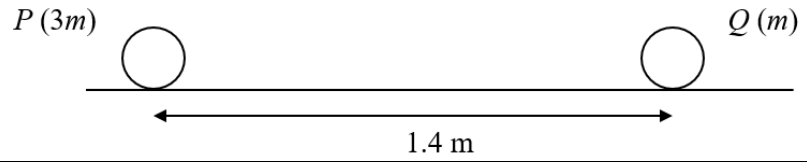
QUESTION NUMBER	SCHEME	MARKS
3		
3(a)	$\lambda = 3m(5-0)$	M1
	$= 15m$	A1
		(2)
3(b)	$2.5^2 = 5^2 + 2a(1.4)$ **OR** $5^2 = 2.5^2 + 2a(1.4)$	M1 A1
	$R = 3mg$	B1
	Use of $F = \mu R$	M1
	N2L $-\mu(3mg) = 3m \times a$ or just $-\mu g = a$	M1 A1
	$\mu = 0.68$ or 0.683	A1
		(7)
3(c)	$3m(2.5) + m(0) = \pm\ 3mv + m(2.1)$ **OR** $3m(\pm v - (-2.5)) = m \times 2.1$	M1 A1
	$v = \pm\ 1.8$ so speed is 1.8 (m s^{-1})	A1
		(3)
		(12)
	Notes for Question 3	
3(a)		
M1	Use of $I = \pm m\,(v-u)$ with $3m$ and 5. May not see $u = 0$. M0 if g is included or m missing.	
A1	Correct answer. **N.B.** $\lambda =$ NOT NEEDED.	
3(b)		
M1	Complete method, using *suvat*, to find an equation in a only. Ignore sign errors.	
A1	Correct unsimplified equation in a only. (the exact value for a is $\frac{-375}{56} = -6.6964..$)	
B1	Correct expression for R seen.	
M1	Use $F = \mu R$ for **their** R (must have found an R)	
M1	Correct method using N2L to give an equation in (m), μ and a. Must have correct number of forces and either $3m$ or m on BOTH sides of the equation or on neither side. Allow missing g.	
A1	Correct unsimplified equation in m, μ and a **N.B.** a does NOT need to be substituted for this mark but it must be consistent (in direction) with the previous *suvat* equation. i.e. it must lead to a POSITIVE value for μ.	
A1	Correct answer for μ to 2 or 3 sf.	
3(c)		

M1	Dimensionally correct CLM equation in v ONLY with correct number of terms and correct pairings of masses and velocities. Allow consistent extra g's. Ignore sign errors. **OR** equate impulses to give a dimensionally correct equation in v ONLY**.** Allow consistent extra g's. Ignore sign errors.	
A1	Correct unsimplified equation.	
A1	Correct speed, must be positive.	