ACTIVITY # 15.1 HEAT & COOLING CURVE   Date due:_____

This question is about density, the kinetic theory and changes of state.

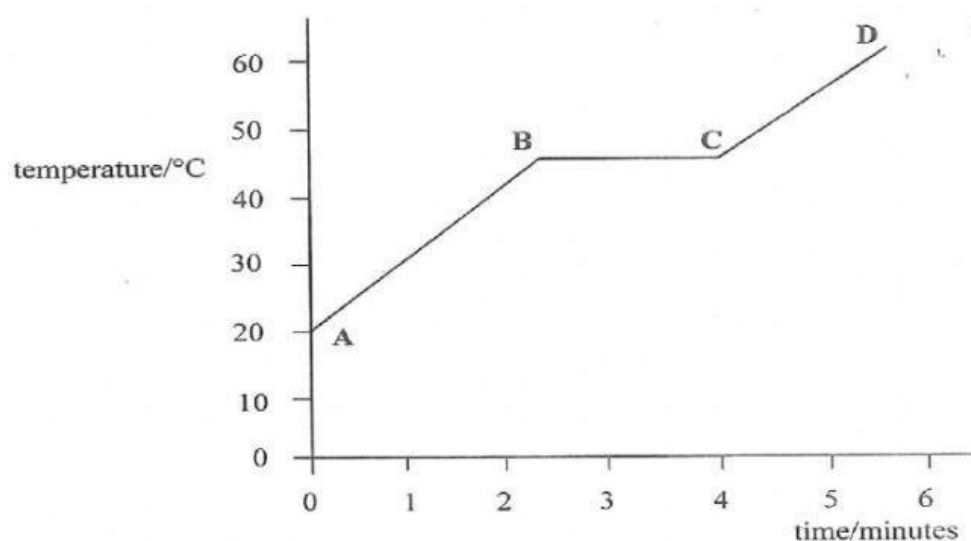**Fig. 7.1**

Fig. 7.1 shows the heating curve of solid beeswax as it is gently heated from room temperature (20 °C).

(a)   As the beeswax is being gently heated. Explain briefly, in terms of its particles

(i)   why the temperature of the beeswax increases from **A** to **B**?

_____

(ii)   why the temperature of the beeswax remains constant from **B** to **C**?

_____ [2]

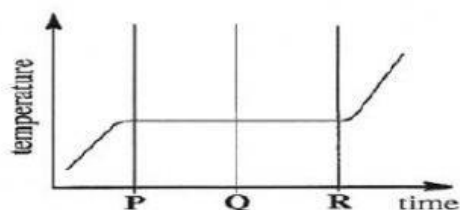(b)   (i)   Name the process taking place between points **B** and **C**.

_____ [1]

(ii)   What is the state of the beeswax between points **C** and **D**?

_____ [1]

(iii)   How many minutes did it take for the beeswax to melt?

_____ [1]

LIVEWORKSHEETS

c. **Fig. 2.2** shows a **temperature** versus **time** graph for a beaker full of crushed ice as it is gently heated whilst being stirred.

Fig. 2.2

(i)   Briefly describe what you would see if you looked into the beaker at times.

P _____

_____

Q _____

_____

R _____

_____ [3]

d. Fig. 4.2 shows the cooling curve of the wax.
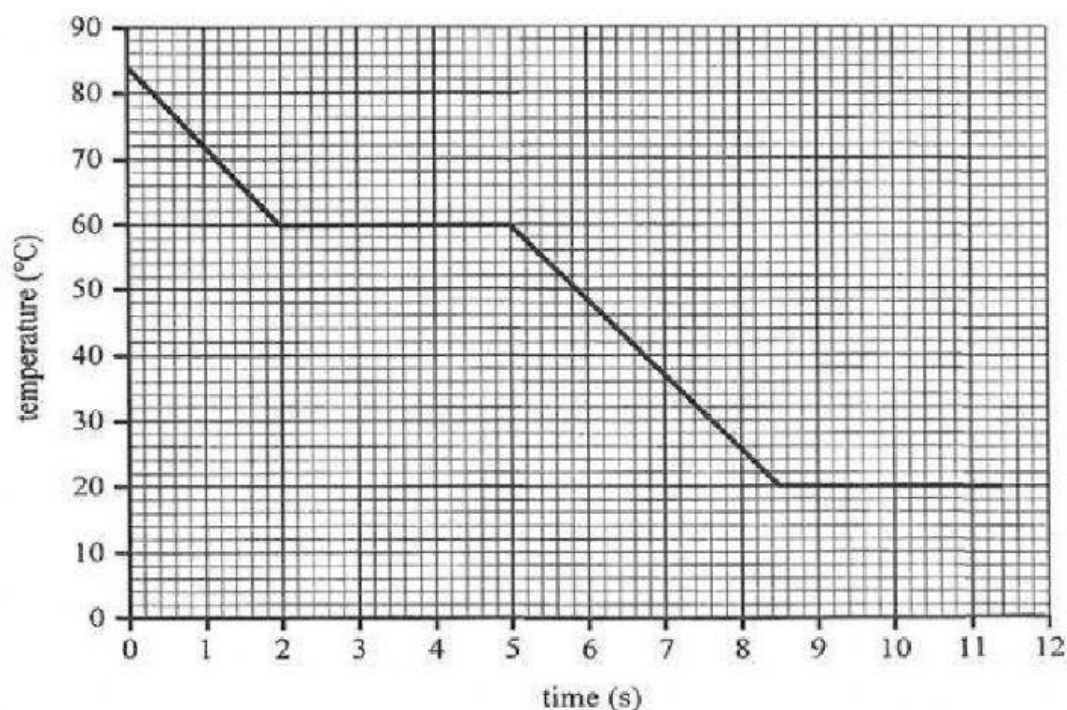

Fig. 4.2

(i) Briefly explain how cooling affects the kinetic energy of the wax molecules.

_____ [1]

(ii) Name the state of matter of the wax when the temperature is 58° C.

_____ [1]

(iii) State the freezing point of the wax.

_____ [1]

(iv) State what would happen to the freezing point of wax if impurities were added to it.

_____ [1]

LIVEWORKSHEETS

2. The graph shows the temperature and time for 400 g of solid wax which was heated from room temperature in an insulated container.
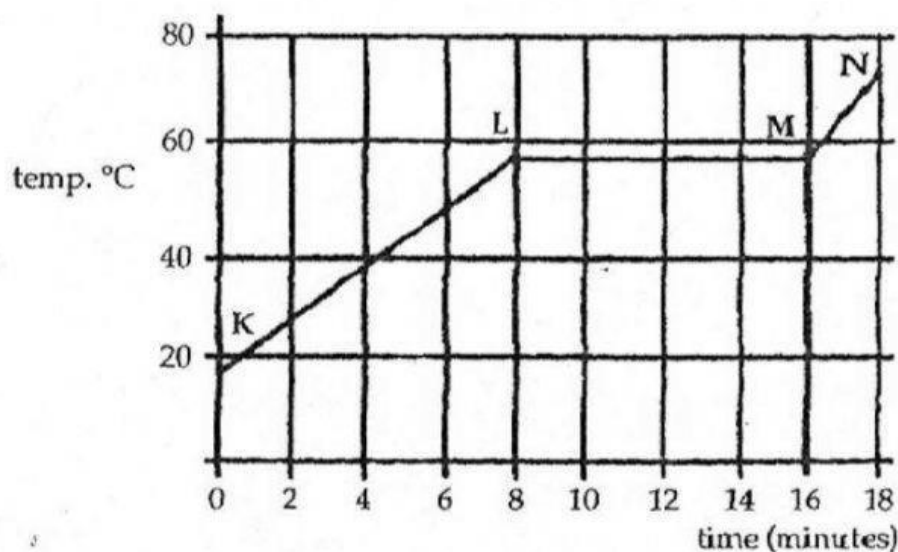
(a) State the melting point of the wax.

_____ [1]

(b) Write down the principal molecular energy change in the wax, in each of the three stages KL, LM and MN.

_____

_____

_____ [2]

(c) (i) Show that the time taken from point K of the graph to point L of the graph is 8.0 minutes.

_____

_____ [2]
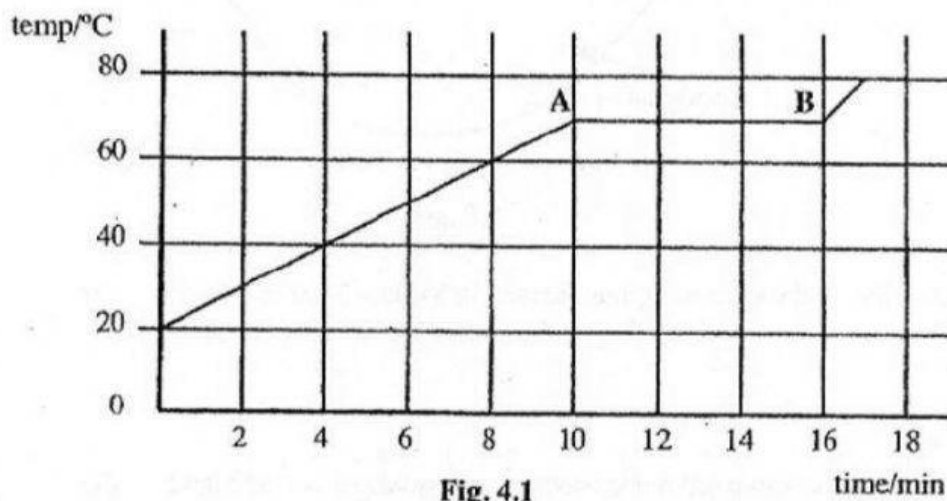
(ii) Show that the temperature rise between point K of the graph and point L of the graph is 36 K (°C).

_____

_____ [2]

3. This question is about changes in state.

Figure 4.1 shows a graph of temperature against time for 400 g of solid wax heated from room temperature in an insulated container by a 20 W heater.

Fig. 4.1

(a) State the value of the temperature of the room.

_____ [1]

(b) State the value of the melting point of the wax.

_____ [1]

(c) Explain why the temperature of the wax remains constant from points **A** to **B**, even though the heater is still on.

_____

_____ [2]