

Brett Robbins Academic Consulting

Chemistry 30 Practice Test

Unit C: Organic Chemistry

25 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

But – 1 – ene can be classified as

- A) an aliphatic alkane
- B) an aromatic alkene
- C) an aliphatic alkene
- D) a saturated hydrocarbon

Question 2

A hydrocarbon has a five – carbon parent chain with methyl groups on carbons 2 and 4. Its IUPAC name is

- A) 2, 4 – dimethylpentane
- B) 2, 4 – dimethylhexane
- C) 3, 4 – dimethylpentane
- D) 2, 4 – dimethylbutane

Question 3

The molecular formula of the alkane that contains 9 carbon atoms is

- | | |
|----------------|----------------|
| A) C_9H_{18} | B) C_9H_{20} |
| C) C_9H_{16} | D) C_9H_{22} |

Question 4

When one molecule of butane undergoes complete combustion, the number of carbon dioxide molecules produced is

Question 5

The number of hydrogen atoms in one molecule of 3 – ethylhexane is

Question 6

Aqueous bromine is added to separate samples of cyclohexane and cyclohexene. The sample that causes the bromine solution to lose its colour rapidly, in the absence of light, is

- | | |
|-----------------|-------------------|
| A) cyclohexane | B) cyclohexene |
| C) both samples | D) neither sample |

Question 7

Crude oil is separated into fractions by *i*, a process that works because the components of crude oil have different *ii*.

A) *i*: fractional distillation

ii: boiling points

B) *i*: fractional distillation

ii: solubilities

C) *i*: filtration

ii: boiling points

D) *i*: filtration

ii: solubilities

Question 8

When but – 1 – ene reacts with water in the presence of an acid catalyst, the major product of the addition reaction is

- A) butan – 1 – ol
- B) butan – 2 – ol
- C) butane
- D) butanoic acid

Question 9

The ester ethyl methanoate can be formed by the reaction of

- A) ethanol and methanoic acid
- B) methanol and ethanoic acid
- C) ethanol and ethanoic acid
- D) methanol and methanoic acid

Question 10

The number of carbon atoms in one molecule of 2, 2, 4 – trimethylpentane is

Question 11

Which of the following compounds is a structural isomer of hexane?

- A) 2 – methylbutane
- B) cyclohexane
- C) 2, 2 – dimethylbutane
- D) hex – 2 – ene

Question 12

The monomer used to produce the polymer polypropene is

- A) propane
- B) propan – 2 – ol
- C) propanoic acid
- D) propene

Question 13

The compound with the condensed structural formula $CH_3COOCH_2CH_3$ is classified as

- A) an alcohol
- B) a carboxylic acid
- C) an ester
- D) an alkane

Question 14

Three isomers of C_5H_{12} are pentane, 2 – methylbutane, and 2,2 – dimethylpropane. Listed in order from lowest boiling point to highest boiling point, these isomers are

- A) 2,2 – dimethylpropane, 2 – methylbutane, pentane
- B) pentane, 2 – methylbutane, 2,2 – dimethylpropane
- C) 2 – methylbutane, pentane, 2,2 – dimethylpropane
- D) 2,2 – dimethylpropane, pentane, 2 – methylbutane

Question 15

The number of structural isomers that have the molecular formula C_5H_{12} is

Question 16

When methane reacts with chlorine gas in the presence of ultraviolet light, the reaction is classified as

- | | |
|----------------|-------------------|
| A) addition | B) substitution |
| C) elimination | D) esterification |

Question 17

Ethanol is heated with concentrated sulfuric acid to produce ethene and water. This reaction is classified as

- | | |
|---------------|-----------------|
| A) addition | B) substitution |
| C) combustion | D) elimination |

Question 18

Benzene can be classified as an *i* compound, and its reaction with bromine is *ii* than the reaction of an alkene with bromine.

- | |
|-----------------|
| A) i: aliphatic |
| ii: faster |
| B) i: aromatic |
| ii: slower |
| C) i: aromatic |
| ii: faster |
| D) i: aliphatic |
| ii: slower |

Question 19

An acyclic hydrocarbon with the molecular formula C_7H_{12} is an alkene and contains no triple bonds. The number of carbon – carbon double bonds in this hydrocarbon is

Question 20

Which of the following compounds is NOT an isomer of C_6H_{12} ?

- A) hex – 2 – ene
- B) cyclohexane
- C) 2 – methylpent – 1 – ene
- D) 2, 3 – dimethylbutane

Question 21

The molecular formula for 3 – ethyl – 2 – methylhexane is

- | | |
|----------------|----------------|
| A) C_9H_{18} | B) C_8H_{18} |
| C) C_9H_{20} | D) C_9H_{22} |

Question 22

Methyl butanoate is an ester that has an apricot – like odour. It can be produced by the reaction of

- A) butanoic acid and methanol
- B) methanoic acid and butan – 1 – ol
- C) butanoic acid and ethanol
- D) methanoic acid and ethanol

Question 23

The number of carbon atoms in one molecule of ethyl propanoate is

Question 24

Which of the following compounds is most soluble in water?

- A) hexane
- B) oct – 1 – ene
- C) propan – 1 – ol
- D) cyclohexane

Question 25

A hydrocarbon contains four carbon atoms. It is branched and saturated.

The hydrocarbon could be

- A) but – 2 – ene
- B) cyclobutane
- C) 2 – methylpropene
- D) methylpropane

Answer Key

- | | | |
|-------|-------|-------|
| 1. C | 10. 8 | 19. 2 |
| 2. A | 11. C | 20. D |
| 3. B | 12. D | 21. C |
| 4. 4 | 13. C | 22. A |
| 5. 18 | 14. A | 23. 5 |
| 6. B | 15. 3 | 24. C |
| 7. A | 16. B | 25. D |
| 8. B | 17. D | |
| 9. A | 18. B | |

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