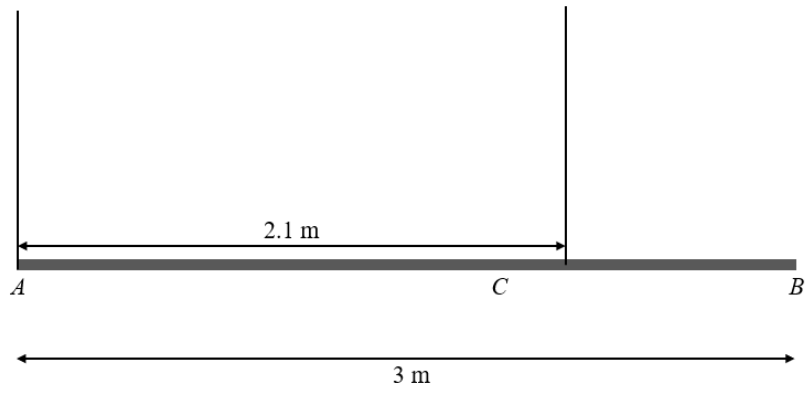
QUESTION NUMBER	SCHEME	MARKS
4		
4(a)	M(A): $350\times 2.1 = W\times 1.5$	M1 A1
	$W = 490$ *	A1*
		(3)
4(b)	M(A): $(600\times 2.1) = (490\times 1.5) + (210\times d)$	M1 A1
	$d = 2.5$	A1
		(3)
4(c)	Tension at A = 0	B1
	M(C): $490\times 0.6 = X\times 0.9$	M1 A1
	$X = \frac{980}{3} = 326.6666\ldots$ (330 or better)	A1
		(4)
		(10)
	Notes for Question 4	
4(a)		
M1	Uses a complete method to form an equation in W only. Dimensionally correct and the correct number of terms. Extra g is an A error. May use two equations and eliminate T_A (= 140) G is the centre of the rod Vert: $T_A + 350 = W$ M(C): $T_A\times 2.1 = W\times 0.6$ M(G): $T_A\times 1.5 = 350\times 0.6$ M(B): $T_A\times 3 + (350\times 0.9) = W\times 1.5$	
A1	Correct unsimplified equation in W only.	
A1*	Cso.	
4(b)		
M1	Uses a complete method to form an equation in d only. Dimensionally correct and the correct number of terms. Extra g is an A error.	

	M(A): $(600\times 2.1)=(490\times 1.5)+(210\times d)$ May use two equations and eliminate T_A (=100) G is the centre of the rod and P is the position of the particle Vert: $T_A+600=490+210$ M(C): $(T_A\times 2.1)=(490\times 0.6)+210(2.1-d)$ M(G): $(T_A\times 1.5)=(600\times 0.6)+210(1.5-d)$ M(P): $(T_A\times d)+490(1.5-d)=600(2.1-d)$	
A1	Correct unsimplified equation in d only	
A1	Correct answer	
4(c)		
B1	Tension at A is 0, seen or implied by the M mark.	
M1	Uses a complete method to form an equation in X only. Dimensionally correct and the correct number of terms. Extra g is an A error. M0 if tension at A is never 0. M(C): $490\times 0.6=X\times 0.9$ May use other equations and eliminate T_C $(=\frac{2450}{3}=816.666..)$ Vert: $T_C=490+X$ M(A): $(T_C\times 2.1)=(490\times 1.5)+(X\times 3)$ M(G): $T_C\times 0.6=X\times 1.5$ M(B): $T_C\times 0.9=490\times 1.5$	
A1	Correct unsimplified equation in X only.	
A1	Correct answer $\frac{980}{3}$ oe, 330 or better (326.666…)	