Consider the setup of a double slit experiment. Denote the intensity at the center of the screen to be $I_0$.

Find the corresponding intensity $I$ for a path difference $\delta = \frac{\lambda}{6}$.

A) $I = \frac{I_0}{4}$.

B) $I = \frac{I_0}{2}$.

C) $I = \frac{3I_0}{4}$. 
\[ I = I_0 \cos^2 \left( \frac{\phi}{2} \right) \]

\[ \phi = k \delta \]

\[ k = \frac{2\pi}{\lambda} \]

Therefore the phase difference is

\[ \phi = \frac{2\pi \lambda}{6} = \frac{\pi}{3}. \]

And \[ I = I_0 \cos^2 \left( \frac{\pi}{6} \right) = \frac{3I_0}{4}. \]

Answer C.

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