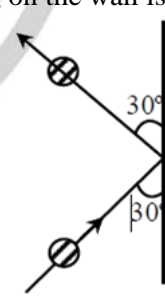


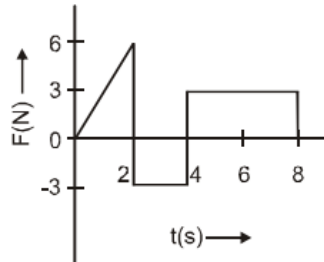
# ARJUNA (NEET)

## Newton's Law of Motion

DPP-03

- A cricket ball of mass 250 g collides with a bat with velocity 10 m/s and returns with the same velocity within 0.01 second. The force acted on bat is  
(A) 25 N (B) 50 N  
(C) 250 N (D) 500 N
- A body of mass 2 kg is moving with a velocity 8 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 N (B) 4 N  
(C) 2 N (D) 1 N
- If a force of 250 N act on body, the momentum acquired is 125 kg-m/s. What is the period for which force acts on the body  
(A) 0.5 sec (B) 0.2 sec  
(C) 0.4 sec (D) 0.25 sec
- A ball of mass  $m$  moves with speed  $v$  and it strikes normally with a wall and reflected back normally, if its time of contact with wall is  $t$  then find force exerted by ball on wall  
(A)  $\frac{2mv}{t}$  (B)  $\frac{mv}{t}$   
(C)  $mvt$  (D)  $\frac{mv}{2t}$
- A rope of length  $L$  is pulled by a constant force  $F$ . What is the tension in the rope at a distance  $x$  from the end where the force is applied  
(A)  $\frac{FL}{x}$  (B)  $\frac{F(L-x)}{L}$   
(C)  $\frac{FL}{L-x}$  (D)  $\frac{Fx}{L-x}$
- An aircraft is moving with a velocity of 300  $\text{ms}^{-1}$ . If all the forces acting on it are balanced, then  
(A) It still moves with the same velocity  
(B) It will be just floating at the same point in space  
(C) It will fall down instantaneously  
(D) It will lose its velocity gradually
- A particle of mass 0.3 kg is subjected to a force  $F = -kx$  with  $k = 15 \text{ N/m}$ . What will be its initial acceleration if it is released from a point 20 cm away from the origin  
(A)  $5 \text{ m/s}^2$  (B)  $10 \text{ m/s}^2$   
(C)  $3 \text{ m/s}^2$  (D)  $15 \text{ m/s}^2$
- A 0.5 kg ball moving with a speed of 12 m/s strikes a hard wall at an angle of  $30^\circ$  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
- In a rocket of mass 1000 kg fuel is consumed at a rate of 40 kg/s. The velocity of the gases ejected from the rocket is  $5 \times 10^4 \text{ m/s}$ . The thrust on the rocket is  
(A)  $2 \times 10^3 \text{ N}$   
(B)  $5 \times 10^4 \text{ N}$   
(C)  $2 \times 10^6 \text{ N}$   
(D)  $2 \times 10^9 \text{ N}$

10. 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 Ns                      (B) 20 Ns  
(C) 12 Ns                      (D) 6 Ns

**ANSWER KEY**

1. (D)
2. (B)
3. (A)
4. (A)
5. (B)
6. (A)
7. (B)
8. (B)
9. (C)
10. (C)



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