

**COURSE TITLE : HYDRAULIC MACHINERY AND FLUID POWER
LABORATORY**

COURSE CODE : 6027

COURSE CATEGORY : A

PERIODS/ WEEK : 3

PERIODS/ SEMESTER : 45

CREDIT : 2

TIME SCHEDULE

MODULE	TOPIC	PERIODS
1	Pelton Turbine, Francis Turbine & Kaplan Turbine	11
2	Centrifugal Pump, Reciprocating Pump, Gear Pump, Lobe Pump, Self priming pump, Stage pump, Deep well pump.	11
3	Hydraulic Ram, hydraulic lift. Hydraulic Jack, Hydraulic press.	10
4	Pneumatic and Hydraulic systems.	13
TOTAL		45

COURSE OUTCOME :

sl.no.	sub	student will be able to
1	1	Carryout the experiment on Pelton Turbine, Francis Turbine & Kaplan Turbine.
	2	Understand the Centrifugal Pump, Reciprocating Pump, Gear Pump, lobe Pump, Self priming pump, stage pump, deep well pump.
	3	Understand the Hydraulic Ram and hydraulic lift
2	4	Comprehend the hydraulic Jack, hydraulic press.
3	5	Comprehend the pneumatic and hydraulic systems.

SPECIFIC OUTCOME

MODULE I

1.1.0 Carryout the experiment on Pelton Turbine, Francis Turbine & Kaplan Turbine.:

- 1.1.1 Study the Pelton turbine
- 1.1.2 Distinguish the characteristics curves of Pelton turbine
- 1.1.3 Find the efficiency at constant head and constant speed
- 1.1.4 Plot the characteristics curves
- 1.1.5 Interpret the curves.
- 1.1.6 Study the Pelton turbine
- 1.1.7 Distinguish the characteristics curves of above turbines
- 1.1.8 Find the efficiency at constant head and constant speed
- 1.1.9 Plot the characteristics curves
- 1.1.10 Interpret the curves.

MODULE II

2.1.0 Understand the Centrifugal Pump, Reciprocating Pump, Gear Pump, lobe Pump, Self priming pump, stage pump, deep well pump.

- 2.1.1 State the function and principle of working of centrifugal pumps
- 2.1.2 State its applications
- 2.1.3 Conduct an experiment and find out hydraulic efficiency and overall efficiency
- 2.1.4 Plot the characteristic curves and comment on it.

- 2.1.5 State the function and principle of working of reciprocating pumps
- 2.1.6 State its applications
- 2.1.7 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.8 Plot the characteristic curves and comment on it.
- 2.1.9 State the function and principle of working of Gear Pumps
- 2.1.10 State its applications
- 2.1.11 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.12 Plot the characteristic curves and comment on it.
- 2.1.13 State the function and principle of working of Lobe Pumps
- 2.1.14 State its applications
- 2.1.15 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.16 Plot the characteristic curves and comment on it.
- 2.1.17 State the function and principle of working of Self priming Pumps
- 2.1.18 State its applications
- 2.1.19 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.20 Plot the characteristic curves and comment on it.
- 2.1.21 State the function and principle of working of Stage Pumps
- 2.1.22 State its applications
- 2.1.23 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.24 Plot the characteristic curves and comment on it.
- 2.1.25 State the function and principle of working of Deep well Pumps
- 2.1.26 State its applications
- 2.1.27 Conduct an experiment and find out volumetric efficiency and overall efficiency
- 2.1.28 Plot the characteristic curves and comment on it.

MODULE III

3.1.0 Understand the Hydraulic Ram and Hydraulic Lift

- 3.1.1 State the function of hydraulic ram
- 3.1.2 Explain the working of hydraulic ram
- 3.1.4 Conduct the experiment on hydraulic ram
- 3.1.5 Construct the graph – discharge versus efficiency of hydraulic ram
- 3.1.6 Plot the graph – discharge Vs D'Abuisson's efficiency and Rankine efficiency
- 3.1.7 Interpret the above curves.

3.2.0 Comprehend the hydraulic Jack, hydraulic press

- 3.2.1 State the functions of hydraulic lift
- 3.2.2 Explain the working of hydraulic lift
- 3.2.3 State the function of hydraulic jack and press
- 3.2.4 Explain the working of hydraulic jack and press
- 3.2.5 Conduct the experiments on hydraulic jack and press

MODULE IV

4.1.0 Comprehend the Pneumatic and Hydraulic systems

- 4.1.1 Identify ISO standard pneumatic symbols.
- 4.1.2 Prepare circuit diagrams based on pneumatic system using pressure, flow and directional control valves {use transparent valves}
- 4.1.3 Carryout the experiment on pneumatic actuators and plot the curve, pressure Vs force with different bore sized actuators.
- 4.1.4 Identify the ISO standard hydraulic symbols.

- 4.1.5 Prepare the circuit diagrams based on hydraulic system using pressure, flow and directional control valves
- 4.1.6 Carryout the experiment on hydraulic actuators linear actuators and plot the curve, pressure Vs force curve with different bore sized actuators.
- 4.1.7 Carryout the experiment on hydraulic rotary actuators and plot the curve, pressure Vs torque with different bore sized actuators
- 4.1.8 Computer based simulation of hydraulic and pneumatic circuits

REFERENCE

1. HydraulicS Lab Manual

K C JOHN