Princess Sumaya جامعـــة
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PHYSICS LAB. I

(20147)

Experiment No.8

Moment of Inertia

Name: …….	**Reg. No. ( )**
Partner name:……	**Class ( )**
Date / / 2019	**Mark ( )**

Experiment 8

The Inertia of different objects

1. **Objectives:**

_____

_____

2. **Apparatus:**

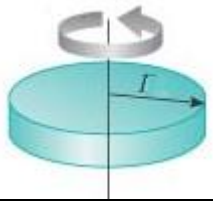
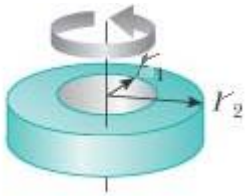
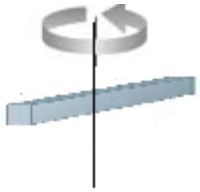
_____

_____

3. **Results:**

A. The inertia theoretically: Complete table 1.

Table 1: Theoretical Calculation of Moment of Inertia (I)

Object	Axis	Law of Moment of inertia (I)	Mass	Dimensions		Inertia
Disk		$Mr^2\frac{1}{2}$		**r=**		
Ring		$\frac{1}{2}M(r_1^2 + r_2^2)$		**r_1 =**		
				r_2 =		
Cylinder		$M\left(\frac{r^2}{4} + \frac{L^2}{12}\right)$		**r =**		
				L =		
Rod		$\frac{1}{12}M(a^2 + b^2)$		**a =**		
				b =		

B. Inertia of the rotator only (I_0).
HINT: use the relation:

$$I_o = m\, r^2 \left(\frac{g t^2}{2\, h} - 1\right)$$

Radius of the rotator cylinder (r) = _____cm

Mass (m) (gm)	**High (h) (cm)**	**time (t) (sec)**	**inertia *(I_0)* (gm . cm^2)**

C. Experimental calculations of Inertia (I) for different objects

object	**Mass m (gm)**	**High h (cm)**	**Time t (sec)**	**inertia of both rotator and object I (gm . cm^2)**	**inertia of the object <u>only</u> = I – I_o ($gm.cm^2$)**
solid disk					
ring					
cylinder					
rod					