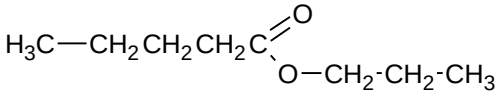
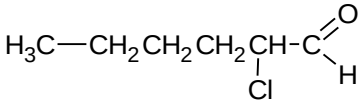
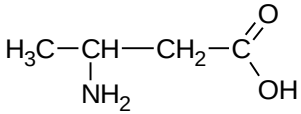
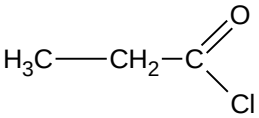
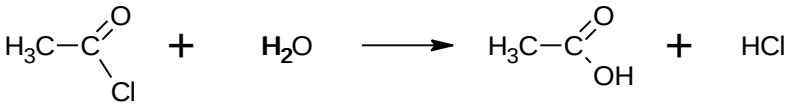
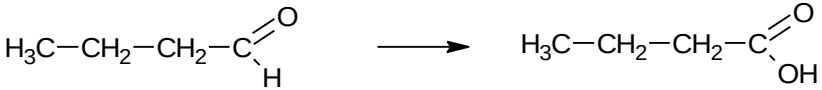
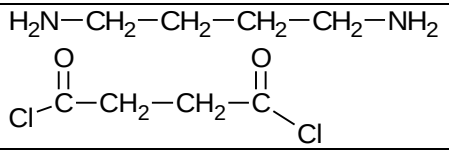
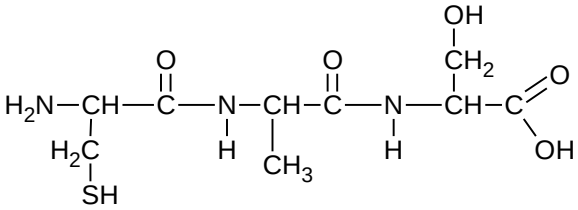
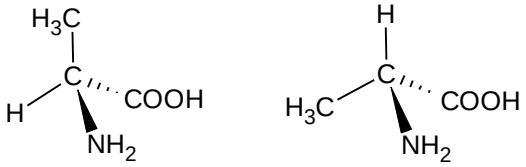
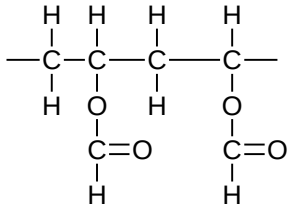
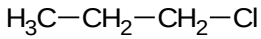
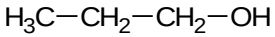
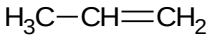
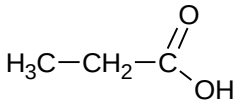
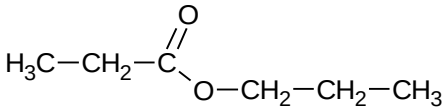
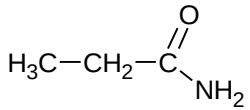
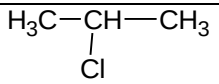
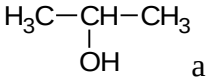
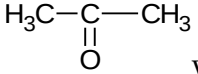
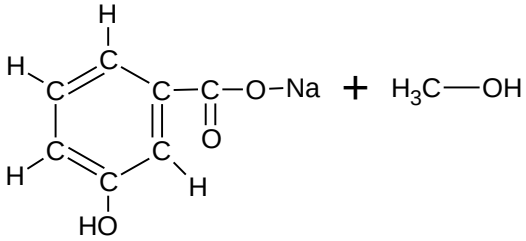
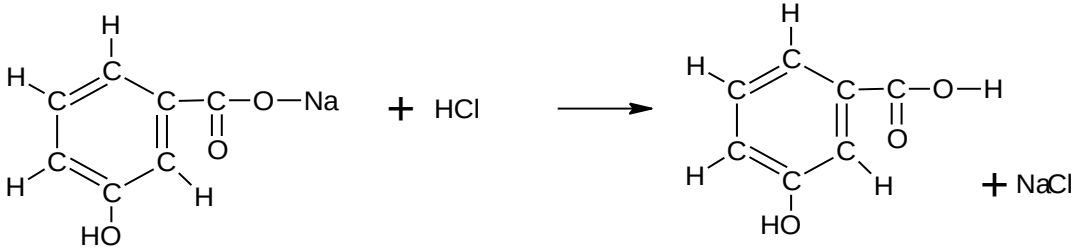
Assessment Schedule 2009 for AS 90698 Chemistry 3.5- Describe aspects of organic chemistry

Question number	Evidence	Achievement	Merit	Excellence
One (a)	i)  ii)  iii)  iv) 	3 correct		
One (b)	i) propylethanoate ii) propanamide iii) pentan-2-one iv) 3-chlorobut-1-ene	3 correct		
Two (a)	Add water to both, ethanoyl chloride will react violently to produce a solution/fumes that turn blue litmus red. Chloroethane is insoluble in water and will not change the colour of blue litmus.  Acids formed turn blue litmus red.	Test distinguishing one pair correctly described in full OR Test correctly identified by name or reagent for both pairs of compounds. (Equations not required)	Tests for both pairs correctly described with appropriate observations. (Equations not required)	Tests for both pairs correctly described with appropriate observations And Links made to reactions occurring at functional groups for both pairs. (Using equations or formulae)
Two (b)	Add Tollens, Fehlings or Benedicts reagents. Only butanal (aldehyde) will react and reduce the reagents. Tollens reagent will give a silver mirror when warmed with butanal and remain colourless with butan-1-ol. Benedicts and Fehlings solution will change from blue solution to a brick red precipitate when warmed with butanal but will remain blue with butan-1-ol.  Butanal can reduce Ag^{+} or Cu^{2+} but butan-1-ol cannot.			

Three (a) (i)		1 structure correct	2 correct	
Three (ii)	• A **polymer** is a **long chain molecule** formed when **many molecules or units** (ie monomers**)** link together. • **Polyamide(nylon)** chains are formed by **condensation** with the loss of HCl at each amide linkage.	1 bullet point of the explanation correct	Both bullet points correct	
Three (b)		Structure backbone contains nine carbons but minor error	Correct structure drawn	
Three (c)		One isomer drawn correctly with 3-d arrangement of groups around chiral C.	Both isomers drawn correctly.	
Three (d)	Differences: Solutions of enantiomers rotate plane polarised light in opposite directions. Different chemical reactions with optically active molecules. Similarities: Same physical properties e.g. same bp, mp, density, polarity. Very similar chemical properties with optically inactive molecules as same bonds broken.	Two differences or similarities or one of each described correctly.	Description recognises similarities and diffs in chemical and physical properties and rotation of plane polarised light.	

Three **(e)** **and** **(f)**	 In an addition polymer the monomer units all originally contain double bonds which undergo addition reactions to form long chains. The polymer chain is the only product formed/no small molecules are removed.	(e) or (f) correct	Both (e) and (f) correct.	
Four **(a)**	A.  B.  C.  D.  E.  F. 	4 correct	5 correct	All correct

Four **(b)**	 • G is  • Reaction of G with KOH(aq) will produce a secondary alcohol • Reaction of the secondary alcohol with concentrated sulfuric acid will produce the **same** alkene C as when B reacts. • Reaction of the secondary alcohol with acidified potassium dichromate will produce a ketone  which will not show acidic properties and will not turn blue litmus red. • No further reactions will occur as the ketone will not react with an alcohol (to undergo esterification.)	Two bullet points correct	Correct structures and some discussion	All points discussed with clarity
Five **(a)** **(b)** **(c)**	 (Base) hydrolysis 	One answer correct	2 answers correct	All correct

Five (d)	Reflux is used in this preparation as heating will increase the rate of reaction and none of the organic material will be lost by evaporation. The condenser is attached to the top of the flask and water passing through it cools the vapour and returns it to the reaction flask. (Or appropriately labelled diagram). Distillation is used to separate the alcohol from the salt (sodium salicylate) as the alcohol will have a lower boiling point. The condenser is attached to the side of the reaction flask so that the vapour formed at the appropriate temperature will condense and drip out into an appropriate container. (Or appropriately labelled diagram).	Description of the process of reflux or distillation	Both processes described in relation to the preparation of salicylic acid.	Complete explanation of both processes including arrangement of equipment/diagrams.

Judgement statement:

Achievement	**Achievement with Merit**	**Achievement with Excellence**
SEVEN questions answered correctly. Minimum of 7 x A.	NINE questions answered correctly including at least SIX at Merit level. Minimum of 6 x M + 3 x A.	TEN questions answered correctly including at least THREE at Excellence level and FIVE at Merit level. Minimum of 3 x E + 5 x M + 2 x A.