DYNAMICS OF MACHINERY LAB EQUIPMENTS

S. No	Name of the Equipment	specifications	Photograph
1.	**Static & Dynamic Balancing Apparatus**	**Description :** This equipment is designed for carrying out the experiment for balancing a rotation mass system. The apparatus consists of a steel shaft fixed in a rectangular frame. A set of four blocks with a clamping arrangement is provided. For static balancing, each block is individually clamped on shaft and its relative weight is found out using cord and container system in terms of number of steel balls. For dynamic balancing, a moment polygon is drawn using relative weights and angular and axial position of blocks is determined. The block are clamped on shaft is rotated by a motor to check dynamic balance of the system. The system is provided with angular and longitudinal scales and is suspended with chains for dynamic balancing. **Experiments :** • To balance the masses statically and dynamically of a single rotating mass system • To observation of effect of unbalance in a rotating mass system **Specifications :** • Electricity 0.5kW, 220V, Single Phase	

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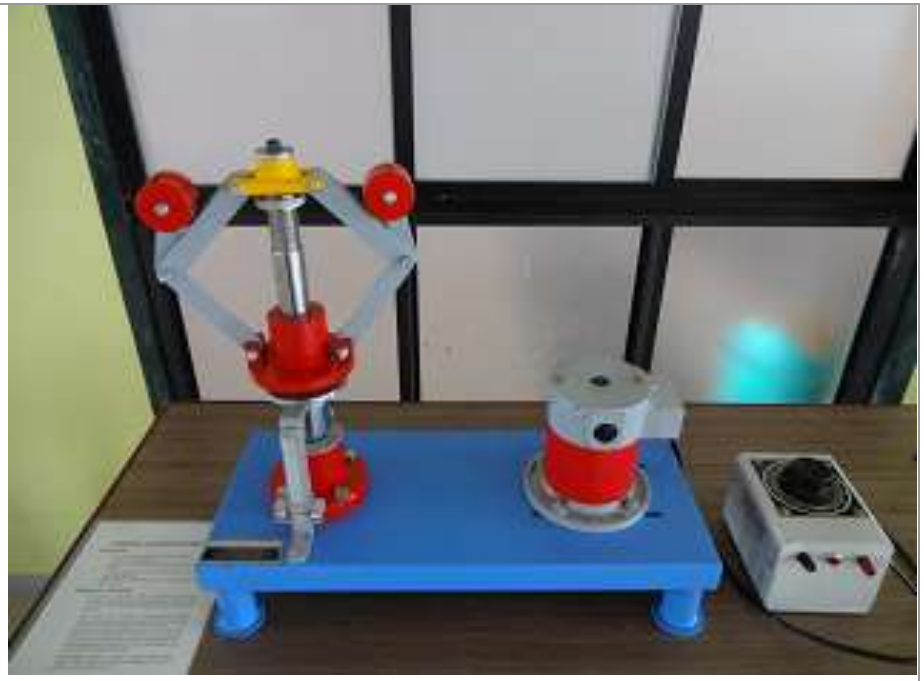
2.	**Universal governor apparatus**	**Description :** The set-up is designed to study the working of different governors (Watt governor, Porter governor, Proell governor, Hartnell governor) normally used to control the speed. It consists of a main spindle, mounted vertically on the base plate. This spindle is driven by a variable speed Motor which is also mounted vertically on the same base plate. Anyone governor assembly out of four can be mounted on spindle. Speed control unit controls the spindle speed. A graduated scale is fitted to the sleeve to measure the displacement. **Experiments :** • Determination of characteristic curve of a sleeve position against speed of rotation for all governors • To study the effect of varying the mass of the center sleeve in Porter and Proell Governor. • To study the effect of varying the initial spring compression in Hartnell Governor. • To study the determination of characteristics curves of radius of rotation against controlling force (Actual & Theoretical) for all governors **Specifications :** • Power Supply: 230 V AC, Single Phase. • Floor Space: 1.5 x 1.5 m • Tachometer to find out RPM	

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3.	**Motorised gyroscope apparatus**	**Description :** The set up consists of heavy disc mounted on a horizontal shaft, rotated by a variable speed motor. The rotor shaft is coupled to a motor mounted on a trunion frame having bearings in a yoke frame, which is free to rotate about vertical axis. A weight pan on other side of disc balances the weight of motor. Rotor disc can be move about three axis. Torque can be applied by calculating the weight and distance of weight from the center of rotor. The gyroscopic couple can be determined. **Experiments :** • Experimental justification of the equation T = 1 w. wp for calculating the gyroscopic couple by observation and measurement of results for independent vibrations in applied couple T and precession wp. • To study the gyroscopic effect of a rotating disc • Observation of gyroscopic effect of rotating disc **Specifications :** • Electric supply: 230 V AC, Single Phase. • Bench area: 1m x 1m • Rotor diameter 280 mm x 10 mm thick	

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4.	**Rope Brake Dynamometer Apparatus**	**Description :** Dynamometer is a device for determining the Force, Torque and Power. It is simple to fabricate and inexpensive type dynamometer. **Experiments :** To determine the Force, Torque & Power. **Specifications :** • Base frame made from MS angle. • PMDC Motor : 1500 rpm, 0.5HP, 180 VDC. • Rope brake Dynamometer assembly coupled to the Motor shaft. • Loading screw with spring balances for applying load on the drum. • Dimmerstat : Closed Type, 0 – 2 amps, 230VAC. • Digital Voltmeter & Ammeter for measuring power input of the motor.	

DYNAMICS OF MACHINERY LAB EQUIPMENTS

5.	**Compound Pendulum Apparatus**	**Description :** The compound pendulum consists of steel bar. The bar is supported in the hole by the knife edge. **Experiments :** To determine the radius of gyration ‘k’ **Specifications :** Length of pendulum rod = 70 cm. Holes spacing = 15 cm.	

DYNAMICS OF MACHINERY LAB EQUIPMENTS

6.	**Tri-Filar Suspension Apparatus**	**Description :** A uniform circular disc is suspended from the pendulum support frame by three parallel cords. Top ends of the cords are gripped by the drill chucks fixed links. The three links are joined to each other at 120^0 angle and this assembly is fitted by stud to the top end of the frame. It is possible to change the length of the cord. **Experiments :** To determine the moment of Inertia of given specimen. **Specifications :** Weight of the disc = 2.5 kg. Diameter of the disc = 200 mm. Ring weight = 2.5 kg. Ring Inner diameter = 200 mm. Ring Outer diameter = 145 mm. Loading pan diameter = 350 mm.