## 4.6 Quantum Mechanics and Bonding: Hybridization

1. Define valence bond theory. P. 231
2. Draw an overlap of a hydrogen and chlorine atom.
3. Draw an NH3 molecule, what is the VSEPR theory regarding this molecule. Look at the table, p. 209.
4. Define hybrid orbital. P. 223.
5. Define hybridization. P. 223
6. Define hybrid orbital, with examples. See p. 234, Table 1.
7. Define a sigma bond. P. 235
8. Define a pi bond. P. 235.

Do and apply, p. 238 Review 4.6, #1, 2, 6, 8

## 4.7 Intermolecular Forces

1. Fill in the table, p. 239.

|  |  |  |
| --- | --- | --- |
| Concept | Definition | Diagram |
| Intramolecular bond |  | Showing the bonding |
| Intermolecular Bond |  | Showing the bonding |

2. The following bonding forces must shown using a real example, define van der Waal Forces, how did he determine there were a number of intermolecular forces.

3. Fill in the table:

|  |  |  |
| --- | --- | --- |
| Force | Definition | Drawing of forces |
| Dipole-dipole force |  | Refer to the polar molecules on p. 228 |
| Hydrogen bond |  |  |
| London Dispersion Forces |  |  |

4. Define polarizability and how molecules are affected by this phenomenon.

5. Do and apply, Practice, p .244, # 1 and 2.

6. Define surface tension, p. 245.

7. Define capillary action, p. 245.

8. Define viscosity, p. 246.

9. Do and apply, Practice, p. 247, 4.7 Review, #1, 2, 4, 6, 7.

# 4.8 The Structure and Properties of Solids

In real life explain why the shape, weight and sturdiness are important in real life situations. In terms of science, technology, and society explain why this may be important for example in computers, hand phones and airplanes. Brainstorm in a group of 4.

Fill in the table below (p. 249 and 250):

|  |  |  |  |
| --- | --- | --- | --- |
| Concept | Definition | Drawing | Real life example and application |
| Ionic crystal | Occurs when an ionic bond is formed  Na  Cl |  |  |
| Metallic Crystal |  |  |  |
| Electronic sea theory | Sheen  Malleability  Electrical conductivity  Hardness | | |