Yakeen NEET 2.0 2026

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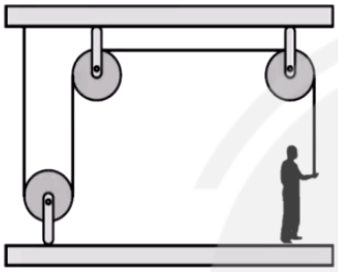
Laws of Motion

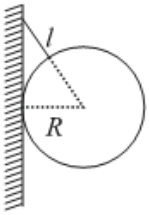
DPP: 3

Q1 A $50\ \text{kg}$ person stands on a $25\ \text{kg}$ platform. He pulls on the rope which is attached to the platform via the frictionless pulleys as shown in the figure. The platform moves upward at a steady rate if the force with which the person pulls the rope is:



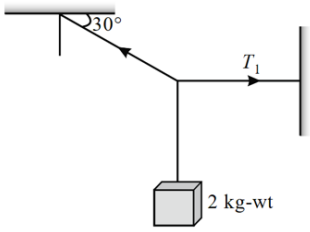
(A) $500\ \text{N}$
(B) $250\ \text{N}$
(C) $25\ \text{N}$
(D) $50\ \text{N}$

Q2 A sphere of radius 25 cm and mass 1 kg is hung by a string of negligible mass and length 40 cm, then tension in the string is:



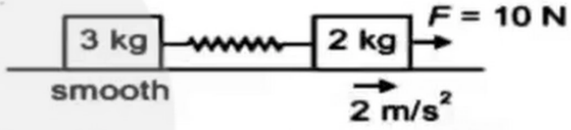
(A) 10.81 N
(B) 18.4 N
(C) 10 N
(D) 8 N

Q3 A body of weight 2 kg is suspended as shown in the figure. The tension T_1 in the horizontal string (in kg wt.) is:



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

Q4 What is the acceleration of $3\ \text{kg}$ mass when acceleration of $2\ \text{kg}$ mass is $2\ \text{m/s}^2$ as shown?



(A) $3\ \text{m/s}^2$
(B) $2\ \text{m/s}^2$
(C) $0.5\ \text{m/s}^2$
(D) Zero

Q5 A dynamometer D is attached to two blocks of masses $6\ \text{kg}$ and $4\ \text{kg}$ as shown in the figure. The reading of the dynamometer is

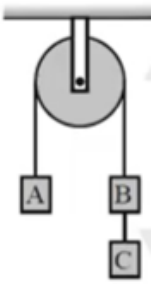
(A) $18\ \text{N}$
(B) $28\ \text{N}$
(C) $38\ \text{N}$
(D) $48\ \text{N}$

Q6 A small metallic sphere of mass *m* is suspended from the ceiling of a car accelerating on a horizontal road with constant acceleration *a*. The tension in the string attached with metallic sphere is:

(A) mg
(B) $mg(g + a)$

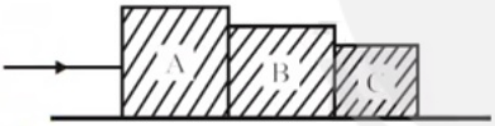
(C) $m(g-a)$ (D) $m\sqrt{g^2+a^2}$

Q7 In the system shown, the blocks A, B and C are of weight $4\ \mathrm{W},\ \mathrm{W}$ and W respectively. The system set free. The tension in the string connecting the blocks B and C is



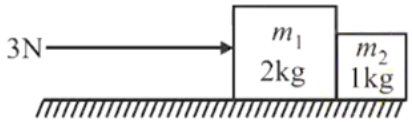
(A) $\frac{2W}{3}$
(B) $\frac{6W}{5}$
(C) $\frac{5W}{3}$
(D) $\frac{4W}{3}$

Q8 Three blocks A, B and C of masses $4\ \mathrm{kg}, 2\ \mathrm{kg}$ and 1 kg respectively, are in contact on a frictionless
surface, as shown. If a force of $14\ \mathrm{N}$ is applied on the $4\ \mathrm{kg}$ block, then the contact force between A and B is:



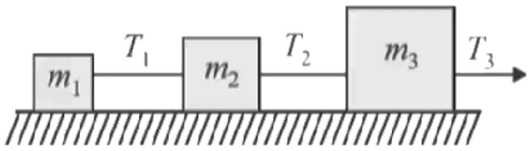
(A) $6\ \mathrm{N}$
(B) $8\ \mathrm{N}$
(C) $18\ \mathrm{N}$
(D) $2\ \mathrm{N}$

Q9 Force of $3\ \mathrm{N}$ acts on a system of two blocks of mass $2\ \mathrm{kg}$ and $1\ \mathrm{kg}$ as shown in figure. Contact force between the block is:



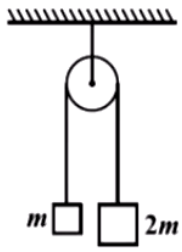
(A) $1\ \mathrm{N}$
(B) $2\ \mathrm{N}$
(C) $3\ \mathrm{N}$
(D) 0

Q10 Three blocks are connected as shown, on a horizontal frictionless table and pulled to the right with a force $60\ \mathrm{N}$. If $m_1 = 10\ \mathrm{kg}, m_2 = 20\ \mathrm{kg}$ and $m_3 = 30\ \mathrm{kg}$, the tension T_2 is -



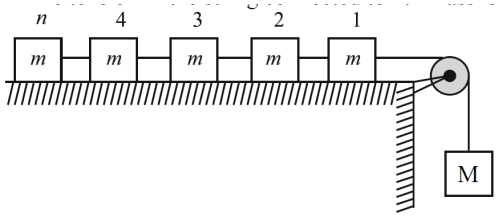
(A) $10\ \mathrm{N}$
(B) $20\ \mathrm{N}$
(C) $30\ \mathrm{N}$
(D) $60\ \mathrm{N}$

Q11 For the system shown, string and pulley are massless. The pulley is smooth. Acceleration of the lighter block is: (g is acceleration due to gravity)



(A) g
(B) $\frac{g}{3}$
(C) $\frac{g}{9}$
(D) Zero

Q12 In the given arrangement, n number of equal masses
are connected by strings of negligible masses. The tension in the string connected to nth mass is



(A) $\frac{mMg}{nm+M}$
(B) $\frac{mMg}{nmM}$
(C) mg
(D) $\frac{mMg}{mN+M}$

Answer Key

Q1	(B)
Q2	(A)
Q3	(C)
Q4	(B)
Q5	(C)
Q6	(D)
Q7	(D)
Q8	(A)
Q9	(A)
Q10	(C)
Q11	(B)
Q12	(A)