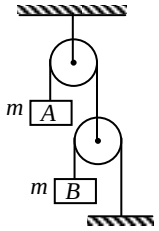
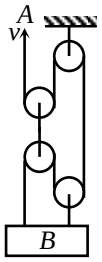
SINGLE CHOICE QUESTION

1. Two blocks *A* and *B* of equal masses m are suspended with ideal pulley and string arrangement as shown. The acceleration of mass *B* is



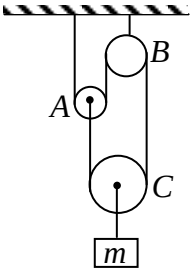
(A) $\frac{g}{3}$ (B) $\frac{5g}{3}$ (C) $\frac{2g}{3}$ (D) $\frac{2g}{5}$

2 In the arrangement shown, end *A* of light inextensible string is pulled up with constant velocity *v*. The velocity of block *B* is



(A) *v*/2 (B) *v* (C) *v*/3 (D) 3*v*

3. In the arrangement shown in figure, thread is inextensible and massless. All the pulleys are also massless. If friction in all pulleys are negligible, then :



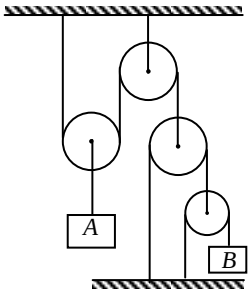
(A) Tension in thread is equal to $\frac{mg}{2}$.

(B) Acceleration of pulley *C* is equal to $\frac{g}{2}$(downward).

(C) Acceleration of pulley *A* is equal to $\frac{g}{2}$(upward).

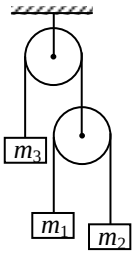
(D) Acceleration of block of mass *m* is equal to *g* (downward).

4. Block *A* moves upward with acceleration $\frac{1}{2}$m/s^2. The acceleration of block *B* in downward direction will be



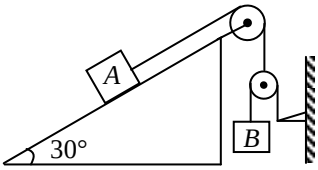
(A) 2 m/s^2 (B) 3 m/s^2 (C) 4 m/s^2 (D) 6 m/s^2

5. In the figure, pulleys are smooth and strings are massless, $m_1 = 1$ kg and $m_2 = \frac{1}{3}$ kg. To keep m_3 at rest, mass m_3 should be



(A) 1 kg (B) $\frac{2}{3}$ kg (C) $\frac{1}{4}$ kg (D) 2 kg

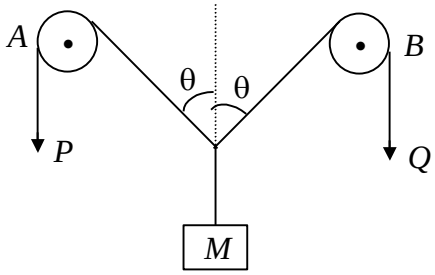
6. In the system shown in figure $m_B = 4$ kg and $m_A = 2$ kg. The pulleys are massless and friction is absent everywhere. The acceleration of block A is ($g = 10$ m/s^2)



(A) $\frac{10}{3}$ m/s^2 (B) $\frac{20}{3}$ m/s^2

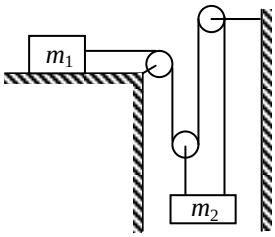
(C) $\frac{35}{9}$ m/s^2 (D) 4 m/s^2

7. In the arrangement shown, the ends P and Q of an inextensible string move downwards with uniform speed v. The pulleys A and B are fixed. The mass M moves upward with a speed



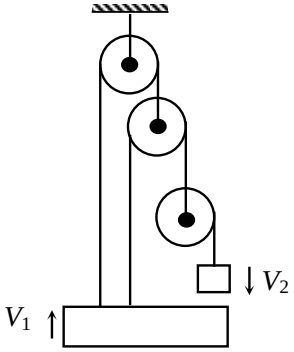
(A) $2v \cos\theta$ (B) $v \cos\theta$ (C) $\frac{2v}{\cos\theta}$ (D) $\frac{v}{\cos\theta}$

8. Two blocks m_1 and m_2 of equal masses as shown in figure. Assume ideal pulleys and strings and neglect friction at all the surfaces. The acceleration of the two blocks will be



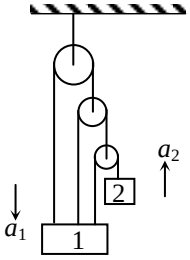
(A) $\frac{4g}{13}, \frac{g}{13}$ (B) $\frac{2g}{7}, \frac{g}{7}$ (C) $\frac{3g}{10}, \frac{g}{10}$ (D) $\frac{g}{4}, \frac{g}{4}$

9. The relation between velocity of two block V_1 and V_2 as shown in the figure is given by



(A) $7V_1 - V_2 = 0$ (B) $V_1 + V_2 = 0$ (C) $7V_1 + V_2 = 0$ (D) $V_1 + 3V_2 = 0$

10. Using constraint equations relation between a_1 and a_2 will be



(A) $a_1 = 3a_2$ (B) $a_2 = 3a_1$ (C) $a_2 = 6a_1$ (D) $a_2 = 7a_1$