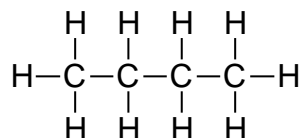
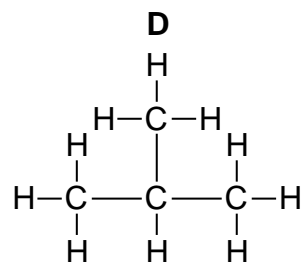
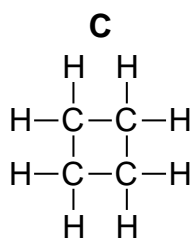
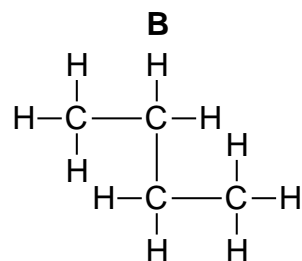
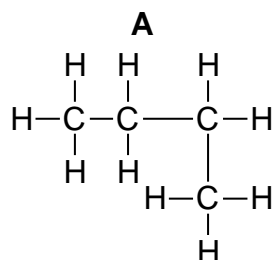


4. The structure of butane maybe represented as:



Which one of the following is an isomer of butane?



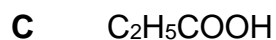
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5. Which one of the following is the formula of an alkene?



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6. Which one of the following is the formula of a possible product when ethanol (C₂H₅OH) is oxidised?



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18. Which one of the following statements concerning alkanes is correct?

- A They undergo addition reactions.
- B They have the same empirical formula.
- C They occur naturally in crude oil.
- D They react with organic acids to form esters.

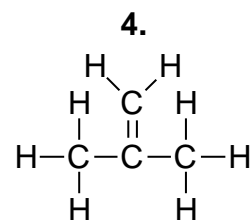
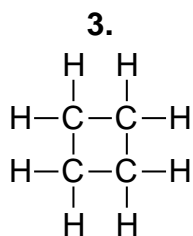
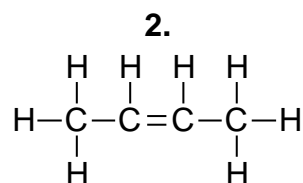
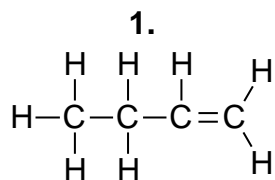
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19. What are the molecular formulae and empirical formulae of ethanoic acid?

	Molecular Formula	Empirical Formula
A	CH ₂ O	C ₂ H ₄ O
B	C ₂ H ₄ O ₂	C ₂ H ₄ O ₂
C	C ₂ H ₄ O ₂	CH ₂ O
D	C ₂ H ₆ O	C ₂ H ₆ O

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20. Four full structural formulae are shown below:

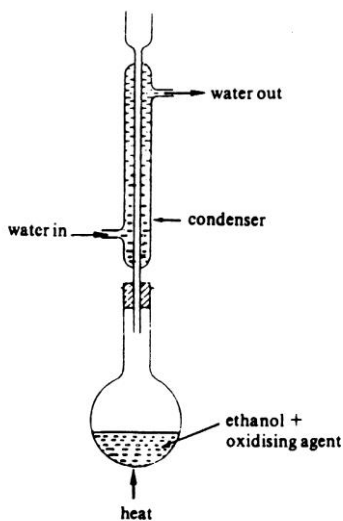


Which of the above are possible structures for an alkene having the molecular formula C₄H₈?

- A 1 and 4 only.
- B 1, 2, 3 and 4.
- C 1, 2 and 4 only.
- D 2 and 3 only.

()

25. Ethanol was oxidised to ethanoic acid using the apparatus shown below:



The purpose of the condenser was to prevent the:

- A Conversion of the ethanol to ethene.
- B Escape of any unreacted ethanol.
- C Reforming of ethanol from the ethanoic acid.
- D Reaction of the ethanoic acid with the ethanol.

()

26. Which one of the following equations represents the complete combustion of C_3H_7OH ?

- A $C_3H_7OH + O_2 \rightarrow C_2H_5COOH + H_2O$
- B $2C_3H_7OH + 3O_2 \rightarrow 6C + 8H_2O$
- C $2C_3H_7OH + 5O_2 \rightarrow 6CO_2 + H_2$
- D $2C_3H_7OH + 9O_2 \rightarrow 6CO_2 + 8H_2O$

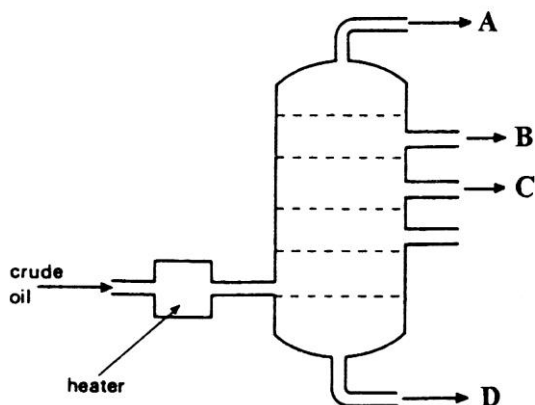
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27. Which one of the following best describes the similarities and differences of compounds which are isomers?

	The Same	Different
A	Chemical properties	Molecular formulae
B	Physical properties	Chemical properties
C	Molecular formulae	Structural formulae
D	Structural formulae	Molecular mass

()

28. The diagram below represents the process of fractional distillation of crude oil. At which position, **A**, **B**, **C** or **D** is bitumen obtained?



()

29. Ethanol is manufactured by a reaction between:

- | | |
|-----------------------------|-----------------------------|
| A Ethane and oxygen. | B ethene and oxygen. |
| C ethane and steam. | D ethene and steam. |

()

30. What reacts at room temperature with ethanol and also with ethanoic acid?

- | | |
|-----------------------------|--------------------|
| A Calcium carbonate. | B Methanol. |
| C Copper(II) oxide. | D Sodium. |

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31. What type of reaction occurs between ethene and hydrogen?

- | | |
|-----------------------|--------------------------|
| A Addition. | B Neutralisation. |
| C Dehydration. | D Oxidation. |

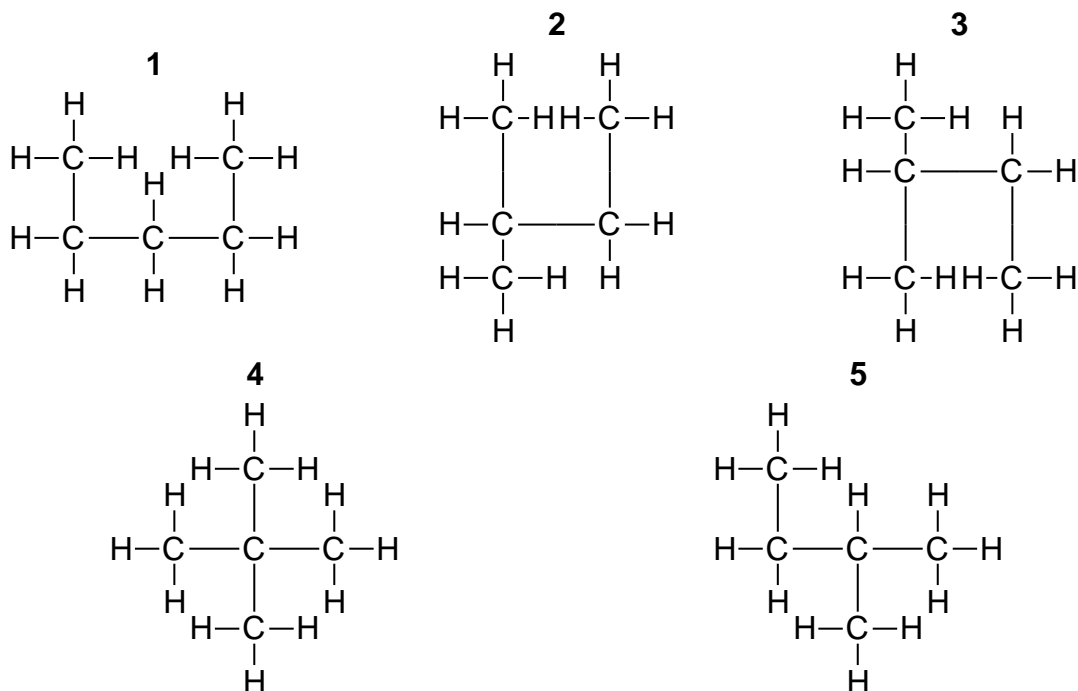
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36. Yeast can be used to convert simple sugars to:

- A** Ethanoic acid and oxygen. **B** Ethanol and oxygen.
C Ethanol and carbon dioxide. **D** Starch and carbon dioxide.

()

37. Five structural formulae are shown below:



Which of the formulae represent the same compound?

- A** 1, 2 and 4. **B** 2 and 3 only.
C 2, 3 and 5. **D** 2 and 4 only.

()

38. In which process do large molecules become smaller molecules?

- A** Fermentation of sugars.
B Catalytic reaction between ethene and steam.
C Reaction between an alcohol and an organic acid.
D Reaction between ethene and bromine.

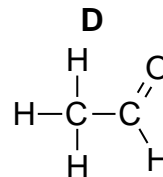
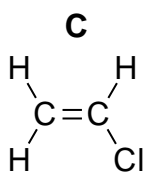
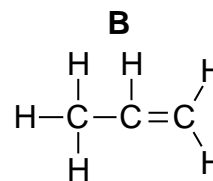
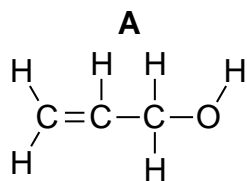
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39. Carbon dioxide and water are formed from poly(ethene) by:

- A** Addition. **B** Combustion.
C Fermentation. **D** Polymerisation.

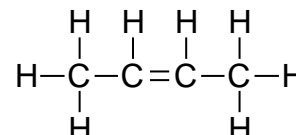
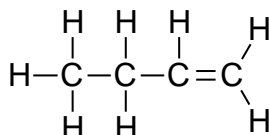
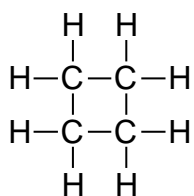
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40. Which structural formula represents an unsaturated hydrocarbon?



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41. The diagram shows the structural formulae of three compounds:



Which statement is correct for all three compounds?

- A They decolourise aqueous bromine.
- B They are carbohydrates.
- C They belong to the same homologous series.
- D They are isomers of one another.

()

42. Ethanol is used in some perfumes and deodorants. Which pair of properties makes it suitable for these uses?

- A It is flammable and mixes easily with water.
- B It is flammable and vaporises easily.
- C It is colourless and has a low freezing point.
- D It is a good solvent and vaporises easily.

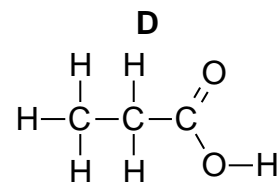
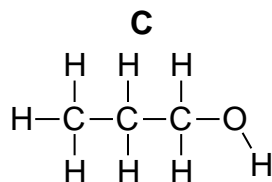
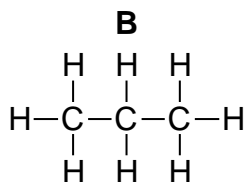
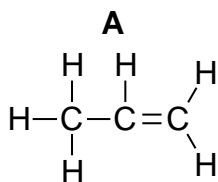
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43. When glasses of wine or beer are left standing in the air for some time they become acidic. Which equation represents this change?

- A $\text{CH}_3\text{CH}_2\text{OH} + \text{CO} \rightarrow \text{CH}_3\text{CH}_2\text{COOH}$
- B $\text{CH}_3\text{CH}_2\text{OH} + \text{O}_2 \rightarrow \text{CH}_3\text{COOH} + \text{H}_2\text{O}$
- C $\text{CH}_3\text{CH}_2\text{OH} + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 3\text{H}_2\text{O}$
- D $2\text{CH}_3\text{CH}_2\text{OH} + \text{O}_2 \rightarrow 2\text{CH}_3\text{COOH} + 2\text{H}_2$

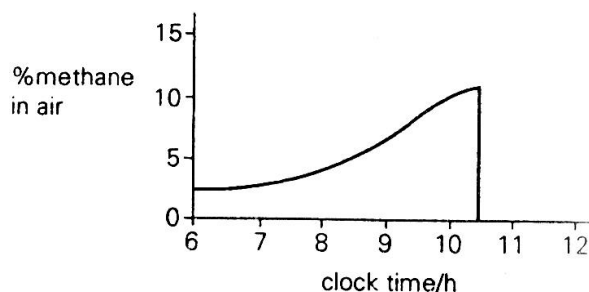
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54. An organic compound **Z** reacts both with sodium hydroxide and with sodium carbonate. What could the structure of **Z** be?



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55. The graph shows the proportion of methane in a coal mine during a working day:

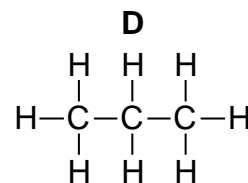
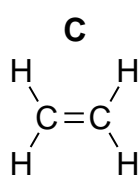
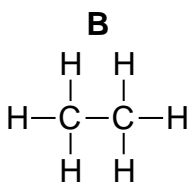
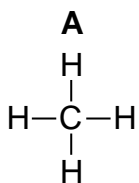


What is most likely to have caused the sudden fall in the percentage methane shown on the graph?

- A** The temperature in the mine was lowered.
- B** An explosive mixture of methane and air ignited.
- C** The ventilator fans were switched on.
- D** Methane stopped seeping into the mine.

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56. Ethane gas was cracked to produce hydrogen gas and another gas **Y** which decolourised aqueous bromine. What is the structural formula of **Y**?



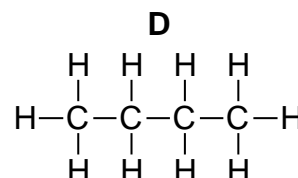
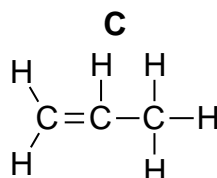
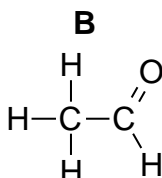
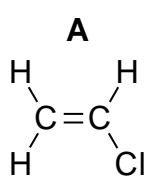
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65. A 10 cm³ sample of gaseous hydrocarbon was completely burnt in oxygen. The total volume of the product was 70 cm³. Which equation represents the combustion of the hydrocarbon?

- A** $\text{CH}_{4(g)} + 2\text{O}_{2(g)} \rightarrow \text{CO}_{2(g)} + 2\text{H}_2\text{O}_{(g)}$
B $\text{C}_2\text{H}_{4(g)} + 3\text{O}_{2(g)} \rightarrow 2\text{CO}_{2(g)} + 2\text{H}_2\text{O}_{(g)}$
C $\text{C}_3\text{H}_{8(g)} + 5\text{O}_{2(g)} \rightarrow 3\text{CO}_{2(g)} + 4\text{H}_2\text{O}_{(g)}$
D $2\text{C}_2\text{H}_6(g) + 7\text{O}_2(g) \rightarrow 4\text{CO}_2(g) + 6\text{H}_2\text{O}(g)$

()

66. Which structural formula represents an unsaturated hydrocarbon?



()

67. What is the formula of the ester formed when propanoic acid (CH₃CH₂COOH) reacts with ethanol?

- A** CH₃CH₂COOCH₃ **B** CH₃COOCH₃
C CH₃CH₂COOCH₂CH₃ **D** CH₃COOCH₂CH₃

()

68. Which statement about ethanol is correct?

- A** It is formed by the catalytic addition of steam to ethene.
B It is an unsaturated compound.
C It is formed by the oxidation of ethanoic acid.
D It reacts with ethyl ethanoate to form an acid.

()

69. Ethanol is manufactured by the reaction between:

- A** Ethane and oxygen. **B** Ethane and steam.
C Ethene and oxygen **D** Ethene and steam.

()

70. In how many of the following can paraffin (kerosene) be used as the energy source?

Aircraft	Air Conditioning Units	Cars
Domestic Cooking	Heavy Lorries	Power Stations

A 1 B 2 C 3 D 4

()

71. Which statements are true about alkanes?

- 1 Their general formula is C_nH_{2n} .
- 2 They are flammable.
- 3 They react with chlorine.

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

()

72. The reaction between a carboxylic acid, $C_xH_yCO_2H$, and an alcohol, $C_nH_{2n+1}OH$, produces an ester. How many hydrogen atoms does one molecule of the ester contain?

A $y + 2n$ B $y + 2n + 1$
C $y + 2n + 2$ D $y + 2n + 3$

()

73. Which compound will react with steam, in the presence of a catalyst, to produce the alcohol $CH_3CH_2CH_2CH_2OH$?

A $CH_3CH_2CH_2COOH$
B $CH_3CH_2CO_2CH_3$
C $CH_3CH=CH_2$
D $CH_3CH_2CH=CH_2$

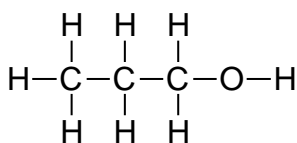
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74. In which reaction does the product have more carbon atoms than the underlined reactant?

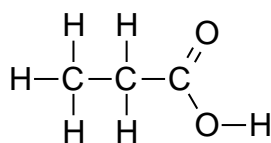
A A carboxylic acid produced from an alcohol and an oxidising agent.
B An ester produced from a carboxylic acid and an alcohol.
C A salt produced from a carboxylic acid and sodium carbonate.
D Carbon dioxide produced from the complete combustion of propane in oxygen.

()

75. Compound X can be oxidised to compound Y.



Compound X



Compound Y

What are compound X and compound Y?

	X	Y
A	Butanol	Propanoic Acid
B	Ethanol	Ethanoic Acid
C	Propanol	Ethanoic Acid
D	Propanol	Propanoic Acid

()

76. One mole of a hydrocarbon X reacted completely with one mole of hydrogen gas in the presence of a heated catalyst. What could be the formula of X?

- A** C₂H₆ **B** C₃H₈ **C** C₅H₁₀ **D** C₇H₁₆

()

77. An ester of molecular formula C₄H₈O₂ was produced by the reaction of an alcohol with a carboxylic acid.

	Alcohol	Acid
1	Methanol	Propanoic Acid
2	Ethanol	Ethanoic Acid
3	Propanol	Methanoic Acid

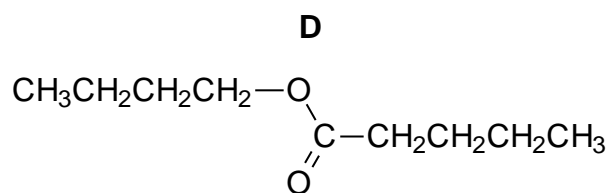
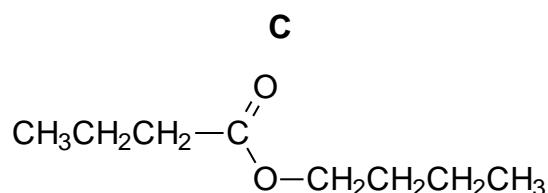
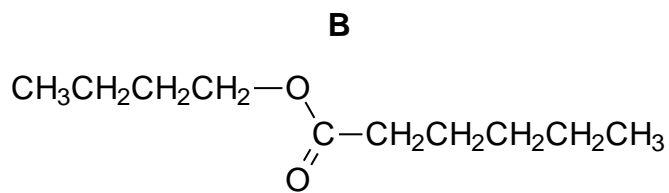
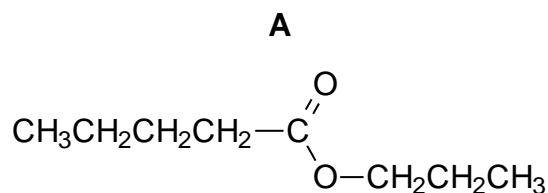
Which of the following could be the alcohol and the acid?

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

()

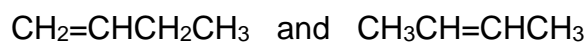
78. Pentanoic acid has the formula $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$.

Which formula represents butyl pentanoate?



()

79. There are two isomers of butene, C_4H_8 , their structures are given below:



How many statements about these two isomers are correct?

- Combustion of 1 mole of each produces equal numbers of moles of CO_2 and H_2O .
- Both decolourise bromine water.
- Both produce the same molecule when reacted with bromine.
- Both produce the same molecule when reacted with hydrogen.
- When polymerised, the same polymer is produced.

A 2

B 3

C 4

D 5

()

80. If one mole of each alcohol is burnt in excess oxygen, which alcohol will provide CO_2 and H_2O in a mole ratio of 3:4?

A CH_3OH

B $\text{C}_2\text{H}_5\text{OH}$

C $\text{C}_3\text{H}_7\text{OH}$

D $\text{C}_4\text{H}_9\text{OH}$

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- Scan the QR code given below to view the answers to this assignment.



http://www.chemist.sg/organic_chem/assignments/multi_choice_ans.pdf