

PENANG SANGAM HIGH SCHOOL
YEAR 12 CHEMISTRY
SUPPLEMENTARY RESOURCES

Week 5 – Strand 2 States of Matter

1. Two burettes were set up, one containing water and the other containing tetrachloromethane. When a positively charged rod was brought close to the stream of water running from the burette, the stream was deflected towards the rod. When the same experiment was carried out with tetrachloromethane the stream was not deflected. **(Refer to the lab on polar molecules and the notes on bond and molecule polarity)**

- i. What do the results indicate about the polarity of water molecule and the tetrachloromethane molecule?

- ii. Draw Lewis structure diagrams to show the shapes of the two molecules mentioned in (i) above.

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- iii. State the bond polarity and molecule polarity of tetrachloromethane. (CCl_4)

2. Account for the following properties: **(Hint: Explain in terms of bonding and structure in solids)**

- i) Solid iodine can sublime at relatively low temperature

- ii) Copper can conduct electricity in solid state.

- iii) Ionic compounds have a high melting and boiling point.

3. Using a suitable diagram, explain why sodium chloride can dissolve in water. Also, explain the process that takes place. (**Hint: hydration process**)

4. Consider the key list given below

O₂ BCl₃ H₂S CH₄ H₂ PCl₃

From the above key list, select the molecule that correctly matches with each of the following shapes. (**Hint: draw Lewis structure to answer correctly**)

- i) Bent _____
ii) Trigonal Planar _____
iii) Trigonal Pyramid _____
iv) Tetrahedral _____

5. **Read the notes on electronegativity and answer question 5.** State the trend of electronegativity across the period and down the group for the first twenty elements in the Periodic Table.

- ii) Arrange the following elements from the least to most electronegative.

Nitrogen, Fluorine, Magnesium, Aluminium
