CL17_Q1. A particle of mass m and zero potential energy can move back and forth freely along the x-axis from $-a$ to $+a$ and cannot go outside this region. Show that the wavefunction for lowest energy state of the particle is $\psi_n(x) = \sqrt{\frac{2}{a}}\cos\left(\frac{n\pi}{a}x\right)$.

CL17_Q2. What must be the wave function outside the potential well in order to satisfy the Schrodinger equation and Why?

CL17_Q3. Show that the energy of an electron confined in a 1-D symmetric potential well of length 'L' and infinite depth is quantized. Is the electron trapped in a potential well allowed to take zero energy? If not, why?

CL17_Q4. What properties must a potential have in order that the wavefunctions have definite parity? If wavefunctions have definite parity, why does the ground state always have *even* parity?