```
Q1 Q0 A 2.0-kg object moving along the x-axis has a
ch Q0 velocity of 5.0 m/s at x = 2.0 m. If the only
7. Q0 force acting on this object is shown in Fig.1,
   Q0 what is the speed of the object at x = 10 m?
   Q0
   A1 5.0 m/s
   A2 0.0 m/s
   A3 3.1 m/s
   A4 8.5 m/s
   A5 2.1 m/s
   Q0
Q2 Q0 An object is constrained by a cord to move in a
ch Q0 circular path of radius 0.5 m on a horizontal
7. Q0 frictionless surface. The cord will break if its
   Q0 tension exceeds 16 N. The maximum kinetic energy the
   Q0 object can have is:
   Q0
   A1 4.0 J
   A2 8.0 J
   A3 16  J
   A4 32  J
   A5 2.0 J
   Q0
Q3 Q0 A net horizontal force of 50 N acts on a 2-kg block
ch Q0 which starts from rest on a horizontal frictionless
7  Q0 surface. The rate at which the work is being done by
   Q0 this force at t = 2 s is:
   Q0
   A1  2500 W
   A2    75 W
   A3   100 W
   A4  1000 W
   A5  5000 W
   Q0
Q4 Q0 We would like to raise a heavy object (at a constant
ch Q0 speed) to a certain height h. We attach a rope to the
8  Q0 object. It is preferable to pull it along a frictionless
   Q0 inclined plane rather than pulling it vertically upward
   Q0 because:
   Q0
   A1 it reduces the force required
   A2 it reduces the work required
   A3 it reduces the change in the gravitational
   A3   potential energy
   A4 it reduces the distance covered
   A5 it increases the acceleration due to gravity
   Q0
Q5 Q0 A 2.0-kg block is dropped from a height of 0.10 m onto
   Q0 a spring of spring constant k (Fig. 2). The spring is
Ch Q0 compressed a maximum distance of 0.05 m (the block
   Q0 comes to rest momentarily). Find the value of k.
8  Q0
   A1 2350 N/m
   A2 1560 N/m
   A3  390 N/m
   A4  810 N/m
   A5  120 N/m
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   Q0
Q6 Q0 A single conservative force is acting on a 10-kg
ch Q0 body. If the work done on the body by this force
8  Q0 is 50 J, find the change in its potential energy.
   Q0
   A1 -50.0  J
   A2  50.0  J
   A3  98.0  J
   A4 -10.0  J
   A5 -1.00  J
Q7 Q0
ch Q0 A 2.0-kg particle is moving to the right at 9.0 m/s
9  Q0 toward a 5.0-kg particle which is moving at 2.0 m/s
   Q0 in the opposite direction. Find the velocity of the
   Q0 center of mass.
   Q0
   A1 1.1 m/s to the right
   A2 1.1 m/s to the left
   A3 5.5 m/s to the right
   A4 5.5 m/s to the left
   A5 0.0 m/s
   Q0
Q8 Q0 A 1.0-kg object at rest explodes, breaking into
ch Q0 three pieces of masses 0.20, 0.20, and 0.60 kg.
9  Q0 The Two pieces,having equal mass, fly off perpendicular
   Q0 to each other, one along the positive x-axis and the
   Q0 other along the positive y-axis with the same speed of
   Q0 30 m/s. Find the speed of the third (0.60-kg) piece.
   Q0
   A1 14 m/s
   A2 10 m/s
   A3 20 m/s
   A4 30 m/s
   A5 17 m/s
   Q0
Q9 Q0 What is the magnitude of the acceleration of the center
   Q0 of mass of the system shown in Fig. 3. Each particle
   Q0 has a mass of 1.00 kg and pulled by a force of 2.0 N
ch Q0 in the direction indicated in Fig.3.
9  Q0
   A1 0.28  m/s**2
   A2 0.0   m/s**2
   A3 2.6   m/s**2
   A4 1.2   m/s**2
   A5 0.10  m/s**2
   Q0
Q10Q0 Two 2.0-kg bodies, A and B, collide. Before collision
   Q0 the velocity of body A is (10i + 20j) m/s and after
ch Q0 the collision body A moves with velocity
   Q0 (-5.0i + 10j) m/s. Find the magnitude of the impulse
   Q0 delivered to body B.
   Q0
   A1  36  kg.m/s
   A2    18  kg.m/s
   A3  0.0 kg.m/s
   A4    25  kg.m/s
   A5  11  kg.m/s
```

```
   Q0
Q11Q0 A 20-g bullet is fired into a 100-g wooden block
   Q0 initially at rest on a horizontal frictionless surface.
ch Q0 If the initial speed of the bullet is 10 m/s and it
10 Q0 comes out of the block with a speed of 5.0 m/s, find
   Q0 the speed of the block immediately after the collision.
   Q0
   A1 1.0 m/s
   A2 3.2 m/s
   A3 5.3 m/s
   A4 0.3 m/s
   A5 0.0 m/s
   Q0
Q12Q0 A 1.0-kg block at rest on a horizontal frictionless
ch Q0 surface is connected to a spring (k = 200 N/m)
   Q0 whose other end is fixed (Fig. 4). A 2.0-kg block
10 Q0 moving at 4.0 m/s collides with the 1.0-kg block.
   Q0 If the two blocks stick together after the one-
   Q0 dimensional collision, what maximum compression of
   Q0 the spring does occur when the blocks momentarily
   Q0 stop?
   Q0
   A1 0.33 m
   A2 0.23 m
   A3 0.43 m
   A4 0.13 m
   A5 0.54 m
   Q0
Q13Q0 A disk has a moment of inertia of 6.0 kg.m**2 and
ch Q0 a constant angular acceleration of 2.0 rad/s**2 about
11 Q0 its axis of rotation. If it starts from rest, find
   Q0 the work done by the net torque during the first
   Q0 5.0 s.
   Q0
   A1 300 J
   A2  30 J
   A3  60 J
   A4 600 J
   A5 0.0 J
   Q0
Q14Q0 A 10-kg block is attached to a cord that is wrapped
   Q0 around the rim of a flywheel of radius 0.5 m and hangs
ch Q0 vertically (see Fig.5). If the moment of inertia of
11 Q0 the flywheel is 2.0 kg.m**2, find the magnitude of the
   Q0 linear acceleration of the block.
   Q0
   A1 5.4 m/s**2
   A2 9.8 m/s**2
   A3 0.0 m/s**2
   A4 2.0 m/s**2
   A5 3.5 m/s**2
   Q0
Q15Q0 A wheel starting from rest, turns through 8 revolutions
ch Q0 in a time interval of 17 s. Assuming constant angular
11 Q0 acceleration,the angular speed at the end of this
   Q0 time interval is:
   Q0
```

```
   A1 5.9 rad/s
   A2 8.5 rad/s
   A3 0.0 rad/s
   A4 1.7 rad/s
   A5 3.5 rad/s
   Q0
Q16Q0 A disk has a mass of 32 kg and a radius of 25 cm.
   Q0 It rolls without slipping along a level ground at
ch Q0 5.0 m/s. Find the total kinetic energy of the disk.
12 Q0
   A1 600  J
   A2 400  J
   A3 800  J
   A4 200  J
   A5 100  J
   Q0
Q17Q0 A 10.0-kg particle is moving in a horizontal circular
   Q0 path of radius 2.00 m with a constant angular speed of
ch Q0 10.0 rad/s. Find the magnitude of its angular momentum
12 Q0 (in kg.m**2/s) about a vertical axis passing through
   Q0 the center of the circle.
   Q0
   A1  400
   A2   40.0
   A3   0
   A4   50.0
   A5  500
   Q0
Q18Q0 A 2.0-kg block is located on the x-axis 3.0 m from the
ch Q0 origin and is acted upon by a force F = 8.0i N. Find
12 Q0 the net torque acting on the block relative to the
   Q0 origin.
   Q0
   A1   0.0   N.m
   A2  -12 k  N.m
   A3  -24 k  N.m
   A4   18 k  N.m
   A5   24 k  N.m
   Q0
Q19Q0 A hinged uniform beam (Fig. 6) weighs 400 N and 4.0 m in
ch Q0 length carries a box of weight 294 N located at 3.0 m
13 Q0 from the wall. A massless string holds the right edge
   Q0 of the beam and makes an angle of 30 degrees with the
   q0 vertical. What is the tension in the string?
   Q0
   A1  486 N
   A2  882 N
   A3 1942 N
   A4 1682 N
   A5  600 N
   Q0
Q20Q0 A 300.0-kg mass is hanged from the end of a steel wire
ch Q0 attached to the ceiling. The steel wire is 43.0 cm long,
13 Q0 2.00 mm in radius and has negligible mass. Calculate
   Q0 the change in the length of the wire ( Young's modulus
   Q0 of the steel  E = 2.00* 10**11 N/m**2).
   Q0
```

A1	0.50	mm
A2	1.0	mm
A3	2.0	mm
A4	0.13	mm
A5	0.32	mm

FIGURE 1

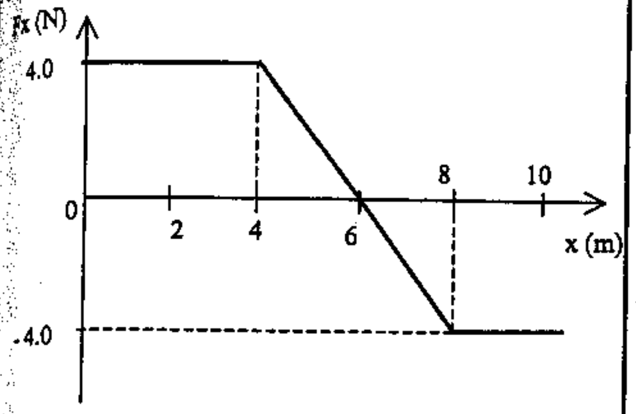

FIGURE 2

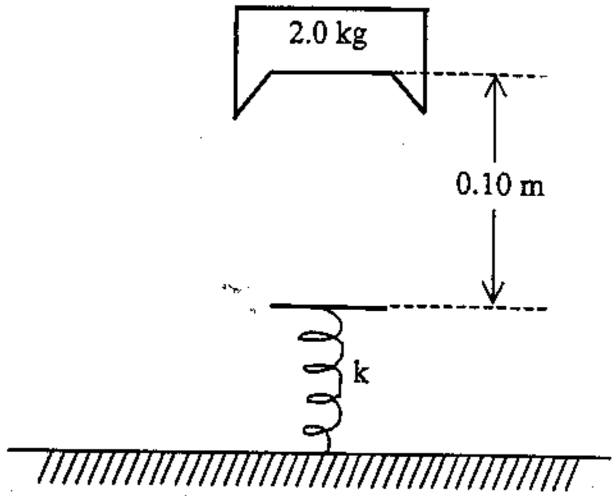

FIGURE 3

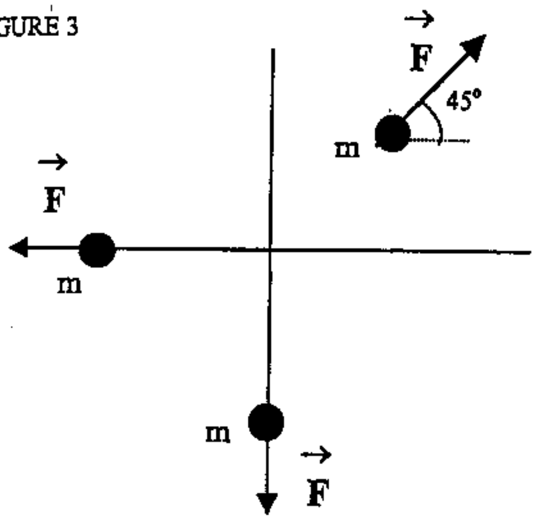

FIGURE 4

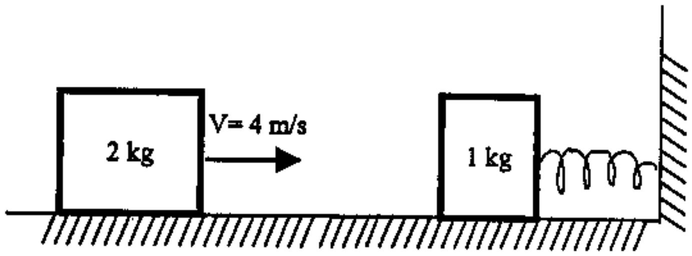

FIGURE 5

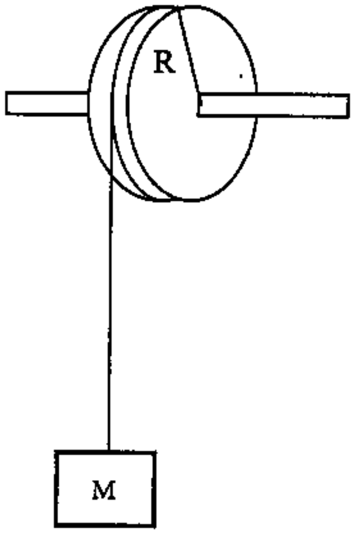

FIGURE 6