Q1 Q0 The standard kilogram is a platinum-iridium cylinder 39 mm
Q0 in height and 19.5 mm in radius. What is the density
Q0 of the material?
Q0
A1 21 g/cm**3
A2 1.0 g/cm**3
A3 13 g/cm**3
A4 11 g/cm**3
A5 19 g/cm**3
q0
Q2)Q0 Fig (1) shows the velocity (Vx) of a particle moving
Q0 along x axis as a function of time (t). What is the
Q0 acceleration of the particle at t= 2.0 s?
Q0
A1 -4 m/s**2
A2 +4 m/s**2
A3 -1 m/s**2
A4 +1 m/s**2
A5 0 m/s**2
Q0
Q3)Q0 The speed of sound in air is about 350 m/s. Express this
Q0 speed in miles per hour (mi/h).
Q0 (1 mile = 1.61 km)
Q0
A1 783 mi/h
A2 350 mi/h
A3 564 mi/h
A4 980 mi/h
A5 0 mi/h
Q0
Q4)Q0 A particle moving along the x axis has a position given by
Q0 x =(24 t - 2 t**3) meters,
Q0 where t is measured in seconds. How far is the particle
Q0 from the origin (x=0) when the particle stops momentarily?
Q0
A1 32 m
A2 23 m
A3 40 m
A4 17 m
A5 98 m
Q0
Q5)Q0 In 2.0 seconds, a particle moving with constant acceleration
Q0 along the x axis goes from x=10 m to x=50 m. The velocity
Q0 at the end of this time interval is 10 m/s. What is the
Q0 acceleration of the particle?
Q0
A1 -10 m/s**2
A2 +15 m/s**2
A3 -15 m/s**2
A4 +20 m/s**2
A5 -20 m/s**2
Q0
Q6)Q0 A stone is thrown downward from height (h) above the ground
Q0 with an initial speed of 10 m/s. It strikes the ground
Q0 3.0 seconds later. Determine h.
Q0
A1 74 m
A2 44 m
A3 14 m
A4 90 m
A5 60 m
Q0
Q7)Q0 Fig (2) shows four vectors A, B, C, D. Which of the following
Q0 statements is correct:
Q0
A1 C = D + B - A
A2 C = A + B + D
A3 C =-D - B + A

A4 C = A - B + D
A5 C =-A - B - D
Q0
Q80Q0 Unit vectors i,j,k have magnitudes of unity and are directed
Q0 in the positive directions of the x,y,z axes.
Q0 The value of k.(k x i) is:
Q0
A1 0
A2 -1
A3 +1
A4 i
A5 j
Q0
Q9)Q0 If we have two vectors A = (a i - 2 j) and B = (2 i + 3 j)
Q0 such that A.B = 4, find the value of a.
Q0
A1 5
A2 4
A3 0
A4 -5
A5 -4
Q0
Q10Q0 A particle starts from the origin at t=0 with a velocity of
Q0 (8j) m/s and moves in the xy plane with constant acceleration
Q0 of (4i - 2j) m/s**2. At the instant the x coordinate of the
Q0 particle is 32 m, what is the value of its y coordinate?
Q0
A1 16 m
A2 35 m
A3 45 m
A4 32 m
A5 12 m
Q0
Q11Q0 A ball is thrown horizontally from the top of a building
Q0 100 m high. The ball strikes the ground at a point 65 m
Q0 horizontally away from the base of the building (Fig 3).
Q0 What is the speed of the ball just before it strikes the ground?
Q0
A1 47 m/s
A2 40 m/s
A3 37 m/s
A4 14 m/s
A5 50 m/s
Q0
Q12Q0 A particle moves at a constant speed in a circular path
Q0 with a radius of 2.0 cm. If the particle makes 4 revolutions
Q0 each second, what is the magnitude of its acceleration?
Q0
A1 13 m/s**2
A2 20 m/s**2
A3 15 m/s**2
A4 18 m/s**2
A5 24 m/s**2
Q0
Q13Q0 The pilot of an airplane flies due north relative to the
Q0 ground with a speed of 80 km/h. A wind is blowing towards
Q0 the east with a speed of 40 km/h. What is the speed of the
Q0 airplane relative to the wind?
Q0
A1 89 km/h
A2 85 km/h
A3 81 km/h
A4 76 km/h
A5 72 km/h
Q0
Q14Q0 A student is standing on a scale in an elevator. The apparent
Q0 weight of the student is greatest when the elevator:
Q0

A1 accelerates upward.
A2 moves upward at a constant velocity.
A3 moves downward at a constant velocity.
A4 accelerates downward.
A5 is not moving.
Q0

Q15Q0 A roller-coaster car has a mass of 500 kg when fully loaded
Q0 with passengers. The car passes over a hill of radius 15 m
Q0 (Fig 4). At the top of the hill, the car has a speed of 8 m/s.
Q0 What is the force of the track on the car at the top of the
Q0 hill?
Q0
A1 2800 N up
A2 7000 N down
A3 7000 N up
A4 2800 N down
A5 0 N
Q0

Q16Q0 A 1.8 kg block is released from rest at the top of a rough
Q0 30 degrees inclined plane. As the block slides down the
Q0 incline, its acceleration is 3.0 m/s**2 down the incline.
Q0 Determine the magnitude of the force of friction acting
Q0 on the block.
Q0
A1 3.4 N
A2 4.2 N
A3 3.0 N
A4 3.8 N
A5 2.3 N
Q0

Q17Q0 A 3.0 kg block is pushed across a horizontal surface by
Q0 a force F=20 N making an angle of 30 degrees with the
Q0 horizontal (Fig 5). If the coefficient of kinetic friction
Q0 between the block and the surface is 0.3, what is the
Q0 magnitude of the acceleration of the block?
Q0
A1 1.8 m/s**2
A2 2.8 m/s**2
A3 3.3 m/s**2
A4 5.4 m/s**2
A5 2.5 m/s**2
Q0

Q18Q0 In Fig (6), F=40 N and M=2 kg. What is the magnitude of the
Q0 acceleration of the suspended object M ?
Q0 (All surfaces are frictionless)
Q0
A1 2.5 m/s**2
A2 2.8 m/s**2
A3 3.3 m/s**2
A4 5.4 m/s**2
A5 1.8 m/s**2
Q0

Q19Q0 The horizontal surface on which the objects (Fig 7) slide
Q0 is frictionless. If the magnitude of the force of the small
Q0 block on the large block is 5.2 N, determine F.
Q0
A1 7.8 N
A2 9.0 N
A3 4.8 N
A4 4.1 N
A5 6.0 N
Q0

Q20Q0 Three blocks are placed on a table as shown in Fig (8).
Q0 The table exerts a normal force:
Q0
A1 only on block C.
A2 only on block A.
A3 upward on block B and downward on block C.

A4 upward on block A and downward on block C.
A5 only on block B.

PHYS101 - FIRST MAJOR EXAM – FIGURES
Term-021

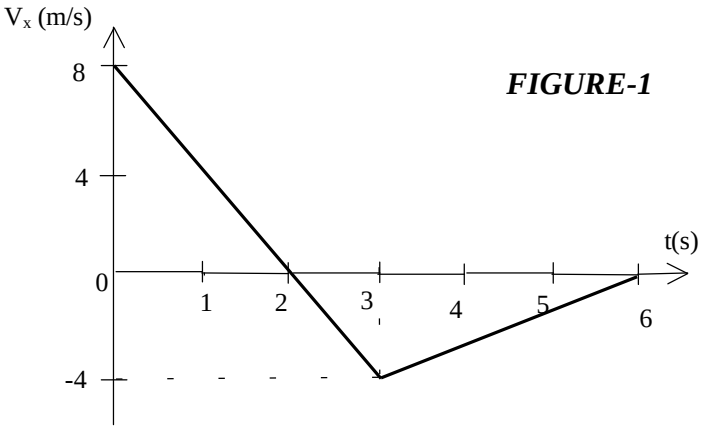
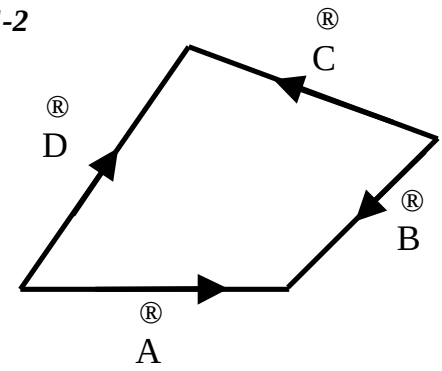


FIGURE-1

FIGURE-2



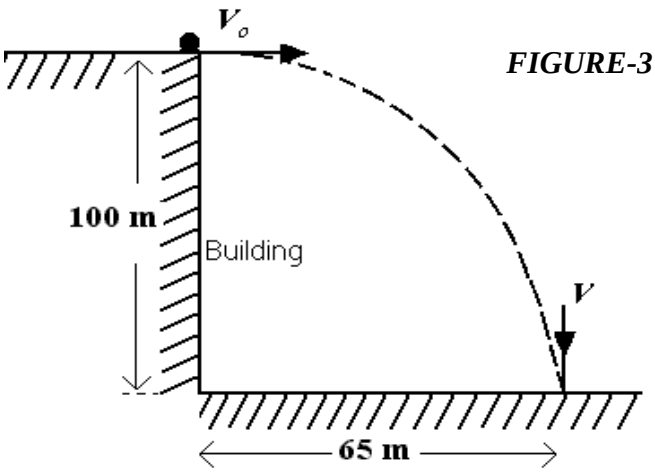
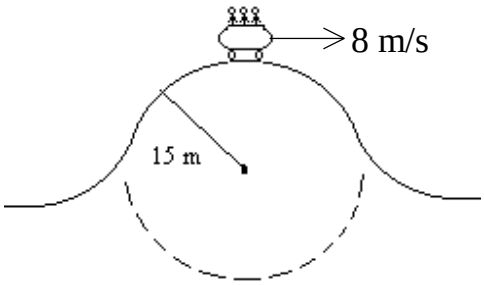


FIGURE-3

FIGURE-4



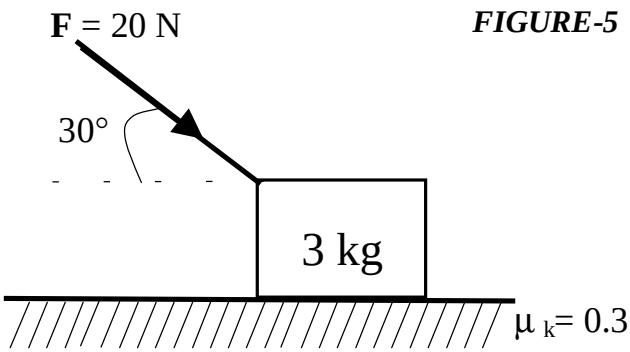


FIGURE-5

FIGURE-6

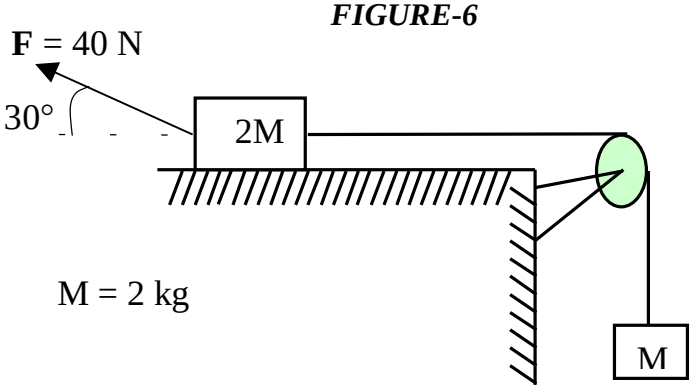


FIGURE-7

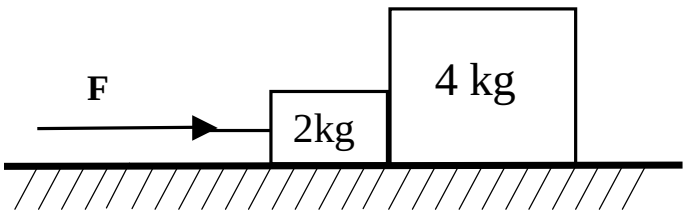


FIGURE-8