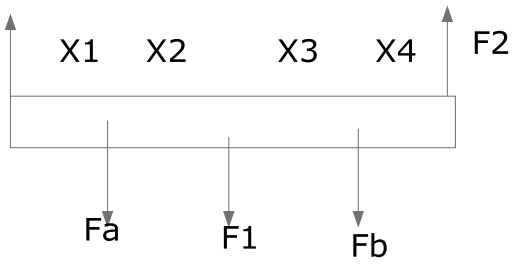
E046 Online Test

Ref68

The figure gives over view at a uniform rod in static equilibrium , the magnitude of the forces F1 & F2 are



X1= 4m, X2= 2m, X3=1m, X4 = 1m, Fa = 10 N ,Fb = 30N

A	90 N, 130 N	B	22.5 N, 32.5 N
C	45 N, 65 N	D	100 N, 200 N
	Answer		

Ref71

How much heat must be absorbed by ice of mass m = 720 g at – 10 deg c to take the liquid state at 15 deg c.

A	600 KJ	B	400 KJ
C	300 KJ	D	150 KJ
	Answer		

Ref74

One mole of oxygen expands at a constant temperature T of 310 deg K from an initial volume V_i of 12L to a final volume V f of 19 L. How much work is done by the gas during expansion?

A	2200 J	B	3300 J
C	4400 J	D	1180 J
	Answer		

Ref77

. Imagine a Carnot engine that operates between the temperatures T_H = 850 deg K and T_L = 300 deg K . the engine performs 1200J of work at each cycle which takes 0.25 sec.

(a) What is the efficiency of this engine?

(b) What is the average power "P" of this engine?

(c) How much energy Q_H is expected as heat from the high temperature reservoir every cycle?

(d) How much energy Q_L is delivered as heat to the low temperature reservoir each cycle?

(e) By how much does the entropy of working substance change as a result of the energy transferred to it from the high temperature reservoir? From it to the low temperature reservoir?

A	85%, 4.8 KW, 1855 J, 655 J, 3.6 J/Deg K, -10 J/ Deg K	B	65%, 4.8 KW, 1855 J, 655 J, 2.18 J/Deg K, -2.18 J/ Deg K
C	25%, 2.4 KW, 1855 J, 655 J, 7.2 J/Deg K, -300 J/ Deg K	D	10%, 1.2 KW, 900 J, 300 J, 2 J/Deg K, -150 J/ Deg K
	Answer		

Ref80

A wave travelling along a string is described by Y (x,t) = 0.00328 Sin (97.1X – 2.92 t)

(a) What is the amplitude of this wave?

(b) What are the wave length, period and frequency of this wave?

(c) What is the velocity of this wave?

(d) What is the displacement Y at X = 22.5 cm and t = 18.9 sec?

A	7 mm, 0.01m, 7 rad/s, 4 sec, 0.5HZ, 0.04 m/s	B	2.27 mm, 0.0871m, 2.72 rad/s, 2.31sec, 0.432HZ, 0.0377 m/s
C	1 mm, 0.015m, 10 rad/s, 7 sec, 0.7HZ, 0.02 m/s	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		

Ref88

2 kg Tin is accelerated at 3m /s^2 in the direction shown by a over a frictionless horizontal surface. The acceleration is caused by three forces . What is the third force?

A	20N	B	10N
C	1N	D	12.5N
	Answer		

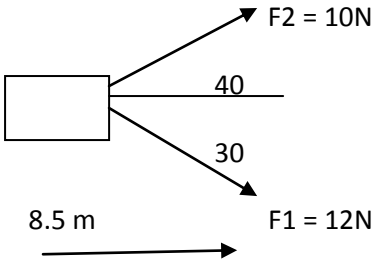
Ref91

Suppose that the coefficient of static friction μ between the rider's clothing and the canvas is 0.4 and the cylinder radius " R" is 2.1 m.

(a) What minimum speed (V) must the cylinder and the rider have if the rider is not to fall when the floor drops? (b) If the rider's mass is 49 Kg, what is the magnitude of centrifugal force on rider?

A	7.2 m/s, 1200N	B	3.6 m/s, 600N
C	21 m/s, 2000N	D	30 m/s, 3000N
	Answer		

Ref94

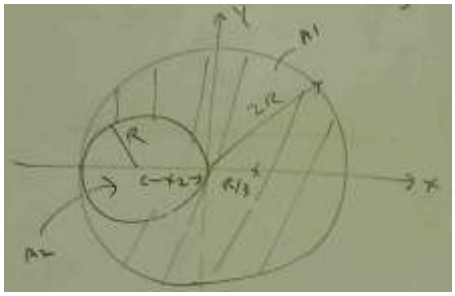


Find total work done of the forces.

A	306J	B	153J
C	469J	D	73J
	Answer		

Ref97

The figure shows a uniform metal plate " P " of radius " 2 R " from which a disk of radius "R" has been stamped out. Using the X-Y co-ordinate system shown, locate the centre of mass of the plate.



A	Xt = R / 4, Yt = R	B	Xt = R, Yt = R
C	Xt = R / 2, Y t = R/ 2	D	Xt = R / 3, Y t= 0
	Answer		

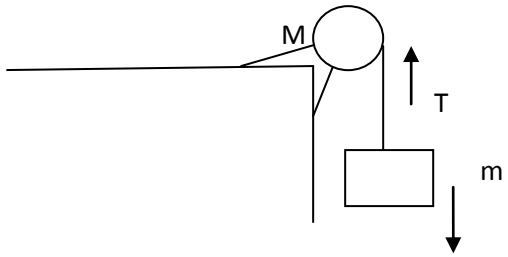
Ref100

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		

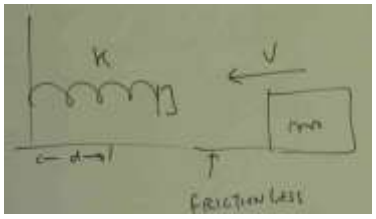
Ref92

If a falling cat reaches a first terminal speed of 97 Km/ hr while it is tucked in and then stretches out, doubling A, how fast is it falling when it reaches a new terminal speed?

A	3.4 m/s	B	1.7 m/s
C	13.6 m/s	D	6.8 m/s
	Answer		

Ref95

A mass 0.4 Kg slides across a horizontal frictionless counter with speed V = 0.5 m/s . It then runs and compresses a spring of spring constant K = 750 N / m . Calculate the distance the spring compressed.



A	1.2 cm	B	2.4 cm
C	3.6 cm	D	4.8 cm
	Answer		

Ref98

The angular position Θ(t) of a reference line on the disk is given by $\Theta = -1 - 0.6t + 0.25\ t^2$

(a)Graph the angular position of the disk versus time (-3 to 5.4 sec)

(b)At what time does Θ(t) reach minimum value? What is the minimum value?

A	1.2 sec, 77 Deg	B	2.4 sec, 97 Deg
C	1.2 sec, 30 Deg	D	3 sec, 45 Deg
	Answer		