

Question number	Answer	Notes	Marks
3 (a)	(to the) left;  (because) repulsion (due to like magnetic poles);	allow towards A, away from B ignore backwards reject if mention of charge	2
(b) (i)	0.045 (kg m/s);	allow 'the same'	1
(ii)	momentum of B after collision = $0.045 - (-0.021)$ ; evaluation;  e.g. $0.045 - -0.021$ (momentum $\Rightarrow$ ) 0.066 (kg m/s)	allow 0.024 for 1 mark  allow $0.045 + 0.021$	2
(iii)	substitution into $F = \text{change in momentum} / \text{time taken}$ ; evaluation;  e.g. $F = 0.066 / 0.19$ ( $F \Rightarrow$ ) 0.35 (N)	allow ECF from (ii)  use of 0.024 from (ii) gives 0.126... (N)	2
(iv)	(to the) right;	allow 0.347... (N)  allow towards B, away from A	1

**(Total for Question 3 = 8 marks)**