G. S. Mandal's

MARATHWADA INSTITUTE OF TECHNOLOGY, AURANGABAD

DEPARTMENT OF MECHANICAL ENGINEERING

Laboratory Name and Location: Hydraulic Machines

Lab In-charge: Mr. Shon D. Patil (Asst. Professor)

Lab Area: 106.25 Sq.m **Total Investment (INR): Rs. 3,71,680/-**

List of Major Equipments:

Sr. No.	Name & Specifications of the Equipment	Photograph of the Equipment
1.	**Pelton Wheel Turbine** Specification:- Runner outside diameter=150mm Hub diameter =78mm P.C.D.guide vanes = 230mm Brake drum diameter =214mm Rope diameter =13mm Size of orifice meter=100mm	
2.	**Francis Turbine** Specification:- Rated supply head =10 meters. Discharge =1000 lpm. Rated speed =800-1000 rpm. Power output =1 HP Runner diameter =160 mm. P.C.D. of guide vanes =230 mm. Brake rope diameter =13 mm Brake drum diameter = 214 mm	

3	**Kaplan Turbine** Specification:- Rated Supply Head=5 meters. Discharge = 500 LPM Rated Speed =1000 rpm. Power Input= 650 Watts. No. of guide vanes = 10 Brake Drum Diameter=270 mm	
4	**Centrifugal Pump** Specification:- Motor Power = 01 HP Dimmer Stat = 04 Amp., Open Type Energy Meter = Electrical Vacuum Gauge = 0 to 760 mm of Hg (0 to -30 PSi) Pressure Gauge = 0 to 2.1 kg / cm^2	

5	**Gear Pump** Specification:- Motor= 1 HP Pump rpm = 1440 No. of Rotation/flash of energy meter = 10-Rotation/flash.	
6.	**Rotameter Test Rig** Specification:- Motor:1HP Capacity:10 LPH Material : SS Pipe Diameter : 27 mm	

Hydraulic Machines

LIST OF EXPERIMENTS

Experiment No.1:- To study impact of jet to find the force exerted on plate. Aim & Objectives : To study impact of jet to find the force exerted on plate. Outcome : Able to derive expressions for impact of jet on stationary and moving plates.	**CO3**
Experiment No.2:- Trail on Pelton wheel turbine. Aim & Objectives : To calculate the overall efficiency of pelton wheel. Outcome : Able to understand working principle of pelton wheel. Experimentation : Readings of pressure, load and spring balance. Results and Discussion: Find the overall efficiency of pelton wheel.	**CO5**
Experiment No.3:- Trail on Francis turbine test rig. Aim & Objectives : To calculate the overall efficiency of francis turbine. Outcome : Able to understand working principle of francis turbine Experimentation : Readings of pressure, load and spring balance Results and Discussion: Find the overall efficiency of francis turbine	**CO5**
Experiment No.4:- Trail on Kaplan turbine test rig. Aim & Objectives : To calculate the overall efficiency of Kaplan turbine. Outcome : Able to understand working principle of Kaplan turbine. Experimentation : Readings of pressure, load and spring balance Results and Discussion: Find the overall efficiency of Kaplan turbine	**CO5**
Experiment No.5:- Trial on the centrifugal pump Aim & Objectives : To calculate the overall efficiency of centrifugal pump. Outcome : Able to understand working principle of centrifugal pump. Experimentation : Readings of pressure, discharge and energy meter. Results and Discussion: Find the overall efficiency of centrifugal pump	**CO5**

Experiment No.6:- Trial on the Gear pump Aim & Objectives : To calculate overall efficiency of gear pump. Outcome : Able to understand working principle of gear pump. Experimentation : Readings of pressure, discharge and energy meter Results and Discussion: Find the overall efficiency of gear pump	**CO5**
Experiment No.7:- Study of nozzels and diffusers Aim & Objectives : To study the different types of nozzels and diffusers Outcome : Able to differentiate between nozzel and diffusers	**CO2**