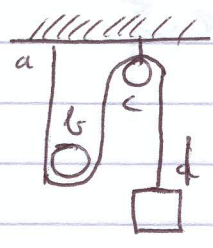


K197304



(b)

(c)

(d)

Fixed.

Mass 10 kg

Accel ↑ a

Forces T ↑ * T
 ↓ 10g

NII: $2T - 10g = 10a$
 $\Rightarrow 2T - 10g = 10a$

10 kg.

↓ 2a

↑ T
 ↓ 10g

$10g - T = 10(2a)$
 $10g - T = 20a$

NB

Mass (b) $\Rightarrow 2T - 10g = 10a$
 mass (d) $\Rightarrow 10g - T = 20a$

$2T - 10g = 10a$
 $20g - 2T = 40a$

Add: $10g = 50a$

$\Rightarrow a = \frac{1}{5}g \text{ ms}^{-2}$

\Rightarrow Accel of (d) is $2a$
 $= 2(\frac{1}{5}g) = \underline{3.92 \text{ ms}^{-2}}$

$10g - T = 20a \Rightarrow$

$10g - T = 20(\frac{1}{5}g)$

$\Rightarrow 10g - T = 4g$

$\Rightarrow 10g - 4g = T$

$6g = T$

$\Rightarrow \underline{T = 58.8 \text{ N}}$

Note

Let Distance travelled by (b) in t secs be x m.

\Rightarrow Distance travelled by (d) in t secs is 2x secs as 2x metres of rope have passed under (b).

\Rightarrow if Speed (b) = \dot{x} then Speed (d) = $2\dot{x}$

\Rightarrow Accel (b) = \ddot{x} then Accel (d) = $2\ddot{x}$

\Rightarrow Accel (d) = double accel (b) used.