

Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Centre Number		Candidate Number	

Pearson Edexcel Level 3 GCE

Tuesday 21 May 2024

Morning (Time: 1 hour 30 minutes)

Paper reference **8CH0/02**

Chemistry
Advanced Subsidiary
PAPER 2: Core Organic and Physical Chemistry

You must have:
 Scientific calculator, Data Booklet, ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – there may be more space than you need.

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets – use this as a guide as to how much time to spend on each question.
- For the question marked with an **asterisk** (*), marks will be awarded for your ability to structure your answer logically, showing the points that you make are related or follow on from each other where appropriate.
- A Periodic Table is printed on the back cover of this paper.

Advice

- Read each question carefully before you start to answer it.
- Show all your working in calculations and include units where appropriate.
- Check your answers if you have time at the end.

Turn over ►

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(c) But-2-ene exists as two stereoisomers.

(i) Give the displayed formula and name of each of these isomers.

(2)

Isomer 1

Isomer 2

Name

Name

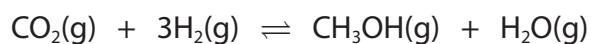
(ii) Explain how the presence of the double bond in but-2-ene results in these two isomers.

(2)

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- *7 Methanol can be produced by reacting carbon dioxide and hydrogen in the exothermic reaction shown.



Discuss, with reasons, the effects of changing the conditions on the yield of methanol and the rate of reaction.

- increasing temperature at constant pressure
- increasing pressure at constant temperature

(6)

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(Total for Question 7 = 6 marks)



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Mark Scheme (Results)

Summer 2024

Pearson Edexcel GCE

In Chemistry (8CH0)

Paper 02: Core Organic and Physical Chemistry

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

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Question Number	Answer	Additional Guidance	Mark
1(b)(iii)	An answer that makes reference to the following point: sodium hydroxide solution can be added rapidly / not drop by drop to a volume a little below that of the rough titration (making the titration quicker)	Allow add acid dropwise / slow down as it gets close to / before the rough titration value / value in (b)(ii) Allow added rapidly to the volume given in (b)(ii) minus about 2 cm³ or so Do not award slow down when you get to the rough titration value Do not award the rough titration is a value that you try to get as close to as possible	(1)

Question Number	Answer	Additional Guidance	Mark
1(c)(i)	calculation of mean titre	<u>Example of calculation</u> $(23.30 + 23.35 + 23.25) \div 3 = 23.3(0) \text{ (cm}^3\text{)}$ Correct answer with no working scores 1	(1)

Question Number	Answer	Additional Guidance	Mark
1(c)(ii)	calculation of number of moles	<u>Example of calculation</u> $(23.30 \times 0.100) \div 1000 = 0.00233 / 2.33 \times 10^{-3} \text{ (mol)}$ Allow TE on (c)(i)	(1)

Question Number	Answer	Additional Guidance	Mark
3(a)	An answer that makes reference to the following points: molecular formula, C₄H₈ and empirical formula, CH₂	Do not award CH₂ for the molecular formula Allow a calculation involved C₄H₈ eg C₄H₈ ÷ 4 = CH₂ as long as CH₂ given	(1)

Question Number	Answer	Mark
3(b)(i)	The only correct answer is A (electrophilic addition) <i>B is not correct because the reaction involves electrophilic not nucleophilic attack</i> <i>C is not correct because the reaction is an addition not a substitution</i> <i>D is not correct because the reaction is an addition reaction resulting from electrophilic attack</i>	(1)

Question Number	Answer	Additional Guidance	Mark
5(c)(iii)	An answer that makes reference to the following point: separating funnel / dropping funnel	Allow top funnel Ignore burette	(1)

(Total for Question 5 = 12 marks)

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Question Number	Answer	Mark
6(e)	The only correct answer is B (the time taken will decrease using the 100 cm³ flask) <i>A is not correct because the depth of the solution has increased so more solid is between the eye and the cross</i> <i>C is not correct because the depth of the solution has increased so more solid is between the eye and the cross</i> <i>D is not correct because the depth of the solution has increased so more solid is between the eye and the cross</i>	(1)

(Total for Question 6 = 7 marks)