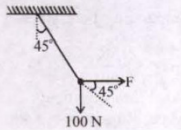QUES 04

A mass of 10 kg is suspended vertically by a rope from the roof. When a horizontal force is applied on the rope at some point, the rope deviated at an angle of 45°at the roof point. If the suspended mass is at equilibrium, the magnitude of the force applied is $(g = 10 \text{ ms}^{-2})$

(a)   200 N
(b)   140 N
(c)   70 N
(d)   100 N

(d)
At equilibrium,

$$\tan 45° = \frac{mg}{F} = \frac{100}{F}$$

$\therefore F = 100 \text{ N}$

100 N