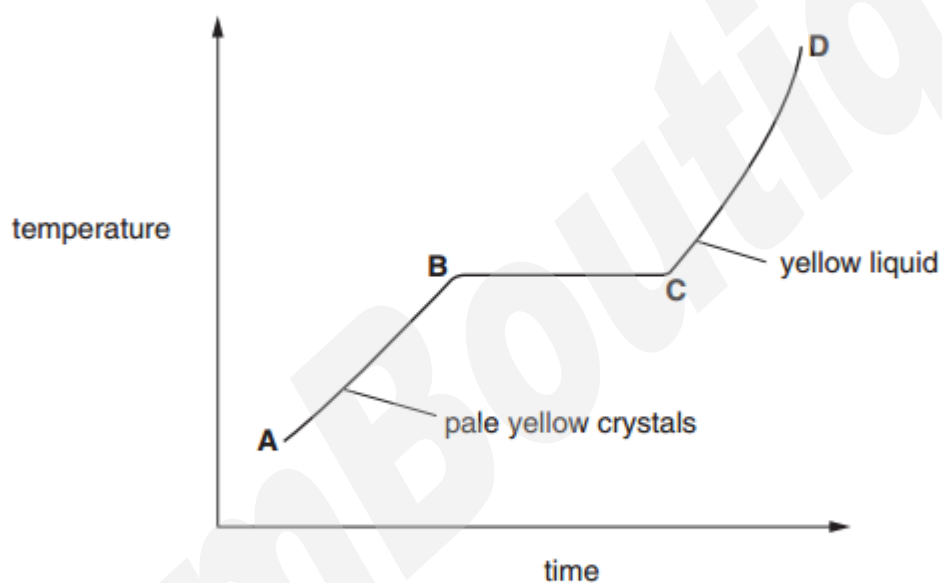


The Particulate Nature of Matter

Past Year Topical Questions

May/June 2003 (P3)

- (b) When nitrogen dioxide is cooled, it forms a yellow liquid and then pale yellow crystals. These crystals are heated and the temperature is measured every minute. The following graph can be drawn.



- (i) Describe the arrangement and movement of the molecules in the region A–B.

.....
.....

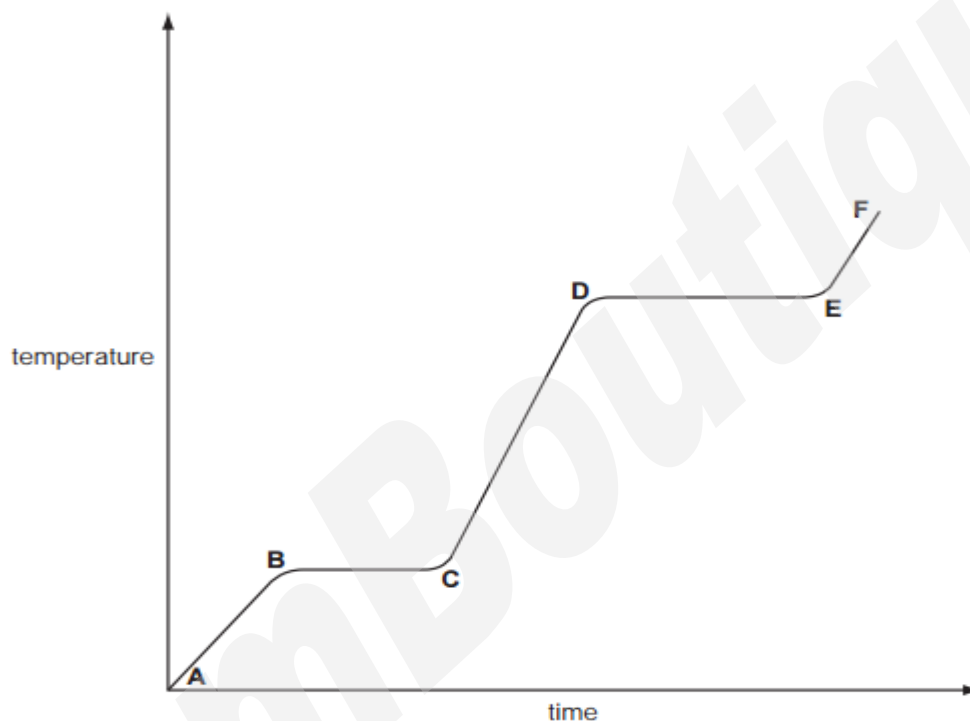
- (ii) Name the change that occurs in the region B–C

.....[4]

Oct/Nov 2005 (P3)

2 Ethanoic acid is a colourless liquid at room temperature. It has the typical acid properties and forms compounds called ethanoates.

(a) A pure sample of ethanoic acid is slowly heated from 0°C to 150°C and its temperature is measured every minute. The results are represented on the graph below.



(i) Name the change that occurs in the region D to E.

..... [1]

(ii) What would be the difference in the region B to C if an impure sample had been used?

..... [1]

(iii) Sketch on the graph how the line would continue if the acid was heated to a higher temperature. [1]

- (iv) Complete the following table that compares the separation and movement of the molecules in regions **C** to **D** with those in **E** to **F**.

	C to D	E to F
separation (distance between particles)
movement of particles	random and slow
Can particles move apart to fill any volume?

[5]

Oct/Nov 2006 (P3)

- 2 The table shows the melting points, boiling points and electrical properties of the six substances **A** to **F**.

substance	melting point / °C	boiling point / °C	electrical conductor at room temperature	electrical conductor of substance dissolved in water
A	961	2193	good	does not dissolve
B	113	444	does not conduct	does not dissolve
C	0	100	very poor	very poor
D	803	1465	does not conduct	good
E	-5 to -10	102 to 105	good	good
F	-85	-60	does not conduct	does not dissolve

- (i) Which **three** substances are solids at room temperature?

..... [1]

- (ii) Which **one** is an ionic compound?

..... [1]

- (iii) Which **one** is a gas at room temperature?

..... [1]

- (iv) Which **two** substances are liquids at room temperature?

..... [1]

- (v) Which substance is a metal?

..... [1]