CHEMISTRY YEAR 12 - MODULE 7 - LESSON 1

Introduction to Organic Chemistry & IUPAC Nomenclature I

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

Every synthetic fabric, fuel, medicine and flavouring on Earth is built from variations on the same carbon-chain framework — and the naming system you learn today is the universal key for reading and writing the language of all of them.

- The general formulas for alkanes (C n H 2n+2), alkenes (C n H 2n), alkynes (C n H 2n−2)
- Why carbon's tetravalency creates the structural diversity of organic chemistry

2. Success Criteria

By the end, you should be able to:

- The general formulas for alkanes (C n H 2n+2), alkenes (C n H 2n), alkynes (C n H 2n−2)
- The three hybridisation states of carbon: sp^3, sp^2, sp
- The eight chain-length IUPAC prefixes: meth– to oct–

3. Key Terms

Hydrocarbon
An organic compound containing only carbon and hydrogen atoms.

Functional group
A specific atom arrangement that determines characteristic chemical reactions.

Homologous series
A family of compounds with the same functional group, differing by CH_2.

Isomer
Compounds with the same molecular formula but different structural arrangements.

Addition reaction
A reaction where atoms add across a carbon-carbon multiple bond.

Substitution reaction
A reaction where one atom or group replaces another in a molecule.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. 2. 2,3-dimethylbutane

BAND 3 3 MARKS

2. 3. 4-methylpent-2-ene

BAND 4 3 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Introduction to Organic Chemistry & IUPAC Nomenclature I but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Introduction to Organic Chemistry & IUPAC Nomenclature I?

- [ ] A. Identify the key concept being tested
- [ ] B. Write every fact from memory
- [ ] C. Ignore the command word
- [ ] D. Skip examples and evidence

2. Which answer would show stronger understanding of Introduction to Organic Chemistry & IUPAC Nomenclature I?

- [ ] A. An answer with accurate terms and reasoning
- [ ] B. A copied definition only
- [ ] C. A single-word response
- [ ] D. An answer with no example

3. What should you do if a question asks you to explain?

- [ ] A. Link the idea to a reason or cause
- [ ] B. List unrelated facts
- [ ] C. Only draw a diagram
- [ ] D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: The general formulas for alkanes (C_nH_{2n+2}), alkenes (C_nH_{2n}), alkynes (C_nH_{2n-2})

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The three hybridisation states of carbon: sp^3, sp^2, sp

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The eight chain-length IUPAC prefixes: meth– to oct–

BAND 5 4 MARKS

One thing I still need help with: