In this theoretical work, we study quantum mechanical phenomena exhibited by conductive electrons confined in nanocrystals. First, a model of quantum dots as potential wells is derived. Only the volume, not shape, is a significant parameter of the model in scope of terahertz spectroscopy and hence the studied geometries are interchangeable. A convenient choice can simplify given problems and therefore the spherical symmetry is chosen for investigating depolarization effects, which are reflected in Maxwell Garnett effective medium theory by a depolarization factor. Within the first order perturbation, Poisson's equation is solved for electrons distributed inside the sphere according to wavefunction and the depolarization factor is found. While reproducing the same value in the classical limit, it increases for nanocrystals and the maximum is reached in a non-degenerate regime when only the ground state is occupied. Increasing the depolarization factor shifts plasmonic resonances towards higher frequencies.