

Summary Quiz (Chapter 24)

Section A: Multiple Choice

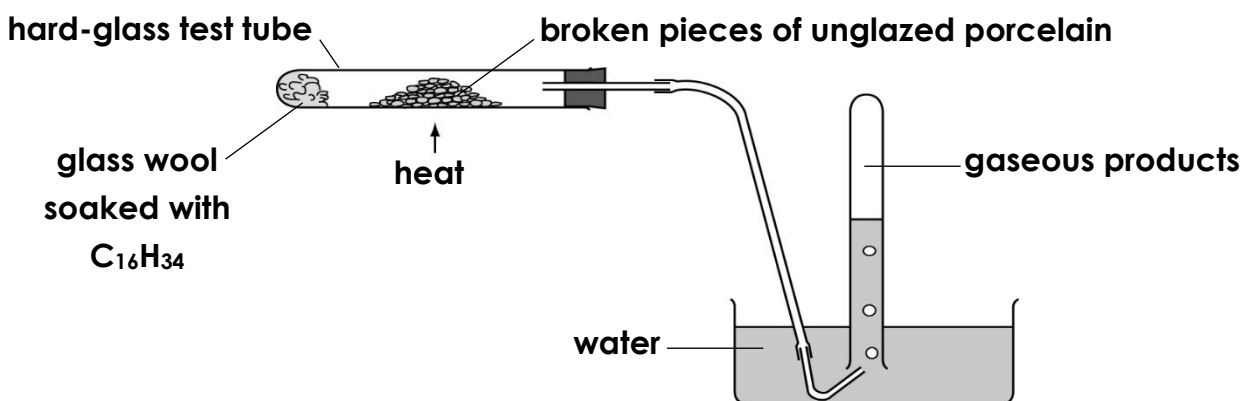
- Which of the following statements about ethene is correct?
 - It is a saturated compound.
 - It is the second member of the alkene series.
 - It burns in air to give carbon dioxide and water.
 - It turns bromine (dissolved in an organic solvent) from colourless to orange.

Questions 2 and 3 refer to the chlorination of propane.

- Which of the following statements about the reaction are correct?
 - It requires energy to initiate the reaction.
 - The reaction is a substitution reaction.
 - The product mixture obtained can decolorize acidified potassium permanganate solution.
 - (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)
- How many products with the chemical formula of $C_3H_6Cl_2$ form at the end of the reaction?

A. 3	B. 4
C. 5	D. 6
- Ethene is seldom used as fuel because
 - it does not give sufficient energy on burning.
 - it gives a lot of smoke on burning.
 - it is an important raw material of plastics.
 - it can be further cracked to more useful fractions.

Questions 5-6 refer to the following diagram about the cracking of $C_{16}H_{34}$:



5. Which of the following statements about the above reaction are correct?
- (1) Broken pieces of unglazed porcelain act as a catalyst.
 - (2) Broken pieces of unglazed porcelain can be replaced by aluminium oxide.
 - (3) The reaction must take place in the absence of air.
- A. (1) and (2) only B. (1) and (3) only
 C. (2) and (3) only D. (1), (2) and (3)

6. The following equation shows one of the reactions taking place in the set-up:
- $$\text{C}_{16}\text{H}_{34} \longrightarrow \text{C}_6\text{H}_{12} + \text{C}_6\text{H}_{14} + \text{X}$$

Which of the following statements about X is correct?

- (1) The chemical formula of X is C_4H_8 .
- (2) It is insoluble in water.
- (3) It can decolorize bromine solution.

- A. (1) and (2) only B. (1) and (3) only
 C. (2) and (3) only D. (1), (2) and (3)

7. The following equation shows the complete combustion of octane:
- $$a\text{C}_8\text{H}_{18} + b\text{O}_2 \longrightarrow c\text{CO}_2 + d\text{H}_2\text{O}$$

Which of the following combinations is correct?

	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>
A.	1	16	8	18
B.	1	16	16	9
C.	2	25	8	9
D.	2	25	16	18

8. Which of the following compounds is the product of the reaction between propene and cold acidified potassium permanganate solution?
- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ B. $\text{HOCH}_2\text{CH}_2\text{CH}_2\text{OH}$
 C. $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{OH}$ D. $\text{HOCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$

Section B: Structural Question

A student carried out two experiments on cyclohexane and cyclohexene respectively. The results are summarized as follows:

Test	Procedure	Observation
I	Add bromine (dissolved in an organic solvent) to cyclohexene and cyclohexane respectively.	Both cyclohexane and cyclohexene decolorize bromine solution.
II	Add acidified potassium permanganate solution to cyclohexene and cyclohexane respectively.	Cyclohexene decolorizes acidified potassium permanganate solution immediately. There is no observable change for cyclohexane.

- (a) Give the systematic names of the products formed by cyclohexane and cyclohexene in Test I respectively.
- (b) State the condition required for the reaction between cyclohexane and bromine (dissolved in an organic solvent).
- (c) (i) State the type of reaction involved for the Test II of cyclohexene.
(ii) Give the structural formula of the product for cyclohexene in Test II.
- (d) Justify, with reason, which test is a better test to distinguish between an alkane and an alkene.

The End

Suggested Answer**Section A**

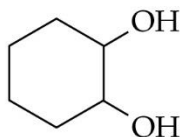
1.	C	5.	D
2.	A	6.	D
3.	B	7.	D
4.	C	8.	C

Section B

- (a) Product formed by cyclohexane: bromocyclohexane (accept other reasonable answers)
Product formed by cyclohexene: 1,2-dibromocyclohexane

- (b) In the presence of light / heating

- (c) (i) Addition reaction
(ii)



- (d) Test II is a better test because alkanes do not react with acidified potassium permanganate solution in the presence of light.

The End