



Yekeen NEET 2.0 (2026)

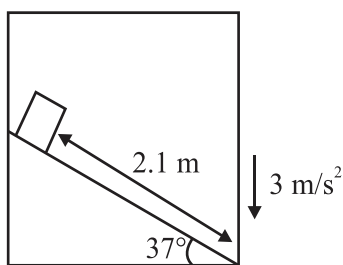
KPP - 24

Physics by Saleem Sir

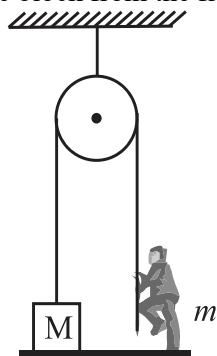
Newton's Laws of Motion

Time Limit 01 Hour

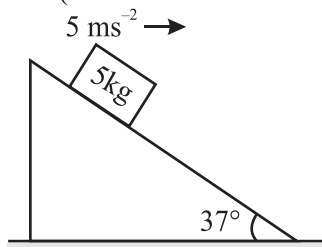
1. A block of mass 1 kg is kept on the tilted floor of a lift moving down with 3 ms^{-2} . If the block is released from rest as shown, what will be the time taken by block to reach the bottom?



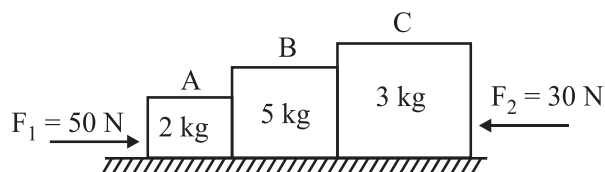
2. In the given figure, the block of mass M is at rest on the floor. At what acceleration with which should a boy of mass m climb along the rope of negligible mass so as to lift the block from the floor?



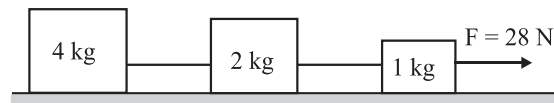
3. An inclined plane is moved toward right with an acceleration of 5 ms^{-2} as shown in figure. Find force in newton which block of mass 5 kg exerts on the incline plane. (All surfaces are smooth.)



4. Find the contact force between the blocks and acceleration of the blocks as shown in figure.

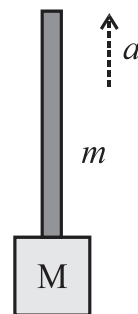


5. In the arrangement shown in figure, the strings are light and inextensible. The surface over which blocks are placed is smooth. Find:

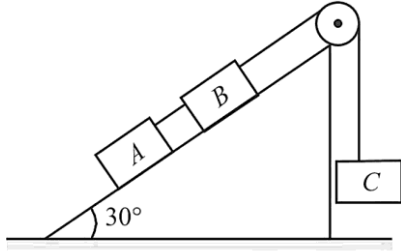


- (a) the acceleration of each block
(b) the tension in each string

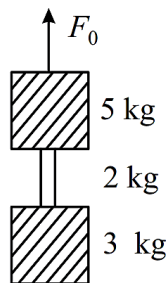
6. A body of mass M is hanging by an inextensible string of mass m . If the free end of the string accelerates up with constant acceleration a , find the variation of tension in the string as a function of the distance measured from the mass M (bottom of the string).



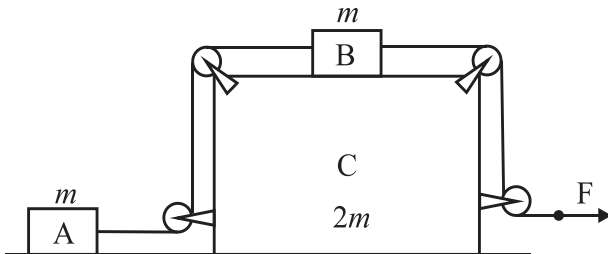
7. In the given figure, blocks A and B are connected together by a string and placed on a smooth inclined plane. B is connected to C (which is suspended vertically) by another string which passes over a smooth pulley fixed to the plane. The mass of A is $m_A = 1 \text{ kg}$ and mass of B is $m_B = 2 \text{ kg}$.



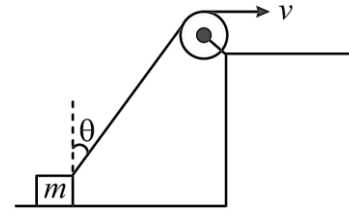
- (a) If the system is at rest, find the mass of C.
 (b) If the mass of C is twice the mass calculated in (a), then find the acceleration of the system.
8. A 5 kg block has a rope of mass 2 kg attached to its underside and a 3 kg block is suspended from the other end of the rope. The whole system is accelerated upward at an acceleration of 2 m/s^2 by an external force F_0 . ($g = 10 \text{ m/s}^2$).



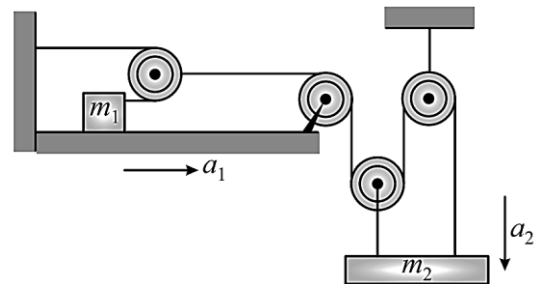
- (a) What is the value of F_0 ?
 (b) What is the net force on the rope?
 (c) What is the tension at middle point of the rope?
9. In the system shown in the figure, all surfaces are smooth. Block A and B have mass m each and mass of block C is $2m$. All pulleys are massless and fixed to block C. Strings are light and the force F applied at the free end of the string is horizontal. Find the acceleration of all three blocks.



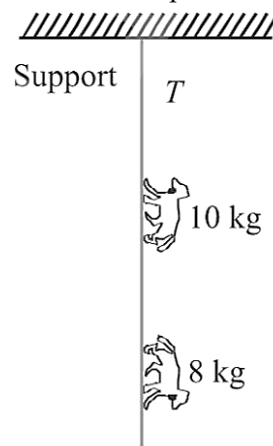
10. A block is dragged on a smooth plane with the help of a rope which moves with velocity v . The horizontal velocity of the block is:



- (1) v (2) $\frac{v}{\sin \theta}$
 (3) $v \sin \theta$ (4) $\frac{v}{\cos \theta}$
11. Two blocks are arranged as shown in the figure. The relation between acceleration a_1 and a_2 is:



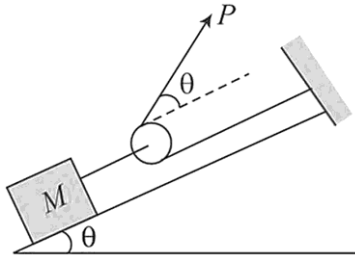
- (1) $a_1 = a_2$ (2) $a_1 = 6a_2$
 (3) $a_1 = 3a_2$ (4) $a_1 = 4a_2$
12. Two monkeys of masses 10 kg and 8 kg are moving along a vertical rope as shown in figure. The former climbing up with an acceleration of 2 ms^{-2} , while the later coming down with a uniform velocity of 2 ms^{-1} . Find the tension in the rope at the fixed support.



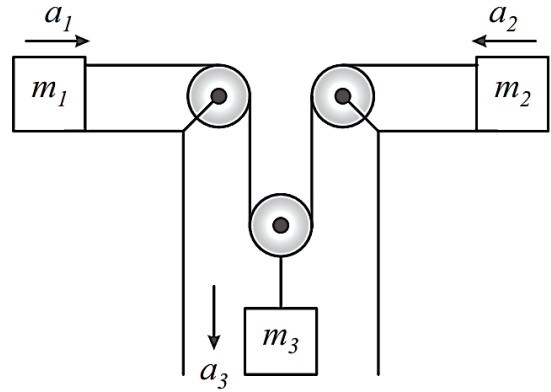
13. If pulleys shown in the diagram are smooth and massless and a_1 and a_2 are acceleration of blocks of mass 4 kg and 5 kg respectively, then

- (1) $a_1 = a_2$ (2) $a_1 = 2a_2$
 (3) $2a_1 = a_2$ (4) $a_1 = 4a_2$

14. What should be the minimum force P to be applied to the string so that block of mass m just begins to move up the frictionless plane?



15. In the arrangement of three blocks as shown in fig, the string is inextensible. If the directions of accelerations are as shown in the figure, then determine the constraint relation among a_1 , a_2 and a_3 .





Answer Key

- | | |
|--|---|
| <p>1. (1s)</p> <p>2. $a > \left(\frac{M}{m} - 1\right)g$</p> <p>3. (55 N)</p> <p>4. ($N_1 = 36$ N; $N_2 = 46$ N)</p> <p>5. (a) 4 ms^{-2}; (b) $T_1 = 24$ N, $T_2 = 16$ N</p> <p>6. ($T = F$)</p> <p>7. (a) $m_C = 1.5$ kg; (b) $a = 2.5 \text{ ms}^{-2}$</p> <p>8. (a) $F = 120$ N; (b) $F = 4$ N; (c) 48 N</p> | <p>9. $a = \frac{F}{2m}$</p> <p>10. (2)</p> <p>11. (2)</p> <p>12. (200 N)</p> <p>13. (2)</p> <p>14. $\frac{mg \sin \theta}{1 + \cos \theta}$</p> <p>15. $a_1 + a_2 = 2a_3$</p> |
|--|---|

