Question Number	Scheme	Marks
1(i)	$6mu - 3mu = -2m.\frac{3u}{2} + 3mv$ $v = 2u$	M1 A1 A1
(ii)	$I = \pm 2m(\frac{3u}{2} - -3u)$ Magnitude $= 9mu$ **OR**: $I = \pm 3m(2u - -u)$ Magnitude $= 9mu$	M1 A1 A1 M1 A1 A1 **6**
	Notes	
1(i)	M1 for CLM with correct no. of terms to give an equation in one unknown. Allow consistent extra *g*'s and/or cancelled *m*'s. Condone sign errors (They may obtain this equation by finding the impulse on each and eliminating the impulse – apply the *same* criteria, including condone sign errors)	
	First A1 for a correct unsimplified equation. Allow: $6mu - 3mu = -2m.\frac{3u}{2} - 3mv$	
	Second A1 for $2u$ (must be positive) (**N.B.** If all terms in the CLM are given the same sign, this leads to $2u$ M1A0A0)	
(ii)	M1 for dimensionally correct Impulse-momentum equation with consistent use of $2m$ or $3m$ (i.e. M0 if *g* included or *m* omitted.) **N.B**. Mark the actual equation not the formula (some candidates use $I = m(v+u)$ when the direction has been reversed)	
	First A1 for a correct unsimplified equation	
	Second A1 for $9mu$ (must be positive)	