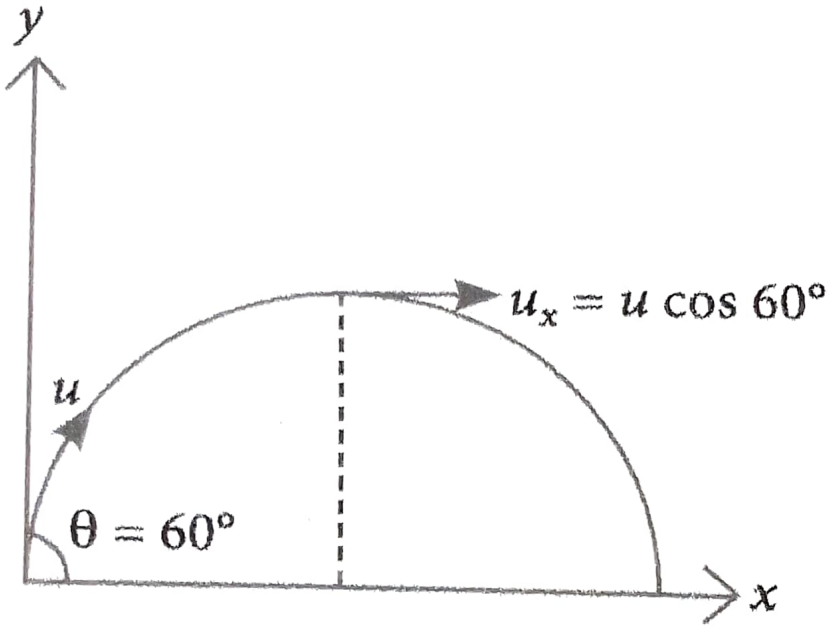
(a) : Given: $m = 100$ g, $u = 20$ m/s, $\theta = 60°$



Velocity at highest point, $u_x = u \cos 60°$

$$\text{K.E}_i = \frac{1}{2}mu^2$$

$$\text{K.E}_f = \frac{1}{2}m(u\cos 60°)^2$$

Change in kinetic energy, $\Delta K.E = K.E_i - K.E_f$

$$\Delta K.E = \frac{1}{2}mu^2\left[1-\cos^2 60°\right] = \frac{1}{2}\times\frac{100}{1000}\times 20\times 20\times\frac{3}{4}$$

$\Delta K.E = 15$ J