

Multiple Choice Answers

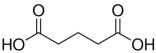
Q3: B

Multiple Choice Answers

Q4: B

Q17: A

Q40: D

3(a)	simplest /lowest (whole number / integer) ratio of atoms (of each element) in a compound / molecule
3(b)	two of: 
3(c)(i)	homolytic
3(c)(ii)	M1 $\text{C}_5\text{H}_{10} + \text{Cl}^\bullet \rightarrow \text{C}_5\text{H}_9^\bullet + \text{HCl}$ M2 $\text{C}_5\text{H}_9^\bullet + \text{Cl}_2 \rightarrow \text{C}_5\text{H}_9\text{Cl} + \text{Cl}^\bullet$
3(c)(iii)	termination
3(d)(i)	HCl (g)
3(d)(ii)	M1 (reaction 1): $-3115 - 286 + 3292 = -109$ (kJ mol ⁻¹) M2 $\Delta\text{H}_2 = -53 - (-109) = (+)56$ (kJ mol ⁻¹)
3(e)(i)	
3(e)(ii)	M1 absorption labelled at approx. 3000 cm ⁻¹ identified as O—H M2 absorption labelled at approx. 1720 cm ⁻¹ identified as C=O

1(a)	I The following data are recorded: - two burette readings AND titre for the rough titration - initial and final burette readings for two (or more) accurate titrations
	II Titre values recorded for accurate titrations, AND Correct headings and units in the accurate titration table - initial / start AND (burette) reading / volume - final / end AND (burette) reading / volume - titre OR volume used/added/ OR FA 2 used/added - unit: / cm³ OR (cm³) OR in cm³ (for each heading) OR cm³ unit given for each volume recorded.
	III All accurate burette readings recorded to 0.05 cm ³
	IV The final accurate titre recorded must be within 0.10 cm ³ of any other accurate titre
Accuracy (Q) marks Round burette readings to the nearest 0.05 cm ³ . Check and correct titre subtractions where necessary. Examiner selects the best mean titre, using the following hierarchy: - two (or more) accurate identical titres (ignoring any that are labelled 'rough'), <i>then</i> - two (or more) accurate titres within 0.05 cm³, <i>then</i> - two(or more) accurate titres within 0.10 cm³, <i>etc.</i> Calculate the candidate's mean titre value Calculate the supervisor's mean titre value Calculate the difference (δ) between the candidate's mean titre and the supervisor's mean titre	
Award accuracy Q marks as follows: V Award if δ ≤ 0.50 cm ³ VI Award if δ ≤ 0.30 cm ³ VII Award if δ ≤ 0.20 cm ³	
1(b)	Correctly calculates mean titre to 2 dp - Candidate must take the average of two (or more) titres that are within a total spread of not more than 0.20 cm³. - Working/explanation must be shown OR ticks must be put next to the two (or more) accurate readings selected. - The mean should be quoted to 2 dp and be rounded to nearest 0.01 cm³. (<i>e.g. 26.675 cm³ must be rounded to 26.68 cm³</i>)
1(c)(i)	All answers to (c)(ii), (c)(iii) and (c)(iv) to 3 – 4 sf
1(c)(ii)	Correctly calculates amount of manganate(VII) = 0.02 × volume in (b) / 1000 mol
1(c)(iii)	Correctly uses M1 Amount of ethanedioic acid = (c)(ii) × 5 / 2 mol M2 Concentration of FA 1 = (c)(ii) × 5 / 2 × 1000 / 25 mol dm ⁻³
1(c)(iv)	Correctly uses $M_r = 6.2(0) / (c)(iii)$
1(c)(v)	$(M_r - 90) / 18$ AND correctly calculates answer as integer
1(d)	H ⁺ needed in the reaction / H ⁺ used in / appears in the equation