E046 Online Test

Ref 69

A living room has the floor dimension and height of 3.5 m x 4.2 m. A height of 2.4 m (a) What does the air in the room weigh when the air pressure is 1 atm? (b) What is the magnitude of the atmosphere downward force on the top of your head which we take to have an area of $0.04m^2$

A	420 N, 4 x 10^3 N	B	840 N, 8 x 10^3 N
C	210 N, 2 x 10^3 N	D	1640 N, 6 x 10^3 N
	Answer		

Ref72

A copper slug whose mass m_c is 75 g is heated in a laboratory oven to a temperature T of 312 deg C . The slug is then dropped into a glass beaker containing mass m_w = 220 g of water. The heat capacity C_b of the beaker is 450 cal / deg K . The initial temperature T_i of the water and the beaker is 12 deg c. Assuming that the slug and the water does not vaporize. Find the final temperature T_f of the system at thermal equilibrium.

A	60 Deg C	B	30 Deg C
C	90 Deg C	D	15 Deg c
	Answer		

Ref75

The molar mass M of oxygen is 0.072 Kg/ mol (a) What is the average speed V avg of oxygen gas molecules at T = 300 deg K. What is the most probable Vp at 300 deg K.

A	745 m/ s	B	1500 m/s
C	600 m/s	D	300 m/s
	Answer		

Ref78

32. The block whose mass "m" is 680 g is fastened to spring whose spring constant K is 65 N/m . the block is pulled a distance   X= 11 cm from it's equilibrium position at X = 0 on a fractionless surface and released from rest at t= 0.

   (a) What are angular frequency, the frequency and period of resulting motion?

   (b) What is the amplitude of oscillation?

   (c) What is the maximum speed Vm of the oscillating block and where is the block when it has this period?

   (d) What is magnitude of oscillation?

   (e) What is the phase constant ф for the motion?

   (f)   What is the displacement function?

A	9.78 rad/s, 1.6 HZ, 0.64 sec, 11 cm, 1.1 m/s, 11 m/ s^2, 0.11 cos 9.78 t	B	18 rad/s, 3 HZ, 1 sec, 11 cm, 3 m/s, 22 m/ s^2, 0.7 cos 18 t
C	36 rad/s, 5 HZ, 7 sec, 40 cm, 10 m/s, 30 m/ s^2, 10cos 7.98 t	D	
	Answer		

Ref81

The following equations give the position X(t) of a particle in four situation.   (a)
(a)X = 8t – 2   (b) X = -9t^2-2   (c) x =   1/ 2t^2 (d) x = -3

In which situation, the velocity V is constant

A	a	B	b
C	c	D	d
	Answer		

Ref84

The magnitude of a is 3 Km due East and   b = 5 Km North of East. c = 1 Km due West. What is the greatest distance at third displacement?

A	4.8 km	B	9.6 km
C	112 km	D	20 km
	Answer		

Ref87

a = 4 I + 5 j + 7k   b = 3 I + j + 4 k   Find a X b

A	-2i+8j-5k	B	2i-8j+5k
C	2i+8j+5k	D	
	Answer		

Ref90

The circus performer is riding a bicycle in the loop with radius R = 2.7 m. What is the least speed at the top of the loop and the force. Mass = 20 kg.

A	3 m/s	B	2 m/s
C	5.1 m/s	D	10 m/s
	Answer		

Ref93

A locomotive is moving at 0.25 m/ s^2 acceleration and it is weighed 1.2×10^6 N. What is kinetic energy? It moves for 3.2 Km.

A	2 MJ	B	1MJ
C	3MJ	D	4MJ
	Answer		

Ref96

Three particles of masses m 1 = 1,2 Kg, m2 = 2.5 Kg and m3 = 3.4 kg form an equilateral triangle of edge length a = 140 cm. Where is the centre of mass of this system?

A	116 cm	B	29 cm
C	14.5 cm	D	58 cm
	Answer		

Ref99

A grind stone rotates at a constant angular acceleration α = 0.85 rad/ s^2. At time t = 0 , it has angular velocity w0 = -4.6 rad/ s and a reference line on it is horizontal at the angular position   w = 0

   (a) At what time after t= 0 is the reference line at angular position Θ = 5 rev

   (b) Describe the rotation between t= 0 and t = 32 sec.

   (c) At what time t, does the grind stone momentarily stop?

| A	16 sec, 0.1 rad/s^2 , 13 sec	B	32 sec, -0.35 rad/s^2 , 13 sec
C	48 sec, -0.7 rad/s^2 , 20 sec	D	16 sec, 0rad/s^2 , 13 sec
	Answer		

Ref100

A coach roach rides the rim of a rotating merry go around. If the angular speed is constant, does the coach roach have (a) Radial acceleration ? (b) Tangential acceleration ? What angle Θ $_p$ should the arc subtend so that a 15. 4 kg at the point "P".

A	50 Deg	B	30 Deg
C	111 Deg	D	200 Deg
	Answer		

Ref101

Figure shows a uniform disk with mass M = 2.5 kg, R = 20 cm. A block of m = 1.2 kg hangs from a massless cord. Find acceleration of falling block.
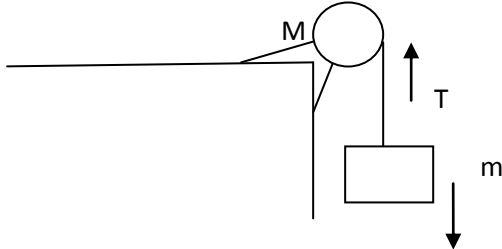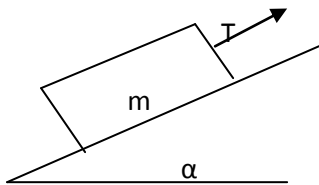

A	9.3 m / s^2	B	4 m / s^2
C	18 m / s^2	D	3.8 m / s^2
	Answer		

Ref89

m= 5 kg   α= 30 deg

Cord   A cord pulls on a box up along a frictionless plane

inclined at α = 30 degree. The box has mass m = 5 kg

The speed from the cord has magnitude T = 30N. What is

acceleration of the box?

A	0.1 m/ s^2	B	1 m/ s^2
C	0.01 m/ s^2	D	2 m/ s^2
	Answer		

Ref81

The following equations give the position X(t) of a particle in four situation.   (a)
(a)X = 8t – 2   (b) X = -9t^2-2   (c) x = 1/ 2t^2 (d) x = -3

In which situation, the velocity V is constant

A	a	B	b
C	c	D	d
	Answer		