

8 (a)	For B : $I = \frac{1}{2}a \cdot 2^2 \Rightarrow a = \frac{1}{2} \text{ m s}^{-2}$	M1 A1 (2)
(b)	$R = 3mg; F = \mu R$ $T - F = 3m \times 0.5$ $2mg - T = 2m \times 0.5$ Solving for μ $\mu = 0.58 \text{ or } 0.582$	B1 ; B1 M1 A1ft M1 A1 ft DM1 A1 (8)
(c)	$v = \frac{1}{2} \times 2 = 1$ $-\mu 3mg = 3ma$ $0 = 1^2 - 2\mu gs$ $s = 0.0877\dots (0.09 \text{ or better})$ $s < 0.3 \text{ correct conclusion,}$	B1 ft M1 M1 A1 DM1A1 cso (6) 16

NOTES

Question 8(a)

First M1 for a complete method to find a . M0 if $s = 1.3$ is used

First A1 for $a = 0.5$

Question 8(b)

First B1 for $R = 3mg$

Second B1 for $F = \mu R$ seen (could be on diagram)

First M1 for resolving horizontally for A (this M mark can be scored if they just use m for mass but M0 if no mass used)

First A1ft on their a , for correct equation. (allow F)

Second M1 for resolving vertically for B (this M mark can be scored if they just use m for mass but M0 if no mass used)

Second A1ft on their a , for correct equation.

(Allow M2A2 for ‘whole system’ equation but M0 if not using $5m$)

Third M1 dependent on both previous M marks for solving for μ

N.B. If m omitted consistently throughout (b), can score max

B0B1M1A0M1A0M1A0

Question 8(c)

B1 ft for (their $a \times 2$) oe to find v

First M1 for resolving horizontally for A with $T = 0$

Second M1 for a complete method (must have found a new ‘ a ’) to find distance moved by A .

First A1 for 0.09 or better (0.087719..)

Third M1, dependent on first and second M marks, for comparison with 0.3 or 1.3 (Must explicitly refer to either 0.3 or 1.3 or an appropriate equivalent)

Second A1 cso for does not reach pulley.