

<b>Discipline:</b> Mechanical Engineering	<b>Semester :</b> 5th Semester-2020-21	<b>Name of the Teaching Faculty:</b> Shri. SHEKHAR KUMAR SAHU, PTGF in Mechanical Engineering
<b>Subject:</b> HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER	<b>No. of Days/week</b> <b>Class Allotted:60</b>	<b>Semester from date: 01/09 / 2020 to date: 19/03/2021</b> <b>No. of weeks: 18</b>
<b>week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1st	1st	Definition and classification of hydraulic turbines
	2nd	Construction and working principle of impulse turbine.
	3rd	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
	4th	Numerical on Pelton wheel
2nd	1st	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	2nd	Numerical on Francis Turbine
	3rd	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	4th	Numerical on Kaplon Turbine
3rd	1st	Distinguish between impulse turbine and reaction turbine
	2nd	Construction and working principle of centrifugal pumps
	3rd	Work done and derivation of various efficiencies of centrifugal pumps.
	4th	Numerical on Centrifugal Pumps
4th	1st	Numerical on Centrifugal Pumps
	2nd	Numerical on Centrifugal Pumps
	3rd	Describe construction & working of single acting reciprocating pump.
	4th	Describe construction & working of double acting reciprocating pump.
5th	1st	Derive the formula foe power required to drive the pump (Single acting & double acting)
	2nd	Define slip.
	3rd	State positive & negative slip & establish relation between slip & coefficient of discharge.
	4th	Solve numerical on above
6th	1st	Elements -filter-regulator-lubrication unit
	2nd	Pressure control valves
	3rd	Pressure relief valves
	4th	Pressure regulation valves
7th	1st	Direction control valves
	2nd	3/2DCV,5/2 DCV,5/3DCV
	3rd	Flow control valves

	4 <sup>th</sup>	Throttle valves
8 <sup>th</sup>	1 <sup>st</sup>	ISO Symbols of pneumatic components
	2 <sup>nd</sup>	Pneumatic circuits : Direct control of single acting cylinder
	3 <sup>rd</sup>	Operation of double acting cylinder
	4 <sup>th</sup>	Operation of double acting cylinder with metering in and metering out control
9 <sup>th</sup>	1 <sup>st</sup>	Hydraulic system, its merit and demerits
	2 <sup>nd</sup>	Hydraulic accumulators: Pressure control valves
	3 <sup>rd</sup>	Pressure relief valves
	4 <sup>th</sup>	Pressure regulation valves
10 <sup>th</sup>	1 <sup>st</sup>	3/2DCV,5/2 DCV,5/3DCV
	2 <sup>nd</sup>	Flow control valves
	3 <sup>rd</sup>	Throttle valves
	4 <sup>th</sup>	External and internal gear pumps
11 <sup>th</sup>	1 <sup>st</sup>	Vane pump
	2 <sup>nd</sup>	Radial piston pumps
	3 <sup>rd</sup>	ISO Symbols for hydraulic components.
	4 <sup>th</sup>	Actuators
12 <sup>th</sup>	1 <sup>st</sup>	Direct control of single acting cylinder
	2 <sup>nd</sup>	Operation of double acting cylinder
	3 <sup>rd</sup>	Operation of double acting cylinder with metering in and metering out control
	4 <sup>th</sup>	Comparison of hydraulic and pneumatic system
13 <sup>th</sup>	1 <sup>st</sup>	Revision 1.1 to 1.3
	2 <sup>nd</sup>	Revision 1.4
	3 <sup>rd</sup>	Revision 1.5
	4 <sup>th</sup>	Revision 1.7
14 <sup>th</sup>	1 <sup>st</sup>	Revision 1.5
	2 <sup>nd</sup>	Revision 2.1
	3 <sup>rd</sup>	Revision 2.2
	4 <sup>th</sup>	Revision 2.3
15 <sup>th</sup>	1 <sup>st</sup>	Revision 3.1 to 3.3
	2 <sup>nd</sup>	Revision 3.3 to 3.6
	3 <sup>rd</sup>	Revision 4.1 to 4.3
	4 <sup>th</sup>	Revision 4.4 to 4.5
16 <sup>th</sup>	1 <sup>st</sup>	Revision 5.1 to 5.3

17 <sup>th</sup>	1 <sup>st</sup>	Revision 5.4 to 5.6	
	2 <sup>nd</sup>	Revision 5.7 to 5.8	
	3 <sup>rd</sup>	Model test 1	
	4 <sup>th</sup>	Model test 2	
18 <sup>th</sup>	1 <sup>st</sup>	Model test 3	
	2 <sup>nd</sup>	Model test 4	
	3 <sup>rd</sup>	Model test 5	
	4 <sup>th</sup>	Model test 6	

