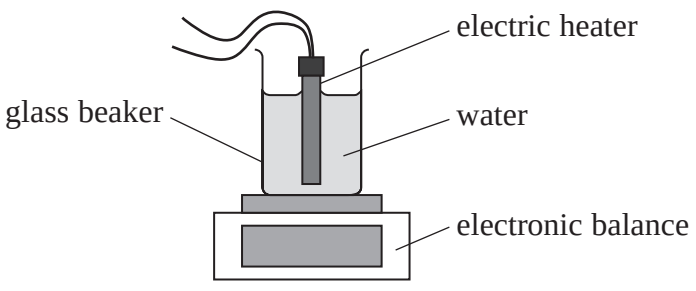
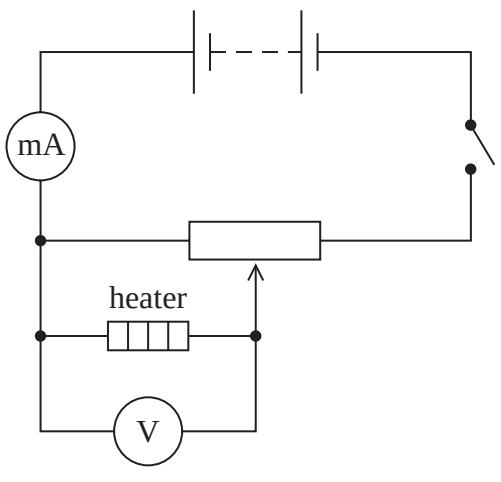
3 The specific latent heat of vaporisation of water can be determined using the apparatus shown.



(a) A student planned to vary the current in the heater from 0 A to 5 A. The student connected the following circuit to measure the current in the heater.



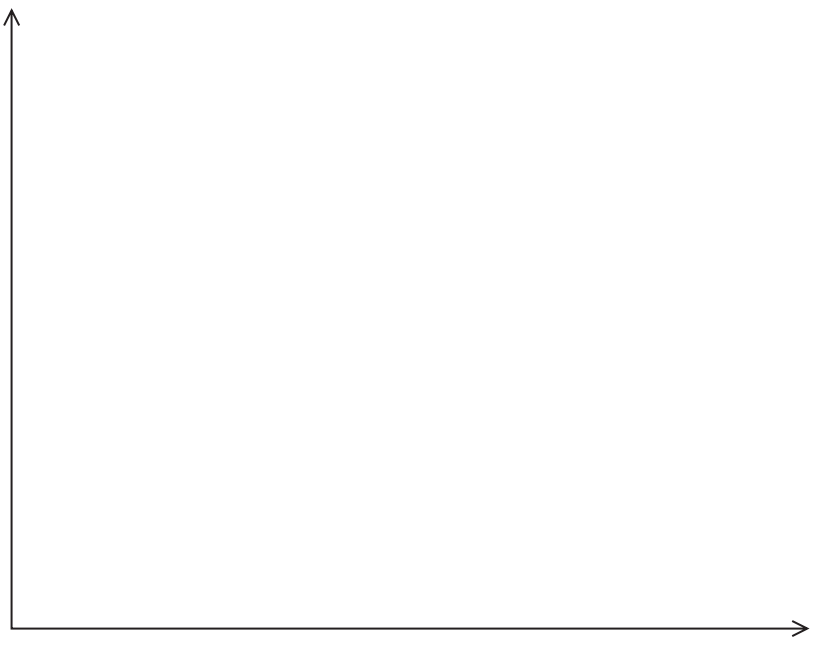
Criticise the student's circuit.

(2)

(b) (i) The student corrected the circuit and closed the switch. He waited until the water started boiling. He started a stopwatch and recorded the readings on the balance at regular time intervals.

Sketch a graph, on the axes below, of how the readings on the balance would vary with time.

(3)



(ii) The heater was switched on for 6.0 minutes and the change in mass of water in the beaker was 7.5 g.

Calculate the specific latent heat of vaporisation of water, L.

$V = 12\,\text{V}$
$I = 4.2\,\text{A}$

(3)

$L =$ .....

(iii) The errors in the experiment include uncertainty in the mass reading and uncertainty in reading the stopwatch, as the water boils.

Explain how another significant source of error affects the value of L obtained from the experiment.

(2)

(Total for Question 3 = 10 marks)