Question	Answer	Marks	Guidance
(a)	Conservation of momentum	**M1**	3 terms; allow M1 if speed of A after collision is $\frac{1}{4}\times 8.5$. Allow $5\times 8.5 = 5X + 3Y$ where $\lvert X\rvert$ and $\lvert Y\rvert$ are different which may be seen by later work. If $\lvert X\rvert$ and $\lvert Y\rvert$ are subsequently used as being equal then M0.
	$5\times 8.5 = 5\times 0.25v + 3v$	**A1**	OE e.g. $5\times 8.5 = 5V + 3\times 4V$
	Speed of $B = 10\,\text{ms}^{-1}$	**A1**	Do not award if 10 from using mgv, maximum 2/3 –10 is A0 as speed required not velocity
		3	
(b)	KE before $= \frac{1}{2}\times 5\times 8.5^2 \left[= 180.625\right]$ KE after $= \frac{1}{2}\times 5\times 2.5^2 + \frac{1}{2}\times 3\times 10^2 \left[= 15.625 + 150 = 165.625\right]$	**1**	Attempt at any of the 3 terms for KE, using their $10\,\text{ms}^{-1}$ Not $\frac{1}{2}\times(5+3)\times 8.5^2$, not $\frac{1}{2}\times(5+3)\times 2.5^2$ not $\frac{1}{2}\times(5+3)\times 10^2$ unless $\lvert X\rvert = \lvert Y\rvert$ seen
	KE loss $\left[= 180.625 - 165.625\right] = 15$ J	**A1**	Accept –15, AWRT ±15.0
		2	