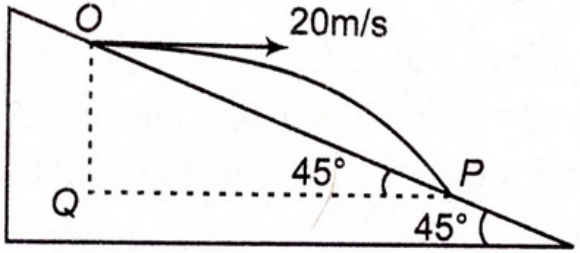
QUES 05:-

In the figure shown, find



(a) the time of flight of the projectile over the inclined plane

(b) range OP

Solution (a) Let the particle strikes the plane at point P at time t, then

$$OQ = \frac{1}{2} g t^2 = 5t^2$$

$$QP = 20\,t$$

In ΔOPQ, angle OPQ is 45°.

$\therefore$ $$OQ = QP \quad \text{or} \quad 5t^2 = 20t$$

$\therefore$ $$t = 4\,\text{s}$$ **Ans.**

(b) $$OP = QP \sin 45° = (20t)(\sqrt{2})$$

Substituting $t = 4\,\text{s}$, we have

$$OP = 80\sqrt{2}\,\text{m}$$ **Ans.**