

57. The decay scheme is $n \rightarrow p + e^- + \nu$. The electron kinetic energy is a maximum if no neutrino is emitted. Then, $K_{\text{max}} = (m_n - m_p - m_e)c^2$, where m_n is the mass of a neutron, m_p is the mass of a proton, and m_e is the mass of an electron. Since $m_p + m_e = m_H$, where m_H is the mass of a hydrogen atom, this can be written $K_{\text{max}} = (m_n - m_H)c^2$. Hence, $K_{\text{max}} = (840 \times 10^{-6} \text{ u})c^2 = (840 \times 10^{-6} \text{ u})(931.5 \text{ MeV/u}) = 0.783 \text{ MeV}$.