Exam 1, 101 (011)

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Q1 Q0 Speed of sound is 330 m/s. Express this in miles
ch Q0 per hour ( 1 mile = 1609 m).
1. Q0
   A1 738 miles/h
   A2 533 miles/h
   A3 945 miles/h
   A4 853 miles/h
   A5 443 miles/h
   Q0
Q2 Q0 The average radius of a nucleus is R = 10.0 fm.
ch Q0 Find the density of the nucleus which has a mass
1. Q0 of 15u [1 fm = 10**(-15)m, 1 u = 1.66* 10**(-27)kg].
   Q0
   A1 5.94* 10** 15 kg/m**3
   A2 5.94* 10**-5  kg/m**3
   A3 1.66* 10**-27 kg/m**3
   A4 1.68* 10**-15 kg/m**3
   A5 2.94* 10**5   kg/m**3
   Q0
Q3 Q0 How far does the runner whose velocity - time graph
ch Q0 is shown in Fig.1 travel in 10 s?
2  Q0
   A1  20 m
   A2  24 m
   A3  28 m
   A4  32 m
   A5  16 m
   Q0
Q4 Q0 A car travelling 20.0 m/s is 30.0 m from a wall
ch Q0 when the driver slams on the brakes.The car hits the
2  Q0 wall 2.00 s later. How fast is the car travelling
   Q0 when it hits the wall?
   Q0
   A1 10.0 m/s
   A2 11.8 m/s
   A3 5.60 m/s
   A4 7.45 m/s
   A5 8.50 m/s
   Q0
Q5 Q0 The position of a particle moving along the x axis
Ch Q0 is described by the equation x(t) = 5.0 + 2.0t + t**3.
2  Q0 Find its average acceleration for the time interval
   Q0 t = 1.0 s to t = 2.0 s.
   Q0
   A1 9.0 m/s**2
   A2 7.3 m/s**2
   A3 5.0 m/s**2
   A4 11  m/s**2
   A5 13  m/s**2
   Q0
Q6 Q0 A ball is thrown vertically upward with an initial
ch Q0 velocity vo and reaches its maximum height in 6.0 s.
2  Q0 After how many seconds will it have a velocity -vo/2?
   Q0
   A1 9.0 s
   A2 12  s
   A3 6.0 s
   A4 18  s
   A5 15  s
Q7 Q0
ch Q0 Vector A=(5.0i + 3.0j)m, and vector B is 6m in length
3  Q0 and making 120 degrees angle with +ve x-axis. Find
   Q0 A-B.
   Q0
   A1 ( 8.0 i - 2.2j )m
   A2 ( 8.0 i + 8.2j )m
   A3 (-2.0 i + 8.2j )m
   A4 ( 2.0 i - 5.6j )m
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   A5 ( 2.0 i + 7.5j )m
   Q0
Q8 Q0 If a=(3.0i + 4.0j)m and b=(5.0i -2.0j)m, find the angle
ch Q0 between the two vectors.
3  Q0
   A1 75 degrees
   A2 31 degrees
   A3 82 degrees
   A4 55 degrees
   A5 93 degrees
   Q0
Q9 Q0 For the following three vectors;
ch Q0 A=2i+3j+4k, B=4i+4j and C= 2i+2k, find A.(BxA).
3  Q0
   A1 0
   A2 -16i+16j-8k
   A3  16i-16j+8k
   A4   8i- 8j-8k
   A5  -8i+ 8j+8k
   Q0
Q10Q0 A plane traveling north at 200 m/s turns and then travels
ch Q0 south at 200 m/s. The change in its velocity is:
4  Q0
   A1   400 m/s South
   A2   400 m/s North
   A3   200 m/s North
   A4   200 m/s South
   A5   0     m/s
   Q0
Q11Q0 A stone is thrown horizontally from the top of a 40m
ch Q0 high hill. It strikes the ground at an angle of 30
4  Q0 degrees as shown in Fig.2. With what speed was it
   Q0 thrown?
   Q0
   A1 49 m/s
   A2 19 m/s
   A3 10 m/s
   A4 98 m/s
   A5 0  m/s
   Q0
Q12Q0 A particle starts from the origin at t = 0 with a velocity
ch Q0 of 8.0j m/s and moves in the XY plane with a constant
4  Q0 acceleration of (4.0i +2.0j)m/s**2. At the instant the
   Q0 X coordinate of the particle is 32 m, find its y coordinate.
   Q0
   A1 48 m
   A2 24 m
   A3 32 m
   A4 16 m
   A5 64 m
   Q0
Q13Q0 A river has a steady flow of 0.30 m/s. A student swims
ch Q0 downstream a distance of 1.2 km and returns to the starting
4  Q0 point. If the student can swim at a constant speed of
   Q0 v in still water and the downstream portion of the swim
   Q0 takes him 20 minutes, the time required for the entire
   Q0 swim is:
   Q0
   A1 70 minutes
   A2 50 minutes
   A3 20 minutes
   A4 90 minutes
   A5 0  minutes
   Q0
Q14Q0 A 16-kg block and an 8-kg block is connected by a string
   Q0 as shown in Fig.3.If the pulley is massless and the
ch Q0 surface is frictionless, the magnitude of the acceleration
5  Q0 of the 8-kg block is:
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    Q0
    A1 g/3
    A2 3g/5
    A3 4g/3
    A4 g
    A5 g/2
    Q0
Q15Q0 A 70-kg man stands on a spring scale in an elevator
ch Q0 that has a downward acceleration of 2.8 m/s**2. The
5  Q0 scale will read:
   Q0
   A1 490 N
   A2 980 N
   A3 686 N
   A4 343 N
   A5 170 N
   Q0
Q16Q0 Acceleration is always in the direction:
ch Q0
5  A1 of the net force
   A2 of the displacement
   A3 of the initial velocity
   A4 of the final velocity
   A5 opposite to the frictional force
   Q0
   Q0 A person pulls a 50-kg box horizontally with a constant
Q17Q0 horizontal force of 200 N.If the coefficient of kinetic
ch Q0 friction muk is 0.2 and the coefficiet of static friction
6  Q0 mus is 0.3. Find the acceleration of the box.
   Q0
   A1  2 m/s**2
   A2  1 m/s**2
   A3  4 m/s**2
   A4 -1 m/s**2
   A5  0 m/s**2
   Q0
Q18Q0 A block of mass M = 10kg is pushed up along a 30 degree
ch Q0 inclined plane with a force F parallel to the inclined
6  Q0 plane. If the velocity of the block is constant and
   Q0 the coefficient of kinetic friction muk is 0.2, find
   Q0 the magnitude of the force.
   Q0
   A1  66  N
   A2  95  N
   A3  17  N
   A4  6.7 N
   A5  98  N
   Q0
Q19Q0  An object moving at constant speed in a circular path
ch Q0
6  A1  has an acceleration of constant magnitude
   A2  has an acceleration of constant direction
   A3  has zero acceleration
   A4  has constant velocity
   A5  has a zero net force acting on it
   Q0
Q20Q0 A motorcycle and 60.0 kg rider accelerate at 3.00 m/s**2
5  Q0 up an inclined plane 10.0 degrees above the horizontal.
   Q0 Find the magnitude of the net force acting on the rider.
   Q0
   A1   180 N
   A2   588 N
   A3   102 N
   A4   282 N
   A5    78 N
   Q0
Q21Q0  A monkey hangs vertically from a rope in a descending
ch Q0  elevator that decelerates at 2.4 m/s**2.If the tension
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5  Q0  in the rope is 400 N, find the mass of the monkey.
   Q0
   A1  33 kg
   A2  54 kg
   A3  41 kg
   A4 167 kg
   A5  25 kg
   Q0
Q22Q0 One end of a 1.0-m string is fixed, the other end is attached
ch Q0 to a 2.0-kg stone. The stone swings in a vertical circle,
6  Q0 and has a speed of 4.0 m/s at the top of the circle.
   Q0 The tension in the string at this point is approximately:
   Q0
   A1 12  N
   A2 0   N
   A3 20  N
   A4 32  N
   A5 9.8 N
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