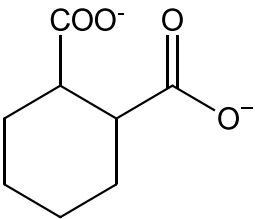
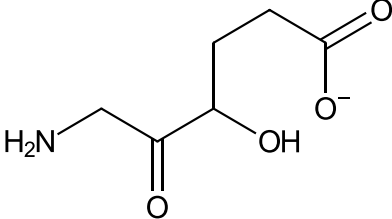


|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8(a)      | <ul style="list-style-type: none"> <li>chlorobenzene is less reactive than ethanoyl chloride</li> <li>p orbital / lone pair on Cl / -Cl will overlap / delocalise into the ring<br/><b>OR</b> C of COCl has most electron deficient <b>OR</b> has an electronegative oxygen atom / two electronegative atoms / electron withdrawing C=O group</li> <li>due to partial double C-Cl bond<br/><b>OR</b> C-Cl bond strengthened (more) / stronger bond between Cl and benzene / ring<br/><b>OR</b> C-Cl weakened in ROCl</li> </ul> <p>any two [1], all three [2]</p> |
| 8(b)(i)   | <ul style="list-style-type: none"> <li>nitrile</li> <li>amide</li> <li>ketone / carbonyl</li> <li>ester</li> </ul> <p>any two [1], all four [2]</p>                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8(b)(ii)  | 8 / eight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8(b)(iii) | no need to separate optical isomers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8(c)      | <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p><b>M1:</b> amide bond hydrolysed and COO<sup>-</sup> and NH<sub>2</sub> formed</p> <p><b>M2:</b> nitrile bond hydrolysed and COO<sup>-</sup> formed</p> <p><b>M3:</b> ester bond hydrolysed and COO<sup>-</sup> and OH formed</p>                                                                  |
| 8(d)(i)   | percentage = $100 \times 28 / (28 + 58 + 13 + 42) = 19.9 (\%)$ min 2sf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8(d)(ii)  | <b>D</b> is attracted more strongly to the stationary phase / forms stronger intermolecular forces with the stationary phase                                                                                                                                                                                                                                                                                                                                                                                                                                      |