Question Number	Scheme	Marks
7(a)	$F = \mu mg$	B1
	For P: $mg - kmg = ma$ Allow $mg - T = ma$	M1A1
	For Q: $kmg - F = ma$ Allow $T - F = ma$	M1A1
	Either of these may be replaced by : $mg - F = 2ma$ (whole system)	
	Produce an equation in k and μ only using $T = kmg$	M1
	$k = \frac{1}{2}(1+\mu)$	A1
		(7)
7(b)	Attempt to find the acceleration. [Note that some possible correct forms are: $a = \frac{1}{2}g(1-\mu)$ or $g(1-k)$ or $g(k-\mu)$]	M1
	$d = \frac{1}{2} \times \frac{1}{2} g(1-\mu)t^2$	M1A1
	$t = \sqrt{\frac{4d}{g(1-\mu)}}$	A1
		(4)
7(c)	P or Q (or the system) would not move	B1
	Accept any of $T = mg$, $T > mg$, $T \geq mg$, $a = 0$, $a < 0$, $a \leq 0$ $F = T$, $F > T$, $F \geq T$, $F > mg$. Allow F replaced by μR **N.B**. Forces referred to must be clearly defined so e.g. use of vague terms like 'forward force' , 'opposite force', 'force to the left or right' is B0.	**D**B1
		(2)
		(13)