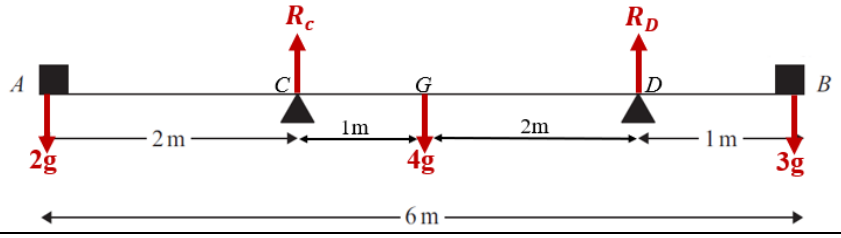
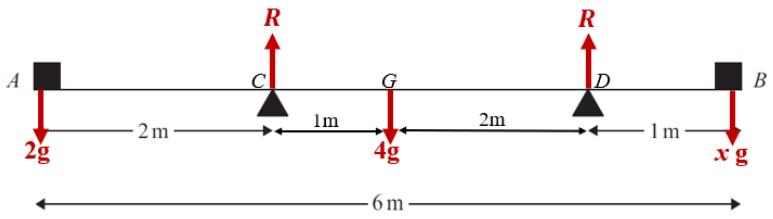
Question Number	Scheme	Marks
2 **(a)**		
	(i) Form an equation to solve for R_C	M1
	Relevant equations M(*D*): $3R_C+(1\times3g)=(2\times4g)+(5\times2g)$ Vert: $R_C+R_D=4g+2g+3g$ M(C): $3R_D+(2\times2g)=(1\times4g)+(4\times3g)$ M(*A*): $2R_C+5R_D=(3\times4g)+(6\times3g)$ M(*B*): $4R_C+1R_D=(3\times4g)+(6\times2g)$ M(*G*): $1R_C+(3\times3g)=2R_D+(3\times2g)$	A1
	$R_C=49$ (N)	A1
	(ii) Form an equation to solve for R_D	M1
	Correct equation	A1
	$R_D=39$ or 39.2 (N)	A1
		(6)
(b)		
	Moments equation in *x* with new Reaction forces	M1
	M(*B*): $4R_C+1R_D=(3\times4g)+(6\times2g)$ M(*D*): $3R_C+(1\times xg)=(2\times4g)+(5\times2g)$ M(C): $3R_D+(2\times2g)=(1\times4g)+(4\times xg)$ M(*A*): $2R_C+5R_D=(3\times4g)+(6\times xg)$ M(*G*): $1R_C+(3\times xg)=2R_D+(3\times2g)$	A1
	Complete method to find *x* using $R_C=R_D$	dM1
	$x=3.6$	A1
		(4)
		[10]
Notes		
2(a)	**Note: mark parts (i) and (ii) together.**	
(i)		

M1	Form a relevant equation in R_C. Dimensionally correct and the correct number of terms. A consistent missing *g* or including *m* with every mass term is an A error. If solving simultaneous equation in R_C and R_D, mark the first equation seen. If more than 2 equations are written, mark the ones used.
A1	Correct unsimplified equation
A1	Correct reaction at C seen in part (a), accept 5g.
(ii)	
M1	Form a relevant equation in R_D. Dimensionally correct and the correct number of terms. A consistent missing *g* or including *m* with every mass term is an A error. If solving simultaneous equation in R_C and R_D, mark the second equation seen. If more than 2 equations are written, mark the ones used.
A1	Correct unsimplified equation
A1	Correct reaction at *D* seen in part (a), accept 4g.
2(b)	
M1	Form a moments equation in *x* and *R*. Condone re-using notation R_C and R_D M0 if a previous *R* value is used. If more than one moments equation is used, award this mark for their best equation.
A1	Correct unsimplified moments equation. If more than one moments equation is used, award this mark for their best equation.
dM1	Dependent on previous method mark. Dimensionally correct equation with the correct terms. Complete method to find *x*. Must use $R_C = R_D$ and a second equation. The second equation may be another moments equation or vertical equilibrium. Vert: $R_C + R_D = 4g + 2g + xg$
A1	Correct answer oe, accept $\frac{18}{5}$
	SC: In part (b) max mark M1A1 dM1A1 if there is a complete method with a consistent missing *g* in both equations or for including *m* with every mass term in both equations.