

# Lesson plan winter 2021

Discipline :Mechanical engineering.	Semester:5 <sup>th</sup>	Name of the Teaching Faculty :Mrutunjaya Jena.
Subject: HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER.	No of Days /Per week class allotted	Semester from date 01.08.2021 to 31.01.2022 No of week:15
Week	Class day	Theory/Practical topics
1st	1st	<b>UNIT -01 HYDRAULIC TURBINES.</b> 1.1 Definition and classification of hydraulic turbines.
	2nd	1.2 Construction and working principle of impulse turbine.
	3rd	1.3 Velocity diagram of moving blades of impulse turbine.
	4th	1.3 Simple numerical solve on above.
2nd	1st	<b>PUJA VACATION</b>
	2nd	
	3rd	
	4th	
3rd	1st	1.3 Velocity diagram of work done and derivation of various efficiencies of impulse turbine.
	2nd	1.3 Simple numerical solve on above.
	3rd	1.4 Velocity diagram of moving blades, work done of Francis turbine.
	4th	1.4 Simple numerical solve on above.
4th	1st	1.4 work done and derivation of various efficiencies of Francis turbine.
	2nd	1.4 Simple numerical solve on above.
	3rd	1.5 Velocity diagram of moving blades, work done Kaplan turbine.
	4th	1.5 Simple numerical solve on above.
5th	1st	1.5 derivation of various efficiencies of Kaplan turbine.
	2nd	1.5 Simple problems on above.
	3rd	1.7 Distinguish between impulse turbine and reaction turbine.
	4th	<b>UNIT -02 CENTRIFUGAL PUMPS.</b> 2.1 Construction and working principle of centrifugal pumps
5th	1st	2.2 work done Calculation.
	2nd	2.3 Numerical on above.
	3rd	2.4 derivation of various efficiencies of centrifugal pumps
	4th	2.4 Simple problems on above.



7th	1st	<b>UNIT 03-RECIPROCATING PUMPS.</b> 3.1 Describe construction & working of single acting reciprocating pump.
	2nd	3.3 Simple problems on above.
	3rd	3.2 Describe construction & working of double acting reciprocating pump.
	4th	3.3 Derive the formula foe power required to drive the pump Single acting.
8th	1st	3.3 Solve numerical on above
	2nd	3.3 Derive the formula foe power required to drive the pump double acting.
	3rd	3.4 Define slip.Calculation of slip.
	4th	3.5 State positive & negative slip .
9th	1st	3.5 establish relation between slip & coefficient of Discharge.
	2nd	3.6 Solve numerical on above.
	3rd	<b>UNIT -04 PNEUMATIC SYSTEM.</b>
	4th	4.1Elements –filter-regulator-lubrication unit.
10th	1st	4.2 Pressure control valves.
	2nd	4.2.1 Pressure relief valves & Pressure regulation valves.
	3rd	4.3 Direction control valves.
	4th	4.3.1 3/2DCV,5/2 DCV,5/3DCV 4.3.2 Flow control valves 4.3.3. Throttle valves.
11th	1st	4.4 ISO Symbols of pneumatic components.
	2nd	4.5. Pneumatic circuits. <b>Direct control of single acting cylinder</b>
	3rd	4.5.2 Operation of double acting cylinder
	4th	4.5.3 Operation of double acting cylinder with metering in and metering out control.
12th	1st	<b>UNIT 5 HYDRAULIC SYSTEM.</b>
	2nd	5.1 Hydraulic system, its merit and demerits.
	3rd	5.2 Hydraulic accumulators.
	4th	5.3.1 Pressure control valves 5.3.2 Pressure relief valves.
13th	1st	5.3.3 Pressure regulation valves.
	2nd	5.3 Direction control valves.
	3rd	5.3.1 3/2DCV,5/2 DCV,5/3DCV & Flow control valves.
	4th	5.3.3 Throttle valves.
14th	1st	5.4 Fluid power pumps
	2nd	5.4.1 External and internal gear pumps.
	3rd	5.4.2 Vane pump.
	4th	5.4.3 Radial piston pumps.

15th	1st	5.5 ISO Symbols for hydraulic components.
	2nd	5.6 Actuators.
	3rd	5.7 Hydraulic circuits.
	4th	5.7.1 Direct control of single acting cylinder.
16th	1st	5.7.2 Operation of double acting cylinder.
	2nd	5.7.2 Numerical on it
	3rd	5.7.3 Operation of double acting cylinder with metering in and metering out control.
	4th	5.8 Comparison of hydraulic and pneumatic system.

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