Yakeen NEET 2.0 2026

Physics By Manish Raj Sir

Laws of motion

DPP: 4

Q1 A body of mass $2\ \text{kg}$ is moving with a velocity $8\ \text{m/s}$ on a smooth surface. If it is to be brought to rest in 4 seconds, then the force to be applied is

(A) $8\ \text{N}$
(B) $4N$
(C) $2N$
(D) $1\ \text{N}$

Q2 If a force of $250\ \text{N}$ act on body, the momentum acquired is $125\ \text{kg} - \text{m/s}$. What is the period for which force acts on the body

(A) 0.5sec
(B) 0.2sec
(C) 0.4sec
(D) 0.25sec

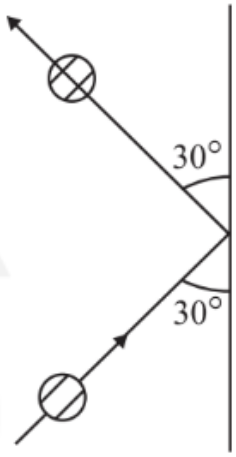
Q3 A cricket ball of mass $250\ \text{g}$ collides with a bat with velocity $10\ \text{m/s}$ and returns with the same velocity within 0.01 second. The force acted on bat is:

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

Q4 A player catches a ball of $200\ \text{g}$ moving with a speed of $20\ \text{m/s}$. If the time taken to complete the catch is $0.5\ \text{s}$, the force exerted on the players hand is

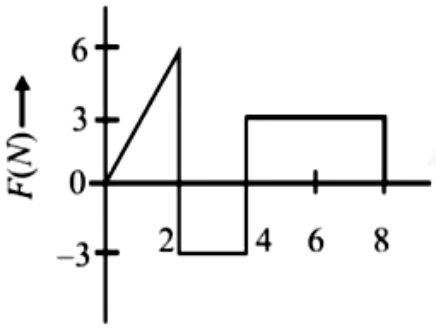
(A) $8\ \text{N}$
(B) $4\ \text{N}$
(C) $2\ \text{N}$
(D) 0

Q5 A $0.5\ \text{kg}$ ball moving with a speed of $12\ \text{m/s}$ strikes a hard wall at angle of 30° with the wall. It is reflected with the same speed and 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



(A) 48 N
(B) 24 N
(C) 12 N
(D) 96 N

Q6 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



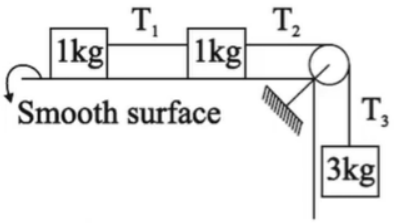
(A) $24\ \text{Ns}$
(B) $20\ \text{Ns}$
(C) $12\ \text{Ns}$
(D) $6\ \text{Ns}$

Q7

A ball weighing $10\ \mathrm{g}$ hits a hard surface vertically with a speed of $5\ \mathrm{m/s}$ and rebounds with the same speed. The ball remains in contact with the surface for $(0.01)\mathrm{s}$. The average force exerted by the surface on the ball is:

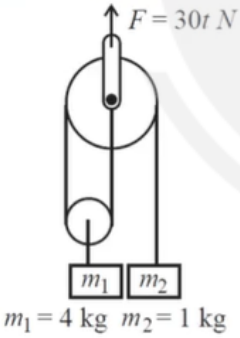
(A) $100\ \mathrm{N}$
(B) $10\ \mathrm{N}$
(C) $1\ \mathrm{N}$
(D) $0.1\ \mathrm{N}$

Q8 In following diagram find value of T_2.



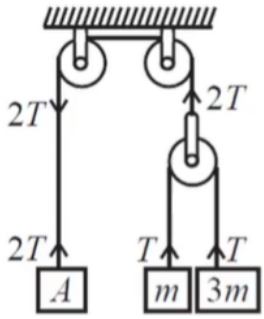
(A) $12\ \mathrm{N}$
(B) $6\ \mathrm{N}$
(C) $4\ \mathrm{N}$
(D) $1\ \mathrm{N}$

Q9 Force F is applied on upper pulley. If $F = 30tN$ where t is time in second. Find the time when m_1 loses contact with floor.



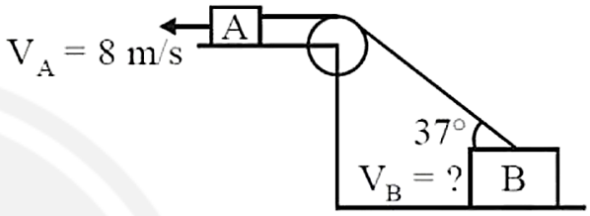
(A) $t = 1\mathrm{sec}.$
(B) $t = 2\mathrm{sec}.$
(C) $t = 0.5\mathrm{sec}.$
(D) $t = 1.5\mathrm{sec}.$

Q10 In the given figure, find mass of the block A, if it remains at rest, when the system is released from rest. Pulleys and strings are massless. $\left[g = 10\ \mathrm{m/s^2}\right]$



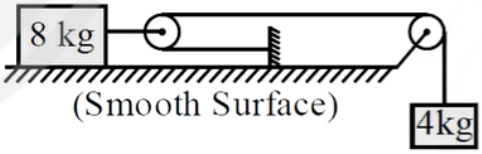
(A) m
(B) $2\ \mathrm{m}$
(C) $2.5\ \mathrm{m}$
(D) $3\ \mathrm{m}$

Q11 Find velocity of block B ?



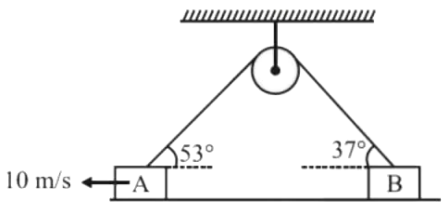
(A) $10\ \mathrm{m/s}$
(B) $15\ \mathrm{m/s}$
(C) $20\ \mathrm{m/s}$
(D) $25\ \mathrm{m/s}$

Q12 If pulleys shown in the diagram are smooth and massless and a_1 and a_2 are acceleration of blocks of mass $4\ \mathrm{kg}$ and $8\ \mathrm{kg}$ respectively, then



(A) $a_1 = a_2$
(B) $a_1 = 2a_2$
(C) $2a_1 = a_2$
(D) $a_1 = 4a_2$

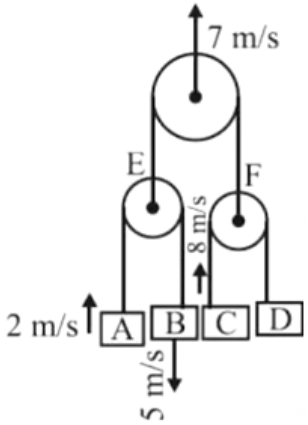
Q13 Find out the velocity of block B in a pulley block system as shown in figure.



(A) $\frac{10}{2}\ \mathrm{m/sec}$

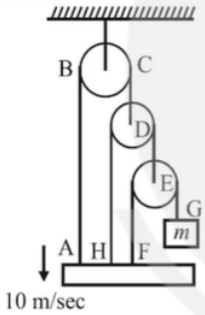
(B) $\frac{15}{2}$ m/sec
(C) $\frac{20}{2}$ m/sec
(D) None of these

Q14 Find out the velocity of block D.



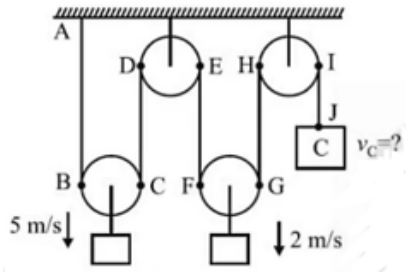
(A) $V_D = 22$ m/s (upward direction)
(B) $V_D = 22$ m/s (downward direction)
(C) $V_D = 23$ m/s (upward direction)
(D) $V_D = 23$ m/s (downward direction)

Q15 Find the velocity of point G



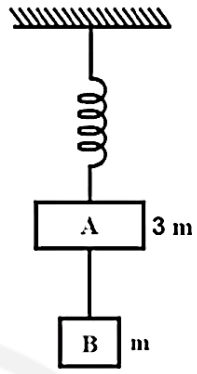
(A) 70 m/s upwards
(B) 70 m/s downwards
(C) 50 m/s upwards
(D) 50 m/s downwards

Q16



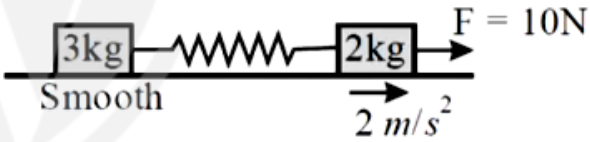
(A) $V_C = 14$ m/sec (upward)
(B) $V_C = 14$ m/sec (downward)
(C) $V_C = 15$ m/sec (upward)
(D) $V_C = 15$ m/sec (downward)

Q17 Two blocks A and B of masses 3 m 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



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

Q18 What is the acceleration of 3 kg mass when acceleration of 2 kg mass is 2 m/s^2 as shown?



(A) 3 m/s^2
(B) 2 m/s^2
(C) 0.5 m/s^2
(D) Zero

Answer Key

Q1	(B)	Q10	(D)
Q2	(A)	Q11	(A)
Q3	(D)	Q12	(B)
Q4	(A)	Q13	(B)
Q5	(B)	Q14	(C)
Q6	(C)	Q15	(A)
Q7	(B)	Q16	(A)
Q8	(A)	Q17	(A)
Q9	(B)	Q18	(B)

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