

- 2 (a) Define specific latent heat of fusion.

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- (b) Some crushed ice at 0°C is placed in a funnel together with an electric heater, as shown in Fig. 2.1.

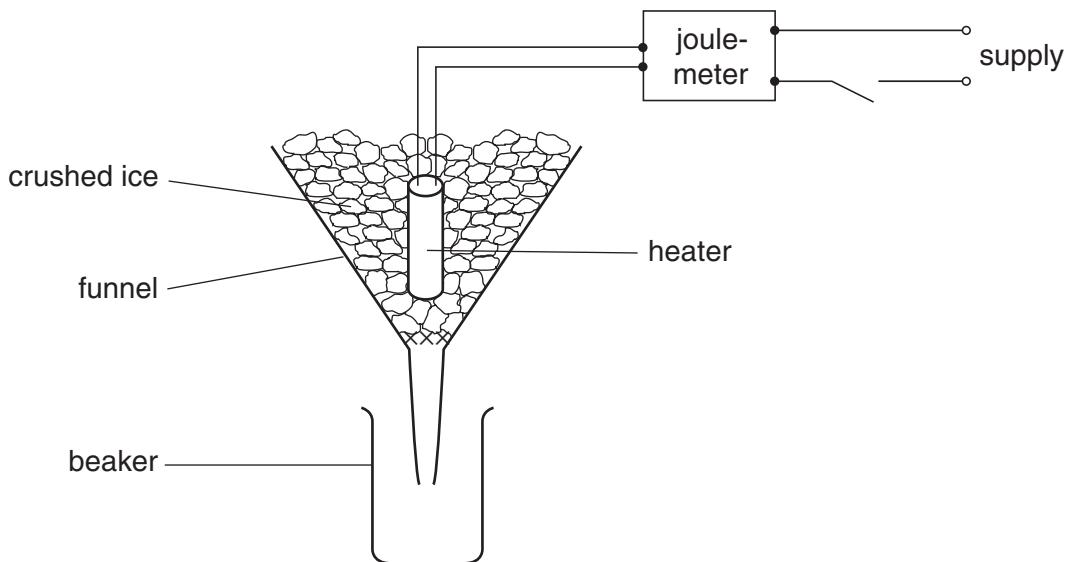


Fig. 2.1

The mass of water collected in the beaker in a measured interval of time is determined with the heater switched off. The mass is then found with the heater switched on. The energy supplied to the heater is also measured.

For both measurements of the mass, water is not collected until melting occurs at a constant rate.

The data shown in Fig. 2.2 are obtained.

| | mass of water / g | energy supplied to heater / J | time interval / min |
|---------------------|-------------------|-------------------------------|---------------------|
| heater switched off | 16.6 | 0 | 10.0 |
| heater switched on | 64.7 | 18000 | 5.0 |

Fig. 2.2

- (i) State why the mass of water is determined with the heater switched off.

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- (ii) Suggest how it can be determined that the ice is melting at a constant rate.

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- (iii) Calculate a value for the specific latent heat of fusion of ice.

latent heat = kJ kg⁻¹ [3]