

- 3 (a) State what is meant by *specific latent heat*.

.....
.....
..... [2]

- (b) A student determines the specific latent heat of vaporisation of a liquid using the apparatus illustrated in Fig. 3.1.

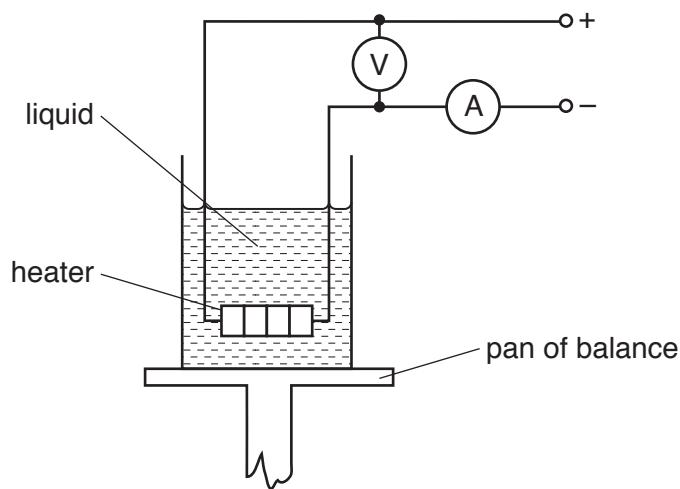


Fig. 3.1

The heater is switched on. When the liquid is boiling at a constant rate, the balance reading is noted at 2.0 minute intervals.

After 10 minutes, the current in the heater is reduced and the balance readings are taken for a further 12 minutes.

The readings of the ammeter and of the voltmeter are given in Fig. 3.2.

	ammeter reading /A	voltmeter reading /V
from time 0 to time 10 minutes	1.2	230
after time 10 minutes	1.0	190

Fig. 3.2

The variation with time of the balance reading is shown in Fig. 3.3.

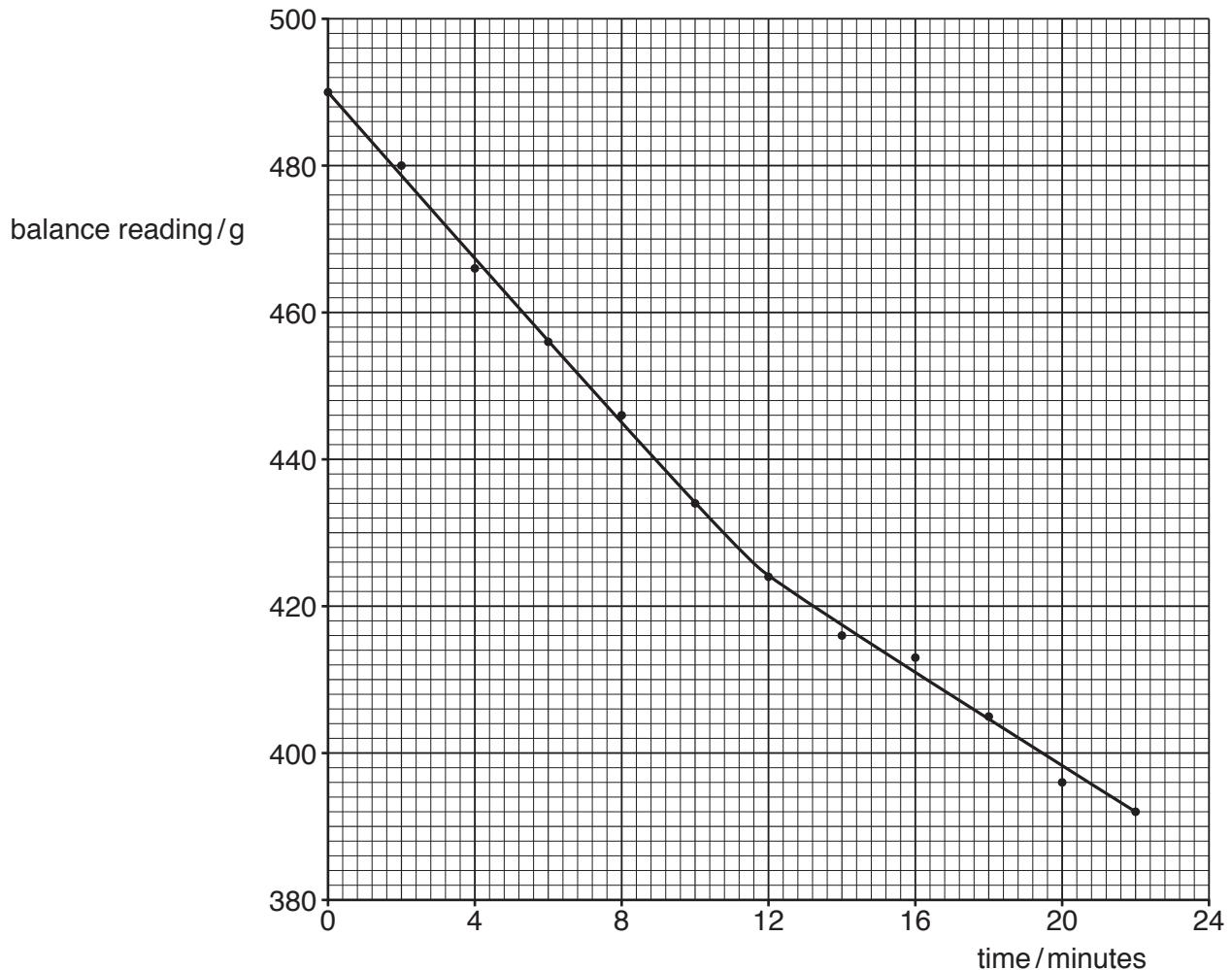


Fig. 3.3

- (i) From time 0 to time 10.0 minutes, the mass of liquid evaporated is 56 g.

Use Fig. 3.3 to determine the mass of liquid evaporated from time 12.0 minutes to time 22.0 minutes.

$$\text{mass} = \dots \text{g} [1]$$

- (ii) Explain why, although the power of the heater is changed, the rate of loss of thermal energy to the surroundings may be assumed to be constant.

.....
..... [1]

- (iii) Determine a value for the specific latent heat of vaporisation L of the liquid.

$$L = \dots \text{Jg}^{-1} [4]$$

- (iv) Calculate the rate at which thermal energy is transferred to the surroundings.

$$\text{rate} = \dots \text{W} [2]$$

[Total: 10]