**CHEMISTRY UNIT 1 & 2 EXTENDED RESPONSE #2**

You have one hour of class time to answer both of the questions below. Both questions are worth the same number of marks, so you should devote approximately the same amount of time to each.

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| **Question #1**  The physical properties of covalent molecular substances, including melting and boiling points, are influenced by the types and strength of intermolecular forces. The effects of these forces can be seen in the boiling point trends for hydrides in Group 14, 15, 16 and 17.  http://chemwiki.ucdavis.edu/@api/deki/files/60952/=cc544bd9881e8821e38e4a2e0df1f735.jpg?revision=1  Describe the origin and nature of dispersion forces, dipole-dipole forces and hydrogen bonding, and use these concepts to explain the trends in boiling points for hydrides in Group 14-17.  Your answer should include diagrams where relevant. |

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| **Question #2:**  The following table gives information about the solubility of some solutes in the solvents water and hexane.   |  |  |  | | --- | --- | --- | | **Solute** | **Solvent** | | | **Water** | **Hexane** | | decane | insoluble | soluble | | methanol \* | soluble | slightly soluble | | pentan-1-ol \* | slightly soluble | soluble | | allose \* | soluble | insoluble | | sodium chloride | soluble | insoluble | | silver chloride | insoluble | insoluble |   Discuss the intermolecular and interionic forces involved in the above solutes and solvent, and so account for the solubility of each substance in water and hexane.  \* The structures of selected organic substances are shown below:   |  |  |  | | --- | --- | --- | | https://upload.wikimedia.org/wikipedia/commons/thumb/d/d1/Methanol_flat_structure.png/622px-Methanol_flat_structure.png | https://upload.wikimedia.org/wikipedia/commons/thumb/a/a0/Pentan-1-ol.png/1024px-Pentan-1-ol.png | https://s3.amazonaws.com/classconnection/30/flashcards/7630030/png/d-threose-14CE92C6D5A645DF9C8.png | | Methanol | Pentan-1-ol | Allose | |

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| **Total Score** | | |
| Q1 (/22.5) | |  |
| Q2 (/22.5) | |  |
| Penalties for incomplete or late drafts  *(max -2 per question)* | Q1 |  |
| Q2 |  |
| Q3 |  |
| Q4 |  |
| **OVERALL (/45)** | |  |