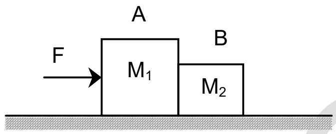
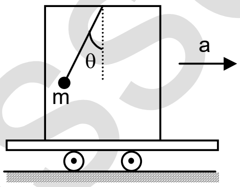
9.Assignments (Subjective Problems)

LEVEL – I

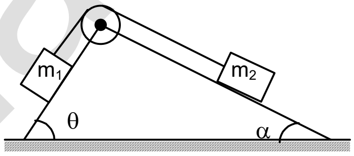
1. Two blocks A and B of masses M_1 and M_2 respectively kept in contact with each other on a smooth horizontal surface. A constant horizontal force (F) is applied on 'A' as shown in figure. Find the acceleration of each block and the contact force between the blocks



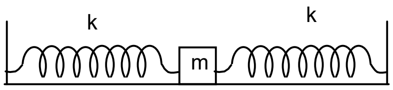
2. A bob of mass m = 50 gm is suspended from the ceiling of a trolley by a light inextensible string. If the trolley accelerates horizontally, the string makes an angle $\theta = 30^o$ with the vertical. Find the acceleration of the trolley.



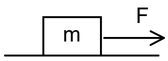
3. Two small bodies connected by a light inextensible string passing over a smooth pulley are in equilibrium on a fixed smooth wedge as shown in the figure. Find the ratio of the masses. Given that $\theta = 60^0$ and $\alpha = 30^0$.



4. Both the springs shown in Figure are unstretched. If the block is displaced by a distance x and released, what will be the initial acceleration?



5. A block of mass m = 1 kg is at rest on a rough horizontal surface having coefficient of static friction 0.2 and kinetic force 0.15. Find the frictional forces if a horizontal force (a) F = 1 N, (b) F = 1.96 N and (c) F = 2.5 N are applied on a block which is at rest on the surface.



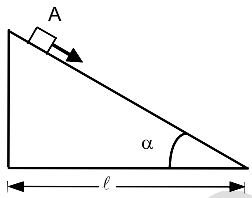
6. Two masses m_1 = 5 kg, m_2 = 2 kg placed on a smooth horizontal surface are connected by a light inextensible string. A horizontal force F = 1 N is applied on m_1. Find the acceleration of either block. Describe the motion of m_1 and m_2 if the string breaks but F continues to act.

7. The coefficient of static friction between a block of mass m and an incline is $\mu_s = 0.3$. (a) What can be the maximum angle θ of the incline with the horizontal so that the block does not slip on the plane? (b) If the incline makes an angle θ/2 with the horizontal, find the frictional force on the block.

8. A 20 kg box is dragged across a rough level floor having a coefficient of kinetic friction of 0.3 by a rope which is pulled upward at angle of 30° to the horizontal with a force of magnitude

80 N.
(a) What is the normal force?
(b) What is the frictional force?
(c) What is the acceleration of the box?
(d) If the force is reduced until the acceleration becomes zero, what is the tension in the rope?

9. A small body A starts sliding down from the top of a wedge (fig.) whose base is equal to ℓ = 2.10 m. The coefficient of friction between the body and the wedge surface is k = 0.140. For what value of the anlge α will the time of sliding be the least? What will it be equal to?



10. A chain of length ℓ is placed on a smooth spherical surface of radius R with one of its ends fixed at the top of the sphere. What will be the acceleration a of each element of the chain when its upper end is released? It is assumed that the length of the chain $\ell < (\pi R/2)$.

LEVEL – II

1. A smooth wedge with elevation θ is fixed in an elevator moving up with uniform acceleration $a_0 = g/2$. The base of the wedge has a length L. Find the time taken by a particle sliding down the incline to reach the base.

2. A body of mass 2 kg is lying on a rough inclined plane of inclination 30°. Find the magnitude of the force parallel to the incline needed to make the block move (a) up the incline (b) down the incline. Coefficient of static friction = 0.2.

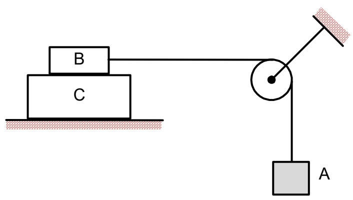
3. A spring has its end fixed to the ceiling of the elevator rigidly. It has spring constant = 2000 N/m. A man of mass 50 kg climbs along the other end of the spring vertically up with an acceleration of 2 m/s^2 relative to the elevtater. The elevater is going up with retardation 3 m/s^2. Find extension in the spring.

4. A bar of mass m resting on a smooth horizontal plane starts moving due to the force F = mg/3 of constant magnitude. In the process of its rectilinear motion the angle α between the direction of this force and the horizontal varies as α = as, where a is a constant, and s is the distance traversed by the bar from its initial position. Find the velocity of the bar as a function of the angle α.

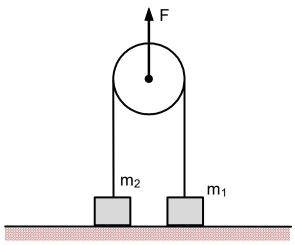
5. Two blocks in contact of masses 2 kg and 4 kg in succession from down to up are sliding down an inclined surface of inclination 30°. The friction coefficient between the block of mass 2.0 kg and the inclines is μ_1, and that between the block of mass 4.0 kg and the incline is μ_2. Calculate the acceleration of the 2.0 kg block if (a) μ_1 = 0.20 and μ_2 = 0.30, (b) μ_1 = 0.30 and μ_2 = 0.20. Take g = 10 m/s^2.

6. A balloon is descending with a constant acceleration a, less than the acceleration due to gravity g. The weight of the balloon, with its basket and contents, is w. What weight, w, should be released so that the balloon will begin to accelerate upward with constant acceleration a? Neglect air resistance.

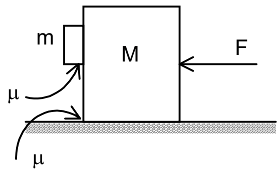
7. In the figure shown co-efficient of friction between the block B and C is 0.4. There is no friction between the block C and the surface on which it is placed. The block A is released from rest, find the distance moved by the block C when block A descends through a height 2m. Given masses of the blocks are m_A = 3 kg, m_B = 5 kg and m_C = 10 kg.



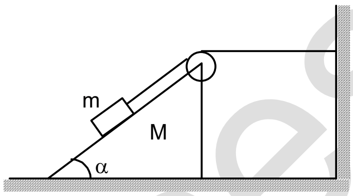
8. Two masses m_1 and m_2 are connected by means of a light string, that passes over a light pulley as shown in the figure. If m_1 = 2kg and m_2 = 5 kg and a vertical force F is applied on the pulley then find the acceleration of the masses and that of the pulley when
(a) F = 35 N (b) F = 70 N (c) F = 140 N



9. In the given figure the co-efficient of friction between the walls of block of mass m and the plank of mass M is μ. The same co-efficient of friction is there between the plank and the horizontal floor. The force F is of 100 N and the masses m and M are of 1 kg and 3 kg respectively. Find the value of μ, if the block does not slip along the wall of the plank.



10. In figure, a bar of mass m is placed on the smooth surface of a wedge of mass M. The bar is connected to an inextensible string passing over a light smooth pulley fitted with the wedge. The string is connected to the vertical wall. The angle of inclination of the slant surface of the wedge is α. If all contacting surfaces are smooth, find the acceleration of the wedge.



10. Assignments (Objective Problems)

LEVEL – I

1. When a body is stationary:
(A) There is no force acting on it
(B) The forces acting on it are not in a contact with it
(C) The combination of forces acting on it balance each other
(D) The body is in vacuum

2. A toy train consists of three identical compartments X, Y and Z. It is pulled by a constant horizontal force F applied on Z horizontally. Assuming there is negligible friction, the ratio of tension in string connecting XY and YZ is:
(A) 2:1 (B) 3:2
(C) 1:2 (D) 2:3

3. Two blocks of masses 2 kg and 1 kg are in contact with each other on a frictionless table, when a horizontal force of 3.0 N is applied to the block of mass 2 kg the value of the force of contact between the two blocks is:
(A) 4 N (B) 3 N
(C) 2 N (D) 1 N

4. A block of metal weighing 2 Kg is resting on a frictionless plane. It is struck by a jet releasing water at a rate of 1 Kg/sec and at a speed of 5m/sec. The initial acceleration of the block will be:
(A) 2.5 m/sec^2 (B) 5.0 m/sec^2
(C) 10 m/sec^2 (D) none of above

5. When a force of constant magnitude always act perpendicular to the motion of a particle then:
(A) Velocity is constant (B) Acceleration is constant

(C) KE is constant (D) None of these

6. Two masses M_1 and M_2 are attached to the ends of string which passes over the pulley attached to the top of a double inclined plane. The angles of inclination of the inclined planes are α and β. Take $g = 10\ ms^{-2}$. If $M_1 = M_2$ and $\alpha = \beta$, what is the acceleration of the system?
(A) zero (B) $2.5\ ms^{-2}$
(C) $5\ ms^{-2}$ (D) $10\ ms^{-2}$

7. Starting from rest, a body slides down a 45° inclined plane in twice the time it takes to slide down the same distance in the absence of friction. The coefficient of friction between the body and the inclined plane is:
(A) 0.33 (B) 0.25
(C) 0.75 (D) 0.80

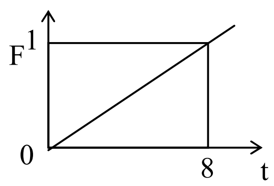
8. A trolley car slides down a smooth inclined plane of angle of inclination θ. If a body is suspended from the roof of the trolley car by an inextensible string of length l, the corresponding tension in the string will be
(A) mg (B) mg $\cos\theta$
(C) mg $\sin\theta$ (D) None of these

9. A block of mass m is held at the top of an inclined rough plane of angle of inclination θ. The coefficients of static and kinetic friction are μ_1 and μ_2 respectively. If the block is pushed down at the verge of slipping, assuming $\theta < \tan^{-1} \mu_1$, Its acceleration down the plane is :
(A) $g[\text{Sin } \theta - \mu_1 \text{ Cos } \theta]$ (B) $g[\text{Sin } \theta - \mu_2 \text{ Cos } \theta]$
(C) $g(\text{Sin } \theta - \mu_1 \text{ Cos } \theta]$ (D) g

10. A satellite in force-free space sweeps stationary interplanetary dust at a rate $(dM/dt) = \alpha v$. The acceleration of satellite is:
(A) $-2v^2/M$ (B) $-\alpha v^2/M$
(C) $-\alpha v^2/2M$ (D) $-\alpha v^2$

11. Three blocks are connected on a horizontal frictionless table by two light strings, one between m_1 and m_2, another between m_2 and m_3 . The tensions are T_1 between m_1 and m_2 and T_2 between m_2 and m_3. if $m_1 = 1$ kg, $m_2 = 8$ kg, $m_3 = 27$ kg and F = 36 N applied on m_3, then T_2 will be
(A) 18 N (B) 9 N
(C) 3.375 N (D) 1.75 N

12. A force-time graph for the motion of a body is shown in figure. Change in linear momentum between 0 and 8 s is:



(A) Zero (B) 4 N-s
(C) 8 Ns (D) None

13. A block of mass M is pulled along a horizontal frictionless surface by a rope of mass m. If a force F is applied at one end of the rope, the force which the rope exerts on the block is:
(A) F/(M+m) (B) F
(C) FM/(m+M) (D) 0

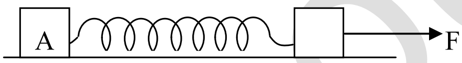
14. A chain of length L and mass M is hanging by fixing its upper end to a rigid support. The tension in the chain at a distance x from the rigid support is:
(A) Zero
(B) F
(C) $Mg\frac{(L-x)}{L}$
(D) $Mg\frac{(L-x)}{M}$

15. Two masses m and m' are tied with a thread passing over a pulley, m' is on a frictionless horizontal surface and m is hanging freely. If acceleration due to gravity is g, the acceleration of m' in this arrangement will be
(A) g
(B) g/(m+ m′)
(C) g/m′
(D) g/(m- m′)

16. A block of mass 0.1 kg is held against a wall by applying a horizontal force of 5 N on the block. If the coefficient of friction the block and the wall is 0.5, the magnitude of the frictional force acting on the block is:
(A) 2.5 N
(B) 0.98 N
(C) 4.9 N
(D) 0.49 N

17. A block *A* of mass 2 kg rests on another block *B* of mass 8 kg which rests on a horizontal floor. The coefficient of friction between *A* and *B* is 0.2 while that between *B* and floor is 0.5. When a horizontal force of 25 N is applied on the block *B*. The force of friction between *A* and *B* is:
(A) Zero
(B) 3.9 N
(C) 5.0 N
(D) 49 N

18. A ball weighing 10 gm hits a hard vertical surface with a speed of 5m/s and rebounds with the same speed. The ball remains in contact with the surface for (0.01) sec. The average force exerted by the surface on the ball is:
(A) 100 N
(B) 10 N
(C) 1 N
(D) 0.1 N

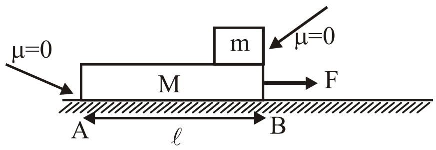


19. Two masses *A* and *B* each of mass *M* are fixed together by a massless spring. A force *F* acts on the mass *B* as shown in figure. At the instant shown the mass *A* has acceleration *a*. What is the acceleration of mass *B*?
(A) (F/M)-a
(B) a
(C) -a
(D) (F/M)

20. An object is placed on the surface of a smooth inclined plane of inclination θ. It takes time t to reach the bottom. If the same objective is allowed to slide down a rough inclined plane of same inclination θ, it takes nt to reach the bottom where n is a number greater than 1. The coefficient of friction μ is given by
(A) $\mu = \tan(1-1/n^2)$
(B) $\mu = \cot(1-1/n^2)$
(C) $\mu = \tan(1-1/n^2)^{1/2}$
(D) $\mu = \cot(1-1/n^2)^{1/2}$

LEVEL – II

1. In the figure small block is kept on m then



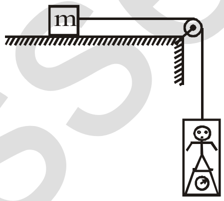
(A) the acceleration of m w.r.t. ground is $\frac{F}{m}$

(B) the acceleration of m w.r.t. ground is zero

(C) the time taken by m to separate from M is $\sqrt{\frac{2\ell m}{F}}$

(D) the time taken by m to separate from M is $\sqrt{\frac{2\ell M}{F}}$

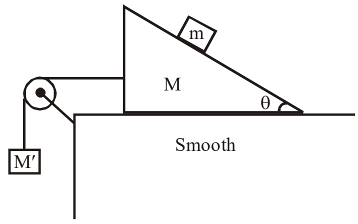
2. In the figure, a man of true mass M is standing on a weighing machine placed in a cabin. The cabin is joined by a string with a body of mass m. Assuming no friction, and negligible mass of cabin and weighing machine, the measured mass of man is (normal force between the man and the machine is proportional to the mass)



(A) measured mass of man is $\frac{Mm}{(M+m)}$ (B) acceleration of man is $\frac{mg}{(M+m)}$

(C) acceleration of man is $\frac{Mg}{(M+m)}$ (D) measured mass of man is M.

3. The figure shows a block of mass *m* placed on a smooth wedge of mass *M*. Calculate the value of M′ and tension in the string, so that the block of mass *m* will move vertically downward with acceleration 10 m/s^2
(Take g = 10 m/s^2)



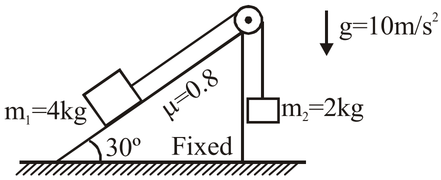
(A) the value of M′ is $\frac{M\cot\theta}{1-\cot\theta}$

(B) the value of M′ $\frac{M\tan\theta}{1-\tan\theta}$

(C) the value of tension in the string is $\frac{Mg}{\tan\theta}$

(D) the value of tension is $\frac{\mu g}{\cot\theta}$

4. Two blocks of masses m_1 and m_2 are connected through a massless inextensible string. Block of mass m_1 is placed at the fixed rigid inclined surface while the block of mass m_2 hanging at the other end of the string, which is passing through a fixed massless frictionless pulley shown in figure. The coefficient of static friction between the block and the inclined plane is 0.8. The system of masses m_1 and m_2 is released from rest.

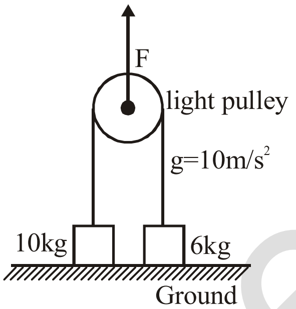


(A) the tension in the string is 20 N after releasing the system

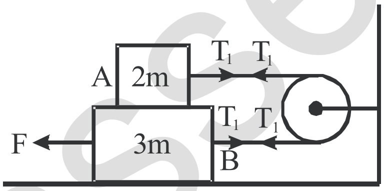
(B) the contact force by the inclined surface on the block is along normal to the inclined surface

(C) the magnitude of contact force by the inclined surface on the block m_1 is $20\sqrt{3}$N
(D) none of these

5. A force F is applied vertically upward to the pulley and it is observed that the pulley in the figure moves upward with a uniform velocity of 2 m/s. The possible value(s) of F is/are (in newtons)
(A) 150 (B) 120
(C) 75 (D) 400.

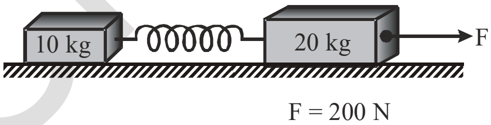


6. The coefficient of friction of all the surfaces is μ. The string and the pulley are light. The blocks are moving with constant speed. Choose the correct statement



(A) F = 9 μ mg (B) T_1 = 2μ mg
(C) T_1= 3μ mg (D) T_1 = 4μ mg

7. Two masses of 10 kg and 20 kg are connected by a light spring as shown. A force of 200 N acts on a 20 kg mass as shown. At a certain instant the acceleration of 10 kg mass is 12 ms^{-2}.

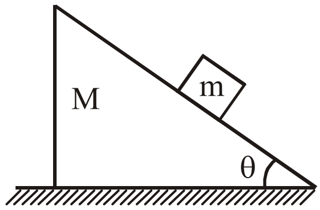


(a) At that instatnt the 20 kg mass has an acceleration of 2 ms^{-2}
(b) At that instant the 20 kg mass has an acceleration of 4ms^{-2}
(c) The stretching force in the spring is 120 N
(d) Spring force have different magnitudes for both blocks.

8. A particle stays at rest as seen in a frame. We can conclude that
(a) the frame is inertial
(b) resultant force on the particle is zero
(c) the frame may be inertial but the resultant force on the particle is zero
(d) the frame may be non-inertial but there is a nonzero resultant force

9. A particle is observed from two frames S_1 and S_2. The frame S_2 moves with respect to S_1 with an acceleration α. Let F_1 and F_2 be the pseudo forces on the particle when seen from S_1 and S_2 respectively. Which of the following are not possible?
(a) $F_1 = 0, F_2 \neq 0$ (b) $F_1 \neq 0, F_2 = 0$
(c) $F_1 \neq 0, F_2 \neq 0$ (d) $F_1 = 0, F_2 = 0$

10. A block of mass m slides down on a wedge of mass M as shown in figure. Let $\vec{a}_1$ be the acceleration of the wedge and $\vec{a}_2$ the acceleration of block. N_1 is the normal relation between block and wedge and N_2 the normal reaction between wedge and ground. Friction is absent everywhere. Select the correct alternative (s)



(a) $N_2 < (M + m) g$

(b) $N_1 = m (g \cos q - | \vec{a}_1 | \sin q)$

(c) $N_1 \sin q = M |\vec{a}_1|$

(d) $m\vec{a}_2 = -M\vec{a}_1$

COMPREHENSIONS

Comprehension I:

A car engine is so constructed as to exert a torque onto the wheels causing them to rotate, and the wheels move forward on the road due to static friction. The force of static friction, acting between the wheels and the road, is responsible for the forward acceleration of the car. The force of static friction has an upper limit, known as the limiting force of static friction – proportional to the normal reaction between the wheels and the road; this limits the maximum forward acceleration of the car.

In recent years, there has been a tendency to design lighter and more fuel efficient cars, which drive faster than conventional cars. At very high speeds, it is observed that conventional cars lose out on manoevrability, as friction is no longer sufficient. This is caused by airflow around the body of the car, which produces pressure differentials that increase the tendency of the car to get airborne. Modern designers have tried to manipulate this airflow so as to reduce lift, decrease drag, and in some cases – even cause a downward force resulting in better traction.

1. A motorist, driving a car on a level road, desires to take a tight circular turn of radius r at a constant speed v. The coefficient of static friction between the wheels of the car is μ_S and that of kinetic friction is μ_K. He will be able to take this turn without skidding if (choose the most appropriate option)

(A) $\mu_K \ge \frac{gr}{v^2}$

(B) $\mu_S \ge \frac{gr}{v^2}$

(C) $\mu_S, \mu_K \ge \frac{gr}{v^2}$

(D) $\mu_S \ge \frac{v^2}{rg}$

2. The car drives onto a bridge, which is convex upward, maintaining a constant speed v. The driver, when he is on the bridge,

(A) can take a tighter turn, than when he is on a level road.
(B) cannot take a tighter turn, than when he is on a level road.
(C) can take a turn of the same radius as he could on a level road.
(D) can take tighter turns when he is getting upon the bridge, and looser turns when he is getting off the bridge.

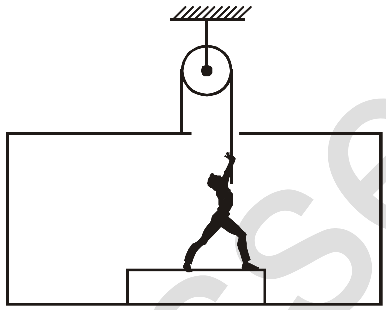
Assume that the driver always takes a full circular turn without skidding.

3. The car is driven at a very high constant speed v, on a straight level road. This causes a lift L to act on the car due to airflow. The force of friction (f) acting between the driving wheels and the road

(choose the most appropriate option)
(A) is zero, since the car is moving with constant velocity.
(B) Satisfies f = μ_S mg, where m is the mass of the car.
(C) Satisfies f = μ_S (mg – L), assuming that the wheels do not lose contact with the road.
(D) Satisfies f = D, where D is the resultant backward force on the car due to air drag and other contact forces.

Comprehension II :

If a man is measuring his actual weight by weighing machine as shown in the figure. The mass of man is 60 kg, mass of weighing machine is 20 kg and mass of lift is 30 kg (pulley is smooth and string is massless).
(Take g = 10 ms^{-2})



4. The tension exerted by the man on the string
(A) 6600 N (B) 1800 N
(C) 1110 N (D) 800 N

5. Acceleration of the lift is
(A) 30 ms^{-2} (B) 18.5 ms^{-2}
(C) 110 ms^{-2} (D) 13.3 ms^{-2}

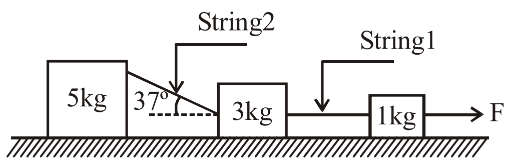
6. Normal reaction exerted by man on weighing machine
(A) 600 N (B) 900 N
(C) 800 N (D) 1110 N

MATCH THE FOLLOWING

1. On a rough surface

	Column A		Column B
(A)	Body is stationary it is possible that	(p)	Frictional force acting on it is zero
(B)	Body is just about to move	(q)	Frictional force acting on it is static
(C)	Body is moving with uniform acceleration then it is possible that	(r)	Frictional force acting on it is limiting frictional force
(D)	Body is moving with uniform velocity	(s)	Frictional force acting on it is kinetic

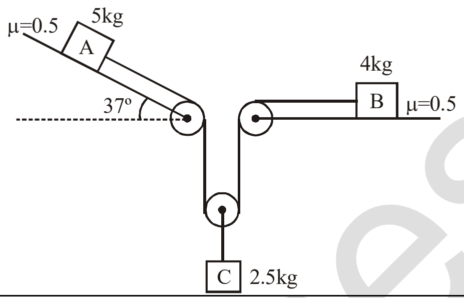
2. System of blocks are placed on a smooth horizontal system, as shown. For a particular value of F, 3 kg block is just about to leave ground. (tan 37º = $\frac{3}{4}$)



	Column I		Column II
(A)	Tension in string 1	(p)	80 N

(B)	Tension in string 2	(q)	64 N
(C)	Net force by ground on 5 kg block	(r)	50 N
(D)	Net force on 3 kg block	(s)	24 N

3. In the above arrangement all pulleys are light and frictionless, threads are ideal, μ = 0.5 at all surfaces.



Column I		***Column II***	
(A)	Net force on block A	(p)	0
(B)	Net force on block B	(q)	5
(C)	Net force on block C	(r)	10
(D)	Tension in string	(s)	20

11. Hints to Subjective Assignments

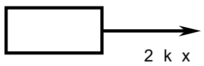
LEVEL-I

1. Draw the F.B.D. and find the forces acting on A & B. Vertical forces will balance each other and apply Newton's second law in horizontal

2. Draw the F.B.D. and resolve the forces in vertical and horizontal direction, write down eqs. and find a.

3. Draw the F.B.D. and resolve all forces along and perpendicular to plane, apply Newton's second law.

4. F=ma
   a=2kx/m



5. N-mg=ma   N=contact force on the box.

6. $a = \dfrac{F}{m_1 + m_2}$

7. Calculate the angle of repose.

8. $a = g(\sin\theta - \mu \cos\theta)$

9. $a_1 = 4a_2$ where a_1 is acceleration of m and a_2 is acceleration of M.

10. Constant velocity means a = 0
    T– mg= 0

LEVEL-II

1. Pseudo force (ma_0) and weight mg act vertically downward. Resolve along the incline.

2. Take a small element of chain at an angular position θ

3. $a = m_2g/(m_1+m_2)$

4. Write constraints equations and solve.

5. $a_{relative} = a_1 - a_2$, where a_1 and a_2 be the retardation of m and M respectively.

6. Find acceleration of mass relative to earth. Then apply Newton's second law.

7. First consider relative motion between the blocks. Find common acceleration and sec whether $F_e = M_c .a \leq f_{lim}$

8. Draw the F.B.D. of pulley block system .Find the maximum tension corresponding to the force F and check whether motion is possible or not.
If possible then apply equations of motion and constraint relation for the accelerations of masses and pulley.

9. $mg \leq \mu ma$
$g \leq \mu. \dfrac{F - \mu g(M+m)}{M+m}$
$(M + m) g \leq \mu F - \mu^2 g (M + m)$

10. Write the acceleration as $v\dfrac{dv}{ds}$ and integrate.

12. Answers to Subjective Assignments

LEVEL – I

1. $a = \frac{F}{M_1 + M_2}, N = \frac{M_2F}{M_1 + M_2}$

2. 5.7 m/s^2

3. $\frac{m_1}{m_2} = \frac{1}{\sqrt{3}}$

4. $\frac{2kx}{m}$

5. (a) 1N (b) 1.96 N (c) 1.5 N

6. $\frac{F}{m_1 + m_2} = \frac{1}{7} m/s^2$, m_2 will move with constant velocity and m will accelerate with 1/5 m/s^2

7. (a) $\tan^{-1} \mu_s = \tan^{-1} 0.3 = 16.70$ (b) 0.145 mg

8. (a) 160 N, (b) 48 N (c) 1.06 m/s^2 (d) 55.42 N

9. $\tan 2\alpha = -\frac{1}{k}$, $\alpha = 49^0$, t_{min}= 1.0 s

10. (Rg/l) / {1- cos(l/R) }

LEVEL – II

1. $\sqrt{\frac{16L}{3\sqrt{3}g}}$

2. (a) 13.46 N (b) 0

3. 0.225 m

4. $v = \sqrt{(2g/3a)\sin\alpha}$

5. 3.7 m/s^2, 2.97 m/s^2

6. $\frac{2wa}{g + a}$

7. 2m.

8. (a) $a_1 = a_2 = 0 = a_p$ (b) $a_1 = \frac{15}{2}$ m/s^2, $a_2 = 0$, $a_p = \frac{15}{4}$ m/s^2

   (c) a_1 = 25 m/s^2, a_2 = 4 m/s^2, $a_p = \frac{29}{2}$ m/s^2

9. $\mu = 0.5$

10. $\frac{mg\sin\alpha}{M + 2m(1 - \cos\alpha)}$

13. Answers to Objective Assignments

LEVEL – I

1.	**(C)**	2.	**(C)**
3.	**(D)**	4.	**(A)**
5.	**(C)**	6.	**(A)**
7.	**(C)**	8.	**(B)**
9.	**(B)**	10.	**(B)**
11.	**(B)**	12.	**(B)**
13.	**(C)**	14.	**(C)**
15.	**(B)**	16.	**(B)**
17.	**(B)**	18.	**(B)**
19.	**(A)**	20.	**(A)**

LEVEL – II

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

COMPREHENSION

10.	**(D)**	11.	**(B)**
12.	**(D)**	13.	**(A)**
14.	**(C)**	15.	**(A)**

MATCH THE FOLLOWING

1. (A) – (p), (q), (r); (B) – (q), (r); (C) – (s); (D) – (s)

2. (A) – (q); (B) – (r); (C) – (p); (D) – (s)

3. (A) – (s); (B) – (p); (C) – (q); (D) – (r)