97. (a) The energy density is

$$u_B = \frac{B_e^2}{2\mu_0} = \frac{(50 \times 10^{-6}\,\mathrm{T})^2}{2\,(4\pi \times 10^{-7}\,\mathrm{H/m})} = 1.0 \times 10^{-3}\ \mathrm{J/m^3}\ .$$

(b) The volume of the shell of thickness h is $\mathcal{V} \approx 4\pi R_e^2 h$, where R_e is the radius of the Earth. So

$$U_B \approx \mathcal{V} u_B \approx 4\pi(6.4 \times 10^6\,\mathrm{m})^2(16 \times 10^3\,\mathrm{m})(1.0 \times 10^{-3}\,\mathrm{J/m^3}) = 8.4 \times 10^{15}\ \mathrm{J}\ .$$