

Question Number	Scheme	Marks
7(a)	Inextensible string	B1 (1)
	MARK PARTS (b) and (c) together	
(b)	$4mg \sin \alpha - T - F = 4ma$	M1 A2
	$T - mg = ma$	M1 A1 (5)
(c)	$F = \frac{1}{4} R$	B1
	$R = 4mg \cos \alpha$	B1
	$\cos \alpha = \frac{4}{5}$ or $\sin \alpha = \frac{3}{5}$	B1
	Eliminating R, F and T	M1
	$a = \frac{3}{25} g = 1.2$ or $1.18 \text{ (m s}^{-2}\text{)}$	A1 (5)
(d)	$v^2 = 2 \times \frac{3}{25} gh = \frac{6}{25} gh$	M1
	$0^2 = \frac{6}{25} gh - 2gs$	
	$s = \frac{3}{25} h$	M1 A1
	$d > \frac{3}{25} h + h = \frac{28}{25} h$ GIVEN ANSWER	DM1 A1 (5)
		(16)
	Notes for Qu 7	
	7(a) B1 for inextensible (and taut) string; B0 if any extras given or if an incorrect consequence of the inextensibility of the string is given.	
	MARK PARTS (b) and (c) together 7(b) N.B. Omission of m is a Method error i.e. M0 for that equation First M1 for equation of motion for P with usual rules (omission of 4 on RHS is M0) First A1 and second A1 for a correct equation, A1A0 if one error Second M1 for equation of motion for Q with usual rules Third A1 for a correct equation Use of e.g $\cos(4/5)$ instead of $\cos \alpha$ is an A error unless they recover correctly. N.B. Allow consistent use of $-a$	
	7(c) First B1 for $F = \frac{1}{4} R$ seen or implied Second B1 for $R = 4mg \cos \alpha$ seen or implied Third B1 for $\cos \alpha = \frac{4}{5}$ or $\sin \alpha = \frac{3}{5}$ seen or implied or an appropriate correct angle is used to give a correct trig ratio First M1 for eliminating R, F and T and finding an a value First A1 $a = \frac{3}{25} g = 1.2$ or $1.18 \text{ (m s}^{-2}\text{)}$ (must be positive)	