

2(a)	(electric) force is (directly) proportional to product of charges
	force (between point charges) is inversely proportional to the square of their separation
2(b)(i)	charge = $(+)2e$
2(b)(ii)	$F = 2 \times (1.60 \times 10^{-19})^2 / [4\pi \times 8.85 \times 10^{-12} \times (170 \times 10^{-12})^2] = 1.6 \times 10^{-8} \text{ N}$
2(c)(i)	$F = mv^2 / r$
	$v = [(1.6 \times 10^{-8} \times 170 \times 10^{-12}) / (9.11 \times 10^{-31})]^{1/2}$
	$= 1.7 \times 10^6 \text{ m s}^{-1}$
2(c)(ii)	$F = mr\omega^2$ and $\omega = 2\pi / T$
	$F = 4\pi^2 mr / T^2$
	$T = [(4\pi^2 \times 9.11 \times 10^{-31} \times 170 \times 10^{-12}) / (1.6 \times 10^{-8})]^{1/2}$
	$= 6.2 \times 10^{-16} \text{ s}$
	or
	$v = 2\pi r / T$
	$T = (2\pi \times 170 \times 10^{-12}) / (1.73 \times 10^6)$
	$= 6.2 \times 10^{-16} \text{ s}$
2(d)(i)	$E \propto Q / r^2$
	ratio = $[1.60 \times 10^{-19} \times (170 \times 10^{-12})^2] / [3.2 \times 10^{-19} \times (340 \times 10^{-12})^2]$
	$= 0.13$
2(d)(ii)	resultant force slightly less (than $1.6 \times 10^{-8} \text{ N}$) so speed lower or resultant force slightly less (than $1.6 \times 10^{-8} \text{ N}$) so period greater

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