LESSON PLAN

SUBJECT-HYDRAULICS MACHINE AND INSUSTRIAL FLUID POWER

SUBJECT CODE- TH 03

SEM-5TH

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OBJECTIVE-

At the end of the course the students will be able to
1.Distinguish the working principle of pumps and turbines
2.Explain the working of centrifugal pumps and gear pumps.
3.Compare pneumatic system with hydraulic system.
4.Draw pneumatic circuits for industrial application.
5.State the properties of hydraulic system.
6.Develop hydraulic circuit for machine tool operation.

TOPIC	NO OF CLASSES
1.1 Definition and classification of hydraulic turbines	02
1.2 Construction and working principle of impulse turbine.	02
1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.	03
1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.	03
1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine	03
1.6 Numerical on above	02
	01

1.7 Distinguish between impulse turbine and reaction turbine. 2.1 Construction and working principle of centrifugal pumps	01
2.2 work done and derivation of various efficiencies of centrifugal pumps.	03
2.3 Numerical on above	01
3.1 Describe construction & working of single acting reciprocating pump.	01
3.2 Describe construction & working of double acting reciprocating pump.	01
3.3 Derive the formula foe power required to drive the pump (Single acting & double acting)	01
3.5 Define slip.	01
3.5 State positive & negative slip & establish relation between slip & coefficient of discharge.	01
3.6 Solve numerical on above	01
4.1Elements –filter-regulator-lubrication unit	01
4.2.1 Pressure relief valves	04
4.2.2 Pressure regulation valves	02
4.3.1 3/2DCV,5/2 DCV,5/3DCV	03
4.3.2 Flow control valves	03
4.3.3. Throttle valves	01
4.4 ISO Symbols of pneumatic components	01
4 .5.1 Direct control of single acting cylinder	01
4.5.2 Operation of double acting cylinder	01
4.5.3 Operation of double acting cylinder with metering in and metering out control	03
5.1 Hydraulic system, its merit and demerits	01
5.2 Hydraulic accumulators	01
5.3.1 Pressure control valves	02
5. 3.2 Pressure relief valves	01
5.3.3 Pressure regulation valves	02
5.3.1 3/2DCV,5/2 DCV,5/3DCV	03
5.3.2 Flow control valves	01
5.3.3 Throttle valves	01

5.4.1 External and internal gear pumps	01
5.4.2 Vane pump	01
5.4.3 Radial piston pumps	01
5.5 ISO Symbols for hydraulic components.	01
5.6 Actuators	01
5.7.1 Direct control of single acting cylinder	01
5.7.2 Operation of double acting cylinder	01
5.7.3 Operation of double acting cylinder with metering in and metering out control	01
5.8 Comparison of hydraulic and pneumatic system	01