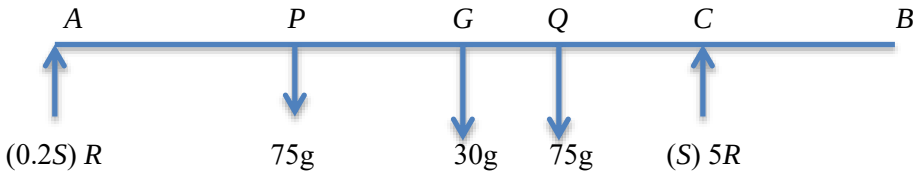
Question Number	Scheme	Marks
3(a)	 $(\uparrow)\ R+5R=75g+30g+75g$ $M(A)\quad 75gx+75g2x+30g\ \times 3=5R\ \times 4$ $x=\frac{34}{15}=2.3$ or better (N.B. Or another Moments Equation)	M1 A2 M1 A2 A1 **(**M1 A2) (7)
(b)	uniform – mass is or acts at midpoint of plank; centre of mass is at middle of plank; weight acts at the middle of the plank, centre of gravity is at midpoint rod - plank does not bend, remains straight, is inflexible, is rigid	B1 B1 (2) **9**
	Notes	
(a)	First M1 for either a vertical resolution (with correct of terms) or a moments equation (all terms dim correct and correct no. of terms) First A1 and Second A1 for a correct equation in R (or S where $S = 5R$) only or R and x only or S and x only. (- 1 each error , A1A0 or A0A0) Second M1 for a moments equation (all terms dim correct and correct no. of terms) Third A1 and Fourth A1 for a correct equation in R (or S where $S = 5R$) only or R and x only or S and x only. (- 1 each error, A1A0 or A0A0) Fifth A1 for $x = {}^{34}/_{15}$ oe or 2.3 (or better) **(i)** In a moments equation, if R and $5R$ (or S and $0.2S$) are interchanged, treat as 1 error. **(ii)** Ignore diagram if it helps the candidate. **(iii)** If an equation is correct but contains both R and S, *or $S = 5R$ is never used*, treat as 1 error. **(iv)** Full marks possible if all g's omitted. **(v)** For inconsistent omission of g, penalise each omission. $M(B),\ R\times 6+5R\times 2=75g(6-x)+75g(6-2x)+30g\times 3$ $M(C),\ 75g(4-x)+75g(4-2x)+30g\times 1=R\times 4$ $M(G),\ 75g(3-x)+5R\times 1=R\times 3+75g(2x-3)$ $M(P),\ Rx+30g(3-x)+75gx=5R(4-x)$ $M(Q),\ 75gx+30g(2x-3)+5R(4-2x)=R\times 2x$	
(b)	First B1 for first correct answer seen. Second B1 for the other answer, but only award this second mark if no extras given.	