Lesson 13:1

(Please listen to the explanations, fill in the blanks and then complete the on-line quiz on BB7)

1. **Explain using a simple kinetic model for matter why:**
   a. **Melting and boiling take place without a change in temperature**
      - During melting/boiling process, work has to be done to _____/_____ the bonds or intermolecular forces between atoms in the substance to change it from solid to liquid/ liquid to gas.
      - Molecules in solid are slightly loose from their fixed position and drifting freely over one another in melting process.
      - Therefore, molecular _____ energy of the substance increases as the _____between atoms increases.
      - Heat energy is absorbed to increase the potential component of its _____energy but not the _____ energy. Since ____is directly proportional to its _____, these processes occurs at a _____temperature.

   b. **The specific latent heat of vaporisation is higher than specific latent heat of fusion for the same substance.**

Latent heat of fusion	**Latent heat of vaporisation**
☞ Is the heat energy absorbed to increase the molecular mobility where molecules can drift over one another as in liquid state. ☞ But _____ still exist between them.	☞ Is the heat energy absorbed to break the bonds between atoms in liquid state ☞ In addition, extra work has to be done against _____ to enable the molecules to escape from the liquid surface as _____.

   c. **A cooling effect accompanies evaporation.**
      - Evaporation is a change of state from liquid to gas that takes place at the surface of a liquid at _____ temperature.
      - The molecules of a liquid have an average kinetic energy which increases with temperature.
      - These molecules drift over one another and transfer _____. Some molecules gain energy, some lose energy.
      - Molecules with higher energy move faster. When coming to liquid surface, these _____moving molecules have enough energy to escape from the _____forces of neighbouring molecules and jump out from the liquid.
      - As the _____energetic molecules escape from the liquid (evaporation occurs), the _____ of the liquid is reduced, KE$\propto$ T, it results in a drop in _____.
      - Hence, evaporation produces cooling effect.