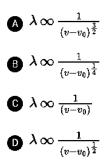
## Previous Year JEE Problems with Explanations

The de Broglie wavelength ( $\lambda$ ) associated with a photoelectron varies with the frequency (v) of the incident radiation as, [v<sub>0</sub> is threshold frequency] :



## Explanation

By photoelectric effect

 $KE = h\gamma - h\gamma_0 \dots (1)$ 

de broglie wavelength,

$$\lambda = \frac{h}{mv} = \frac{h}{\sqrt{2m \times K.E}} \dots (2)$$

Using equation (1) and (2), we get

$$\lambda = \frac{h}{\sqrt{2m \times (h\nu - h\nu_0)}}$$
$$\therefore \lambda \propto \frac{1}{(v - v_0)^{\frac{1}{2}}}$$