Quantum Mechanics
FS2024
Clicker Week 2
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1. To obtain the T.I.S.E. from the T.D.S.E., we had to assume that the potential energy function was time-independent.

   ■ **T** ☐ F This assumption is necessary to apply the technique of separation of variables.

2. Stationary states have a probability density that does not change with time

   ■ **T** ☐ F Stationary states have constant probability density as time cancels in $|\Psi|^2$.

3. In Quantum Mechanics, all measurements are probabilistic.

   ☐ T ■ **F** While most measurements yield probabilistic outcomes, if the system is in a stationary state, the result is deterministic.

4. If we confine an electron inside a finite volume with $V(x) = 0$, its ground state energy can never be exactly zero.

   ■ **T** ☐ F $E_n = \frac{n^2\hbar^2\pi^2}{2ma^2}$, where the ground state is $n = 1$. Thus, $E_1 \geq 0$.