



## LABORATORY WORK SHEET

Date: .....

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Exp No: 04 Experiment Name: static and dynamic Balancing apparatus

### DAY TO DAY EVALUATION:

	Preparation	Algorithm	Source Code	Program Execution	Viva voce	Total
		Performance in the Laboratory	Calculations and Graphs	Results and Error Analysis		
Max. Marks	5	5	10	5	5	30
Obtained	4	4	4	3	3	18

*Bule*

Signature of Lab I/C

### START WRITING FROM HERE:

Objective: To study the static and dynamic Balancing system.

Aim: To balance the masses statically and dynamically of a simple rotating mass.

### Apparatus:

Electric supply: single phase, 220V, 50Hz, 5.15 amp socket with connections.

Bench area required: 1m x 0.5m

### Procedure:

- 1) Insert all the weights in sequence 1-2-3-4 from Pulley side
- 2) fix the pointers and pointers as shaft
- 3) fix the pointers as 0xJ as the circular Protractor scale
- 4) fix the weight in horizontal position
- 5) Rotate the shaft cover loosening previous position at pointers and fix it as (0<sub>1</sub>) (0<sub>2</sub>)
- 6) fix the weight no.2 in horizontal position

Tables:

S.No	Plane	mass (grams)	Angle from reference	Distance (L) <del>mm</del> Cm
1	1	90	180°	6
2	2	130	0°	10
3	3	160	270°	18
4	4	180	85°	20

S.No	Plane	mass (grams)	mass moment (mr <sub>i</sub> )	Couple (mr <sub>i</sub> · f <sub>i</sub> )
1	90	90	180	1080
2	130	130	325	3909
3	160	160	1040	187200
4	180	180	1350	32409

S.No	1	2	3	4	5	6	7	8	
1	1	1	m <sub>1</sub>	r <sub>1</sub>	1	m <sub>1</sub> r <sub>1</sub>	0	0	
2	2	2	m <sub>2</sub>	r <sub>2</sub>	2	m <sub>2</sub> r <sub>2</sub>	L <sub>2</sub>	m <sub>2</sub> r <sub>2</sub> L <sub>2</sub>	
3	3	3	m <sub>3</sub>	r <sub>3</sub>	3	m <sub>3</sub> r <sub>3</sub>	L <sub>3</sub>	m <sub>3</sub> r <sub>3</sub> L <sub>3</sub>	
4	4	4	m <sub>4</sub>	r <sub>4</sub>	4	m <sub>4</sub> r <sub>4</sub>	L <sub>4</sub>	m <sub>4</sub> r <sub>4</sub> L <sub>4</sub>	

- 7) loose the weight no 2 and pointer rotate the shaft at fix position as  $0^\circ$
- 8) Fix the weight no-3 in horizontal position
- 9) loose the pointer and rotate the shaft to fix pointer on  $0^\circ$
- 10) fix the weight no4 in horizontal position
- 11) for static balancing the system will remain steady in any angular position
- 12) now put the belt as the pulley of shaft and motor
- 13) supply the main power to the motor through dimmerstat
- 14) Gradually reduce the speed to minimum and then switch off main supply to the system.

#### Nomenclature:

$L$  = Distance between Particular weight from weight 1mm

$w$  = mass of Particular weight, kg

$\theta$  = Angle of Particular weight from reference Point of degree.

#### Precautions:

- 1) never run the apparatus if power supply is less than 180v and above 230v
- 2) Increase the motor speed gradually

#### Result:

static and dynamic analysis is done.