

7(a)	- force per unit length - force per unit current - length / current perpendicular to field 1 mark for any two points, 2 marks for all three points.
7(b)(i)	$F = BQv$
7(b)(ii)	arrow at Y pointing vertically upwards
7(b)(iii)	upwards deflection showing circular path
7(c)(i)	electric field applied vertically downwards (may be shown on a labelled diagram)
	electric force on particle in opposite direction to magnetic force (may be shown on a labelled diagram)
	particle undeflected when magnitudes of electric and magnetic forces are equal
7(c)(ii)	$EQ = BQv$
	$v = E / B$

6(a)(i)	$F = BIL$
	force on QR = $5.2 \times 10^{-3} \times 1.2 \times 0.054 \times 190$
	= 0.064 N
6(a)(ii)	torque = force $\times$ perpendicular distance between forces
	= $0.064 \times 0.025 \cos \theta = (1.6 \times 10^{-3}) \cos \theta$ N m
6(a)(iii)	one complete cycle of a sinusoidal curve between 0 and 360°
	τ axis labelled to show maximum and minimum torques at $\pm 1.6 \times 10^{-3}$ N m
	maximum at 0 and 360° and minimum at 180° (or vice versa), with torque shown as zero at 90° and 270°
6(b)	(ferrous core) increases magnetic flux density
	amplitude of torque increases