

10. We use Eq. 32-7 to obtain $\Delta U = -\Delta(\mu_{s,z}B) = -B\Delta\mu_{s,z}$, where $\mu_{s,z} = \pm eh/4\pi m_e = \pm\mu_B$ (see Eqs. 32-4 and 32-5). Thus,

$$\Delta U = -B[\mu_B - (-\mu_B)] = 2\mu_B B = 2(9.27 \times 10^{-24} \text{ J/T})(0.25 \text{ T}) = 4.6 \times 10^{-24} \text{ J} .$$