AQA A-Level Chemistry

Intro to organic mark scheme · goes with “Intro to organic” · whiteboardchemistry.com/revision/aqa-a-level-chemistry/exam-questions

Mark schemes

Intro to organic · 25 questions

Q1 · June 2024 · Paper 3 · Q24 · [1 mark]

Answer: **D**

$CH_3CH_2CHO \rightarrow CH_3CH_2CH(OH)CN$

Q2 · November 2020 · Paper 3 · Q22 · [1 mark]

Answer: **A**

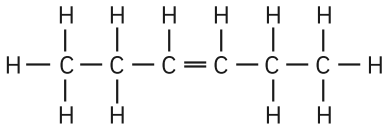
Q3 · November 2021 · AS Paper 2 · Q9 · [1 mark]

Answer: **B**

4-methylpent-2-ene

Q4 · June 2022 · AS Paper 2 · Q3 · [8 marks]

(a)

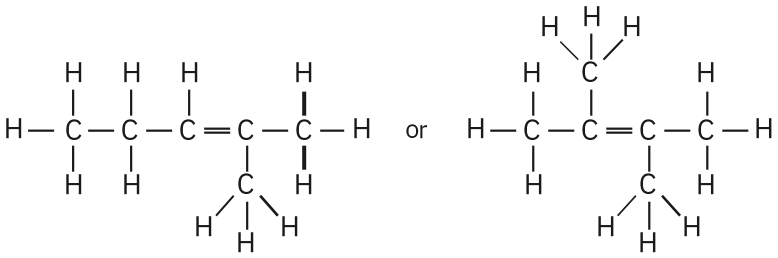


Displayed formula of hex-3-ene (E or Z isomer)

Award 1 mark if correct compounds given in (a) and (b) but they are not displayed formulas

[1 mark]

(b)



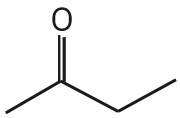
Displayed formula of 2-methylpent-2-ene or 3,4-dimethylbut-2-ene

Allow molecules that are both chain and position isomers, eg 2-methylpent-1-ene, 3-methylpent-1-ene, 4-methylpent-1-ene, 3,3-dimethylbut-1-ene, 2,3-dimethylbut-1-ene, 2-ethylbut-1-ene

Award 1 mark if correct compounds given in part (a) and (b) but they are not displayed formulas

[1 mark]

(c)

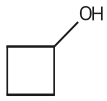


Skeletal formula

Award 1 mark if correct compounds given in part (c) and (d) but they are not skeletal formulas

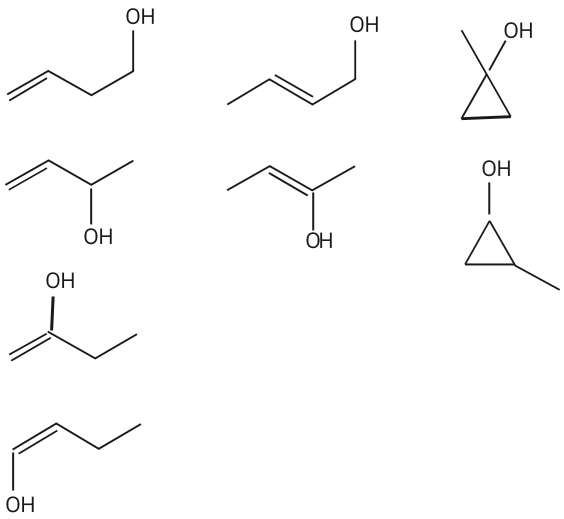
[1 mark]

(d)



Skeletal formula

Alternative answers:



Award 1 mark if correct compounds given in part (c) and (d) but they are not skeletal formulas

[1 mark]

(e) M1 divide %s by relative atomic masses:

$$C\ \frac{17.8}{12.0} = 1.48 \qquad H\ \frac{3.0}{1.0} = 3.00 \qquad Br\ \frac{79.2}{79.9} = 0.99$$

Allow ECF from M1 to M2 for a correct empirical formula for their working in M1

[1 mark]

M2 (1.48 : 3.00 : 0.99 = 3 : 6 : 2) empirical formula = $C_3H_6Br_2$

Allow ECF from M2 to M3/4 for compounds that are saturated halogenoalkanes

[1 mark]

M3,4 any 2 of:

1,1-dibromopropane

1,2-dibromopropane

1,3-dibromopropane

2,2-dibromopropane

[2 marks]

Q5 · June 2024 · Paper 3 · Q25 · [1 mark]

Answer: **D**

Propyl propanoate

Q6 · November 2020 · AS Paper 2 · Q11 · [1 mark]

Answer: **C**

3-fluoro-2,2-dimethylpentane

Q7 · November 2021 · Paper 3 · Q27 · [1 mark]

Answer: **A**

alcohols $C_nH_{2n+2}O$

Q8 · November 2020 · AS Paper 2 · Q5 · [6 marks]

This question is marked using levels of response.

Level 3 5-6 marks	**All stages are covered and each stage is generally correct and virtually complete. (6 v 5) Answer is well structured, with no repetition or irrelevant points, and covers all aspects of the question. Accurate and clear expression of ideas with no errors in use of technical terms.**
Level 2 3-4 marks	**All stages are covered but stage(s) may be incomplete or may contain inaccuracies OR two stages are covered and are generally correct and virtually complete** (4 v 3) Answer has some structure and covers most aspects of the question. Ideas are expressed with reasonable clarity with, perhaps, some repetition or some irrelevant points. If any, only minor errors in use of technical terms.
Level 1 1-2 marks	**Two stages are covered but stage(s) may be incomplete or may contain inaccuracies OR only one stage is covered but is generally correct and virtually complete** (2 v 1) Answer includes statements which are presented in a logical order and/or linked.
0 marks	Insufficient correct chemistry to warrant a mark.

Indicative chemistry

Stage 1

Difference between structural & stereoisomers

1a structural isomers = molecules with same molecular formula but different structure

1b stereoisomers = molecules with same structural formula but different arrangement of atoms in space

Stage 2

Stereoisomers

2a lack of rotation around C=C

2b structures of E- and Z-but-2-ene

2c correct identity of E and Z isomers

Stage 3

Structural isomers

3a different C chain, e.g. methylpropene & but-1-ene / but-2-ene

3b different position of functional group e.g. but-1-ene & but-2-ene

3c different functional group, e.g. cyclobutane & but-1-ene / but-2-ene / methylpropene

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Q9 · November 2021 · Paper 3 · Q23 · [1 mark]

Answer: **C**

CHBr=CHBr

Q10 · November 2021 · AS Paper 2 · Q17 · [1 mark]

Answer: **A**

Q11 · June 2022 · Paper 3 · Q25 · [1 mark]

Answer: **B**

methyl propanoate

Q12 · June 2023 · AS Paper 2 · Q18 · [1 mark]

Answer: **A**

E-3-fluorohex-3-ene

Q13 · June 2024 · Paper 3 · Q26 · [1 mark]

Answer: **D**

3-methylpent-2-ene

Q14 · June 2024 · AS Paper 2 · Q11 · [1 mark]

Answer: **D**

Q15 · June 2016 · AS Paper 2 · Q18 · [1 mark]

Answer: **B**

Q16 · June 2017 · AS Paper 2 · Q14 · [1 mark]

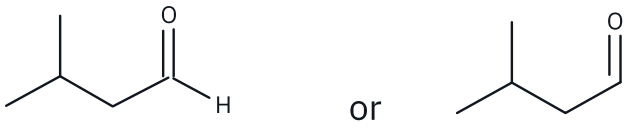
Answer: **C**

Q17 · June 2017 · AS Paper 2 · Q18 · [1 mark]

Answer: **B**

Q18 · June 2017 · AS Paper 2 · Q8 · [3 marks]

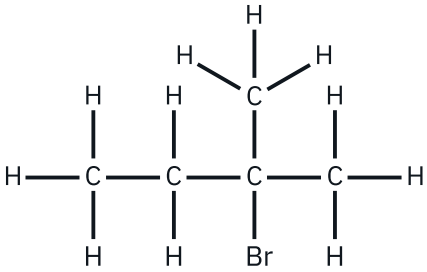
08.1



Must be a skeletal structure

[1 mark]

08.2



Must be a displayed structure

[1 mark]

08.3

Any correct structural representation of alkene with 4 C atoms, either:

but-1-ene or

but-2-ene or

methylpropene

allow butadiene

[1 mark]

Q19 · June 2018 · AS Paper 2 · Q15 · [1 mark]

Answer: **C**

6

Q20 · June 2019 · AS Paper 2 · Q13 · [1 mark]

Answer: **D**

$CH_2{=}CHCH_2CHO$

Q21 · June 2019 · AS Paper 2 · Q14 · [1 mark]

Answer: **C**

4

Q22 · June 2025 · AS Paper 2 · Q12 · [1 mark]

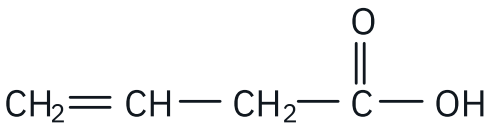
Answer: **D**

Z–3-fluoro-4-methylpent-2-ene

Q23 · June 2025 · AS Paper 2 · Q4 · [4 marks]

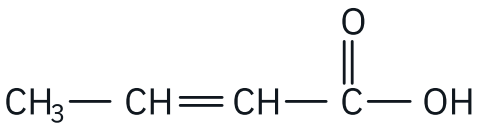
04.1

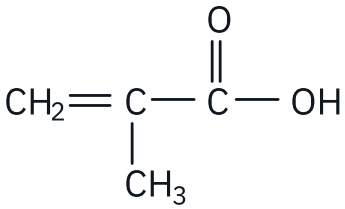
A one of these compounds



B







Allow any correct representation of correct

answers.

[2 marks]

04.2

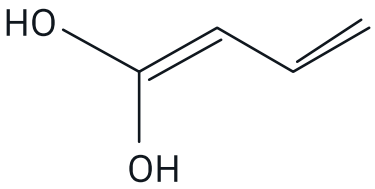
Any molecule with formula $C_4H_6O_2$ containing either:

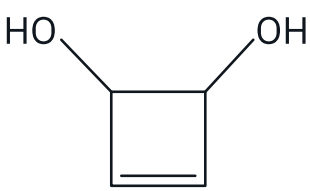
- chain with 2 C=C groups and 2 OH groups

OR

- cyclic compound with 1 C=C group and 2 OH groups

e.g.



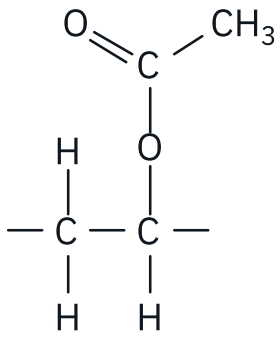


Allow cyclic ethers with one OH and one C=C

Any correct structural representation

[1 mark]

04.3



Ignore any n or brackets

Any correct structural representation

[1 mark]

Q24 · June 2025 · AS Paper 2 · Q8 · [1 mark]

Answer: **B**

3-methylbutanal

Q25 · June 2017 · Paper 3 · Q24 · [1 mark]

Answer: **D**

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