

PSIET, KARANDA, DHENKANAL

LESSON PLAN

Session (2022-2023)

Discipline: Mechanical	Semester: 5 th , Winter/2022	Name of the Teaching Faculty: Alok Kumar Naik, Lecturer
Subject: Hydraulic Machine & Industrial Fluid Power, Theory-3	No. of Days/Week: 04	Start Date: 15/09/2022 End Date: 21/01/2023

Week	Class Day	Theory/Practical Topics
1st	1st	Introduction to hydraulic machine. What is hydraulic turbine? How hydraulic turbine works?
	2nd	Classification of hydraulic turbine.
	3rd	Construction and working principle of impulse turbine (Pelton wheel)
	4th	Velocity diagram of moving blades, work done and efficiencies of Pelton turbine
2nd	1st	Numerical for Pelton turbine
	2nd	Construction and working principle of Francis turbine
	3rd	Velocity diagram of moving blades, work done and efficiencies of Francis turbine
	4th	Numerical for Francis turbine
3rd	1st	Construction and working principle of Kaplan turbine
	2nd	Velocity diagram of moving blades, work done and efficiencies of Kaplan turbine
	3rd	Numerical for Kaplan turbine
	4th	Difference between Impulse and Reaction turbine, Draft tube
4th	1st	<i>Doubt Clearing class</i>
	2nd	<i>Assignment Evaluation & Class Test</i>
	3rd	What is Centrifugal pump? Construction and working principle of centrifugal pump.
	4th	Velocity diagram of moving blades, work done and efficiencies of Centrifugal pump
5th	1st	Numerical for Centrifugal pump
	2nd	<i>Doubt Clearing class</i>
	3rd	<i>QUIZ Test-1</i>
	4th	Reciprocating pump: Classification, application & working Principle

6th	1st	Construction and working principle of single acting and double acting reciprocating pump.
	2nd	Determination of discharge and Power required for the pump (single & double acting). Define Slip, positive and negative slip, Relation between slip and coefficient of discharge
	3rd	Numerical on above
	4th	<i>Doubt Clearing class</i>
7th	1st	<i>Assignment Evaluation & Class Test</i>
	2nd	Introduction to Pneumatic system, Application
	3rd	Elements of Pneumatic system: Air Filter, Air regulator and Air lubricator
	4th	Pressure control valves
8th	1st	Direction control valves
	2nd	Flow control valves, Throttle valves
	3rd	ISO symbols for pneumatic circuits, Pneumatic circuit
	4th	Pneumatic circuit – Control of single acting cylinder
9th	1st	Pneumatic circuit – Operation of double acting cylinder
	2nd	Operation of double acting cylinder with Metering in and Metering out control
	3rd	<i>Doubt Clearing class</i>
	4th	<i>Assignment Evaluation & Class Test</i>
10th	1st	<i>QUIZ Test-2</i>
	2nd	Hydraulic system, its merit and demerit
	3rd	Hydraulic Accumulators, Pressure control valve, Relief valve, Regulation valve
	4th	Direction control valve: 3/2 DCV, 5/2 DCV, 5/3 DCV
11th	1st	Flow control valves, Throttle valves
	2nd	Gear Pumps – Working principle and their uses. External and Internal gear pumps.
	3rd	Vane pump – Working principle and uses
	4th	Radial piston pump – Working principle and uses
12th	1st	ISO symbols for hydraulic components
	2nd	Actuators: Function, types, Working of Actuators
	3rd	Hydraulic circuit – Control of single acting cylinder
	4th	Hydraulic circuit – Operation of double acting cylinder
13th	1st	Operation of double acting cylinder with Metering in and Metering out control
	2nd	Comparison of hydraulic and pneumatic system
	3rd	<i>Doubt Clearing class</i>
	4th	<i>Assignment Evaluation & Class Test</i>

14 th	1st	Revision: Chapter-1
	2nd	Revision: Chapter-2
	3rd	Revision: Chapter-3
	4th	Revision: Chapter-4
15 th	1st	Revision: Chapter-5
	2nd	<i>Doubt Clearing class</i>
	3rd	<i>Doubt Clearing class</i>
	4th	<i>Doubt Clearing class</i>

Alok Kumar Nisik
Signature of the faculty


Signature of the Principal