



**CHEMISTRY ONLINE**  
— **TUITION** —

Phone: +442081445350

[www.chemistryonlinetuition.com](http://www.chemistryonlinetuition.com)

Email: [asherrana@chemistryonlinetuition.com](mailto:asherrana@chemistryonlinetuition.com)

# CHEMISTRY

## ORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	ALKENES
PAPER TYPE:	QUESTION PAPER - 1
TOTAL QUESTIONS	10
TOTAL MARKS	38

ChemistryOnlineTuition Ltd reserves the right to take legal action against any individual/ company/organization involved in copyright abuse.

## Alkenes - 1

1. The following pairs of compounds can be distinguished by simple test-tube reactions.

For each pair of compounds, give a reagent (or combination of reagents) that, when added separately to each compound, could be used to distinguish between them.

State what is observed in each case.

(a) Butan-2-ol and 2-methylpropan-2-ol

(3)

(b) Propane and propene

(3)

2. Which one of the following does not represent an oxidation?

- A. propene  $\rightarrow$  propane
- B. propan-1-ol  $\rightarrow$  propanal
- C. propan-1-ol  $\rightarrow$  propanoic acid
- D. propanal  $\rightarrow$  propanoic acid

(1)

3. In each of the following questions, you should draw the structure of the compound in the space provided.

**(a)** Draw the structure of the alkene that would form 1,2-dibromo-3-methylbutane when reacted with bromine.

**(1)**

**(b)** Draw the structure of the alcohol with molecular formula  $C_4H_{10}O$  that is resistant to oxidation by acidified potassium dichromate(VI).

**(1)**

**(c)** Draw the structure of the alkene that has a peak, due to its molecular ion, at  $m/z = 42$  in its mass spectrum.

**(1)**

**(d)** Draw the structure of the organic product with  $M_r = 73$ , made from the reaction between 2-bromobutane and ammonia.

**(1)**

**4.** Which one of the following is not a suitable method for the preparation of ethanol?

- A.** oxidation of ethane
- B.** hydration of ethene
- C.** reduction of ethanal
- D.** hydrolysis of bromoethane

**(1)**

5. Propene reacts with bromine by a mechanism known as electrophilic addition.

(a) Explain what is meant by the term electrophile and by the term addition.  
Electrophile

(2)

(b) Explain why bromine, a non-polar molecule, is able to react with propene.

(2)

(c) Outline the mechanism for the electrophilic addition of bromine to propene.  
Give the name of the product formed.

(5)

(d) The polymerisation of propene to form poly(propene) is an important industrial process.  
Name the type of polymerisation involved.

(1)

6. Which one of the following conversions does not represent a reduction?

- A. propene  $\rightarrow$  propane
- B. propanal  $\rightarrow$  propan-1-ol
- C. propanal  $\rightarrow$  propanoic acid

D. propanone → propane

(1)

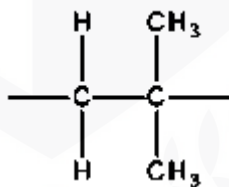
7. The reaction of hydrogen bromide with but-1-ene is as.



Outline a mechanism for this reaction.

(4)

8. The repeating unit of a polymer is



Which of the following molecules would form a polymer containing this repeating unit?

- A. But-1-ene
- B. E-but-2-ene
- C. Z-but-2-ene
- D. Methylpropene

(1)

9. But-1-ene reacts with a reagent of the form HY to form a saturated compound.

(a) Suggest a reagent of the form HY which reacts with but-1-ene.

(1)

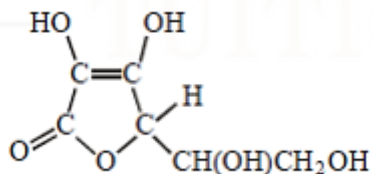
(b) Name and draw a mechanism for the reaction in part (a).

(5)

(c) Explain how three isomeric products are formed when HY reacts with but-1-ene.

(3)

10. Which one of the following is not a correct statement about vitamin C, shown below?



- I am Sorry !!!!!
- A. It is a cyclic ester
  - B. It can form a carboxylic acid on oxidation
  - C. It decolourises a solution of bromine in water
  - D. It is a planar molecule.

(1)



I am Sorry !!!!!



**DR. ASHAR RANA**  
M.B.B.S / MS. CHEMISTRY



**CHEMISTRY ONLINE**  
— TUITION —

Phone: +442081445350  
www.chemistryonlinetuition.com  
Email: asherrana@chemistryonlinetuition.com

- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, Math's and Biology Tutor

## CONTACT INFORMATION FOR **CHEMISTRY ONLINE TUITION**

- UK Contact: 02081445350
  - International Phone/WhatsApp: 00442081445350
  - Website: [www.chemistryonlinetuition.com](http://www.chemistryonlinetuition.com)
  - Email: [asherrana@chemistryonlinetuition.com](mailto:asherrana@chemistryonlinetuition.com)
- Address: 210-Old Brompton Road, London SW5 OBS, UK