

G.S.Mandal's Marathwada Institute of Technology, Aurangabad

Department of Basic Sciences and Humanities

Title of the Subject: Engineering Mechanics	
Title of the Unit: Basic Concepts	Unit No:- 1

Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	Mechanics is the branch of a) <b>Physics</b> b) Chemistry c) Biology d) none of the above	
2	Study of effect of force system acting on particle or rigid body at rest is called as a) motion b) Dynamics c) <b>Statics</b> d) Kinetics	
3	An object whose dimension is not involved in analysis then it is assumed as a) <b>Particle</b> b) Rigid Body c) Deformable body d) non- rigid body	
4	The forces, which meet at one point, but their lines of action do not lie in a plane, are called (a) Coplanar non-concurrent forces (b) Non-coplanar concurrent forces (c) Non-coplanar non-concurrent forces	

	(d) Intersecting forces	
5	The inability of a body to change its state of rest or uniform motion along a straight line is called its a) momentum b) velocity c) acceleration d) inertia	
6	The algebraic summation of moments of all forces acting on a rigid body about any point is equal to the moment of their resultant force about same point. a) Law of moment b)Varignon's theorem c) lami's Theorem	
7	If a material has no uniform density throughout the body, then the position of centroid and center of mass are	
8	What is the C.G of an isosceles triangle of base 20 cm and side 40? a. 12.90 cm b. 13.28 cm c. 19.36 cm d. 38.72 cm	
9	The forces, which meet at one point, but their lines of action do not lie in a plane, are called (a) Coplanar non-concurrent forces (b) Non-coplanar concurrent forces (c) Non-coplanar non-concurrent forces (d) Intersecting forces	
10	If two forces acting simultaneously on a body at a point are represented in magnitude and direction by two adjacent sides of a parallelogram, then the resultant is represented in magnitude and direction by the diagonal of parallelogram which passes through the point of intersection of the two sides representing the forces. a)Law of moment b)Varignon's theorem c) lami's Theorem d) Law of Parallelogram of Force	
	Short Answer Question	
Question No.	Question Description	Expected Marks



7	Explain the term couple.	
8	Find the resultant in magnitude, direction and position with respect to fixed end 'C', for the 20 N forces acting at equal span on the beam. $ \begin{array}{c}                                     $	
9	Explain why moment of inertia is called second moment of area.	
10	Give significance of radius of gyration	

Long Answer Question		
Question No.	Question Description	Expected Marks
1	The plate is subjected to the two forces at A and B as shown. If $\theta = 60^{\circ}$ determine the magnitude of the resultant of these two forces and its direction measured clockwise from the horizontal.	
2	The magnitudes of the three forces applied to the eye bolt are $T1 = 110$ N, $T2 = and T3 = 150$ N. Replace these forces with a equivalent force <b>R</b> . Show the result on a of the eye bolt.	







# G.S.Mandal's Marathwada Institute of Technology, Aurangabad

Department of Basic Sciences and Humanities

Title of the Subject: Engineering Mechanics	
Title of the Unit: Equilibrium	Unit No:- 2

Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	<ul> <li>According to the law of moments, if a number of coplaner forces acting on a particle are in equilibrium, then</li> <li>a) the algebraic sum of their moments about any point in their plane is zero</li> <li>b) their algebraic sum is zero</li> <li>c) their lines of action are at equal distances</li> <li>d) the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point.</li> </ul>	
2	<ul> <li>The resultant of the forces acting on a body will be zero if the body</li> <li>(a) rotates</li> <li>(b) moves with variable velocity in a straight line</li> <li>(c) moves along a curved path</li> <li>(d) D. does not move at all.</li> </ul>	
3	<ul> <li>a) concurrent</li> <li>b) parallel</li> <li>c) concurrent parallel</li> <li>d) D. none of these</li> </ul>	
4	The maximum frictional force which comes into play, when a body just begins to slide over the surface of a an other body, is known	

	a) sliding friction	
	b) rolling friction	
	d) none of these.	
	Which one of the following statements is true?	
5	<ul> <li>a) The tangent of the angle of friction is equal to coefficient of friction</li> <li>b) The angle of repose is equal to angle of friction</li> <li>c) The tangent of the angle of repose is equal to coefficient of friction</li> <li>d) All the above</li> </ul>	
	The following body can be considered in equilibrium	
6	<ul><li>a. body moving uniformly relative to inertial frame of reference</li><li>b. body moving uniformly relative to non-inertial frame</li><li>c. A disk rotating at a constant speed</li><li>d. A body at rest in a non-inertial frame of reference</li></ul>	
	A truss having four members and four joints and supported by a hinge and a roller	
7	is	
	a) deficient b) redundant c) perfect d) none of these	
8	The method which is suitable for finding forces in only few members of the truss is a) method of joint b) method of sections c) equilibrium of entire truss d) none of the above	
	A flowerpot kept on the table is an example of	
9	a) Collinear forces, b) Concurrent forces, Non-coplanar parallel forces, d) Coplanar parallel forces	
	A ladder, one end on ground and other end supported on wall is an example of,	
10	a) Concurrent forces, b) Non-coplanar parallel forces, c) General force system, d) Coplanar parallel forces	
	Short Answer Question	

Question No.	Question Description	Expected Marks
1	Define and explain to: - i) Free Body Diagram, ii) Lami's Theorem	
2	A force of 5000 N is applied at the centre of the beam of length 5 m. Find the reactions at the hinge and roller supports. 5000  N 30  degree 5  m	
3	Two cylinders, A of weight 4000 N and B of weight 2000N rest on a smooth inclines as shown in figure. They are connected by a bar of negligible weight hinged to each cylinder at it's geometric centre by smooth pins. Find the force P to be applied as shown in the figure such that it will hold the system in the given position.	
4	Define friction? Explain the laws of friction and angle of friction.	
5	A wire is fixed at two points A and D as shown in Fig. 2.5(a). Two weights 20 kN and 25 kN are supported at B and C, respectively. When equilibrium is reached it is found that inclination of AB is 30° and that of CD is 60° to the vertical. Determine the tension in the segments AB, BC and CD of the rope and also the inclination of BC to the vertical.	



	Long Answer Question	
Question No.	Question Description	Expected Marks
	Pa	age <b>10</b> of <b>32</b>









# G.S.Mandal's Marathwada Institute of Technology, Aurangabad

Department of Basic Sciences and Humanities

Title of the Subject: Engineering Mechanics	
Title of the Unit: Kinematics	Unit No:- 3

Multiple Choice Questions			
Question No.	Question Description		
1	What determines the nature of path followed by the particle?(a) Speed(b) Velocity(c) Acceleration(d) None of these		
2	A moving body is covering distances in proportion to the square of time along a straight line. The acceleration of the body is:(a) Increasing(b) Decreasing(c) Zero(d) Constant		
3	The distance covered by a body in time't' is proportional to the square of the time't'. The acceleration of the body is:(a) Zero(b) Constant(c) Increasing(d)		
4	A train travels 4 km due east and then 3 km due north and finally comes back to the starting position travelling 5 km along south-west direction. What is the net displacement?(a) 12 km(b) 5 km(c) Zero(d) 1 km		
5	A body moves along a straight line, the motion of the body is said to be:(a) One dimensional(b) Two dimensional(c) Three dimensional(d) May be any of these three		

	A stone is released with zero velocity from the top of a tower reaches the ground		
-	in 4 second, the height of the tower is about.		
6	(a) 20 m (b) 40 m (c) 80 m (d) 16 m		
	A stone is thrown vertically upwards with an initial velocity of 30 m/s. The time		
7	taken for the stone to rise to its maximum height is		
	(a) $0.326$ s (b) $3.26$ s (c) $30.6$ s (d) $3.06$ s		
	The displacement-time graph of a body is parallel to t-axis. The body is said to be		
	moving with:		
8	(a) uniform velocity (b) non-uniform velocity (d) no motion at all		
	(c) may be uniorm of non-uniorm velocity (d) no motion at an		
	If a projectile is projected on a horizontal ground, with inclined velocity u at an angle $\alpha$ , then for the range to be maximum, $\alpha$ should be equal to :		
	a. $\pi/2$		
9	b. $\pi/4$		
	c. $\pi/3$		
	d. None of the above		
	Area under V-t diagram gives :		
10	a. Displacement		
10	c. Velocity		
	d. Time		
	Short Answer Question		
Question		Expected	
No.		Marks	
-	A fly Wheel starts from the rest and after half a minute rotates at 2000 rpm.		
1	Calculate the 1) angular acceleration and 11) number of revolution made by the wheel within this period		
	A rotor of turbine has an initial angular velocity of 1800 rpm. Accelerating		
2	uniformity, it doubled its velocity in 12 s. Find the revolution performed by it in this interval		
3	A rocket is released from ajet fighter flying horizontally 1200 kmph at an altitude		

	of 3000 m above itstarget. The rocket thrust gives it a constant horizontal	
	acceleration of 6 m/sec2. At what angle below the horizontal should pilot see the	
	target at the instant of releasing the rocket in order to score a hit?	
	A particle moves along a straight line so that its displacement in m from a fixed point is given by	
4	$s = t^3 + 3t^2 + 4t + 5$	
	Find :- i) Velocity at start and after 4 sec. ii) Acceleration at start and after 4 sec.	
	The motion of particle moving in a straight line is given by the expression $S = t^3 - 3t^2 + 2t + 5$	
5	Where, s is the displacement in meters and t is the time in seconds. Determine: (1) velocity and acceleration after 4 seconds; (2) maximum and minimum velocity and corresponding displacement; (3) time at which velocity is zero.	
6	A tower is 90m in height. A particle is dropped from the top of the tower is at the same time another particle is projected upward from the foot of the tower. Both the particles meet at the height of 30m. Find the velocity, with which the second particle is projected upward.	
7	A stone dropped into a well is heard to strike the water after 4 seconds. Find the depth of the well, if the velocity of sound is 350m/s.	
8	A car is moving with a velocity of 15m/s. The car is brought to rest by applying brakes in 5 s . Determine: 1. The retardation 2. The distance travelled by car after applying brakes.	
9	A motor cyclist is travelling at 20m/sec, when he observes a traffic length 180m ahead of him turns red for 10 seconds. If the motor cyclist wish to pass the length without stopping just as it turns green. Determine <ol> <li>Acceleration</li> <li>Speed of motor as it passes the light</li> </ol>	
10	A tower is 90m in height A particle is dropper from the top of the tower at the	
	same time another particle is projected upward from the foot of the tower. Both	

the particles meet at a ht of 30m. Find the velocity, with which the second	
particle is projected upward.	

Long Answer Question		
Question No.	Question Description	Expected Marks
1	A motor cyclist is travelling at 20m/sec, when he observes a traffic length 180m ahead of him turns red for 10 seconds. If the motor cyclist wish to pass the length without stopping just as it turns green. Determine 1. Acceleration 2. Speed of motor as it passes the light	
2	A car travels along a straight line such that its displacement is directly proportional to the square of the time of travel. If it travels 400 m during first two minutes. Find displacement, velocity & acceleration at the start & five minutes after starting	
3	A stone dropped into a well is heard to strike the water after 4 seconds. Find the depth of the well, if the velocity of sound is 350m/s.	
4	<ul> <li>A body is moving at 4m/s and accelerates at 1.5m/s<sup>2</sup> for 6s.</li> <li>a. What velocity does it reach?</li> <li>b. What is the average velocity over the 6s?</li> <li>c. Sketch a v-t graph for the motion</li> <li>d. Use the graph to find the distance moved</li> <li>e. Use <v> = s/t to find the distance moved</v></li> <li>f. Use s = u t + <sup>1</sup>/<sub>2</sub> a t<sup>2</sup> to find the distance moved</li> </ul>	
5	A particle moves along a straight line is given by $s = 12t + 4t^2 - 2t^3 + 4$ . Where s is the displacement in meters and t is time of travel in seconds. Calculate: 1) velocity, acceleration and displacement at the start, (2) acceleration when velocity is zero, (3) velocity when acceleration is zero.	
6	A rotor of turbine has an initial angular velocity of 1800 rpm. Accelerating uniformly, it doubled its velocity in 12 s. Find the revolution performed by it in this interval.	
7	When the angular velocity of a 1.2m diameter pulley is 3 rad/s, the total acceleration of a point on its rim is $9.0$ m/s <sup>2</sup> . Determine the angular acceleration of the pulley at this instant.	

8	A flywheel rotating at 3rev per s has its speed at the constant rate of 45 per min each second during an interval of 10 s. Through how many revolutions does it rotate in this time?	
9	A projectile is aimed at a target on the horizontal plane and falls .12 m short when the angle of projection is 15° while it overshoots by 24 m when the angle is 45° Find the angle of projection to hit the target	
10	A rocket is released from ajet fighter flying horizontally 1200 kmph at an altitude of 3000 m above itstarget. The rocket thrust gives it a constant horizontal acceleration of 6 m/sec2. At what angle below the horizontal should pilot see the target at the instant of releasing the rocket in order to score a hit?	



#### G.S.Mandal's

# Marathwada Institute of Technology, Aurangabad

Department of Basic Sciences and Humanities

Title of the Subject: Engineering Mechanics	
Title of the Unit: Kinetics	Unit No:- 4

Multiple Choice Questions				
Question No.	Question Description			
1	<ul> <li>The motion of a particle, in general, is described by</li> <li>(a) Newton's law, and not the work-energy equation</li> <li>(b) Impulse-momentum principle alone if there is no external force</li> <li>(c) The Newton's law, the work-energy, impulse-momentum principle, moment of momentum principle.</li> <li>(d) The principles of conservation of energy and momentum The principle of conservation of energy alone</li> </ul>			
2	<ul> <li>(a) Is a hypothetical principle</li> <li>(b) Is based upon the existence of inertia forces</li> <li>(c) Allow a dynamical problem to be treated as a static problem</li> <li>(d) Is independent of Newton's law.</li> <li>(e) Provides no special advantage over Newton's law.</li> </ul>			

	Which of the following vector quantities?	
2	(a) Linear velocity	
	(b) Linear acceleration	
3		
	(c) All of these	
	(d) Linear displacement	
	If P is the force acting on a body, m is the mass of the body and a is	
	acceleration of the body, then according to Newton's second law of motion	
	(a) P - ma	
4	(b) P + ma	
	(c) P * ma	
	(d) P/ ma	
	The matter contained in a body, is called	
	(a) Impulsive force	
5	(b)Mass	
	(c)Weight	
	(d)Momentum	
	Which of the following statement regarding the concept of mass and inertia is	
	true?	
	(a)Both mass and inertia measured in same units.	
	(b)Mass is of an quantitative property of an object where inertia refer	
6	tendency of an object to maintain its state of motion	
	(c)The inertia of an object is the product of mass and velocity	
	(d)All the above	
	How is Newton's second law expressed in terms of momentum?	
	(a)Force is equal to the average momentum of an object divided by the time	
	interval over which the average is taken.	
7	(b)Force is equal to the average momentum of an object times the time	
	interval over which the average is taken.	
	(c) Force is equal to the change in momentum of an object divided by the time	
	interval over which the average is taken.	
7	<ul> <li>How is Newton's second law expressed in terms of momentum?</li> <li>(a)Force is equal to the average momentum of an object divided by the time interval over which the average is taken.</li> <li>(b)Force is equal to the average momentum of an object times the time interval over which the average is taken.</li> <li>(c) Force is equal to the change in momentum of an object divided by the time interval over which the average is taken.</li> </ul>	

	(d)Force is equal to the change in momentum of an object times the time	
	interval over which the average is taken.	
	If two actual non-roug foreas acting on an abject which of the following	
	If two equal non-zero forces acting on an object which of the following	
	statement is correct?	
	(a) The net force on the object cannot be zero even if the motion is one-	
	dimensional.	
	(b) The net force on the object cannot be zero if there is an angle between the	
8	two forces.	
	(c) The net force on the object can be zero if there is an angle between the two	
	forces is zero.	
	(d) The net force on the object can be zero if there is an angle between the two	
	forces is 180 <sup>0</sup>	
	What physical principle is being demonstrated in this situation: a person's head	
	moves rapidly backwards when a rear end collision occurs?	
	(a) Newton's law of acceleration	
9	(b) Newton's law of action and reaction	
	(c) Newton's law of inertia	
	(d) Newton's law of gravitation	
	An elevator is moving downward at a <b>constant speed</b> . Which statement about the	
	forces on the elevator is true?	
	(a) the forces upward and downward may be equal or unequal.	
10	(b) the forces upward and downward must be equal.	
	(c) there must be an unbalanced force downward.	
	(d) there must be an unbalanced force upward.	
	Short Answer Question	
	Shore this liet Quebuon	
Question		Expected
110.		
1	The acceleration or deceleration for a rectilinear motion is ascertained on the	



	Under what circumstances is Newton's law of motion applicable? When would	
	you prefer the work-energy, impulse-momentum, moment of momentum	
7	principle formulations? How does the D' Alembert principle differ from	
	Newton's law?	
	The laws of motion applicable to a particle must also be applicable to the center	
8	of mass of any system whether or not the forces act at the centre of mass.	
0	Evenlain, work anamy Drinain la	
7	Explain work energy Philiciple	
10	Explain newton's law of Gravitation	

Long Answer Question		
Question No.	Question Description	Expected Marks
	Two blocks $m1 = 2$ kg, and $m2 = 4$ kg are placed one on the other as shown Find	
	the maximum mass of block M in order that $m_2$ accelerate over the table slipping over m2?	
1	$\mu = 0.4$ m1 $\mu = 0.2$ M	
	The system shown in released from rest. Determine the acceleration of each	
2	block. $m_A = 25 \text{ kg}; m_B = 15 \text{ kg}; m_C = 10 \text{ kg}$	
3	Three blocks m1, m2 and m3 of masses 1.5 kg, 2 kg, 1 kg respectively are shown. If a free P is applied so as to give acceleration of give acceleration of 3	
5	$m/s^2$ , then what will be the force that m1 will exerts on m2?	









#### G.S.Mandal's

## Marathwada Institute of Technology, Aurangabad

Department of Basic Sciences and Humanities

Title of the Subject: Engineering Mechanics	
Title of the Unit: Work, Power, Energy	Unit No:- 5

Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	The unit of force in S.I. units is (a) kilogram (Kg). (b)Newton (N) (c) Watt (W) (d) Dyne (e) Joule (J)	
2	The unit of work or energy in S.I. units is (a) Newton (N) (b) Pascal (Pa) (c) kilogram meter (Kg.m) (d) Watt (W)	
3	The unit of power in S.I. units is (a) Newtonmeter (N-m) (b) Watt (W) (c) Joule (J) (d) kilogrammeter/sec (kg m/s) (e) Pascal per sec. (Pa-s)	

	The weight of a body is due to	
4	(a) centrinetal force of earth	
	(b) gravitational null exerted by the earth	
	(c) forces experienced by hody in atmosphere	
	(d) force of attraction experienced by particles	
	(e) gravitational force of attraction towards the center of the earth	
	The forces which meet at one point but their lines of action do not lie in a plane	
	are called	
	(a) Conlanar non-concurrent forces	
5	(b) Non-conclurrent forces	
	(c) Non-coplanar non-concurrent forces	
	(d) Intersecting forces	
	(e) None of the above.	
	Which of the following vector quantities?	
	(a) Linear velocity	
6	(b) Linear acceleration	
	(c) All of these	
	(d) Linear displacement	
	The centrifugal force	
	(a) Is not an inertia force	
	(b) Tends to overturn a body outwards on a curved path	
	(c) Must act whenever there is a centrifugal force	
7	(d) Is the real force experienced by a body negotiating a bend	
	(e) Is a fictitious force	
	The motion of a particle in general is described by	
	The motion of a particle, in general, is described by	
	(e) Newton's law, and not the work-energy equation	
	(f) Impulse-momentum principle alone if there is no external force	
	(a) The Newton's law the work energy impulse momentum	
8	(g) The Newton's law, the work-energy, impuse-momentum	
-	principle, moment of momentum principle.	
	(h) The principles of conservation of energy and momentum	
	(i) The principle of conservation of energy alone.	
0	1. The motion of particle round a fixed axis is	
7	(a) Translatory	
	( <i>a</i> ) 1101200001 j	

	(b) Rotary	
	(c) circular	
	(d) Translatory as well as rotary	
	The unit of energy in S.I. units is	
	(a) Newtonmeter (N-m)	
	(b) Watt (W)	
10	(c) Joule (J)	
	(d) kilogrammeter/sec (kg m/s)	
	(e) Pascal per sec. (Pa-s)	
	Short Answer Question	
Question		Expected
No.		Marks
1	A trolley of mass 200 kg moves on a level track for a distance of 500 meters. If the	
2	A horse pulling a cart exerts a steady horizontal pull of 250 N and walks at the rate of 5	
2	kmph. How much work is done by the horse in 7 minutes?	
2	A truck of mass 10 tones travelling at 1.5 m/s impacts with a buffer springs, which	
5	compresses 1.5 mm per kN. Find the maximum compression of the spring.	
	A block weighing 380 N is resting on a smooth horizontal surface. What work it will be done if the block is to be moved through 2m distance by applying	
4	a. A horizontal force of 125 kN	
	b. A force of 150 N whose line of action makes an angle of $30^{\circ}$ with the horizontal	
5	A box of mass 60 kg is moving at a speed of 15 m/s on a ropeway. If the box is 35m above the ground estimate the potential energy and kinetic energy of box	
6	in 40 seconds. If the frictional resistance is estimated to 2.5 kN per 800 kN of weight	
	of trains, work out the maximum power required and the power required to maintain the speed of $75 \text{ km/hr}$	
7	A 700 kW power engine, working at full power propels a 2300 kN train up an incline of	
	1 in 100 at a speed of 60 km/hr. if the track resistance is 5N per kN weight of train, determine the acceleration with which the train is moving.	
	A body of 5 kg mass is initially at rest on a rough horizontal surface ( $\mu = 0.20$ ) and is sated upon by a 25 kN sull applied horizontal line. Columbate	
8	and is acted upon by a 25 kin pull applied norizontally. Calculate; a. The work done by the net force on the body in 5 seconds	
	b. Change in kinetic energy of the body in 5 seconds.	

9	A cricket ball of mass180 gm is moving with a speed of 36 km/hr. What average force will be required to stop the ball in 0.2 sec	
10	A ball of mass 1 kg moving with a velocity of 2 m/s impinges directly on a ball of mass 2 kg at rest. The first ball, after impinging, comes to rest, find the velocity of second ball after the impact and the coefficient of restitution?	

Long Answer Question		
Question No.	Question Description	Expected Marks
	A block weighing 380 N is resting on a smooth horizontal surface. What work it will be done if the block is to be moved through 2m distance by applying a. A horizontal force of 125 kN b. A force of 150 N whose line of action makes an angle of $30^{0}$ with the horizontal.	
1	$W = 380 \text{ N} \qquad W = 380 \text{ N}$ $F = 130 \text{ N}$ $30^{0}$	
2	A man wishes to move wooden box of 1m cube to a distance of 5m with the least amount of work. If the block weighs 2 kN and the coefficient of friction is 0.30, find whether he should tip it or slide it.	

	$W = 2 \text{ kN}$ $P \longrightarrow F = \mu \text{N}$ $F = \mu \text{N}$	
3	A small block starts from rest at a point A and slides down the inclined plane shown in Fig. What distance along the horizontal plane will it travel before coming rest? The coefficient of kinetic friction between block of the either plane is 0.3. Assume that the initial velocity with which it starts to move along BC is of the same magnitude as gained in sliding from A to B	
4	A train weighing 4000 kN starts from rest and acceleration uniformly to 75 km/hr in 40 seconds. If the frictional resistance is estimated to 2.5 kN per 800 kN of weight of trains, work out the maximum power required and the power required to maintain the speed of 75 km/hr	
5	An army truck of mass 8 tones has a resistance of 75 N/t. find the power of the truck for moving with a constant speed of 45 km.p.h	
6	<ul> <li>A body of 5 kg mass is initially at rest on a rough horizontal surface (μ = 0.20) and is acted upon by a 25 kN pull applied horizontally. Calculate;</li> <li>a. The work done by the net force on the body in 5 seconds</li> <li>b. Change in kinetic energy of the body in 5 seconds.</li> </ul>	
7	A train weighing 2000kN starts from rest with an acceleration of 0.8 $m/s^2$ and acquires a speed of 80 km/ph. Determine the kinetic energy corresponding to final speed and the average power required.	

	Subsequently the power is shut off and the train is subjected to a retarding force equal to 8% of the weight of train. Calculate the distance the train will travel before coming to rest.	
8	Two bodies weighing 350N and 450N are hung to ends of a rope passing over an ideal pulley as shown in fig. How much distance the block will move in increasing the velocity of the system from $2m/s$ to $4m/s$ ? How much is the tension in the string, Use work energy method.	
9	A ball is drop from a height 10 m on a smooth floor and it rebounds to a height of 7m. Determine the coefficient of restitution between the ball and floor and expected height of second rebound.	
10	A machine gun fires 180 bullets per minute. Each bullet has a mass of 50 gm and the muzzle velocity of the bullet is 600 m/sec. presuming the firing to be continuous, make for the average reaction of the gun against the support.	