

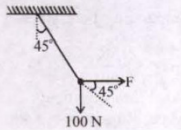
QUES 04

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 ($g = 10 \text{ ms}^{-2}$)

[Main 9 Jan. 2019 II]

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

(d)
At equilibrium,
$$\tan 45^\circ = \frac{mg}{F} = \frac{100}{F}$$
$$\therefore F = 100 \text{ N}$$



The diagram shows a horizontal roof line at the top. A rope is attached to the roof and extends downwards and to the right, making a 45° angle with the vertical dashed line. At the end of the rope, a mass is suspended. A horizontal force F is applied to the mass, pointing to the right. A vertical force of 100 N is shown acting downwards from the mass, representing its weight.