# CH # 11

1- A disk of radius 20 cm rotating at 42 rad/sec stops (assume constant deceleration) after 10 sec. Through how many radians does the disk turn during this time?
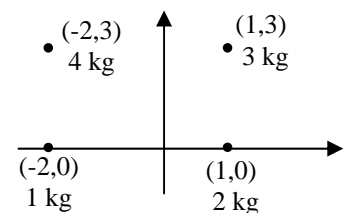*Correct Answer 210 rad*

2- A disk is rotating about an axel through its center O when two forces F1 = 10 N and F2 = 15N are applied on it as shown in Fig. The moment of inertia of the disk about O is 0.036 kg.m^2. If the system starts from rest, find the angular speed at time = 3.0 s.
Correct Answer 100 rad/s

$F_2 = 15$ N
$F_2 = 10$ N
a
b
a = 6 cm
b = 12 cm
$I_O = 0.036$ kg.m^2
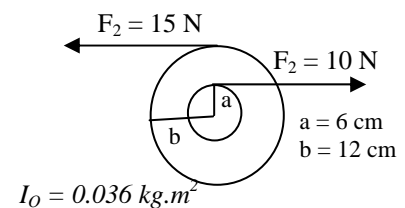
3- The four particles in Fig (6) are connected by rigid rods of negligible mass. Calculate the moment of inertia of this system about the x axis.
Correct Answer 63 kg.m^2

(-2,3)
4 kg
(1,3)
3 kg
(-2,0)
1 kg
(1,0)
2 kg

4- A wheel has a moment of inertia 12 kg.m^2 about its axis of rotation. As it turns through 5.0 rev, its angular velocity increases from 5.0 rad/s to 6.0 rad/s. If the net torque about the axis of rotation is constant, its value is:
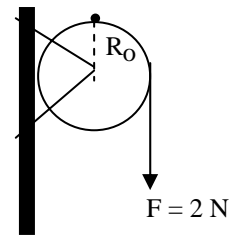*Correct Answer 2.1 N.m*

5- A disk has a moment of inertia 6.0 kg.m^2 about a fixed axis of rotation. It has a constant angular acceleration of 2.0 rad/s^2. If it starts from rest, the work done during the first 5.0 s by the net torque on it is:

Correct Answer 300 J

6- A wheel with a moment of inertia of 5.0 kg.m^2 and a radius of 0.25 m rotates about a fixed axis perpendicular to the wheel and through its center as shown in figure 10. A force of 2.0 N is applied tangentially to the rim. As the wheel rotates through one revolution, what is the work done by the force ?

Correct Answer 3.14 J

R_O

$F = 2\ N$

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