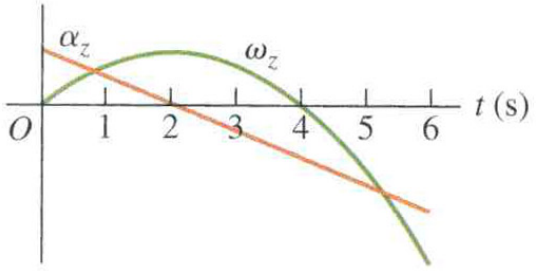
Rotational Kinematics
Concept Questions

Question 1 The figure shows a graph of ω_z and α_z versus time for a particular rotating body.

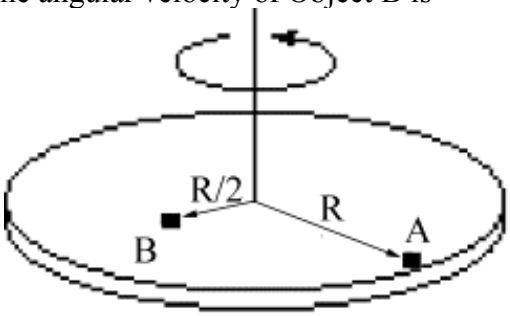


During which time intervals is the rotation slowing down?

1. 0 < t < 2 s
2. 2 s < t < 4 s
3. 4 s < t < 6 s
4. None of the intervals.
5. Two of the intervals.
6. Three of the intervals.

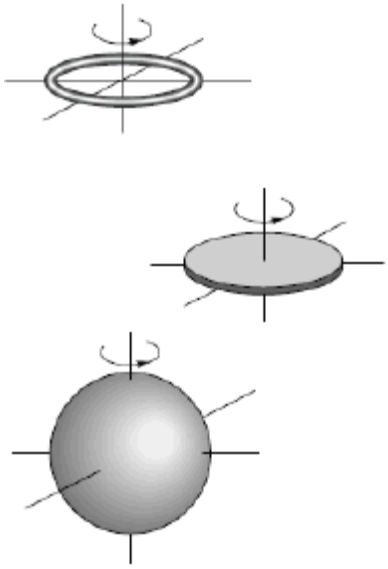
Question 2

Object A sits at the outer edge (rim) of a merry-go-round, and object B sits halfway between the rim and the axis of rotation. The merry-go-round makes a complete revolution once every thirty seconds. The magnitude of the angular velocity of Object B is



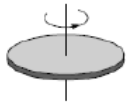
1. half the angular speed of Object A .
2. the same as the angular speed of Object A .
3. twice the angular speed of Object A .
4. impossible to determine

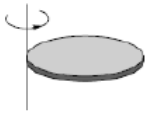
Question 3 Which has the smallest I about its center?



1. Ring (mass m, radius R)
2. Disc (mass m, radius R)
3. Sphere (mass m, radius R)
4. All have the same I.

Question 4 Which gives the largest I for the disc?

1) 

2) 

3) 

4) All have the same I.

Question 5 Rotational Kinetic Energy A disk with mass m and radius R is spinning with angular speed ω about an axis that passes through the rim of the disk perpendicular to its plane. The moment of inertia about cm is $I_{cm} = (1/2)mR^2$. Its total kinetic energy is:

1. $(1/4)mR^2\omega^2$
2. $(1/2)mR^2\omega^2$
3. $(3/4)mR^2\omega^2$
4. $(1/4)mR\omega^2$
5. $(1/2)mR\omega^2$
6. $(1/4)mR\omega$

8.01SC Physics I: Classical Mechanics