Question Number	Scheme	Marks	Notes
8(a)	Equation of motion for P or for Q&R.	M1	All terms required and dimensionally correct. Condone sign errors. If m missing throughout, mark as a misread
	$5mg - T = 5ma$ or $T - 4mg = 4ma$	A1	One correct unsimplified equation
	Second equation of motion.	M1	Condone if second equation is for the **whole system**
	$5mg - T = 5ma$ $T - 4mg = 4ma$	A1	A second correct unsimplified equation
	Solve for a and T	DM1	Dependent on the first M mark
	$a = \frac{g}{9}$	A1	1.09 or 1.1 not $\frac{49}{45}$
	$T = \frac{40mg}{9}$	A1	43.6m, 44m
		(7)	SC A whole system alone leading to correct a scores M0A0M1A1M0A1A0
(b)	All particles have acceleration of the same magnitude	B1 (1)	Particles all start to move at the same time B1 Extra irrelevant comments B0
(c)	$v^2 = \frac{2gd}{9}$	M1	Complete method to find v or v^2 at the instant of separation
	Two independent equations of motion	M1	Dimensionally correct and contain correct terms
	$3mg - T' = 3ma'$ $T' - 4mg = 4ma'$	A1 A1	A1 for each correct equation. Accept the combined eqn. for A2
	$a' = -\frac{g}{7}$	A1	Accept +/-
	Use of *suvat* to find distance	DM1	With $a \neq$ their $\frac{g}{9}$ or g Dependent on the two preceding M marks
	$0 = \frac{2gd}{9} - 2\frac{g}{7}s$	A1ft	Correct unsimplified equation. Follow their $a \neq$ their $\frac{g}{9}$
	$s = \frac{7d}{9}$	A1	0.78d, 0.778d or better. Must be positive. Do not ISW
		(8)	
		(16)	

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