Internal energy

1 Name the changes of state that you observe when you heat ice.

.....

(*2 marks*)

2 **a** Name the two types of energy of particles which add up to make the internal energy of a substance.

.....

(*2 marks*)

b State which of these types of energy the particles of a substance gain when:

i the substance's temperature increases

.....

(*1 mark*)

ii the substance is changing from a solid to a liquid

.....

(*1 mark*)

iii the substance is changing from a liquid to a gas.

.....

(*1 mark*)

c Describe what (if anything) happens to each of these types of energy when:

i a substance is condensing

.....

.....

(*2 marks*)

ii a substance is freezing.

.....

.....

(*2 marks*)

3 Describe the effect on the forces of attraction between particles in a substance when:

a the substance changes from a solid to a liquid

.....

(*1 mark*)

b the substance changes from a liquid to a gas.

.....

(*1 mark*)

1 Complete the table below. (You are not expected to quote numerical values for separation and force, but give simple descriptions such as 'weakest' or 'in contact'.)

State	Particle separation	Strength of forces between particles
Gas		
Liquid		
Solid		

(*6 marks*)

2 The particles of a substance slow down and move much closer together.

a Name the change of state that is happening to the substance.

..... (*1 mark*)

b Describe what is happening to density of the substance.

..... (*1 mark*)

3 When the energy of a liquid decreases (but it does not start to solidify), describe what happens to:

a the liquid's temperature

..... (*1 mark*)

b the movement of the liquid's particles.

..... (*1 mark*)

4 A boiling tube containing liquid stearic acid (which has a melting point of 69 °C) is placed into an insulated cup of water. As the stearic acid solidifies, the temperature of the water rises. Explain why.

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..... (*3 marks*)

5 State whether each of the following statements is correct or incorrect and explain why.

a When a football is kicked, the ball's internal energy increases because its kinetic energy increases.

.....

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..... (*3 marks*)

b When a football is placed on a high shelf, the ball's internal energy increases because its potential energy increases.

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..... (*3 marks*)

c When water boils, interatomic bonds are broken.

.....

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..... (*3 marks*)

d When water boils, intermolecular forces are overcome.

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..... (*3 marks*)