Website: contoureducation.com.au | **Phone:** 1800 888 300
Email: hello@contoureducation.com.au

VCE Chemistry ½

Introduction to Organic Chemistry [2.5]

Test Solutions

25 Marks. 1 Minute Reading. 19 Minutes Writing

Results:

Quiz Questions	_____ / 20
Extension	_____ / 5

Section A: Quiz Questions (20 Marks)

Question 1 (4 marks)

Tick whether the following statements are **true** or **false**.

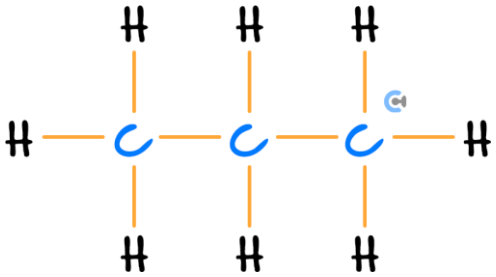
Statement	True	False
a. Organic compounds mainly involve covalent bonds as their intramolecular bonding type.	✓	
b. Carbon can form a maximum of 5 covalent bonds.		✓
c. The "hept" prefix refers to the number 7 and can be used when naming organic compounds.	✓	
d. A semi-structural formula is the same as a structural formula, with the only difference being that instead of drawing out each bond, it is compressed into one line.	✓	
e. When naming organic compounds, we always start from left to right when choosing the longest carbon chain.		✓
f. 2-methylpentane is the same as 4-methylpentane.	✓	
g. When naming alkyl side chains on a hydrocarbon, they are placed in alphabetical order.	✓	
h. Cyclic molecules such as cyclopropane have more hydrogens than their linear equivalents, such as propane.		✓

Space for Personal Notes

Question 2 (5 marks)

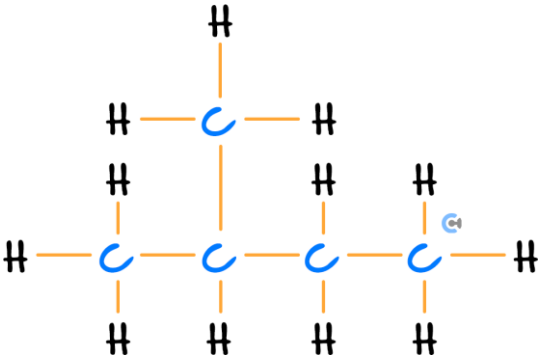
Write the semi-structural formulas, and provide the IUPAC names, for the following organic compounds:

a. (1 mark)



$CH_3CH_2CH_3$ - Propane

b. (1 mark)

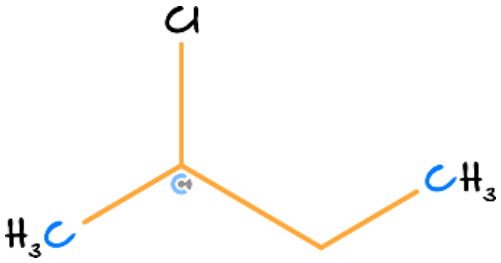


$CH_3CH(CH_3)CH_2CH_3$- Methylbutane

c. (1 mark)

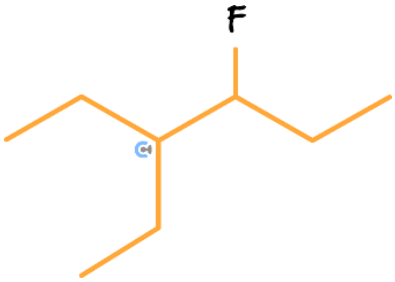
$CH_3CH_2CH_2CH(CH_3)CH_2CH(CH_3)_2$ 2,4-methylbutane

d. (1 mark)



$CH_3CHClCH_2CH_3$ – 2-chlorobutane

e. (1 mark)



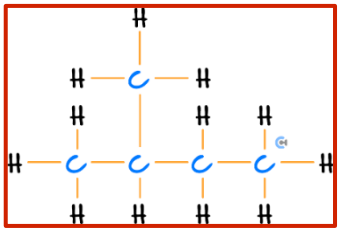
$CH_3CH_2CH(CH_2CH_3)CHFCH_2CH_3$ 3-fluoro-4-ethylhexane

Space for Personal Notes

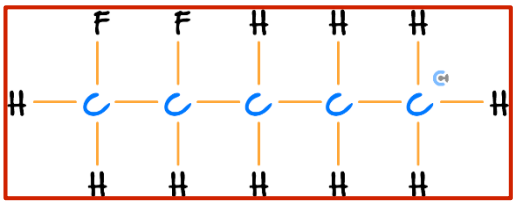
Question 3 (4 marks)

Draw the structural formula for the following compounds:

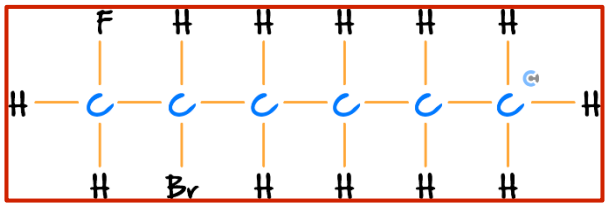
a. 2-methylbutane. (1 mark)



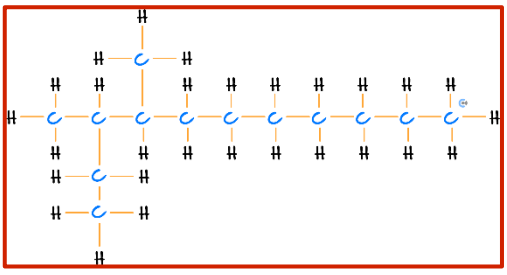
b. 1, 2-difluoropentane. (1 mark)



c. 2-bromo-1-fluorohexane. (1 mark)



d. 2-ethyl-3-methyldecane. (1 mark)



Question 4 (5 marks)

Harry is exploring a certain family of molecules for his project at school. These molecules fall under the category of cyclic organic compounds, also known as aromatic organic compounds.

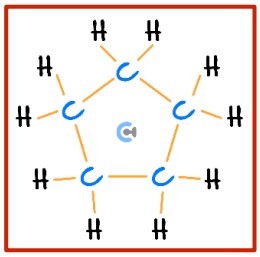
a. What is a cyclic organic compound? (1 mark)

The carbons are arranged in a ring.

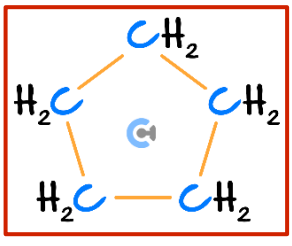
b. Would you expect cyclic organic compounds to have more or less hydrogen than their linear counterparts? Refer to relevant general formulas. (1 mark)

Less because the carbons on the end are not attached to three hydrogen atoms, since they form a carbon bond as well. Linear molecules (alkanes) typically have a general formula C_nH_{2n+2} where cyclic compounds typically are C_nH_{2n}.

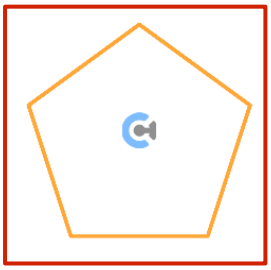
c. In particular, Harry is investigating cyclopentane. Draw the structural formula of this compound. (1 mark)



d. Draw the semi-structural formula of this compound. (1 mark)



e. Draw the skeletal formula of this compound. (1 mark)

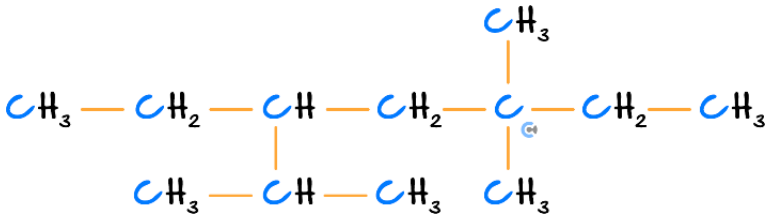


Space for Personal Notes

Question 5 (2 marks)

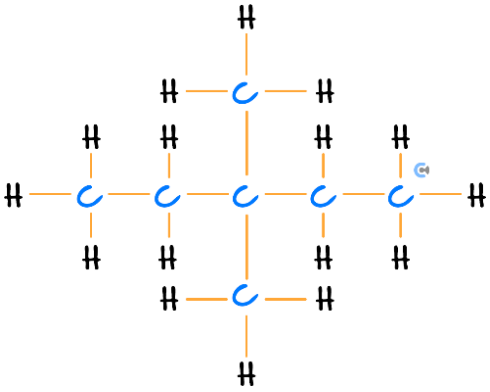
Name the two molecules shown below according to IUPAC standards:

a. (1 mark)



5-ethyl-3, 3, 6-trimethylheptane

b. (1 mark)



3, 3-dimethylpentane

Space for Personal Notes

Section B: Extension (5 Marks)

Question 6 (5 marks)

In a late-night study session, Jin is having trouble remembering the rules for naming haloalkanes. In order to help him revise, Jin takes a number of haloalkanes and attempts to name them.

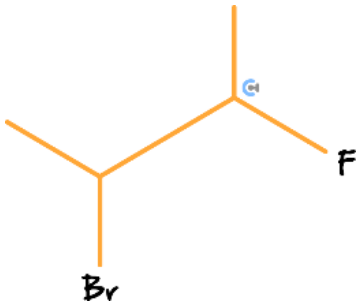
a. Jin observed a haloalkane that has two different halogens in it - bromine and chlorine. He gives bromine higher priority, as it comes first alphabetically. Is this method correct, and thus would Jin lose a mark for his naming? (1 mark)

The heavier halogen is always given priority, so technically wrong. But since Bromine is heavier, Jin's method would have still given him the same numbering/priority.

b. When naming haloalkane with two halogens in it, which one of the two halogens is typically written first in the name? (1 mark)

Alphabetic Order.

c. What is the IUPAC name of the following molecule? (1 mark)



2-bromo-3-fluorobutane

d. What would the semi-structural equation for this molecule be? (1 mark)

$CH_3CHBrCHFCH_3$

e. Given that both halogen atoms were bromine, how would this molecule now be named? (1 mark)

2,3-dibromobutane

CONTOUREDUCATION

Website: contoureducation.com.au | **Phone:** 1800 888 300 | **Email:** hello@contoureducation.com.au

VCE Chemistry ½

Free 1-on-1 Support

Be Sure to Make The Most of These (Free) Services!

- Experienced Contour tutors (45 + raw scores, 99 + ATARs).
- For fully enrolled Contour students with up-to-date fees.
- After school weekdays and all day weekends.

1-on-1 Video Consults	Text-Based Support
➢ Book via bit.ly/contour-chemistry-consult-2025 (or QR code below). ➢ One active booking at a time (must attend before booking the next).	➢ Message +61 440 137 304 with questions. ➢ Save the contact as "Contour Chemistry".

Booking Link for Consults
bit.ly/contour-chemistry-consult-2025

Number for Text-Based Support
+61 440 137 304