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NEET LAWS OF MOTION — PYQS

Max. Marks: 284 **Questions:** 71

Section A (MCQ) — 71 questions

Q.1 A box of mass 15 kg is kept on the floor of a stationary trolley. The coefficient of static friction between the box and the trolley is 0.12. Keeping the box in stationary state over the trolley, the maximum acceleration with which the trolley can be moved horizontally in m s^{-2} is : ($g = 10\ m/s^2$) [NEET (UG) 2026]

(1) 1.8 (2) 1.2 (3) 1.5 (4) 2.1

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Q.2 The magnitude and direction of the acceleration produced in a body of mass 5 kg when two mutually perpendicular forces 8 N and 6 N act on it, are respectively : [NEET (UG) 2026]

(1) 2 m s^{-2}; $\tan^{-1}(3/4)$ with 8 N force

(2) 2 m s^{-2}; $\tan^{-1}(4/3)$ with 8 N force

(3) 2 m s^{-2}; $\tan^{-1}(3/4)$ with 6 N force

(4) 20 m s^{-2}; $\tan^{-1}(4/3)$ with 8 N force

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Q.3 A car travels on a circular racetrack of radius 50 m, which is banked at an angle θ. If the car travels at a speed 10 ms^{-1}, then the wear and tear on its tyres is minimum. Taking the acceleration due to gravity to be 10 ms^{-2}, the value of θ is: [RE-NEET (UG) 2026]

(1) $\tan^{-1}(2\sqrt{3})$ (2) $\tan^{-1}\left(\frac{1}{5}\right)$

(3) $\tan^{-1}\left(\frac{2}{5}\right)$ (4) $\tan^{-1}(\sqrt{3}/2)$

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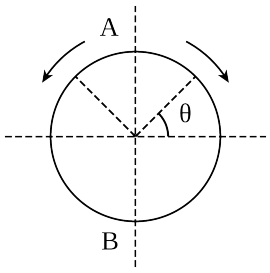
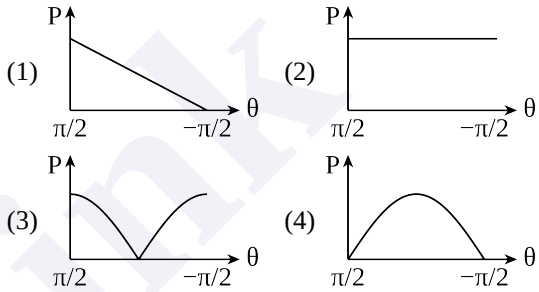
Q.4 A frictionless circular wire of unit radius is fixed on the horizontal plane. Two-point particles of unit mass start moving simultaneously from point $A\left(\theta=\frac{\pi}{2}\right)$ with identical uniform angular speeds in opposite directions, and meet again at point $B\left(\theta=-\frac{\pi}{2}\right)$. During this time, which of the following figures schematically represent the magnitude of the total linear momentum P of the system, as a function of θ? [RE-NEET (UG) 2026]





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Q.5 A ball of mass 0.5 kg is dropped from a height of 40 m. The ball hits the ground and rises to a height of 10 m. The impulse imparted to the ball during its collision with the ground is (Take $g = 9.8\ m/s^2$) [NEET (UG) 2025]

(1) 0 (2) 84 N s (3) 21 N s (4) 7 N s

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Q.6 There are two inclined surfaces of equal length (L) and same angle of inclination 45° with the horizontal. One of them is rough and the other is perfectly smooth. A given body takes 2 times as much time to slide down on rough surface than on the smooth surface. The coefficient of kinetic friction (μ_k) between the object and the rough surface is close to [NEET (UG) 2025]

(1) 0.5 (2) 0.75 (3) 0.25 (4) 0.40

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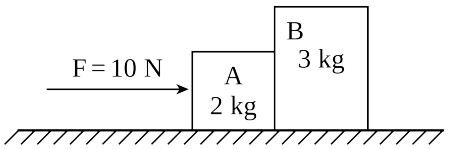
Q.7 A horizontal force 10 N is applied to a block A as shown in figure. The mass of blocks A and B are 2 kg and 3 kg respectively. The blocks slide over a frictionless surface. The force exerted by block A on block B is : [NEET (UG) 2024]



(1) Zero (2) 4 N (3) 6 N (4) 10 N

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Q.8 A bob is whirled in a horizontal plane by means of a string with an initial speed of ω rpm. The tension in the string is T. If speed becomes 2ω while keeping the same radius, the tension in the string becomes: [NEET (UG) 2024]

(1) T (2) 4T (3) $\frac{T}{4}$ (4) $\sqrt{2}T$

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Q.9 A bob is whirled in a horizontal circle by means of a string at an initial speed of 10 rpm. If the tension in the string is quadrupled while keeping the radius constant, the new speed is: [RE-NEET (UG) 2024]

(1) 20 rpm (2) 40 rpm (3) 5 rpm (4) 10 rpm

Scan or tap for the full solution

Q.10 A box of mass 5 kg is pulled by a cord, up along a frictionless plane inclined at 30° with the horizontal. The tension in the cord is 30 N. The acceleration of the box is (Take g = 10 m s^{-2}) [RE-NEET (UG) 2024]

(1) 2 m s^{-2} (2) Zero
(3) 0.1 m s^{-2} (4) 1 m s^{-2}

Solution

Q.11 A football player is moving southward and suddenly turns eastward with the same speed to avoid an opponent. The force that acts on the player while turning is : [NEET (UG) 2023]

(1) along northward (2) along north-east
(3) along south-west (4) along eastward

Scan or tap for the full solution

Q.12 Calculate the maximum acceleration of a moving car so that a body lying on the floor of the car remains stationary. The coefficient of static friction between the body and the floor is 0.15 $(g = 10\ m\,s^{-2})$. [NEET (UG) 2023]

(1) 150 m s^{-2} (2) 1.5 m s^{-2}
(3) 50 m s^{-2} (4) 1.2 m s^{-2}

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Q.13 A shell of mass m is at rest initially. It explodes into three fragments having mass in the ratio 2:2:1. If the fragments having equal mass fly off along mutually perpendicular directions with speed v, the speed of the third (lighter) fragment is : [NEET (UG) 2022]

(1) v (2) $\sqrt{2}v$
(3) $2\sqrt{2}v$ (4) $3\sqrt{2}v$

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Q.14 The distance covered by a body of mass 5 g having linear momentum 0.3 kg m/s in 5 s is : [NEET (UG) 2022 (Phase 2)]

(1) 0.3 m (2) 300 m (3) 30 m (4) 3 m

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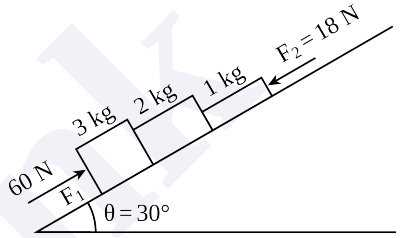
Q.15 In the diagram shown, the normal reaction force between 2 kg and 1 kg is (Consider the surface, to be smooth) :
(Given g = 10 m s^{-2}) [NEET (UG) 2022 (Phase 2)]



(1) 10 N (2) 25 N (3) 39 N (4) 6 N

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Q.16 A ball of mass 0.15 kg is dropped from a height 10 m, strikes the ground and rebounds to the same height. The magnitude of impulse imparted to the ball is (g = 10 m/s^2) nearly : [NEET (UG) 2021]

(1) 1.4 kg m/s (2) 0 kg m/s
(3) 4.2 kg m/s (4) 2.1 kg m/s

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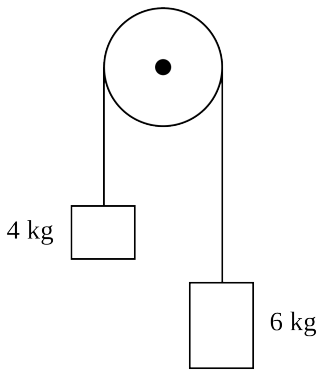
Q.17 Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is : [NEET (UG) 2020]



(1) g/2 (2) g/5 (3) g/10 (4) g

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Q.18 A block of mass 10 kg is in contact against the inner wall of a hollow cylindrical drum of radius 1 m. The coefficient of friction between the block and the inner wall of the cylinder is 0.1. The minimum angular velocity needed for the cylinder to keep the block stationary when the cylinder is vertical and rotating about its axis, will be : ($g = 10\ m/s^2$) [NEET (UG) 2019]

(1) $\frac{10}{2\pi}$ rad/s (2) 10 rad/s

(3) 10π rad/s (4) $\sqrt{10}$ rad/s

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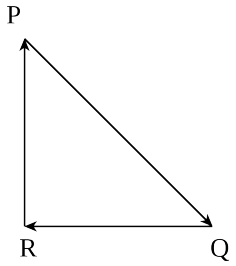
Q.19 A particle moving with velocity $\vec{V}$ is acted by three forces shown by the vector triangle PQR. The velocity of the particle will : [NEET (UG) 2019]



(1) remain constant

(2) increase

(3) decrease

(4) change according to the smallest force $\vec{QR}$

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Q.20 Which one of the following statements is incorrect? [NEET 2018]

(1) Rolling friction is smaller than sliding friction.

(2) Limiting value of static friction is directly proportional to normal reaction.

(3) Frictional force opposes the relative motion.

(4) Coefficient of sliding friction has dimensions of length.

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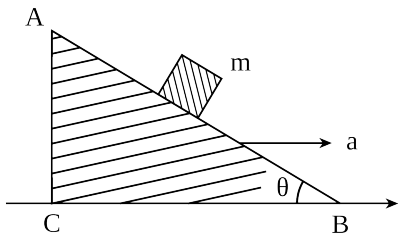
Q.21 A block of mass m is placed on a smooth inclined wedge ABC of inclination θ as shown in the figure. The wedge is given an acceleration 'a' towards the right. The relation between a and θ for the block to remain stationary on the wedge is [NEET 2018]



(1) $a = \frac{g}{\operatorname{cosec}\theta}$ (2) $a = \frac{g}{\sin\theta}$

(3) $a = g\cos\theta$ (4) $a = g\tan\theta$

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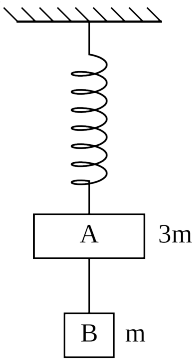
Q.22 One end of string of length l is connected to a particle of mass 'm' and the other end is connected to a small peg on a smooth horizontal table. If the particle moves in circle with speed 'v', the net force on the particle (directed towards centre) will be (T represents the tension in the string) [NEET 2017]

(1) $T + \frac{mv^2}{l}$ (2) $T - \frac{mv^2}{l}$

(3) zero (4) T

Scan or tap for the full solution

Q.23 Two blocks A and B of masses 3m and m respectively are connected by a massless and inextensible string. The whole system is suspended by a massless spring as shown in figure. The magnitudes of acceleration of A and B immediately after the string is cut, are respectively [NEET 2017]



(1) $\frac{g}{3}$, g (2) g, g (3) $\frac{g}{3}$, $\frac{g}{3}$ (4) g, $\frac{g}{3}$

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Q.24 A car is negotiating a curved road of radius R. The road is banked at an angle θ. The coefficient of friction between the tyres of the car and the road is μ_s. The maximum safe velocity on this road is [NEET 2016 (Phase 1)]

(1) $\sqrt{\frac{g}{R}\frac{\mu_s + \tan\theta}{1 - \mu_s\tan\theta}}$ (2) $\sqrt{\frac{g}{R^2}\frac{\mu_s + \tan\theta}{1 - \mu_s\tan\theta}}$

(3) $\sqrt{gR^2\frac{\mu_s + \tan\theta}{1 - \mu_s\tan\theta}}$ (4) $\sqrt{gR\frac{\mu_s + \tan\theta}{1 - \mu_s\tan\theta}}$

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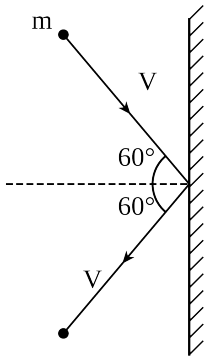
Q.25 A rigid ball of mass m strikes a rigid wall at 60° and gets reflected without loss of speed as shown in the figure. The value of impulse imparted by the wall on the ball will be : [NEET 2016 (Phase 2)]



(1) mV (2) 2 mV (3) $\frac{mV}{2}$ (4) $\frac{mV}{3}$

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Q.26 A bullet of mass 10 g moving horizontally with a velocity of 400 m s^{-1} strikes a wood block of mass 2 kg which is suspended by light inextensible string of length 5 m. As a result, the centre of gravity of the block is found to rise a vertical distance of 10 cm. The speed of the bullet after it emerges out horizontally from the block will be

[NEET 2016 (Phase 2)]

(1) 100 m s^{-1} (2) 80 m s^{-1}
(3) 120 m s^{-1} (4) 160 m s^{-1}

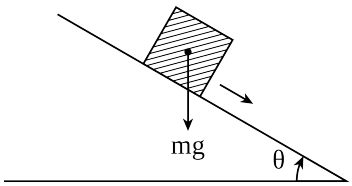
Scan or tap for the full solution

Q.27 Two stones of masses m and 2m are whirled in horizontal circles, the heavier one in a radius $\frac{r}{2}$ and the lighter one in radius r. The tangential speed of lighter stone is n times that of the value of heavier stone when they experience same centripetal forces. The value of n is [AIPMT 2015]

(1) 4 (2) 1 (3) 2 (4) 3

Scan or tap for the full solution

Q.28 A plank with a box on it at one end is gradually raised about the other end. As the angle of inclination with the horizontal reaches 30°, the box starts to slip and slides 4.0 m down the plank in 4.0 s.



The coefficients of static and kinetic friction between the box and the plank will be, respectively

[AIPMT 2015]

(1) 0.5 and 0.6 (2) 0.4 and 0.3
(3) 0.6 and 0.6 (4) 0.6 and 0.5

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Q.29 A block A of mass m_1 rests on a horizontal table. A light string connected to it passes over a frictionless pulley at the edge of table and from its other end another block B of mass m_2 is suspended. The coefficient of kinetic friction between the block and the table is μ_k. When the block A is sliding on the table, the tension in the string is

[AIPMT 2015 (Cancelled)]

(1) $\frac{m_1m_2(1+\mu_k)g}{(m_1+m_2)}$ (2) $\frac{m_1m_2(1-\mu_k)g}{(m_1+m_2)}$
(3) $\frac{(m_2+\mu_k m_1)g}{(m_1+m_2)}$ (4) $\frac{(m_2-\mu_k m_1)g}{(m_1+m_2)}$

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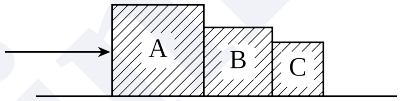
Q.30 Three blocks A, B and C, of masses 4 kg, 2 kg and 1 kg respectively, are in contact on a frictionless surface, as shown. If a force of 14 N is applied on the 4 kg block, then the contact force between A and B is [AIPMT 2015 (Cancelled)]



(1) 8 N (2) 18 N (3) 2 N (4) 6 N

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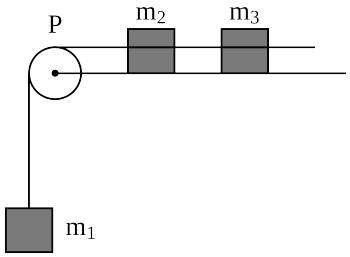
Q.31 A balloon with mass m is descending down with an acceleration a (where a < g). How much mass should be removed from it so that it starts moving up with an acceleration a? [AIPMT 2014]

(1) $\frac{2ma}{g+a}$ (2) $\frac{2ma}{g-a}$ (3) $\frac{ma}{g+a}$ (4) $\frac{ma}{g-a}$

Scan or tap for the full solution

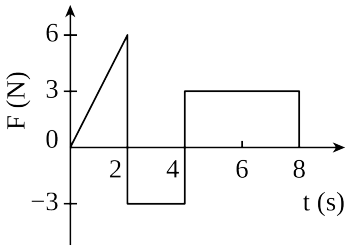
Q.32 A system consists of three masses m_1, m_2 and m_3 connected by a string passing over a pulley P. The mass m_1 hangs freely and m_2 and m_3 are on a rough horizontal table (the coefficient of friction = μ). The pulley is frictionless and of negligible mass. The downward acceleration of mass m_1 is
(Assume $m_1 = m_2 = m_3 = m$) [AIPMT 2014]



(1) $\frac{g(1-g\mu)}{9}$ (2) $\frac{2g\mu}{3}$
(3) $\frac{g(1-2\mu)}{3}$ (4) $\frac{g(1-2\mu)}{2}$

Scan or tap for the full solution

Q.33 The force F acting on a particle of mass m is indicated by the force-time graph shown below. The change in momentum of the particle over the time interval from zero to 8 s is : [AIPMT 2014]



(1) 24 N s (2) 20 N s (3) 12 N s (4) 6 N s

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Q.34 A body of mass (4m) is lying in x-y plane at rest. It suddenly explodes into three pieces. Two pieces, each of mass (m) move perpendicular to each other with equal speeds (v). The total kinetic energy generated due to explosion is : [AIPMT 2014]

(1) mv^2 (2) $\frac{3}{2}mv^2$ (3) $2mv^2$ (4) $4mv^2$

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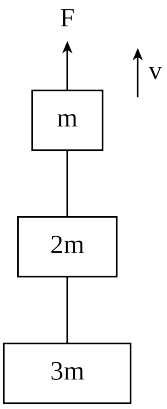
Q.35 An explosion breaks a rock into three parts in a horizontal plane. Two of them go off at right angles to each other. The first part of mass 1 kg moves with a speed of 12 m s^{-1} and the second part of mass 2 kg moves with 8 m s^{-1} speed. If the third part flies off with 4 m s^{-1} speed, then its mass is : [NEET 2013]

(1) 7 kg (2) 17 kg (3) 3 kg (4) 5 kg

Scan or tap for the full solution

Q.36 Three blocks with masses m, 2m and 3m are connected by strings, as shown in the figure. After an upward force F is applied on block m, the masses move upwards at constant speed v. What is the net force on the block of mass 2m ? (g is the acceleration due to gravity) [NEET 2013]



(1) 3mg (2) 6mg (3) zero (4) 2mg

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Q.37 A car is moving in a circular horizontal track of radius 10 m with a constant speed of 10 m/s. A bob is suspended from the roof of the car by a light wire of length 1.0 m. The angle made by the wire with the vertical is [NEET 2013 (Karnataka)]

(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{6}$ (3) $\frac{\pi}{4}$ (4) 0°

Scan or tap for the full solution

Q.38 A person holding a rifle (mass of person and rifle together is 100 kg) stands on a smooth surface and fires 10 shots horizontally, in 5 s. Each bullet has a mass of 10 g with a muzzle velocity of 800 m s^{-1}. The final velocity acquired by the person and the average force exerted on the person are : [NEET 2013 (Karnataka)]

(1) −0.08 m s^{-1}, 16 N (2) −0.8 m s^{-1}, 16 N
(3) −1.6 m s^{-1}, 16 N (4) −1.6 m s^{-1}, 8 N

Scan or tap for the full solution

Q.39 A car of mass m is moving on a level circular track of radius R. If μ_s represents the coefficient of static friction between the road and tyres of the car, the maximum speed of the car in circular motion is given by [AIPMT 2012 (Mains)]

(1) $\sqrt{\mu_s mRg}$ (2) $\sqrt{\frac{Rg}{\mu_s}}$
(3) $\sqrt{\frac{mRg}{\mu_s}}$ (4) $\sqrt{\mu_s Rg}$

Scan or tap for the full solution

Q.40 A car of mass 1000 kg negotiates a banked curve of radius 90 m on a frictionless road. If the banking angle is 45°, the speed of the car is [AIPMT 2012 (Prelims)]

(1) 20 m s^{-1} (2) 30 m s^{-1}
(3) 5 m s^{-1} (4) 10 m s^{-1}

Scan or tap for the full solution

Q.41 A conveyor belt is moving at a constant speed of 2 m s^{-1}. A box is gently dropped on it. The coefficient of friction between them is $\mu = 0.5$. The distance that the box will move relative to belt before coming to rest on it, taking g = 10 m s^{-2}, is [AIPMT 2011 (Mains)]

(1) 0.4 m (2) 1.2 m (3) 0.6 m (4) zero

Scan or tap for the full solution

Q.42 A person of mass 60 kg is inside a lift of mass 940 kg and presses the button on control panel. The lift starts moving upwards with an acceleration 1.0 m/s^2. If g = 10 m s^{-2}, the tension in the supporting cable is [AIPMT 2011 (Prelims)]

(1) 8600 N (2) 9680 N
(3) 11000 N (4) 1200 N

Solution

Q.43 A body of mass M hits normally a rigid wall with velocity V and bounces back with the same velocity. The impulse experienced by the body is [AIPMT 2011 (Prelims)]

(1) MV (2) 1.5 MV
(3) 2MV (4) zero

Scan or tap for the full solution

Q.44 A block of mass m is in contact with the cart C as shown in the figure.
The coefficient of static friction between the block and the cart is μ. The acceleration α of the cart that will prevent the block from falling satisfies [AIPMT 2010 (Prelims)]

[Diagram unavailable]

(1) $\alpha > \frac{mg}{\mu}$ (2) $\alpha > \frac{g}{\mu m}$
(3) $\alpha \geq \frac{g}{\mu}$ (4) $\alpha < \frac{g}{\mu}$

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Q.45 A gramophone record is revolving with an angular velocity ω. A coin is placed at a distance r from the centre of the record. The static coefficient of friction is μ. The coin will revolve with the record if [AIPMT 2010 (Prelims)]

(1) $r = \mu g \omega^2$ (2) $r < \frac{\omega^2}{\mu g}$
(3) $r \leq \frac{\mu g}{\omega^2}$ (4) $r \geq \frac{\mu g}{\omega^2}$

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Q.46 A man of 50 kg mass is standing in a gravity free space at a height of 10 m above the floor. He throws a stone of 0.5 kg mass downwards with a speed 2 m/s. When the stone reaches the floor, the distance of the man above the floor will be [AIPMT 2010 (Prelims)]

(1) 9.9 m (2) 10.1 m (3) 10 m (4) 20 m

Scan or tap for the full solution

Q.47 The mass of a lift is 2000 kg. When the tension in the supporting cable is 28000 N, then its acceleration is: [AIPMT 2009]

(1) 4 m s^{-2} upwards (2) 4 m s^{-2} downwards
(3) 14 m s^{-2} upwards (4) 30 m s^{-2} downwards

Scan or tap for the full solution

Q.48 A body, under the action of a force $\vec{F} = 6\hat{i} - 8\hat{j} + 10\hat{k}$, acquires an acceleration of 1 m s^{-2}. The mass of this body must be [AIPMT 2009]

(1) 10 kg (2) 20 kg
(3) $10\sqrt{2}$ kg (4) $2\sqrt{10}$ kg

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Q.49 An explosion blows a rock into three parts. Two parts go off at right angles to each other. These two are, 1 kg first part moving with a velocity of 12 m s^{-1} and 2 kg second part moving with a velocity 8 m s^{-1}. If the third part flies off with a velocity of 4 m s^{-1}, its mass would be: [AIPMT 2009]

(1) 7 kg (2) 17 kg (3) 3 kg (4) 5 kg

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Q.50 A roller coaster is designed such that riders experience "weightlessness" as they go round the top of a hill whose radius of curvature is 20 m. The speed of the car at the top of the hill is between [AIPMT 2008]

(1) 16 m/s and 17 m/s (2) 13 m/s and 14 m/s
(3) 14 m/s and 15 m/s (4) 15 m/s and 16 m/s

Scan or tap for the full solution

Q.51 Sand is being dropped on a conveyor belt at the rate of M kg/s. The force necessary to keep the belt moving with a constant velocity of v m/s will be : [AIPMT 2008]

(1) $\frac{Mv}{2}$ newton (2) zero
(3) Mv newton (4) 2 Mv newton

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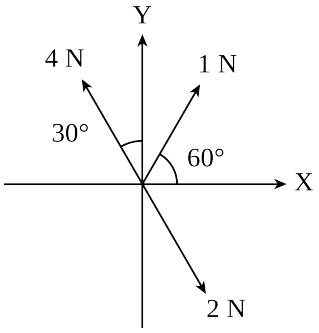
Q.52



Three forces acting on a body are shown in the figure. To have the resultant force only along the y-direction, the magnitude of the minimum additional force needed is [AIPMT 2008]

(1) $\frac{\sqrt{3}}{4}$ N (2) $\sqrt{3}$ N

(3) 0.5 N (4) 1.5 N

Scan or tap for the full solution

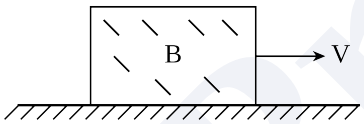
Q.53 A shell of mass 200 gm is ejected from a gun of mass 4 kg by an explosion that generates 1.05 kJ of energy. The initial velocity of the shell is : [AIPMT 2008]

(1) 40 m s^{-1} (2) 120 m s^{-1}

(3) 100 m s^{-1} (4) 80 m s^{-1}

Scan or tap for the full solution

Q.54 A block B is pushed momentarily along a horizontal surface with an initial velocity V. If μ is the coefficient of sliding friction between B and the surface, block B will come to rest after a time [AIPMT 2007]



(1) gμ/V (2) g/V (3) V/g (4) V/(gμ)

Scan or tap for the full solution

Q.55 A 0.5 kg ball moving with a speed of 12 m/s strikes a hard wall at an angle of 30° with the wall. It is reflected with the same speed at the same angle. If the ball is in contact with the wall for 0.25 seconds, the average force acting on the wall is : [AIPMT 2006]

(1) 96 N (2) 48 N (3) 24 N (4) 12 N

Scan or tap for the full solution

Q.56 A tube of length L is filled completely with an incompressible liquid of mass M and closed at both the ends. The tube is then rotated in a horizontal plane about one of its ends with a uniform angular velocity ω. The force exerted by the liquid at the other end is [AIPMT 2006]

(1) $\frac{ML^2\omega^2}{2}$ (2) $\frac{ML\omega^2}{2}$

(3) $\frac{ML^2\omega}{2}$ (4) $ML\omega^2$

Scan or tap for the full solution

Q.57 A bomb of mass 30 kg at rest explodes into two pieces of masses 18 kg and 12 kg. The velocity of 18 kg mass is 6 m s^{-1}. The kinetic energy of the other mass is : [AIPMT 2005]

(1) 324 J (2) 486 J (3) 256 J (4) 524 J

Scan or tap for the full solution

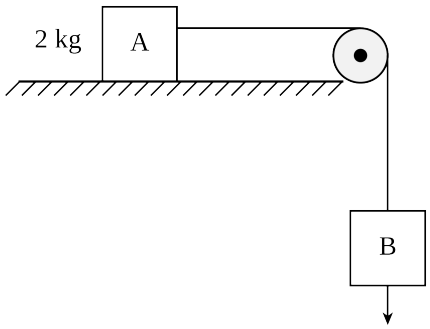
Q.58 A block of mass m is placed on a smooth wedge of inclination θ. The whole system is accelerated horizontally so that the block does not slip on the wedge. The force exerted by the wedge on the block will be (g is acceleration due to gravity) [AIPMT 2004]

(1) mgcos θ (2) mgsin θ

(3) mg (4) mg/cos θ

Scan or tap for the full solution

Q.59 The coefficient of static friction, μ_s, between block A of mass 2 kg and the table as shown in the figure is 0.2. What would be the maximum mass value of block B so that the two blocks do not move? The string and the pulley are assumed to be smooth and massless. (g = 10 m/s^2) [AIPMT 2004]



(1) 2.0 kg (2) 4.0 kg (3) 0.2 kg (4) 0.4 kg

Scan or tap for the full solution

Q.60 A man weighs 80 kg. He stands on a weighing scale in a lift which is moving upwards with a uniform acceleration of 5 m/s^2. What would be the reading on the scale ? (g = 10 m/s^2) [AIPMT 2003]

(1) zero (2) 400 N (3) 800 N (4) 1200 N

Scan or tap for the full solution

Q.61 A monkey of mass 20 kg is holding a vertical rope. The rope will not break when a mass of 25 kg is suspended from it but will break if the mass exceeds 25 kg. What is the maximum acceleration with which the monkey can climb up along the rope ? ($g = 10\ m/s^2$) [AIPMT 2003]

(1) $5\ m/s^2$ (2) $10\ m/s^2$ (3) $25\ m/s^2$ (4) $2.5\ m/s^2$

Scan or tap for the full solution

Q.62 A stationary particle explodes into two particles of masses m_1 and m_2 which move in opposite directions with velocities v_1 and v_2. The ratio of their kinetic energies E_1/E_2 is : [AIPMT 2003]

(1) m_2/m_1 (2) m_1/m_2

(3) 1 (4) m_1v_2/m_2v_1

Scan or tap for the full solution

Q.63 An object of mass 3 kg is at rest. Now a force of $\vec{F} = 6t^2\hat{i} + 4t\hat{j}$ is applied on the object then velocity of object at t = 3 sec. is [AIPMT 2002]

(1) $18\hat{i} + 3\hat{j}$ (2) $18\hat{i} + 6\hat{j}$

(3) $3\hat{i} + 18\hat{j}$ (4) $18\hat{i} + 4\hat{j}$

Scan or tap for the full solution

Q.64 A lift of mass 1000 kg which is moving with acceleration of $1\ m/s^2$ in upward direction, then the tension developed in string which is connected to lift is [AIPMT 2002]

(1) 9800 N (2) 10,800 N

(3) 11,000 N (4) 10,000 N

Scan or tap for the full solution

Q.65 A block of mass 10 kg placed on rough horizontal surface having coefficient of friction $\mu = 0.5$, if a horizontal force of 100 N acting on it then acceleration of the block will be [AIPMT 2002]

(1) $10\ m/s^2$ (2) $5\ m/s^2$ (3) $15\ m/s^2$ (4) $0.5\ m/s^2$

Scan or tap for the full solution

Q.66 On the horizontal surface of a truck a block of mass 1 kg is placed ($\mu = 0.6$) and the truck is moving with acceleration $5\ m/s^2$, then the frictional force on the block will be [AIPMT 2001]

(1) 5 N (2) 6 N (3) 5.88 N (4) 8 N

Scan or tap for the full solution

Q.67 A cricketer catches a ball of mass 150 g in 0.1 s moving with speed 20 m/s, then he experiences a force of [AIPMT 2001]

(1) 300 N (2) 30 N (3) 3 N (4) 0.3 N

Scan or tap for the full solution

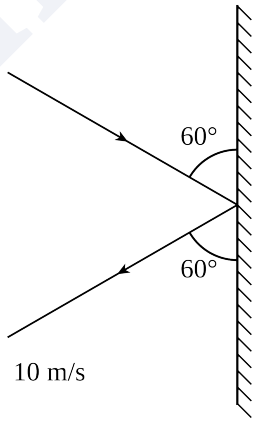
Q.68 A 1 kg stationary bomb is exploded in three parts having mass 1:1:3 respectively. The parts having the same mass move in perpendicular directions with velocity 30 m/s, then the velocity of the bigger part will be [AIPMT 2001]

(1) $10\sqrt{2}$ m/s (2) $\frac{10}{\sqrt{2}}$ m/s

(3) $15\sqrt{2}$ m/s (4) $\frac{15}{\sqrt{2}}$ m/s

Scan or tap for the full solution

Q.69 A body of mass 3 kg hits a wall at an angle of 60° and returns at the same angle. The impact time was 0.2 s. The force exerted on the wall is [AIPMT 2000]

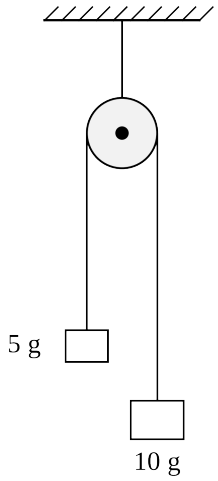


(1) $150\sqrt{3}$ N (2) $50\sqrt{3}$ N

(3) 100 N (4) $75\sqrt{3}$ N

Scan or tap for the full solution

Q.70 Two masses as shown in the figure are suspended from a massless pulley. The acceleration of the system when masses are left free is [AIPMT 2000]



(1) $\frac{2g}{3}$ (2) $\frac{g}{3}$ (3) $\frac{g}{9}$ (4) $\frac{g}{7}$

Scan or tap for the full solution

Q.71 A mass of 1 kg is thrown up with a velocity of 100 m/s. After 5 seconds, it explodes into two parts. One part of mass 400 g comes down with a velocity 25 m/s. The velocity of other part is (Take $g = 10\ m\ s^{-2}$) [AIPMT 2000]

(1) 40 m/s (2) 50 m/s

(3) 100 m/s (4) 60 m/s

Solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**2**	**1**	**2**	**4**	**3**	**2**	**3**	**2**	**1**	**4**	**2**
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	**2**	**3**	**2**	**2**	**3**	**2**	**2**	**1**	**4**	**4**	**4**
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	**1**	**4**	**1**	**3**	**3**	**4**	**1**	**4**	**1**	**3**	**3**
Ques.	34	35	36	37	38	39	40	41	42	43	44
Ans.	**2**	**4**	**3**	**3**	**2**	**4**	**2**	**1**	**3**	**3**	**3**
Ques.	45	46	47	48	49	50	51	52	53	54	55
Ans.	**3**	**2**	**1**	**3**	**4**	**3**	**3**	**3**	**3**	**4**	**3**
Ques.	56	57	58	59	60	61	62	63	64	65	66
Ans.	**2**	**2**	**4**	**4**	**4**	**4**	**1**	**2**	**2**	**2**	**1**
Ques.	67	68	69	70	71						
Ans.	**2**	**1**	**1**	**2**	**3**						

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