

## IDEAL SCHOOL OF ENGG. BBSR, KHURDHA

5<sup>th</sup> SEMESTER MECHANICAL ENGINEERING(2022-23)

SUBJECT- HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER

TOTAL PERIOD60:  
THEORY-4P/WEEK

NAME OF FACULTY:Er.Marshal Marandi(Lect. In. Mech)

Sl No.	week	Day	Topics to be covered
1	1 <sup>st</sup>	1 <sup>st</sup> day	Definition and classification of hydraulic turbines
		2 <sup>nd</sup> day	Construction and working principle of impulse turbine
		3 <sup>rd</sup> day	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine
		4 <sup>th</sup> day	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine
Sl No.	week	Day	Topics to be covered
2	2 <sup>nd</sup>	1 <sup>st</sup> day	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
		2 <sup>nd</sup> day	Distinguish between impulse turbine and reaction turbine.
		3 <sup>rd</sup> day	Numerical on above
		4 <sup>th</sup> day	Construction and working principle of centrifugal pumps
Sl No.	week	Day	Topics to be covered
3	3 <sup>rd</sup>	1 <sup>st</sup> day	Work done and derivation of various efficiencies of centrifugal pumps.
		2 <sup>nd</sup> day	Describe construction & working of single acting reciprocating pump.
		3 <sup>rd</sup> day	Describe construction & working of double acting reciprocating pump
		4 <sup>th</sup> day	Derive the formula for power required to drive the pump (Single acting & double acting)
Sl No.	week	Day	Topics to be covered
4	4 <sup>th</sup>	1 <sup>st</sup> day	Define slip. State positive & negative slip & establish relation between slip & coefficient of discharge.
		2 <sup>nd</sup> day	Numerical on above
		3 <sup>rd</sup> day	Elements –filter-regulator-lubrication unit of Pneumatic Control System
		4 <sup>th</sup> day	Pressure control valves
Sl No.	week	Day	Topics to be covered
5	5 <sup>th</sup>	1 <sup>st</sup> day	Pressure relief valves
		2 <sup>nd</sup> day	Pressure regulation valves
		3 <sup>rd</sup> day	Direction control valves and 3/2DCV,5/2 DCV,5/3DCV
		4 <sup>th</sup> day	Flow control valves
Sl No.	week	Day	Topics to be covered
6	6 <sup>th</sup>	1 <sup>st</sup> day	Throttle valves
		2 <sup>nd</sup> day	ISO Symbols of pneumatic components
		3 <sup>rd</sup> day	Direct control of single acting cylinder of Pneumatic circuits
		4 <sup>th</sup> day	Direct control of single acting cylinder of Pneumatic circuits

<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
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7	7 <sup>th</sup>	1 <sup>st</sup> day	Operation of double acting cylinder
		2 <sup>nd</sup> day	Operation of double acting cylinder with metering in and metering out control
		3 <sup>rd</sup> day	Comparison of hydraulic and pneumatic system
		4 <sup>th</sup> day	Comparison of hydraulic and pneumatic system
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
8	8 <sup>th</sup>	1 <sup>st</sup> day	Direction control valves and 3/2DCV,5/2 DCV,5/3DCV
		2 <sup>nd</sup> day	Numericals on Impulse turbine
		3 <sup>rd</sup> day	Numericals on Francis turbine
		4 <sup>th</sup> day	Numericals on Kaplan turbine
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
9	9 <sup>th</sup>	1 <sup>st</sup> day	Numericals on Centrifugal pump
		2 <sup>nd</sup> day	Numericals on Reciprocating pump(Single acting Reciprocating pump)
		3 <sup>rd</sup> day	Numericals on Reciprocating pump(Double acting Reciprocating pump)
		4 <sup>th</sup> day	Numericals on Centrifugal pump
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
10	10 <sup>th</sup>	1 <sup>st</sup> day	Numericals on Centrifugal pump
		2 <sup>nd</sup> day	Numericals on Reciprocating pump(Single acting Reciprocating pump)
		3 <sup>rd</sup> day	Numericals on Reciprocating pump(Double acting Reciprocating pump)
		4 <sup>th</sup> day	Numericals on Centrifugal pump
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
11	11 <sup>th</sup>	1 <sup>st</sup> day	Numericals on Impulse turbine
		2 <sup>nd</sup> day	Numericals on Francis turbine
		3 <sup>rd</sup> day	Numericals on Kaplan turbine
		4 <sup>th</sup> day	Numericals on Kaplan turbine
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
12	12 <sup>th</sup>	1 <sup>st</sup> day	Numericals on Impulse turbine
		2 <sup>nd</sup> day	Numericals on Francis turbine
		3 <sup>rd</sup> day	Numericals on Kaplan turbine
		4 <sup>th</sup> day	
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
13	13 <sup>th</sup>	1 <sup>st</sup> day	Doubt clearance and Revision
		2 <sup>nd</sup> day	Doubt clearance and Revision
		3 <sup>rd</sup> day	Doubt clearance and Revision

		4 <sup>th</sup> day	Doubt clearance and Revision
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
14	14 <sup>th</sup>	1 <sup>st</sup> day	Numerical Problem solving
		2 <sup>nd</sup> day	Numerical Problem solving
		3 <sup>rd</sup> day	Numerical Problem solving
		4 <sup>th</sup> day	Numerical Problem solving
<b>Sl No.</b>	<b>week</b>	<b>Day</b>	<b>Topics to be covered</b>
15	15 <sup>th</sup>	1 <sup>st</sup> day	Doubt clearance and Revision
		2 <sup>nd</sup> day	Doubt clearance and Revision
		3 <sup>rd</sup> day	Doubt clearance and Revision
		4 <sup>th</sup> day	Doubt clearance and Revision