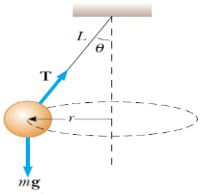
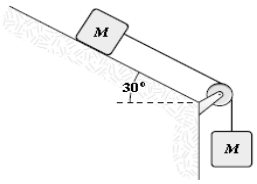
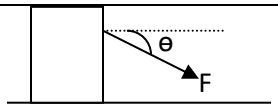
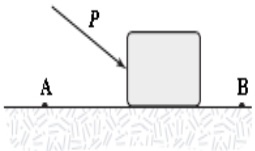
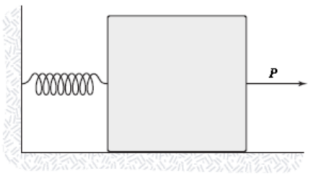
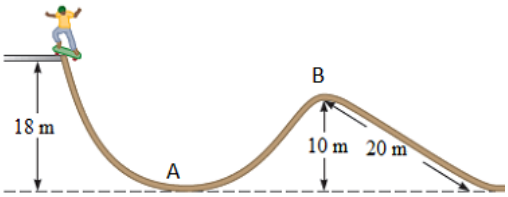
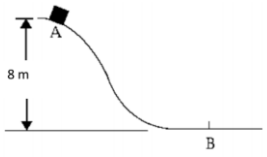
University ** _____name_____

Take g = 9.8 ms^{-2} where ever needed

1	The force responsible for holding a car moving on an unbanked curve road is: A) The vertical component of the normal force B) The horizontal component of the normal force C) The frictional force. D) The car weight E) None of those	C
2	A pendulum having an object 0.4 kg at the end of its string revolves with a constant speed. If the length of the string is 0.29 m making an angle 30° with the vertical, the centripetal force needed to produce the acceleration is:  A) 0.57 N B) 2.26 N C) 1.6 N D) 3.4 N E) 1.13 N	B
3	A block is placed on a rough inclined surface. If the incline angle is increased until the block moves down the incline with a constant speed at angle θ, then: A) $\sin\theta = \mu_k$. B) $\cos\theta = \mu_k$. C) $\cot\theta = \mu_k$. D) $\tan\theta = \mu_k$. E) $\sec\theta = \mu_k$.	D
4	A 2.5 kg object has a velocity of 5**j** m/s at t = 0. It is accelerated at a constant rate for five seconds after which it has a velocity of (6**i** + 12**j**) m/s. The magnitude of the resultant force acting on the object during this time interval is: A) 2.77 N B) 4.61 N C) 1.92 N D) 5.35 N E) 6.45 N	B
5	In the figure, the pulley and all surfaces are frictionless. If M = 2.2 kg, the tension in the connecting string is:  A) 7.8 N B) 2.4 N C) 5.4 N D) 1.2 N E) 3.5 N	C
6	A 10 kg box rests on a horizontal surface and a boy pulls it with a force makes 30° below the horizontal. If the coefficient of static friction is 0.4, the minimum magnitude of the force needed to start the box moving is:  A) 83 N B) 47 N C) 18 N D) 59 N E) 71 N	D
7	If a fly collides with the windshield (الزجاج الأمامي) of a fast moving bus, which of the following statements is correct? A) the fly experiences an impact force with a larger magnitude. B) the fly experiences the greater acceleration . C) the same acceleration is experienced by both. D) the bus experiences an impact force with a larger magnitude. E) The bus experiences the greater acceleration.	B
8	A block is pushed across a rough horizontal surface from point A to point B by a force of magnitude P = 5.4 N. The magnitude of the force of friction acting on the block between A and B is 1.2 N where points A and B are 1.5 m apart. If the kinetic energies of the block at A and B are 4 J and 5.6 J, respectively, how much work is done on the block by the force P between A and B?  A) 3.4 J B) 2.2 J C) 4.6 J D) 5.2 J E) 6.1 J	A

9	A 18 kg block on a horizontal frictionless surface is attached to a spring (force constant = 800 N/m). The block is initially at rest at its equilibrium position when a force (of magnitude P = 80 N) acting parallel to the surface is applied to the block. The speed of the block when it is 13 cm from its equilibrium position is:  A) 2.85 m/s B) 1.35 m/s C) 4.24 m/s D) 0.78 m/s E) 0.64 m/s	E
10	A particle is acted upon by only two forces, one conservative and one nonconservative and neither being a force of friction, as it moves from point A to point B. The kinetic energies of the particle at points A and B are equal if: A) the work of the conservative force is equal to the work of the nonconservative force. B) the sum of the works of the two forces is zero. C) the work of the nonconservative force is zero. D) the work of the conservative force is zero. E) none of the above.	B
11	A skier of mass 60 kg is pulled up a slope by a motor driven cable. If a motor is used to pull him a distance of 60 m up a 30° slope (assumed frictionless) at a constant speed of 2 m/s, the required power delivered by the motor is: A) 588 W B) 784 W C) 1120 W D) 733 W E) 686 W	A
12	A boy of mass 66 kg rides his skateboard at a local skate park. He starts from rest at the top of the track as seen in the figure and begins a descent down (نزول إلي أسفل) the frictionless track, what is his speed when he reaches at point B.  A) 9.3 m/s B) 7.4 m/s C) 12.5 m/s D) 14.6 m/s E) 15.2 m/s	C
13	A block of mass 2 kg and velocity 2 m/s slide from point A (8 m high) to B in the horizontal surface. If the horizontal surface has friction coefficient 0.4, find the distance it travels horizontally (أفقيا) before it stops.  A) 23.3 m B) 12.4 m C) 14.3 m D) 7.2 m E) 20.5 m	E
14	A 20 kg block is released from rest at 100 m above the ground. When it has fallen 50 m, its kinetic energy is: A) 9800 J B) 4900 J C) 4200 J D) 3600 J E) 14700 J	A
15	In an isolated system, which of the following is a correct statement of the quantity that is conserved? A) kinetic energy B) potential energy C) both kinetic energy and potential energy. D) kinetic energy plus potential energy E) None of those	D

The End