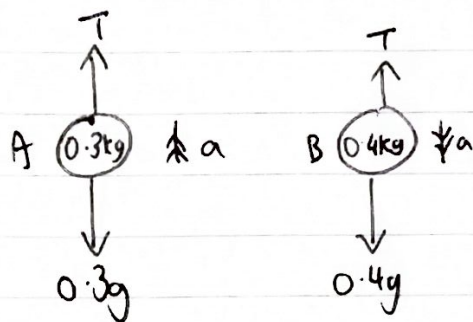


PULLEYS FLIP LEARNING QUESTIONS

1



(i) A

$$R(\uparrow): T - 0.3g = 0.3a \quad (1)$$

B

$$R(\downarrow): 0.4g - T = 0.4a \quad (2)$$

$$(1) + (2) \text{ gives } 0.1g = 0.7a$$

$$a = \frac{0.1g}{0.7}$$

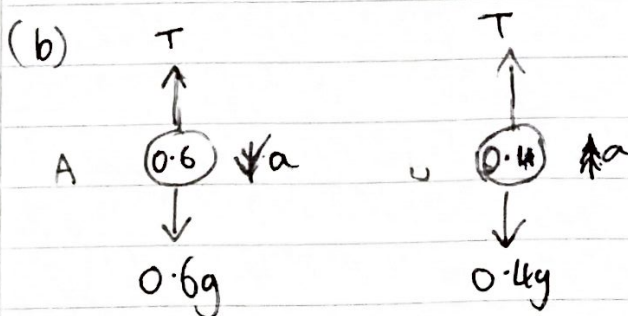
$$a = 1.4 \text{ ms}^{-2}$$

(ii) Using (1) $T = 0.3a + 0.3g$

$$T = 0.3 \times 1.4 + 0.3 \times 9.8$$

$$T = 3.36 \text{ N}$$

2 (a) $T = 0.4g = 3.92 \text{ N}$



A

$$R(\downarrow): 0.6g - T = 0.6a \quad (1)$$

B

$$R(\uparrow): T - 0.4g = 0.4a \quad (2)$$

$$(1) + (2) \text{ gives } 0.2g = a$$

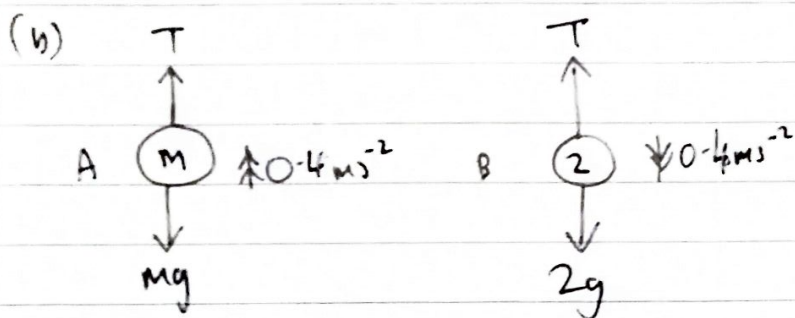
$$a = 1.96 \text{ ms}^{-2}$$

3/ (a) $s = 0.8\text{m}$
 $u = 0\text{ms}^{-1}$
 $v = ?$
 $a = ?$
 $t = 2\text{s}$

$$s = ut + \frac{1}{2}at^2$$

$$0.8 = \frac{1}{2} \times a \times 2^2$$

$$a = 0.4\text{ms}^{-2}$$



A
 $R(\uparrow): T - mg = 0.4m \quad (1)$

B
 $R(\downarrow): 2g - T = 2 \times 0.4$
 $2g - T = 0.8 \quad (2)$

Using (2) $T = 2g - 0.8$
 $= 18.8\text{N}$

(c) Using (1) $mg = T - 0.4m$
 $0.4m + mg = 18.8$
 $m(0.4 + g) = 18.8$

$$m = \frac{18.8}{0.4 + g}$$

$$= 1.84\text{kg} \quad (3\text{sf})$$