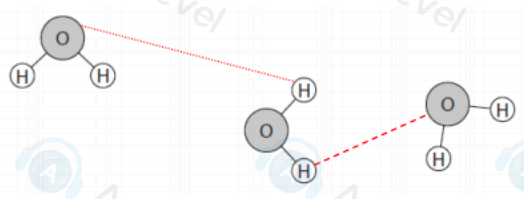
Question number	Answer	Additional guidance	Mark
4(a)(i)	An explanation that includes the following points: • the oxygen (atom) is slightly negative and the hydrogens (atoms) are slightly positive} (1) • {there is (an uneven) charge distribution (across the molecule) / uneven distribution of electrons / the oxygen pulls the electrons towards it} (1)	**Penalise ref to molecules once** **ACCEPT** δ -ve / δ +ve from a diagram **ACCEPT** comparisons of electronegativity unbalanced charge oxygen has more {protons / more positive nucleus} electrons closer to the oxygen	**(2)**

Question number	Answer	Additional guidance	Mark
4(a)(ii)	• a line drawn between an O of one molecule and a H of another molecule (1)	 If more than one H bond shown then they must be both correct and using different atoms on any one molecule If other water molecules draw then mark if correct	**(1)**

Question number	Answer	Additional guidance	Mark
4(b)	• water molecules clustered around the Na^+ with the O facing the Na^+ and the Hs facing away (1)	**NB** if charges are shown, they must be correct and partial **ACCEPT** any number of water molecules but all must be correct **DO NOT ACCEPT** circles overlapping solid lines joining circles  	**(1)**

Question number	Answer	Additional guidance	Mark
4(c)	A description that includes four of the following points: • (A) (increase in temperature can) (linear) increase the solubility (1) • (B) (increase in temperature (up to 32°C) can) (exponentially) increase the solubility and then decrease it (1) • (C) (increase in temperature can have) a slight increase on the solubility (1) • (D) (increase in temperature can) decrease the solubility (1) • statement referring to different chemicals have different solubilities at different temperatures (1)	**ACCEPT** positive correlation **ACCEPT** no effect **ACCEPT** negative correlation	**(4)**

Question number	Answer	Additional guidance	Mark
1	An answer that includes the following points (in order): • dipolar (1) • positive (1) • solvent (1) • hydrolysis (1) • lactose (1)	**ACCEPT** dipole / polar **ACCEPT** medium **DO NOT ACCEPT** hydration **DO NOT ACCEPT** lactase / other named molecules	**(5)**