethane	ethene	ethanoic acid	ethanol
C	ethene	ethane	ethanoic acid	ethanol
D	ethane	ethene	ethanol	ethanoic acid

13. 0620/13,23/M/J/19/No.35,36

Which statements about homologous series are correct?

1 All members have similar chemical properties.

2 All members have the same molecular mass.

3 Ethane and ethene are members of the same homologous series.

4 Ethane and propane are members of the same homologous series.

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

14. 0620/13,23/M/J/19/No.39,38

Which statement about aqueous ethanoic acid is correct?

A It reacts with metal carbonates to form salts, hydrogen and water.

B It reacts with metal oxides to form salts and oxygen.

C It reacts with reactive metals to form salts and hydrogen.

D It turns damp red litmus paper blue.

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15. 0620/13/M/J/19/No.40
Which substances are synthetic polymers?

1 *Terylene*

2 nylon

3 protein

4 poly(ethene)

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

16. 0620/21/M/J/19/No.36
Why is ethanol a member of the homologous series of alcohols but propane is **not**?

A Ethanol has two carbon atoms per molecule but propane has three.

B Ethanol can be made from ethene but propane is obtained from petroleum.

C Ethanol is a liquid but propane is a gas.

D Ethanol contains the same functional group as other alcohols but propane does not.

17. 0620/21/M/J/19/No.37
Chlorine reacts with methane.

Which statements are correct?

1 The reaction takes place in the dark.

2 The reaction of chlorine with methane forms chloromethane.

3 Chloromethane reacts with chlorine to produce dichloromethane.

4 The reaction of chlorine with methane is an addition reaction.

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

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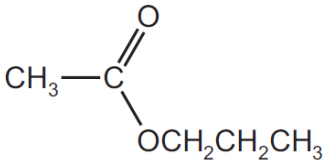
18. 0620/21/M/J/19/No.39

The structure of an ester is shown.



What is the name of the ester?

A ethyl propanoate

B methyl propanoate

C propyl ethanoate

D propyl methanoate

19. 0620/21/M/J/19/No.40

The structure of a polymer is shown.

Which type of polymer is shown and by which process is it formed?

	type of polymer	formed by
A	carbohydrate	addition polymerisation
B	carbohydrate	condensation polymerisation
C	polyester	addition polymerisation
D	polyester	condensation polymerisation

20. 0620/22/M/J/19/No.36

Which statement about homologous series is **not** correct?

A All homologous series are hydrocarbons.

B Members of a homologous series have the same functional group.

C Members of a homologous series have similar chemical properties.

D The alkanes are an example of a homologous series.

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21. 0620/22/M/J/19/No.37

In bright sunlight, ethane and chlorine combine in substitution reactions.

Which compound is **not** formed in these reactions?

A C_2H_3Cl **B** C_2H_5Cl **C** $C_2H_4Cl_2$ **D** HCl

22. 0620/22/M/J/19/No.38

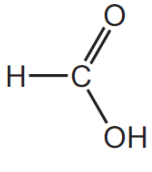
What are the properties of aqueous ethanoic acid?

	decolourises bromine water	reacts with calcium carbonate to make carbon dioxide	turns damp red litmus blue
A	✓	✓	✗
B	✓	✗	✓
C	✗	✓	✗
D	✗	✗	✓

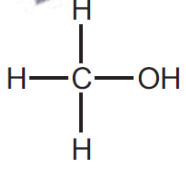
23. 0620/22/M/J/19/No.39

The structures of four molecules are shown.

1



2



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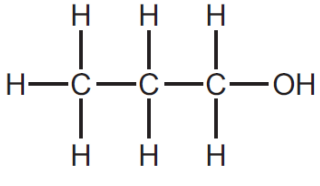

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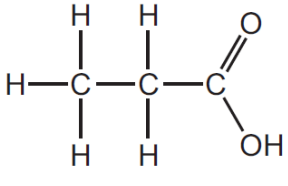

Which molecules react together to form the ester propyl methanoate?

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

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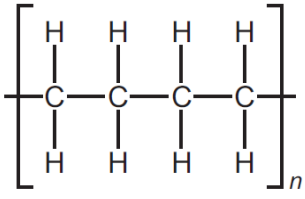
24. 0620/22/M/J/19/No.40

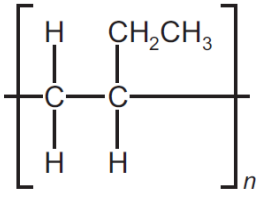
But-1-ene has the structure $CH_3CH_2CH=CH_2$.

What is the structure of poly(but-1-ene)?

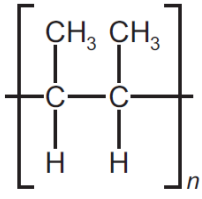
A



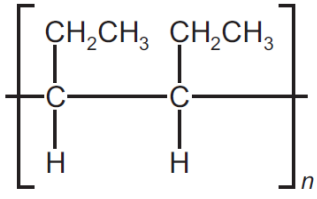
B



C



D



25. 0620/23/M/J/19/No.37

Which type of reaction takes place when methane reacts with chlorine in the presence of ultraviolet light?

A addition

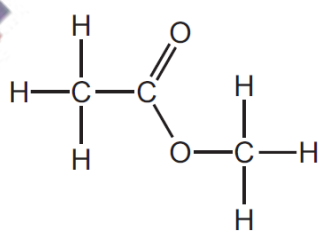
B cracking

C polymerisation

D substitution

26. 0620/23/M/J/19/No.39

The structure of ester W is shown.



Which row gives the names of ester W and the carboxylic acid and alcohol from which it is made?

	name of ester W	carboxylic acid	alcohol
A	ethyl methanoate	ethanoic acid	methanol
B	ethyl methanoate	methanoic acid	ethanol
C	methyl ethanoate	ethanoic acid	methanol
D	methyl ethanoate	methanoic acid	ethanol

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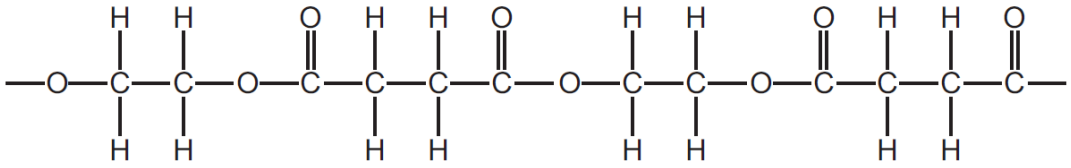
27. 0620/23/M/J/19/No.40

A section of a polymer is shown.



How many different types of monomer units formed this section of polymer?

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

28. 0620/12/F/M/19/No.35

Most objects made from synthetic polymers last for many years.

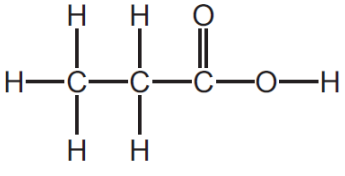
Why do these polymers last for so long?

	chemically unreactive	biodegradable
A	no	no
B	no	yes
C	yes	no
D	yes	yes

29. 0620/12/F/M/19/No.36

The structure of a compound, G, is shown.

G is in the same homologous series as ethanoic acid.



Which row describes some of the properties of an aqueous solution of G?

	produces a gas with magnesium	turns methyl orange yellow
A	no	yes
B	no	no
C	yes	no
D	yes	yes

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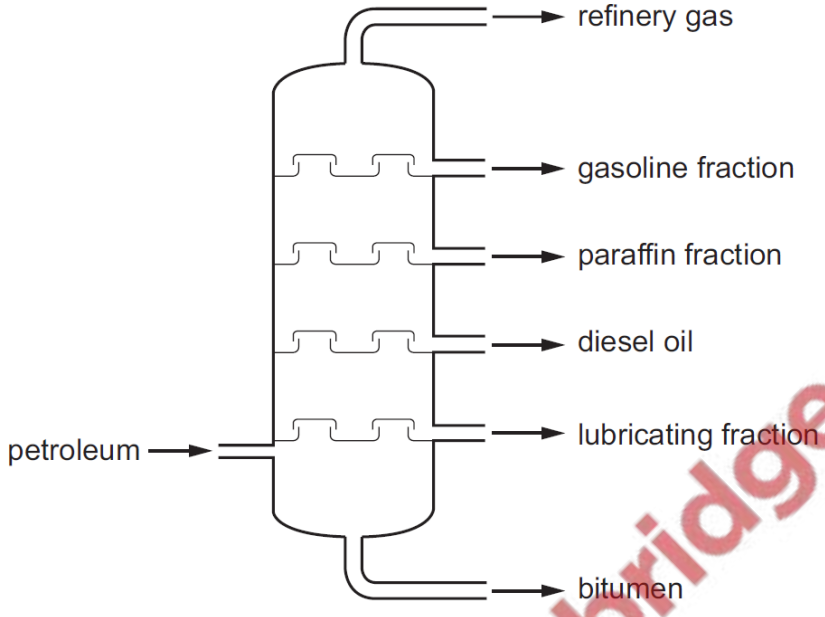
30. 0620/12,22/F/M/19/No.37,36

The fractional distillation of petroleum is shown.



Which fraction is the least volatile?

A bitumen

B diesel oil

C gasoline fraction

D refinery gas

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31. 0620/12/F/M/19/No.38

Which row shows the properties of methane?

	soluble in water	state at room temperature	gives a positive test with aqueous bromine
A	no	gas	no
B	no	gas	yes
C	yes	liquid	no
D	yes	liquid	yes

32. 0620/12/F/M/19/No.39

The formulae of five compounds are listed.

1 C_4H_{10}

2 C_2H_5OH

3 C_4H_9OH

4 C_4H_9COOH

5 $C_5H_{11}OH$

Which compounds are in the same homologous series?

A 1, 3 and 4 only

B 2, 3 and 5 only

C 3 and 4 only

D 3 and 5 only

33. 0620/12/F/M/19/No.40

Which process is used to make an alkene from a long-chain alkane?

A combustion

B condensation

C cracking

D polymerisation

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34. 0620/22/F/M/19/No.37

Which statement about members of a homologous series is correct?

A Successive members differ by CH_3.

B Successive members have a molecular mass that differs by 14.

C They have the same molecular formula.

D They have identical physical properties.

35. 0620/22/F/M/19/No.38

Ethanol is manufactured on a large scale by fermentation.

Which statement about fermentation is correct?

A It is a continuous process.

B A renewable raw material is used.

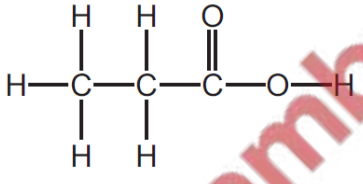
C It is a very fast reaction.

D The ethanol produced is pure.

36. 0620/22/F/M/19/No.39

The structure of a compound, G, is shown.

G is in the same homologous series as ethanoic acid.



Which row describes some of the properties of an aqueous solution of G?

	produces a gas with magnesium	turns methyl orange yellow
A	no	yes
B	no	no
C	yes	no
D	yes	yes

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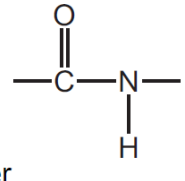
37. 0620/22/F/M/19/No.40

Which statement about polymers is correct?

A Nylon contains the  linkage.

B Nylon is a polyester.

C Propane can be polymerised by addition polymerisation.

D The linkage in *Terylene* contains a carbon-carbon double bond.