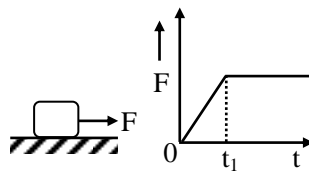


1. A particle is acted upon by two mutually perpendicular forces of 3N and 4N. In order that the particle remains stationary, the magnitude of the third force that should be applied is -

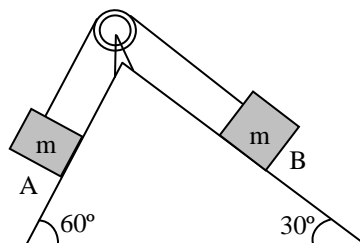
- (A) 12 N (B) 5 N (C) 8 N (D) 7 N

2. A particle is on a smooth horizontal plane. A force F is applied whose F - t graph is given. Then-



- (A) between 0 & t_1 , acceleration is constant (B) initially body must be in rest
(C) after t_1 acceleration is constant (D) Finally acceleration is zero

3. Two blocks each of mass m are resting on a frictionless inclined plane as shown in figure. Then -



- (A) The block A moves down the plane (B) The block B moves down the plane
(C) Both the blocks remains at rest (D) Both the blocks moves down the plane

TRUE OR FALSE TYPE QUESTIONS

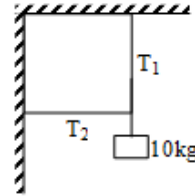
4. Equilibrium means zero acceleration while rest means zero velocity.
5. Newton's first law is a special case of second law.

FILL IN THE BLANKS TYPE QUESTIONS

6. Determine the tensions T_1 and T_2 on the strings.

$T_1 = \dots\dots\dots$

$T_2 = \dots\dots\dots$



ONE OR MORE THAN ONE CORRECT ANSWER TYPE QUESTIONS

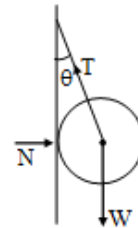
7. A metal sphere is hung by a string fixed to a wall. The forces acting on the sphere are shown in figure. Which of the following statement is/are correct ?

(A) $\vec{N} + \vec{T} + \vec{W} = 0$

(B) $T^2 = N^2 + W^2$

(C) $T = N + W$

(D) $N = W \tan$



8. Two particles A and B, each of mass m , are kept stationary by applying a horizontal force $F = mg$ on particle B as shown in figure. Then-

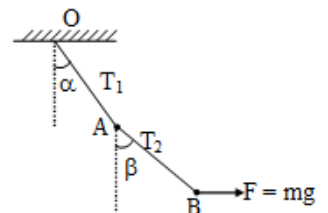
θ α

(A) $\tan \theta = 2 \tan \alpha$

(B) $2T_1 = 5T_2$

(C) $T_1^2 = T_2^2 + 5$

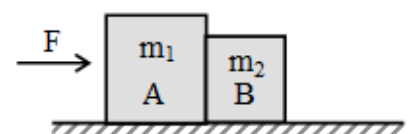
(D) None of these



SUBJECTIVE TYPE QUESTIONS

9. A body of mass 45 kg. is moving with a constant velocity of 10 m/s. A constant force acts on the body for four second, and the speed of the body becomes 2 m/s in opposite direction, calculate the acceleration produced.

10. Two blocks A and B of masses m_1 and m_2 respectively are in contact on frictionless horizontal table. A horizontal force is applied to the block A as shown in the figure. Take



$m_1 = 3 \text{ kg}$, $m_2 = 2 \text{ kg}$ and $F = 5 \text{ N}$.

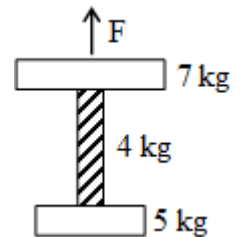
(A) Find the force of contact between the two blocks.

(B) Show that if the same force $F = 5 \text{ N}$ is applied to m_2 rather than m_1 then the force of contact between the two blocks will have a different value.

11. The two blocks shown in figure are connected by a heavy uniform rope of mass 4 kg . An upward force of 200 N is applied as shown in figure.

(a) What is the acceleration of the system ?

(b) What is the tension at the top of the heavy rope?



ANSWER KEY

Q.1 B Q.2 C Q.3 A Q.4 True Q.5 False Q.6 100N, 0

Q.7 A,B,D

Q.8 A,C

Q.9 -3 m/s^2

Q.10 2N

Q.11 (a) 2.69 m/s^2 upward (b) 112.5 N (c) 87.5 N