

Lesson Plan for HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER, 5th Sem. Mechanical Engg. (2021-2022)

Discipline: Mechanical Engg

Semester: 5th

Name of the Teaching Faculty: SRITAM ROUT

Subject: HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER

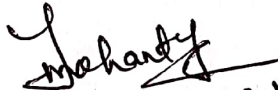
No. of Days/ week class allotted=4

Semester From Date: 1.10.2021

To date : 18.1.2022

| WEEK | PERIOD | TOPICS TO BE COVERED |
|------|--------|-----------------------------------------------------------------------|
| 01 | 01 | Definition of hydraulic turbines |
| | 02 | classification of hydraulic turbines |
| | 03 | Construction and working principle of impulse turbine |
| | 04 | Construction and working principle of impulse turbine |
| 02 | 01 | Velocity diagram of moving blades of impulse turbine. |
| | 02 | work done and derivation of various efficiencies of impulse turbine |
| | 03 | Simple problem on above |
| | 04 | Velocity diagram of Francis turbine |
| 03 | 01 | work done and derivation of various efficiencies of Francis turbine |
| | 02 | Simple problem on above |
| | 03 | Velocity diagram of kaplan turbine |
| | 04 | work done and derivation of various efficiencies of kaplan turbine |
| 04 | 01 | Simple problem on above |
| | 02 | Distinguish between impulse turbine and reaction turbine. |
| | 03 | Distinguish between impulse turbine and reaction turbine. |
| | 04 | Introduction to centrifugal pump |
| 05 | 01 | Construction and working principle of centrifugal pumps |
| | 02 | work done and derivation of various efficiencies of centrifugal pumps |
| | 03 | Numerical on above |
| | 04 | Numerical on above |
| 06 | 01 | construction; working of single and double acting reciprocating pump. |
| | 02 | Derive the formula fluid power required to drive the pump |
| | 03 | Define slip, State positive and negative slip |
| | 04 | relation between slip & coefficient of discharge. |
| 07 | 01 | Solve numerical on above |
| | 02 | Elements –filter-regulator-lubrication unit |
| | 03 | Pressure control valves |
| | 04 | Pressure relief valves |
| 08 | 01 | Pressure regulation valves |
| | 02 | Direction control valves |
| | 03 | UNIT TEST-I |
| | 04 | 3/2DCV,5/2 DCV,5/3DCV |
| 09 | 01 | Flow control valves |
| | 02 | Throttle valves |
| | 03 | ISO Symbols of pneumatic components |
| | 04 | Pneumatic circuits |

| | | |
|----|----|---------------------------------------------------------------|
| 10 | 01 | Direct control of single acting cylinder |
| | 02 | Operation of double acting cylinder |
| | 03 | Operation of double acting cylinder with metering in control |
| | 04 | Operation of double acting cylinder with metering out control |
| 11 | 01 | Hydraulic system, its merit and demerits |
| | 02 | Hydraulic accumulators |
| | 03 | Pressure control valves |
| | 04 | Pressure relief valves |
| 12 | 01 | Pressure regulation valves |
| | 02 | Direction control valves |
| | 03 | 3/2DCV, 5/2 DCV, 5/3DCV |
| | 04 | Flow control valves |
| 13 | 01 | Throttle valves |
| | 02 | Fluid power pumps |
| | 03 | External and internal gear pumps |
| | 04 | Vane pump |
| 14 | 01 | Radial piston pumps |
| | 02 | ISO Symbols for hydraulic components. |
| | 04 | Actuators |
| | 05 | Direct control of single acting cylinder |
| 15 | 01 | Operation of double acting cylinder |
| | 02 | hydraulic metering in circuit |
| | 03 | hydraulic metering out circuit |
| | | |


 1.10.21
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