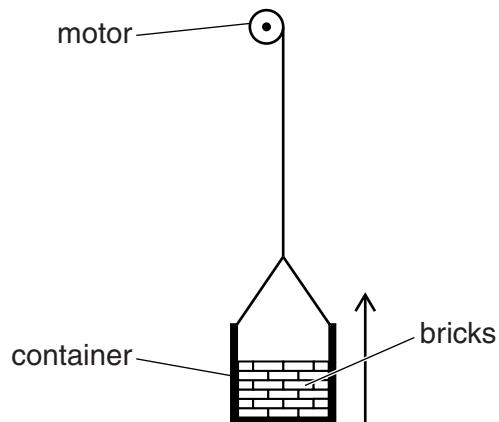


- 5 A motor is used to move bricks vertically upwards, as shown in Fig. 5.1.



**Fig. 5.1**

The bricks start from rest and accelerate for 2.0 s. The bricks then travel at a constant speed of  $0.64 \text{ m s}^{-1}$  for 25 s. Finally the bricks are brought to rest in a further 3.0 s.

The total mass of the bricks is 25 kg.

- (a) Determine the change in kinetic energy of the bricks

- (i) in the first 2.0 s,

$$\text{change in kinetic energy} = \dots \text{ J} [2]$$

- (ii) in the next 25 s,

$$\text{change in kinetic energy} = \dots \text{ J} [1]$$

- (iii) in the final 3.0 s.

$$\text{change in kinetic energy} = \dots \text{ J} [1]$$

(b) The bricks are in a container. The weight of the container and bricks is 350 N.

Calculate, for the lifting of the bricks and container when travelling at constant speed,

(i) the gain in potential energy,

$$\text{energy gain} = \dots \text{J} [3]$$

(ii) the power required.

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