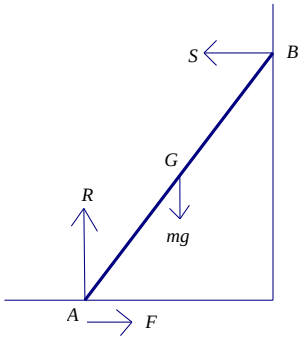
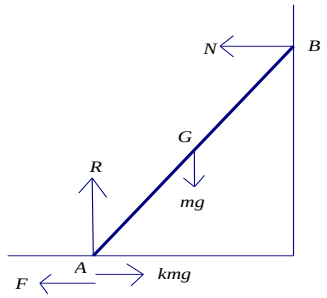
Q	Scheme	Marks	Notes
6(a)			
	$F = \frac{1}{3}R$	B1	For a correct statement seen anywhere e.g. on a diagram
either	Horizontal forces: $S = F\ \left(=\frac{1}{3}mg\right)$	B1	
	Equation for M(A)	M1	need correct terms, condone sign errors and sin/cos confusion. Condone a missing throughout.
	$S \times 2a\cos\alpha = mga\sin\alpha$	A1	Correct unsimplified
or	$R = mg$	B1	
	Equation for M(B)	M1	need correct terms, condone sign errors and sin/cos confusion. Condone a missing throughout.
	$F \times 2a\cos\alpha + mga\sin\alpha = R \times 2a\sin\alpha$	A1	Correct unsimplified
or	$S = F\ \left(=\frac{1}{3}mg\right)$	B1	
	Equation for M(G)	M1	need correct terms, condone sign errors and sin/cos confusion. Condone a missing throughout.
	$Fa\cos\alpha + Sa\cos\alpha = mga\sin\alpha$	A1	Correct unsimplified
SC	$S = F\left(=\frac{1}{3}mg\right)$ or $R = mg$ and no moments equation	B1	And no further marks
	Solve for $\tan\alpha$	M1	
	$\tan\alpha = \frac{2}{3}$*	A1*	Obtain given answer from correct working
SC	A candidate who never uses g can score B1B0M1A0M1A0		
		(6)	

Q	Scheme	Marks	Notes
6(b)			
	A good starting point for marking part (b) is to count the number of terms in the moments equation		
either	Use of $R = mg$ and M(A)	M1	
	$N = S = \frac{1}{3}mg$	A1	Correct only
	Resolve horizontally: $kmg = \frac{1}{3}R + N$ and solve for k	DM1	Dependent on the moments equation need correct terms, condone sign errors
	$k = \frac{2}{3}$	A1	correct equation
		(4)	
or	M(A) and	M1	need correct terms, condone sign errors and sin/cos confusion. Condone a missing throughout.
	$mga\sin\alpha = N \times 2a\cos\alpha$	A1	Correct unsimplified equation
	Resolve horizontally : $kmg = \frac{1}{3}R + N$ and use $R = mg$ and $\tan\alpha = \frac{2}{3}$ to solve for k	DM1	Dependent on the moments equation need correct terms, condone sign errors OR could use a second moments equation
	$k = \frac{2}{3}$	A1	Correct only
or	M(B),	M1	need correct terms, condone sign errors and sin/cos confusion. Condone a missing throughout.
	$mga\sin\alpha + kmg \times 2a\cos\alpha$ $= R \times 2a\sin\alpha + \frac{1}{3}R \times 2a\cos\alpha$	A1	
	Use of $R = mg$ and $\tan\alpha = \frac{2}{3}$ to solve for k	DM1	Dependent on the moments equation OR could use a second moments equation
	$k = \frac{2}{3}$	A1	Correct only
		(4)	
or	M(G),	M1	need correct terms, condone sign errors and sin/cos confusion
	$Na\cos\alpha + kmga\cos\alpha = Ra\sin\alpha + Fa\cos\alpha$	A1	Correct unsimplified equation
	Resolve horizontally : $kmg = \frac{1}{3}R + N$ and use $R = mg$ and $\tan\alpha = \frac{2}{3}$ to solve for k	DM1	Dependent on the moments equation need correct terms, condone sign errors OR could use a second moments equation
	$k = \frac{2}{3}$	A1	Correct only
		(10)	