

56. (a) The complete set of values are $\{-4, -3, -2, -1, 0, +1, +2, +3, +4\} \Rightarrow$ nine values in all.

(b) The maximum value is $4\mu_B = 3.71 \times 10^{-23} \text{ J/T}$.

(c) Multiplying our result for part (b) by 0.250 T gives $U = +9.27 \times 10^{-24} \text{ J}$.

(d) Similarly, for the lower limit, $U = -9.27 \times 10^{-24} \text{ J}$.