Answers to NCERT/CBSE PHYSICS Class 11(Class XI)textbook

CHAPTER FIVE Laws of Motion

EXERCISES

(For simplicity in numerical calculations, take g = 10 m s-2)

5.7 A body of mass 5 kg is acted upon by two perpendicular forces 8 N and 6 N.Give the magnitude and direction of the acceleration of the body.

5.7

Solution;

Let the forces be F_x=8N(in x direction) and $F_y = 6N$(in y direction).

Magnitude of net force is $F_{net} = \sqrt{F_x{}^2 + F_y{}^2} = \sqrt{8^2 + 6^2} = \sqrt{100} = 10N$

And and its direction is given by, $\theta = \tan^{-1}(\frac{F_y}{F_x}) = \tan^{-1}(\frac{6}{8}) = 37^0$ with the x axis,and same as direction of ac

Magnitude of acceleration is ,a$= \frac{F}{m} = \frac{10}{5} = 2\ ms^{-2}$