Energy in one dimension :- $\frac{n^2 \pi^2 \hbar^2}{2 m L_x^2}$

Energy in 3D = $E_x + E_y + E_z$

$$= \frac{n^2 \pi^2 \hbar^2}{2 m L_x^2} + \frac{m^2 \pi^2 \hbar^2}{2 m L_y^2} + \frac{p^2 \pi^2 \hbar^2}{2 m L_z^2}$$

$$= \frac{\pi^2 \hbar^2}{2m} \left(\frac{n^2}{L_x^2} + \frac{m^2}{L_y^2} + \frac{p^2}{L_z^2} \right)$$