Pearson

Mark Scheme (Results)

Summer 2026

Pearson Edexcel International Advanced Subsidiary Level In Chemistry
WCH11/01A

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Summer 2026
Question Paper Log Number P81804A
Publication Code WCH11_01A_2606_MS

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.

Using the Mark Scheme

Examiners should look for qualities to reward rather than faults to penalise. This does NOT mean giving credit for incorrect or inadequate answers, but it does mean allowing candidates to be rewarded for answers showing correct application of principles and knowledge. Examiners should therefore read carefully and consider every response: even if it is not what is expected it may be worthy of credit.

The mark scheme gives examiners:
- an idea of the types of response expected
- how individual marks are to be awarded
- the total mark for each question
- examples of responses that should NOT receive credit.

/ means that the responses are alternatives and either answer should receive full credit.
( ) means that a phrase/word is not essential for the award of the mark, but helps the examiner to get the sense of the expected answer.

Phrases/words in **bold** indicate that the meaning of the phrase or the actual word is **essential** to the answer.
ecf/TE/cq (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

Candidates must make their meaning clear to the examiner to gain the mark. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct context.

Quality of Written Communication

Questions which involve the writing of continuous prose will expect candidates to:
- write legibly, with accurate use of spelling, grammar and punctuation in order to make the meaning clear
- select and use a form and style of writing appropriate to purpose and to complex subject matter
- organise information clearly and coherently, using specialist vocabulary when appropriate.

Full marks will be awarded if the candidate has demonstrated the above abilities. Questions where QWC is likely to be particularly important are indicated (QWC) in the mark scheme, but this does not preclude others.

Section A

Question Number	Answer	Mark
1	**The only correct answer is D** (10) ***A*** *is incorrect because 2 is the number of types of orbital* ***B*** *is incorrect because 5 is the number of electrons if each orbital was occupied by 1 electron* ***C*** *is incorrect because 7 is the number of electrons if 2 electrons were in each of the two s orbitals and there was 1 electron in each of the three p orbitals*	**(1)**

Question Number	Answer	Mark
2	**The only correct answer is D** (equal amounts of carbon dioxide are emitted to and absorbed from the atmosphere) ***A*** *is incorrect because the neutrality term does not refer to the products of combustion* ***B*** *is incorrect because combustion of fuels does produce carbon dioxide* ***C*** *is incorrect because the term refers to the carbon in carbon dioxide and not carbon directly*	**(1)**

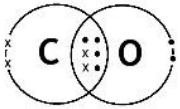
Question Number	Answer	Mark
3	**The only correct answer is B (X)** *A is incorrect because this is crude oil which contains all different lengths of carbon chains* *C is incorrect because this is a fraction of intermediate chain length* *D is incorrect because this is the fraction with the longest carbon chains*	**(1)**

Question Number	Answer	Mark
4(a)	**The only correct answer is D** (zeolite catalyst) *A is incorrect because oxygen would result in combustion and not cracking* *B is incorrect because phosphoric(V) acid is a catalyst to add steam to alkenes* *C is incorrect because ultraviolet radiation is used for the reaction of alkanes with halogens*	**(1)**

Question Number	Answer	Mark
4(b)	**The only correct answer is C** (to convert long chain alkanes into shorter, more useful alkenes) ***A*** *is incorrect because reforming is the process to produce fuels which burn more efficiently* ***B*** *is incorrect because cracking is not used to remove impurities* ***D*** *is incorrect because cracking reduces chain length, does not increase it*	**(1)**

Question Number	Answer	Mark
4(c)	**The only correct answer is B** () ***A*** *is incorrect because this equation is an example of reforming due to isomerisation* ***C*** *is incorrect because this equation is an example of reforming due to cyclisation* ***D*** *is incorrect because this equation is an example of reforming due to aromatisation*	**(1)**

Question Number	Answer	Mark
4(d)	**The only correct answer is C** ($C_8H_{18} + 12½O_2 \rightarrow 9H_2O + 8CO_2$) ***A*** *is incorrect because this equation shows the formation of nitrogen monoxide which is the first step in the formation of acid rain from nitric acid* ***B*** *is incorrect because this equation shows the formation of nitrogen dioxide which is the second step in the formation of acid rain from nitric acid* ***D*** *is incorrect because this equation shows the formation of sulfur trioxide which dissolves in rainwater to form sulfuric acid*	**(1)**

Question Number	Answer	Mark
4(e)	**The only correct answer is A** () ***B*** *is incorrect because carbon should have four crosses and not five to represent its electrons and oxygen should have six dots not five to represent its electrons* ***C*** *is incorrect because carbon should have four crosses and not six to represent its electrons and oxygen should have six dots not four to represent its electrons* ***D*** *is incorrect because carbon should have four crosses and not six to represent its electrons and oxygen should have six dots not four to represent its electrons*	**(1)**

Question Number	Answer	Mark
5	**The only correct answer is A** ($CH_3^{\bullet} + Cl_2 \rightarrow CH_3Cl + Cl^{\bullet}$) ***B*** *is incorrect because this reaction is an example of a termination step* ***C*** *is incorrect because this reaction is an example of a termination step* ***D*** *is incorrect because this reaction does not occur in the chlorination of methane*	**(1)**

Question Number	Answer	Mark
6	**The only correct answer is D** (NaCl) ***A*** *is incorrect because sulfur is a simple molecular structure and will not light the bulb when molten because there are no ions or delocalised electrons* ***B*** *is incorrect because glucose is a simple molecular structure and will not light the bulb when molten because there are no ions or delocalised electrons* ***C*** *is incorrect because sodium is a metallic structure will light the bulb when solid as well as when molten due to the movement of delocalised electrons*	**(1)**

Question Number	Answer	Mark
7	 **The only correct answer is A** ( ) ***B*** *is incorrect because the hydrogen atom is significantly smaller than the chlorine atom* ***C*** *is incorrect because this electron density map is for an ionically bonded compound where the cation is smaller than the anion* ***D*** *is incorrect because this electron density map is for an ionically bonded compound where the cation and the anion are the same size*	**(1)**

Question Number	Answer	Mark
8	**The only correct answer is D** (MgO) ***A*** *is incorrect because* Li^+ *is similar in size to* Mg^{2+} *and* F^- *is similar in size to* O^{2-} *but they both only have a single charge.* ***B*** *is incorrect because* Li^+ *is similar in size to* Mg^{2+} *but only has a single charge* ***C*** *is incorrect because* F^- *is similar in size to* O^{2-} *but only has a single charge*	**(1)**

Question Number	Answer	Mark
9(a)	**The only correct answer is C** (62.8%) ***A*** *is incorrect because this value arises from omitting the molar ratio of iron* ***B*** *is incorrect because this value arises from omitting the molar ratios of iron and carbon dioxide* ***D*** *is incorrect because this value arises from omitting the molar ratio of carbon dioxide*	**(1)**

Question Number	Answer	Mark
9(b)	**The only correct answer is C** (47.5 tonnes) ***A*** *is incorrect because the molar ratio has been omitted* ***B*** *is incorrect because the molar ratio and the percentage by mass have been omitted* ***D*** *is incorrect because the percentage by mass has been omitted*	**(1)**

Question Number	Answer	Mark
10	**The only correct answer is A** (4.99) ***B*** *is incorrect because 2.50 is the concentration of the magnesium chloride compound* ***C*** *is incorrect because the number of moles has been divided by two instead of multiplying* ***D*** *is incorrect because 1.00 is obtained by multiplying the number of moles by 20 instead of dividing by 0.020 and then multiplying by two*	**(1)**

Question Number	Answer	Mark
11	**The only correct answer is C** (Mg^{2+}) ***A*** *is incorrect because an ion with a 2+ charge will have greater polarising power then an ion with a 1+ charge* ***B*** *is incorrect because an ion with a 2+ charge will have greater polarising power then an ion with a 1+ charge and the potassium ion has a larger radius which also reduces polarising power* ***D*** *is incorrect because the calcium ion is larger than the magnesium ion and so has less polarising power*	**(1)**

Question Number	Answer	Mark
12	**The only correct answer is C** (potassium manganate(VII) and sulfuric acid) ***A*** *is incorrect because the oxygen produced from hydrogen peroxide would not convert ethene into ethane-1,2-diol* ***B*** *is incorrect because oxygen gas under high pressure would not convert ethene into ethane-1,2-diol* ***D*** *is incorrect because steam with a phosphoric acid catalyst would produce ethanol and not the diol*	**(1)**

Question Number	Answer	Mark
13	**The only correct answer is B** (the hazard is fixed but the risk varies) ***A*** *is incorrect because the chemical properties of a chemical stay the same so the hazard is fixed, but the risk depends on the use of the chemical so varies* ***C*** *is incorrect because the chemical properties of a chemical stay the same so the hazard is fixed* ***D*** *is incorrect because the risk depends on the use of the chemical so varies*	**(1)**

Question Number	Answer	Mark
14	**The only correct answer is D** (it has a multi-layered structure) ***A*** *is incorrect because graphene is an excellent conductor of electricity* ***B*** *is incorrect because graphene can be rolled to produce nanotubes* ***C*** *is incorrect because graphene does have a giant structure*	**(1)**

Question Number	Answer	Mark
15	**The only correct answer is B** (551) ***A*** *is incorrect because 276 is missing the factor of two since the mass is only 0.500 g* ***C*** *is incorrect because 609 would have been the ppm of the sodium fluoride compound but is missing the factor of two since the mass is only 0.500 g* ***D*** *is incorrect because 1220 is the ppm of the sodium fluoride compound*	**(1)**

TOTAL FOR SECTION A = 20 MARKS

Section B

Question Number	Answer	Additional Guidance	Mark
16(a)	An answer that makes reference to the following points: • two elements from the s block • two elements from the p block • two elements from the d block Two elements correct from each block scores (2) Two elements correct from any two blocks scores (1) Two elements correct from only one block scores (0)	 K **and** Ca Any two from Ga Ge As Se Br Kr Any two from Sc Ti V Cr Mn Fe Co Ni Cu Zn Penalise names instead of symbols once only If no other mark awarded, then allow (1) for one correct element in each of the three blocks but penalise an incorrect element. Allow (1) for 6 correct elements from Period 5 Allow (1) if 6 correct elements but p and d swapped round Ignore electronic configurations, even if incorrect.	**(2)**

Question Number	Answer	Additional Guidance	Mark
16(b)(i)	An explanation that makes reference to the following points: • there is an increase in proton number (across Period 2) **(1)** • (but) **electron** is removed from the same (quantum) shell / energy level **(1)**	Accept nuclear charge increases Do not award number of atoms increases Allow shielding of the **electron** remains the same / similar Ignore comments about attraction to nucleus Ignore atomic radius decreases	**(2)**

Question Number	Answer	Additional Guidance	Mark
16(b)(ii)	An explanation that makes reference to the following points: • electron (being removed) from B is in a (2)p orbital / (2)p subshell (whereas for Be it is in an s orbital/s subshell) **(1)** • which is more repelled/shielded by the electrons in an s orbital (resulting in a lower first ionisation energy) **(1)**	Electron needs to be seen somewhere in M1 or M2 Allow reference to electron in p orbital is higher energy than the electron in s orbital Ignore electronic configurations Do not award reference to a new ‘quantum’ shell Allow reference to p electron is further from the nucleus than the s electron	**(2)**

Question Number	Answer	Additional Guidance	Mark
16(c)(i)	An answer that makes reference to the following points: • aluminium has more **delocalised** electrons **(1)** • Al^{3+} is smaller (than Na^{+}) **and** Al^{3+} has a higher charge (than Na^{+}) **(1)** • greater/stronger (electrostatic) attraction between the **delocalised** electrons and the positive cations **(1)**	Reference to **delocalised** electrons needed at least once in either M1 or M3 Allow Al^{3+} has a higher charge density (than Na^{+}) Allow (therefore) metallic bonding in aluminium is stronger than in sodium Do not award attraction between electrons and nucleus Penalise atoms instead of ions once only	**(3)**

Question Number	Answer	Additional Guidance	Mark
16(c)(ii)	An answer that makes reference to the following points: • silicon has a giant (covalent/molecular) structure **and** with (strong) covalent bonds **(1)** • chlorine has a simple / molecular structure **and** with (weak) intermolecular forces **(1)** • strong covalent bonds need more **energy** to break than weak intermolecular forces **(1)**	Do not award ionic bonds in Si or Cl Allow each silicon atom has four bonds Ignore lattice alone Do not award giant covalent bonds / giant molecule Do not award intermolecular forces are broken in silicon Allow reference to London forces/ dispersion forces/van der Waals' forces/ instantaneous dipole-induced dipole forces Do not award covalent bonds are broken in chlorine If M1 and M2 not scored, allow (1) for Si is giant (covalent) **and** Cl_2 is simple / molecular Ignore id-id. Must be a comparison about breaking / overcoming bonds / intermolecular forces	**(3)**

(Total for Question 16 = 12 marks)

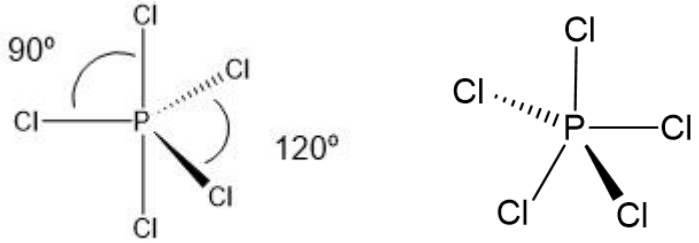
Question Number	Answer		Additional Guidance	Mark
17(a)	• conversion of volume and temperature to appropriate units	**(1)**	Example of calculation $V = 0.25$ (m^3) $T = 288$ (K)	**(5)**
	Method 1 • rearrangement of ideal gas equation	**(1)**	$n = pV \div RT$	
	• calculation of number of moles	**(1)**	$n = ((1.37 \times 10^7 \times 0.25) \div (8.31 \times 288) = 1431.1$ (mol)	
	• calculation of molar mass	**(1)**	$M = (m \div n = 5.72 \times 10^3 \div 1431.1 =) 3.9970/ 4.0$ (g mol^{-1})	
	• identity of gas	**(1)**	Helium/He	
			Correct answers with some working scores (5) TE at each stage Ignore SF	
	Method 2 • rearrangement of ideal gas equation	**(1)**	$M = mRT \div pV$	
	• substitution and conversion of mass to grams	**(1)**	$M = (5720 \times 8.31 \times 288) \div (1.37 \times 10^7 \times 0.25)$	
	• evaluation	**(1)**	$M = 3.9970/ 4.0$ (g mol^{-1})	
	• identity of gas	**(1)**	Helium/He	

Question Number	Answer	Additional Guidance	Mark
17(b)(i)	• ionic equation **and** state symbols	Example of equation $Zn(s) + 2H^+(aq) \rightarrow Zn^{2+}(aq) + H_2(g)$ Accept multiples Do not award if spectator ions present, even if balanced	**(1)**

Question Number	Answer	Additional Guidance	Mark
17(b)(ii)	**Either** • calculation of moles of hydrogen **(1)** • calculation of moles of zinc **(1)** • there are more moles of zinc than moles of hydrogen so zinc must be in excess due to 1:1 molar ratio **(1)** **or** • calculation of moles of zinc **(1)** • calculation of moles of HCl **(1)** • the moles of HCl are less than twice the moles of zinc and so HCl is the limiting factor meaning that zinc is in excess **(1)** **or** • calculation of moles of hydrogen **(1)** • calculation of mass of zinc reacted **(1)** • the mass of zinc added is greater than mass of zinc reacted **(1)**	<u>Example of calculation</u> n = (75 ÷ 24000=) 0.0031250 / 3.1250×10^{-3} (mol) n =(0.214 ÷ 65.4 =) 0.0032722 / 3.2722×10^{-3} (mol) Allow 3.272×10^{-3} (mol)> 3.125×10^{-3} (mol) n =(0.214 ÷ 65.4 =) 0.0032722 / 3.2722×10^{-3} (mol) n = (0.025 × 0.250 =) 0.0062500 / 6.2500×10^{-3} (mol) n = (75 ÷ 24000=) 0.0031250 / 3.1250×10^{-3} (mol) m = $3.125 \times 10^{-3} \times 65.4 = 0.204$(g) Allow 0.214(g) > 0.204(g) M3 needs some justification so ignore just ‘zinc is in excess’ Ignore SF except 1SF	**(3)**

Question Number	Answer	Additional Guidance	Mark
17(c)(i)	• calculation of moles of carbon dioxide **(1)** • calculation of mass of carbon dioxide **(1)** • calculation of concentration in g dm^{-3} **(1)**	Example of calculation n = ($1.98 \times 10^{21} \div 6.02 \times 10^{23}$ =) 0.0032890 / 3.2890×10^{-3} (mol) m = ($3.2890 \times 10^{-3} \times 44$ =) 0.14472 (g) c= (0.14472×10 =) 1.4472/1.447/1.45 (g dm^{-3}) Do not award 1.5 Allow TE throughout Ignore SF except 1 SF Correct answer with no working scores 3	**(3)**

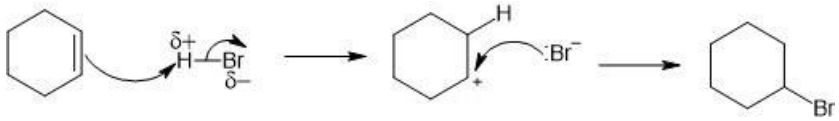
Question Number	Answer	Additional Guidance	Mark
17(c)(ii)	An explanation that makes reference to the following points: • oxygen is more electronegative than carbon **and** nitrogen is more electronegative than hydrogen **(1)** • that results in polar bonds with $O^{\delta-}$, $C^{\delta+}$ **and** $N^{\delta-}$, $H^{\delta+}$ **(1)** • carbon dioxide is a linear molecule, but ammonia is pyramidal **(1)** • dipole (moments) cancel in carbon dioxide because it is symmetrical but not in ammonia (because it is asymmetrical) **(1)**	Accept oxygen / nitrogen has a greater force of attraction for the bonded electrons than both carbon and hydrogen Allow have different electronegativity Allow diagrams showing dipoles on C=O/C–O **and** N–H Ignore just C=O/C–O and N–H are polar / have dipoles M3 and M4 can also be shown in diagrams If no other mark scored award (2) if 4 correct points are made about either CO_2 or NH_3 , or award (1) if 2 or 3 points about CO_2 or NH_3 are made.	**(4)**

Question Number	Answer	Additional Guidance	Mark
17(d)	An answer that makes reference to the following points: • 'wedges' to show 3-dimensional shape **(1)** • bond angles of 90 º **and** 120º labelled on the diagram **(1)** • name of shape trigonal bipyramid(al) **(1)**	Examples of diagram  Allow ----- or ıllıllı for receding bond Ignore 180º Do not award incorrectly labelled bond angles	**(3)**

(Total for Question 17 = 19 marks)

Question Number	Answer	Additional Guidance	Mark
18(a)	• nickel / Ni	Accept Pd / Palladium / Pt / Platinum If name and formula given both must be correct Ignore references to heat Do not award if given with other substances except H_2	**(1)**

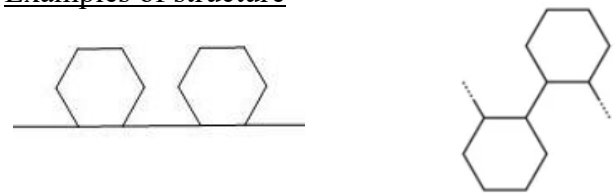
Question Number	Answer	Additional Guidance	Mark
18(b)	• calculation of molar masses of **both** compounds **(1)** • calculation of the percentage composition by mass of hydrogen in one compound **(1)** • calculation of the second percentage composition by mass **and** determination of the difference to **1DP** **(1)**	<u>Example of calculation</u> M_r (C_6H_{12}) = 84 (g mol^{-1}) **and** M_r (C_6H_{10}) = 82 (g mol^{-1}) Hydrogen %(C_6H_{12}) = (12 ÷ 84 x 100=) 14.286(%) **or** Hydrogen %(C_6H_{10}) = (10 ÷ 82 x 100=) 12.195(%) Two correct percentage values in M2 subsumes M1 Difference = (14.286 – 12.195= 2.091=) 2.1 (%) Correct answer with no working scores (3) TE at each stage	**(3)**

Question Number	Answer	Additional Guidance	Mark
18(c)	An answer that makes reference to the following points: • dipole on HBr • curly arrow from H−Br bond to $Br^{(\delta-)}$ • curly arrow from C=C bond to $H^{(\delta+)}$ • structure of carbocation intermediate • lone pair on bromide **ion** • curly arrow from lone pair/bromide ion to C+ All 6 points score (4) 5 points scores (3) 3 or 4 points scores (2) 2 points scores (1) 1 point scores (0)	Example of mechanism  Ignore the omission of the hydrogen atom on the carbocation If the lone pair on Br^- is present, the arrow must come from it, otherwise it may come from anywhere on the bromide ion. Ignore final product Penalise use of curly half-arrows once only in points 2,3 and 6 Penalise use of Br_2 once only Penalise use of alternative alkene once only Penalise use of δ^+ on carbocation once only in points 4 and 6	**(4)**

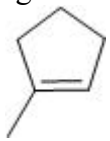
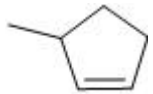
Question Number	Answer	Additional Guidance	Mark
18(d)(i)	An answer that makes reference to the following points: • two appropriate curly half-arrows **(1)** • product of 2 bromine free radicals with dots **(1)**	<u>Example of equation</u>  Accept 2Br• If chlorine is used M1 can be awarded for two correct arrows but not M2 Production of hydrogen radicals scores (0)	**(2)**

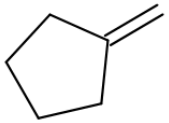
Question Number	Answer	Additional Guidance	Mark
18(d)(ii)	An explanation that makes reference to the following points: • the bromine free radical has more than one electron **(1)** • a free radical has one unpaired electron **(1)**	Allow bromine has 35 electrons Allow reference to outer shell electrons Ignore comments about homolytic fission Ignore reference to species	**(2)**

Question Number	Answer		Additional Guidance	Mark
18(d)(iii)	An explanation that makes reference to two of the following points: • di/poly halogenated compounds are made • other termination products can be made • which need to be separated (from bromocyclohexane)	**(1)** **(1)** **(1)**	Allow further substitution Allow reference to any correct product of further substitution Ignore just other products / side reactions	**(2)**

Question Number	Answer	Additional Guidance	Mark
18(e)	An answer that makes reference to the following point • two repeat units	<u>Examples of structure</u>  Accept any correct type of formulae, displayed / structural / skeletal or any combination thereof Ignore brackets and ‘n’	**(1)**

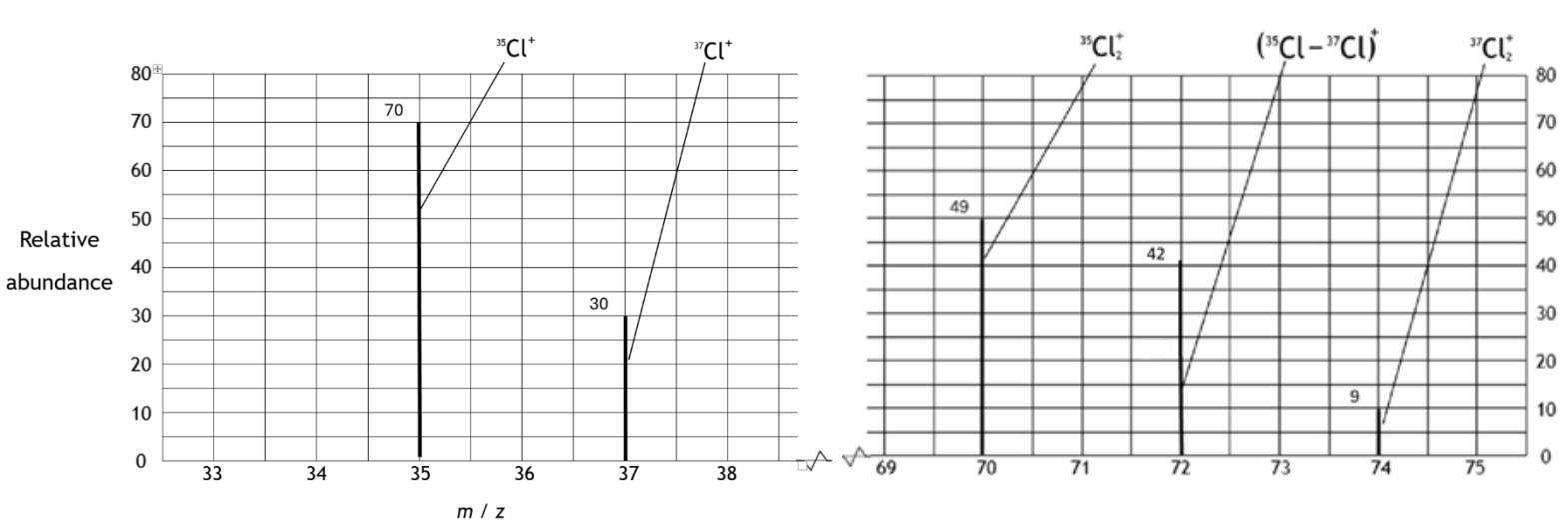
Question Number	Answer	Additional Guidance	Mark
18(f)(i)	An answer that makes reference to the following point • 3-methylpent-1-ene	 Accept 3-methyl-1-pentene Ignore missing punctuation Do not award 3-methlypentan-1-ene	**(1)**

Question Number	Answer	Additional Guidance	Mark
18(f)(ii)	An answer that makes reference to the following points: • 1-methylcyclopent-1-ene structure • 2-methylcyclopent-1-ene structure • 3-methylcyclopent-1-ene structure All 3 isomer structures scores (2) 1 or 2 isomer structures scores (1)	<u>Example of structures</u> Ignore bond length and bond angles    Use of non-skeletal formulae scores (1) for three correct isomer structures Penalise additional incorrect structures Penalise ethyl cyclopentene once only	**(2)**

Question Number	Answer	Additional Guidance	Mark
18(f)(iii)	• structure of methylidenecyclopentane	Example of structure  Accept a structural / displayed / hybrid formula If two structures are shown, both must be correct	**(1)**

(Total for Question 18 = 19 marks)

Question Number	Answer		Additional Guidance	Mark
19(a)	• expression for the RAM calculation	**(1)**	Example of calculation $79.9065 = \frac{((? \times 50.54) + (80.9163 \times 49.46))}{100}$ $79.9065 = \frac{(? \times 50.54)}{100} + \frac{(80.9163 \times 49.46))}{100}$	**(3)**
	• rearrangement of expression or part calculation	**(1)**	$79.9065 - \frac{(80.9163 \times 49.46))}{100} = \frac{(? \times 50.54)}{100}$ $39.8853 = \frac{(? \times 50.54)}{100}$	
	• calculation of relative isotopic mass **and** answer to six SF	**(1)**	relative isotopic mass(?) = 78.91828255 so relative isotopic mass(?) = 78.9183 Ignore units of g mol^{-1} Do not award other units Correct answer with no working scores (3)	

Question Number	Answer	Additional Guidance	Mark
19(b)	An answer that makes reference to the following points: • peak at m/z 37 with height 30% **(1)** • peak at m/z 72 with label $(^{35}Cl–^{37}Cl)^+$ **(1)** • peaks at m/z 74 with label $^{37}Cl_2^+$ **(1)** • peak at $m/z = 72$ has height 42% **and** peak at $m/z = 74$ has height 9% **(1)**	Ignore labelling on peaks at 35 & 70	**(4)**
			

Question Number	Answer	Additional Guidance	Mark
19(c)	An answer that makes reference to the following points: (working to show) • relative molecular mass is 2 × 69 which is 138 **or** there are two CF_3 'units' which add up to 138 • hexafluoroethane molecular formula	 C_2F_6 Allow $C_2F_6^{2+}$ but do not award any other charge Ignore any names and structures	**(2)**

Question Number	Answer	Additional Guidance	Mark
19(d)	An answer that makes reference to the following points: • $C_2H_5^+$ **and** (because it has the) lowest m/z (ratio)	 Accept it has the lowest mass / lightest (ion) Do not award reference to molecule / molecular Do not award relative atomic mass	**(1)**

(Total for Question 19 = 10 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 80 MARKS