



Department of Mechanical Engineering
University of Engineering & Technology Lahore (KSK Campus).

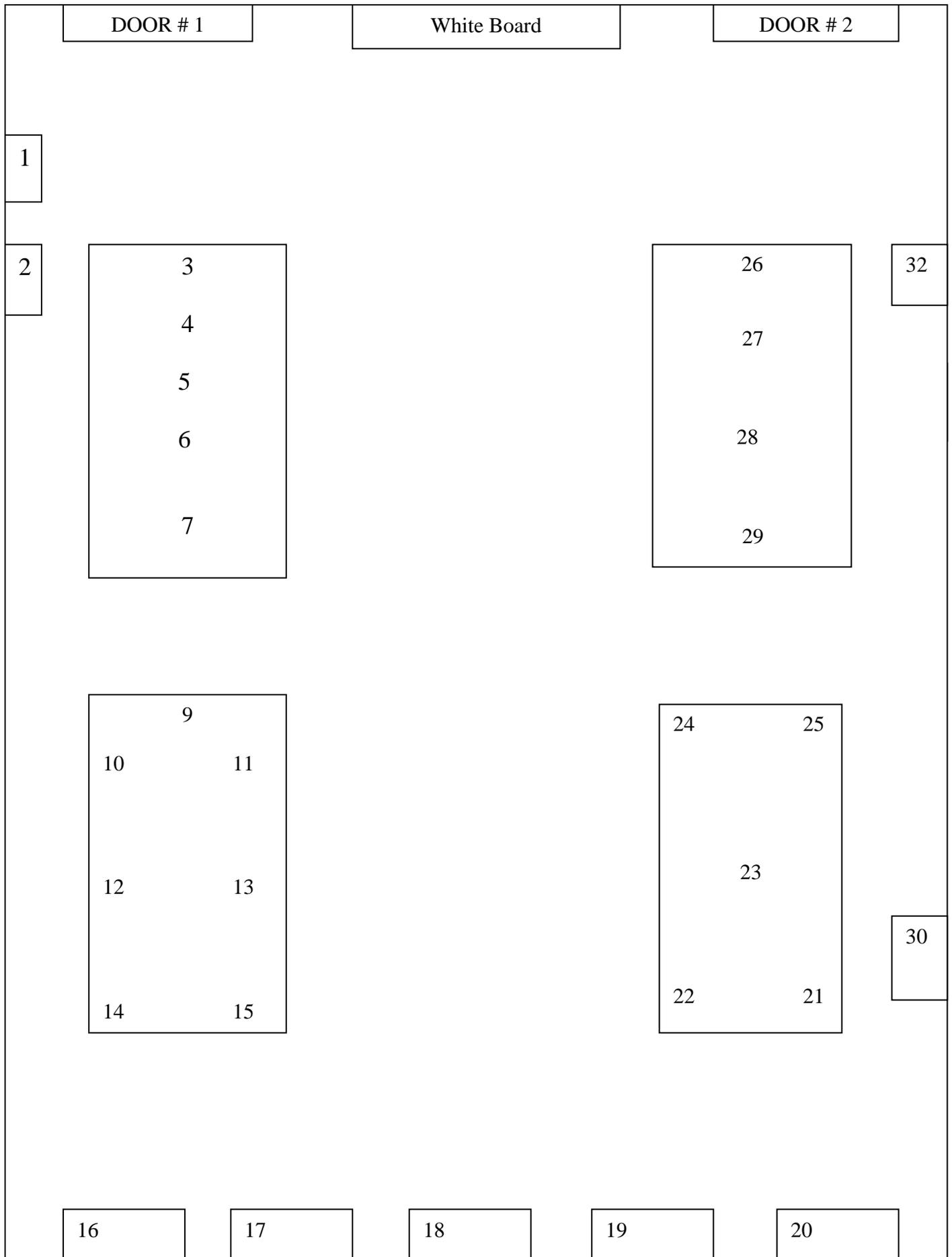
MECHANICS OF MACHINES

LAB DATA

Lab Incharge: Engr. Muhammad Amjad

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Lay-Out of Mechanics of Machines Lab



Description of lab lay-out

1. Fly wheel
2. Linear and angular speed
3. Governor's apparatus
4. Static and Dynamics
Balancing Materials
5. Cam and Follower
6. Toggle Joint
7. Funicular polygon of forces
8. Friction Machine
9. Balancing Machine
- 10.Crank and Slotted Lever
Mechanism
- 11.Four Bar Chain
- 12.Ackerman Steering
- 13.Slotted Link Mechanism
- 14.Slider Crank Chain
- 15.Whitworth Quick Return
- 16.Duplex Screw Jack
- 17.Moment of Inertia
- 18.Warm and Warm wheel
- 19.Clutch Friction
- 20.Friction of Belt
- 21.Gear Train
- 22.Epicyclic Gear Train
- 23.Piston Crank
- 24.Co-efficient of Friction
- 25.Friction on Horizontal &
Inclined Plane
- 26.Portal Frame
- 27.Redundant Truss
- 28.Roof Truss
- 29.Force Triangle
- 30.Screw Efficiency
- 31.Helical Gear
- 32.Wheel and Axle

Objective of the Lab:

The objective of the lab is to perform experiments which are related to mechanics of machine subject in order to understand the behavior of different mechanical equipments which students study in theory.

Governor Apparatus

Objective:

Exp.# 1:

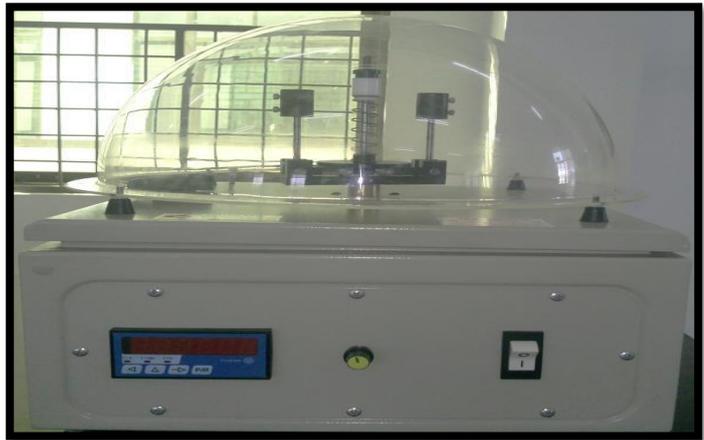
1. To observe the lift off speed of a Porter Governor.
2. To observe the effect of varying sleeve weight or spring force on the operation of a Porter Governor.

Exp # 2:

1. To observe the lift off speed of a Proell governor.
2. To observe the effect of varying sleeve weight or spring force on the operation of a Proell governor.

Exp # 3:

1. To observe the lift off speed of a Hartnell governor.
2. To observe the effect of varying sleeve weight or spring force on the operation of a Hartnell governor.



Clutch Friction Apparatus

Objective:

To investigate the behavior of flat clutch plates and to compare the results using two different methods (uniform pressure and uniform wear) of calculations.



Worm Wheel Apparatus

Objective:

To investigate the behavior of a worm and wheel gear set.



Wooden Block friction Apparatus

Objective:

Exp.# 1:

To measure the coefficient of static and kinetic friction between wooden block and a inclined wooden block.

Exp # 2:

To measure the coefficient of static and kinetic friction between wooden block and a horizontal wooden block.



Gear Train Apparatus

Objective:

To obtain by experiment the velocity ratios of a simple or a compound train of gears and to verify calculated values.



Duplex Screw Jack Apparatus

Objective:

To study the tension in the tight and in the slack side of a square thread and a Vee thread.



Friction of Belt Apparatus

Objective:

To determine the coefficient of friction for a square belt and Vee belt and compare the results which is in contact with a cast iron pulley.



Epicyclic Gear Train Apparatus

Objective:

To investigate different types of Epicyclic gear configurations and check ratios with theoretical values.



Screw Efficiency Apparatus

Objective:

To evaluate the efficiencies of square and vee threads for both raising and lowering and to compare them to theoretical predictions.



Piston Crank Apparatus

Objective:

To investigate the relationships between piston displacement and crank angle and between piston load and crankshaft torque.



Helical Gear Drive Apparatus

Objective:

1. To investigate a pair of helical gears;
2. To find the effort required to raise each of range of loads at a given velocity ratio.
3. To find the efficiency at each load.
4. To find the effort of friction at each load.
5. To investigate the effect at varying the velocity ratio.
6. To study the variation in effort, friction, efficiency and velocity ratio.



Balancing Machine

Objective:

To investigate the masses which required to balance the rod in the rotating and reciprocating position.



Wheel & Axle Apparatus

Objective:

1. To calculate the velocity ratio of the machine and to check the value by comparing distance moved by the effort and load respectively.
2. To plot graph on a base of increasing load illustrating the variation of
 - i) Effort
 - ii) Effort of friction
 - iii) Efficiency
3. To obtain an equation for the relationship between load and effort, and hence to obtain a value for the limiting efficiency of the machine.

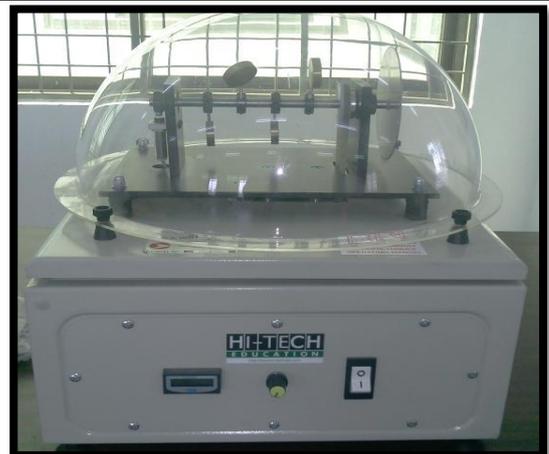


Static & Dynamic Balancing Machine

Objective:

The objectives of the experiments are as follow:

1. To understand the effect of dynamic balancing
2. To understand the effect of static balancing
3. The use of vector diagram
4. Comparison of actual and theoretical results.



Journal Friction Machine

Objective:

The object of the experiment is to evaluate different bearings under varying conditions of load and speed. The processed data will then be compared to theory

