Assessment schedule: practice paper 2026

AS 91391 Demonstrate understanding of the properties of organic compounds · Vertex Academy practice paper, not an NZQA paper

QUESTION ONE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	propanal: CH_3CH_2CHO propanone: CH_3COCH_3 same molecular formula, different structure	Both formulas, both functional groups AND the type of isomerism correct.		
(b)	propanal propanone	Correct observations for both AND the organic product for propanal.		
(c)	C2 bonded to CH_3, H, OH, COOH non-superimposable mirror images rotate plane-polarised light in opposite directions	Identifies the chiral carbon (four different groups), OR states that enantiomers rotate plane-polarised light in opposite directions.	Explains that the chiral carbon with four different groups gives two non-superimposable mirror images, AND that they rotate plane-polarised light by equal amounts in opposite directions.	
(d)	(i) esterification (condensation) C2 still has four different groups (ii) oxidation of secondary alcohol C2 now C=O	One correct product, OR one reaction type (esterification or oxidation).	Both products and reaction types correct, OR one product with a correct explanation of its optical activity.	Discusses both reactions with products and reaction types, AND justifies that the ester is optically active while 2-oxopropanoic acid is not, using the groups on carbon 2.

QUESTION TWO

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	(i) $CH_3CH_2CH_2OH$, propan-1-ol (ii) $CH_3CH_2CH_2NH_2$, propan-1-amine	Both products named correctly AND both reaction types correct.		
(b)	reflux orange to green distil as it forms	Product under reflux, colour change, reaction type AND the product when distilled off, all correct.		
(c)	methyl propanoate: $CH_3CH_2COOCH_3$ intermediate: propanoyl chloride, CH_3CH_2COCl Route 1: $CH_3CH_2COOH + CH_3OH \rightleftharpoons$ ester + H_2O Route 2: $CH_3CH_2COCl + CH_3OH \rightarrow$ ester + HCl	Correct structure of methyl propanoate OR of propanoyl chloride.	Both structures correct AND explains that Route 1 is an equilibrium, while the acyl chloride reaction is fast and goes to completion.	
(d)	(i) $CH_3CH_2COOCH_3 + H_2O \rightleftharpoons CH_3CH_2COOH + CH_3OH$ (ii) $CH_3CH_2COOCH_3 + NaOH \rightarrow CH_3CH_2COONa + CH_3OH$ acid product deprotonated to $CH_3CH_2COO^-$ carboxylate ion cannot re-form the ester	Names the reactions as hydrolysis, OR gives the products of one reaction.	Products of both reactions correct (propanoic acid and methanol; sodium propanoate and methanol).	Products of both AND explains that acid hydrolysis is an equilibrium, while in base the acid is converted to the carboxylate ion, which cannot re-form the ester, so the reaction goes to completion.

QUESTION THREE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	nylon-6,6 PET keratin	All three polymer types and linkages correct.		

(b)	$H_2NCH_2COOH + H_2NCH_2COOH \rightarrow H_2NCH_2CONHCH_2COOH + H_2O$ peptide (amide) link; condensation	Correct dipeptide structure AND the linkage, the other product and the reaction type.		
(c)	ester links attacked by OH^- products: ethane-1,2-diol + sodium benzene-1,4-dicarboxylate chains broken	States that the ester links are hydrolysed, OR names one product.	Explains base hydrolysis of the ester links breaking the chains AND names both products (a diol and a dicarboxylate salt).	
(d)	amide links -CO-NH- monomers: $H_2NCH_2CH_2NH_2$ and $HOOCCH_2CH_2COOH$ condensation polymerisation (i) acid: $HOOCCH_2CH_2COOH + {}^+H_3NCH_2CH_2NH_3^+$ (ii) base: $H_2NCH_2CH_2NH_2 + {}^-OOCCH_2CH_2COO^-$	Identifies the polymer as a polyamide, OR one monomer correctly.	Both monomers AND condensation polymerisation, OR the products of one hydrolysis correctly.	Both monomers, condensation polymerisation, AND the products of both hydrolyses in their correct forms (diammonium ion and acid in acid; diamine and dicarboxylate ion in base).

Judgement for each question

N0	N1	N2	A3	A4	M5	M6	E7	E8
No response; no relevant evidence.	1a.	2a, or 1m.	3a, or 1a and 1m.	4a, or 2a and 1m.	2m, or 1e.	2a and 2m, or 1m and 1e.	1e and 1m, with a minor error or omission elsewhere.	2a, 1m and 1e: every part correct.

Grade score out of 24 (each question's grade: N0 = 0 to E8 = 8): Not Achieved 0 to 7, Achieved 8 to 13, Merit 14 to 18, Excellence 19 to 24 (the 2025 exam's cut scores).