

SCIENCE (Chemistry)
ORGANIC CHEMISTRY (Alkene)

Name: _____ () Class: _____ Date: _____

Exercise 4

1) What is the general formula of alkene? _____

2) Which group of letters is present in the chemical names of all alkenes? _____

3) Complete the following table of alkene.

No of carbon atoms in one molecule	Chemical name	Molecular formula	Structural formula of one molecules	Relative molecular mass	Boiling point(^o C)	State under room condition
2		C ₂ H ₄			-104	
3	Propene				-89	
4			$ \begin{array}{ccccccc} & \text{H} & \text{H} & & \text{H} & & \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & = \text{C} & & \\ & & & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} & & \end{array} $		-6	

4) In the alkene homologous series,

i) _____

ii) _____

iii) _____

5) Write the molecular formula and structural formula of the alkenes with 5 carbon atoms in one molecule.

Reaction of alkene

a) Combustion

- 6) Alkenes burn in air. Write the word equation and chemical equation for the combustion of ethene.

Word equation: _____

Chemical equation: _____

b) Addition of Halogen

- 7) A molecule is added to alkene to make one product in an addition reaction.

i) Suggest a reason why such a reaction can take place.

ii) Chlorine reacts with propene in an addition reaction. Write the word and chemical equation(with structural formula) for this reaction.

c) Addition of Hydrogen (Hydrogenation)

- 8) i) Ethene undergoes hydrogenation. Write the word and chemical equation (with structural formula) for this reaction.

ii) What is the name of this type of chemical reaction? _____

iii) What is the purpose of the nickel catalyst? _____

d) Addition of steam

- 9) The compound C_2H_4 reacts with water to produce alcohols.

i) Write a balanced chemical equation for the reaction.

ii) State the physical difference between the alcohol and C_2H_4

Testing for alkenes

- 10) Describe how you can distinguish between an alkane and an alkene by a simple chemical test.

Reagent used: _____

Procedure: _____

Observation for alkene (in liquid and gaseous state): _____

Observation for alkane: _____

Saturated and Unsaturated Hydrocarbon

11) Alkanes are describe as being saturated. Alkenes are describes as being **unsaturated**.

What does the term mean?

Unsaturated _____

12) Which of the following compounds are saturated? (Place a tick $\checkmark$ if compound is saturated and a cross X if it is unsaturated)

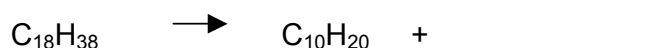
C_2H_4		C_2H_6		C_6H_{14}	
C_3H_6		C_3H_8		C_8H_{16}	
C_4H_{10}		C_4H_8		$C_{10}H_{20}$	

Cracking

13) i) What is cracking?

ii) Describe how the alkane $C_{18}H_{38}$ is cracked.

iii) Complete the following equation for a cracking equation.



iv) Name the **3** uses of cracking.