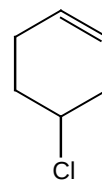
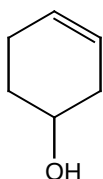
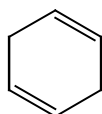
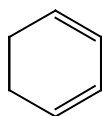


(ii)

2

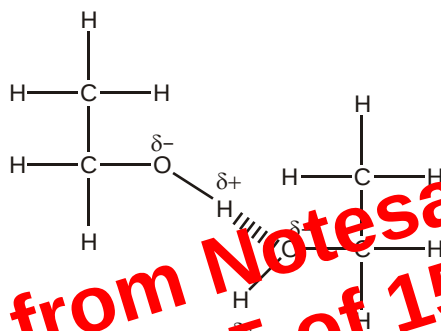
from the diol allow

from the Cl-alcohol allow



[6]

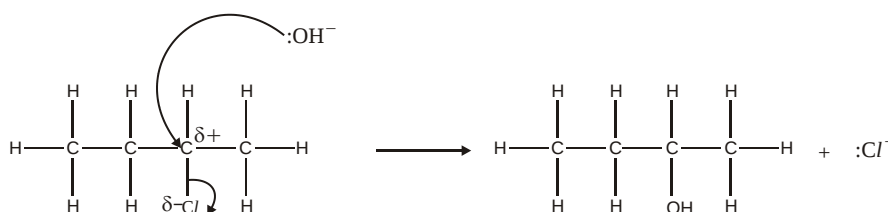
12. (i) *low volatility*, = **high** boiling point/ not easy to vapourise/owtte 1
intermolecular bonds. = bonds/forces/attractions **between** molecules 1
- (ii) type of intermolecular bond = hydrogen bond 1
 dipoles on both O-H bonds 1
 H-bond shown as a 'dashed bond' 1



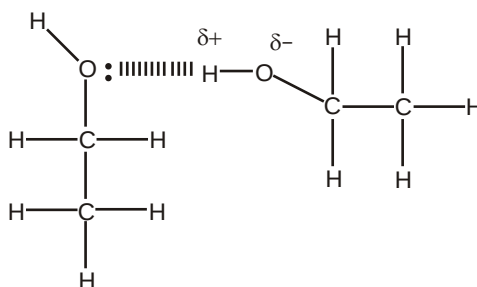
- (iii) (The boiling point of glycerol will be higher than ethanol because there are) 1
 more OH groups $\therefore$ more H-bonds

[6]

13. (a) (i) butan-2-ol by name or by formula ✓ 1
- (ii)



18.



dipoles 1

hydrogen bond between O in one O-H
and H in the other O-H 1

lone pair from O involved in the H-bond 1

[3]

19. (a) (i) (volatile components) can escape/distil out 1

ethanal is most volatile/b pt less than 60°C/partial oxidation 1

(ii) (volatile components) cannot escape/ refluxed 1

complete oxidation will be achieved/oxidised to the acid

(b) $\text{C}_2\text{H}_5\text{OH} + 2[\text{O}] \rightarrow \text{CH}_3\text{COOH} + \text{H}_2\text{O}$
($\text{CH}_3\text{COOH} + \text{H}_2\text{O}$ ✓) 2

(c) spectrum C 1

spectrum C only shows absorption at 1700 cm^{-1} for the C=O 1

the other two spectra contain the OH group absorption at approx 3000 cm^{-1} 1

[9]

20. (a) (i) reaction 1 1

(ii) reaction 4 1

(iii) reaction 3 1