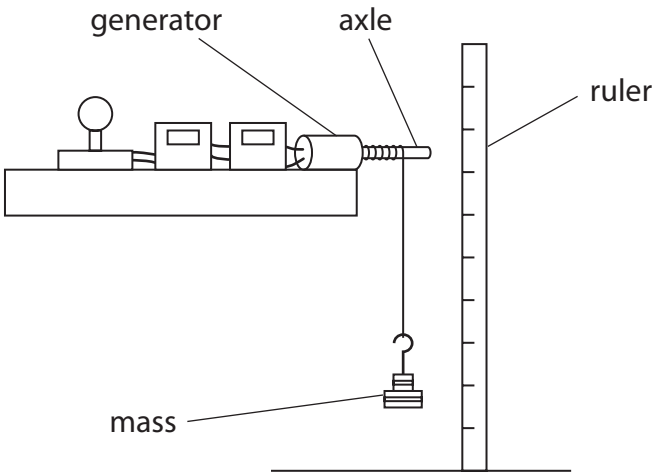
8 (a) A student investigates the energy transfers in a small generator.

She connects the generator to a circuit that includes a lamp.

She hangs a mass from a string wound around the axle.

The lamp lights as the mass falls to the ground.



The table shows the student's results.

height that mass falls	0.61 m
mass	2.75 kg
time taken for mass to fall	1.3 s
average current in the lamp	0.46 A
average voltage across the lamp	12.7 V

(i) State the equation linking gravitational potential energy, mass, *g* and height.

(1)

(ii) Calculate the gravitational potential energy, GPE, lost by the mass.

(2)

GPE = ... J

(iii) Explain why only some of the gravitational potential energy of the mass is transferred to the lamp.

(2)

(iv) Calculate the energy transferred to the lamp.

(2)

energy transferred = ... J

(b) Water from a reservoir can be used to generate electricity on a large scale.

Describe the energy transfers involved in this process.

(3)

(Total for Question 8 = 10 marks)