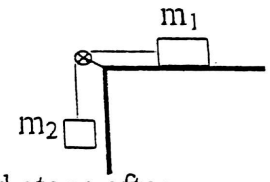
Q6. A block is at rest on an inclined plane. When the object is about to slide at $\theta = 37^0$ the coefficient of static friction μ_s is:

a) 0.75 b) 0.52 c) 0.27 d) 0.85 e) 0.36

Q7. A man pushes a trolley with a horizontal force of 15 N. The trolley accelerates at 1.5 m/s^2. The weight of trolley is: Assume friction is negligible

a) 10 N b) 4.3 N c) 98 N d) 15 N e) 980 N

Q8. In the figure shown, the string and pulley are massless and the coefficient of kinetic friction between m_1 and the table is 0.3. If m_1=5 kg and m_2=4 kg then the tension in the string connecting the two masses is:



a) 9.64 N b) 8.72 N c) 39.2 N d) 28.3 N e) 4.83 N

Q9. A 10g bullet traveling horizontally at 755 m/s strikes a stationary target and stops after penetrating 14.5 cm into the target. The average force of the target on the bullet is:

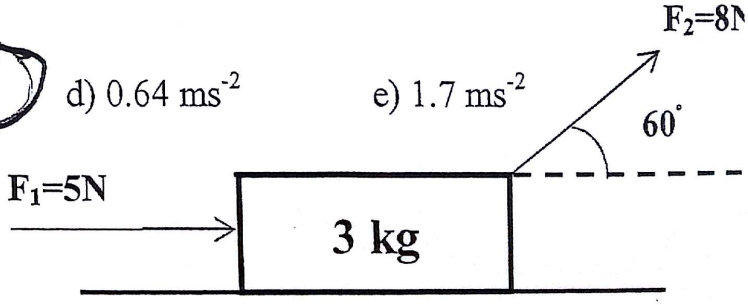
a) 1.97×10^4 N b) 2.07×10^5 c) 6.26×10^3 N d) 3.13×10^4 N e) 3.93×10^4 N

Q6. The frictional force between two surfaces in contact does not depend on :

a) The normal force pressing one against the other .
b) Whether the surfaces are stationary or in relative motion .
c) The areas of the surfaces .
d) Whether a lubricant is used or not .

Q7. The acceleration of the block in the figure is :

a) 1 ms^{-2} b)4. 3 ms^{-2} **c) 3 ms^{-2}** d) 0.64 ms^{-2} e) 1.7 ms^{-2}

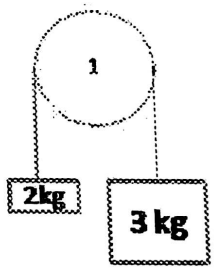


Q8. A car whole mass (including the driver) is 1600kg has a maximum acceleration of $1.2\ ms^{-2}$. If three 80kg passengers are also in the car , then its maximum acceleration will be :

a) $1.04\ ms^{-2}$ b) $1.2\ ms^{-2}$ c) $0.8\ ms^{-2}$ d) $0.6\ ms^{-2}$ e) $0.3\ ms^{-2}$

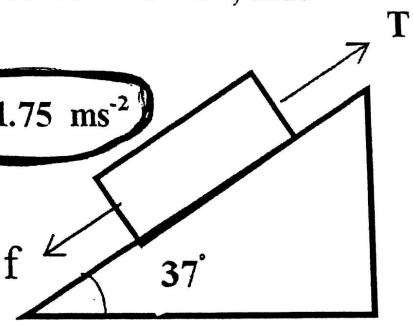
Q9. The acceleration of the system shown in the figure is :

a) $9.8 ms^{-2}$ b) $3.92\ ms^{-2}$ c) $7.84 ms^{-2}$ **d) $1.96\ ms^{-2}$** e) $2.75\ ms^{2}$



Q10. In the adjacent figure T = 400 N, weight W = 392 N and frictional force f = 94 N , then the acceleration of the block is :

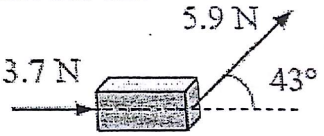
a) $0.82\ ms^{-2}$ b) $2.35\ ms^{-2}$ c) $1.5\ ms^{-2}$ d) $3.2\ ms^{-2}$ **e) $1.75\ ms^{-2}$**



Q7. A 25.0-kg block is initially at rest on a horizontal surface. A horizontal force of 75.0 N is required to set the block in motion. After it is in motion, a horizontal force of 60.0 N is required to keep the block moving with constant speed. The coefficients of static and kinetic friction are

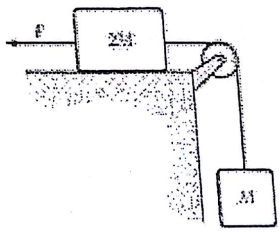
a) 0.306, 0.245 b) 0.123, 0.265 c) 0.408, 0.378 d) 0.289, 0.348 e) 0.62, 0.53

Q6. Two forces act on a 4.5-kg block resting on a frictionless surface as shown. The magnitude of the horizontal acceleration of the block is :



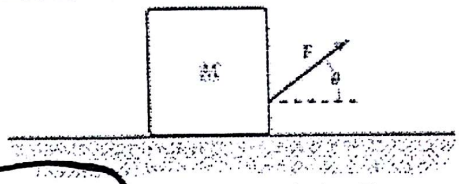
a) 1.8 m/s^2 b) 3.2 m/s^2 c) 8.9 m/s^2 d) 1.2 m/s^2 e) 0.82 m/s^2

Q7. If F = 40 N and M = 1.5 kg, the tension in the connecting string shown is Assume that all surfaces are frictionless. Assume g=10 m/s^2



a) 13,3 N b) 23,3 N c) 36,5 N d) 15,5 N e) 28,3 N

Q8. The block shown is pulled across the horizontal surface at a constant speed by the force shown. If $M = 5.0$ kg, $F = 14$ N and $\theta = 35°$, the coefficient of kinetic friction between the block and the horizontal surface is:



a) 0.44 b) 0.33 c) 0.38 **d) 0.28** e) 0.17

Q9. If a man weighs 900 N on the Earth, what would he weigh on moon, where the acceleration due to gravity is 25.9 m/s^2?

a) 32 KN b) 23 KN c) 3.2 KN **d) 2.3 KN** e) 90 KN

Q10. When throwing a ball straight upward in air. At the highest point the ball's velocity and acceleration are

a) velocity is zero, acceleration is zero
b) velocity is not zero, acceleration is zero
c) velocity is zero, acceleration is not zero
d) velocity is not zero, acceleration is not zero

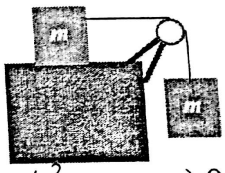
Q11. A force F accelerates a puck on ice surface, the puck travels a distance x in time t. If the applied force is increased to three times, the travled distance by the puck is :

a) x. b) $(3/2)x$. **c) $3x$.** d) $(9/2)x$. e) $9x$.

Q12. When the car has traveled halfway around a circular track, the magnitude of its *displacement* from the starting point is :

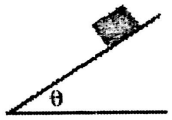
a) r b) πr c) zero meters **d) 2r** e) $2\pi r$

Q5 The string and the pulley are massless and the coefficient of kinetic friction is 0.20 .
If m=5kg, the acceleration of the system is:



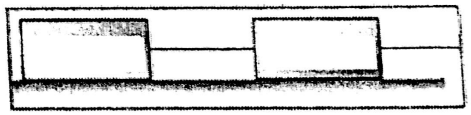
a) $-4.01 m/s^2$ b) $4.94 m/s^2$ c) 0 d) $3.92 m/s^2$ e) $9.8 m/s^2$

Q6 In the figure shown, the block slides down a frictionless inclined plane with acceleration of $4.9 m/s^2$. The angle (θ) between the inclined plane and the horizontal is:



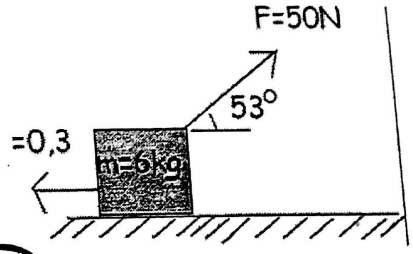
a) 60° b) 45° c) 30° d) 50° e) 40°

Q7 A train has two cars, each car has a mass of $1x10^4$ kg. If the acceleration of the system is $2 m/s^2$ and the frictional force on each car is $1x10^4$ N. The tension between the first and second cars is:



a) $1.96x10^4$N b) $3.0x10^4$ N c)400N d)$9.82x10^4$N e)$1.52x10^3$N

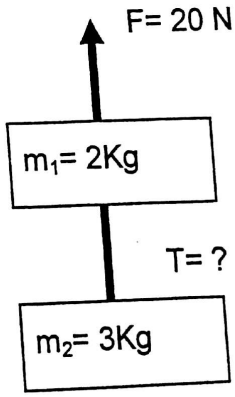
Q5. A force of 50 N is applied on a 6 kg box, if the frictional coefficient is 0.3, the box acceleration will be:



a) 5.22 m/s^2 b) 3.56 m/s^2 c) 5.72 m/s^2 **d) 4.07 m/s^2** e) 4.56 m/s^2

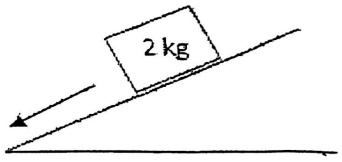
Q6. When the system is in motion, the tension on the rope is :

a) 8 N b) 11 N c) 14 N **d) 12 N** e) 15 N



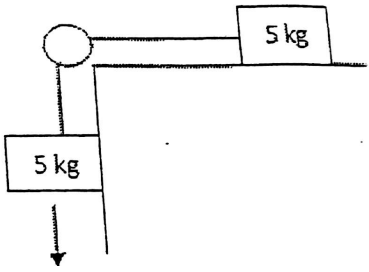
Q7. Block A and B have equal masses and travel equal distances on straight frictionless track
while a constant force F is applied on A and a constant force 2F is applied on B. The acceleration of the two blocks are related to each other by

Q7. A 2.0 kg box slides down on inclined surface at 30° as shown in the figure, If the friction force is 3.8 N, the acceleration of the box in (m/s^2) is



a)1 b) 2 c) 4 d) 3 e) 5

Q8. In the system shown, if there is no friction. The tension in the string of the system in (N) is



a) 12.4 b) 16.8 c) 24.5 d) 30.7 e) 10.5

Q9. The work done in (J) by a person lifting a 4.0-kg object from the