

18. The period of revolution for the iodine ion is $T = 2\pi r/v = 2\pi m/Bq$, which gives

$$m = \frac{BqT}{2\pi} = \frac{(45.0 \times 10^{-3} \text{ T})(1.60 \times 10^{-19} \text{ C})(1.29 \times 10^{-3} \text{ s})}{(7)(2\pi)(1.66 \times 10^{-27} \text{ kg/u})} = 127 \text{ u} .$$