Kinectic Energy of $e^- = 0.1 Mev$

$= 100 Kev$

Rest mass energy of $e^- = 511 Kev$

K.E is Comparable to rest mass energy, So we will use Relativistic formula

$$\frac{1}{2}\frac{m_0 v^2}{\sqrt{1-v^2/c^2}} \leq 100 Kev$$

Multiplying & Dividing by c^2.

$$\frac{1}{2}\frac{m_0c^2}{\sqrt{1-v^2/c^2}}\cdot\frac{v^2}{c^2} = 100\text{Kev}$$

$$m_0c^2 = 511\text{Kev}$$

$$\frac{1}{2}\frac{511}{\sqrt{1-\frac{v^2}{c^2}}}\cdot\frac{v^2}{c^2} = 100$$

Put $\frac{v^2}{c^2} = B$

$$\frac{B}{\sqrt{1-B}} = 0.4 \text{ (approx)}$$

Squaring both side.

$B^2 + 0.16B - 0.16 = 0 \longrightarrow$ quadratic equation

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}, \quad a \neq 0$$

Hence $B = 0.328 \rightarrow$ Velocity Square Can't be Negative.

$$v^2 = 0.328\, c^2$$

$$\boxed{V = 0.57\, C} \text{ (approximated Result).}$$