BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT- HYDRAULIC MACHINES AND INDUSTRIAL FLUID POWER

FACULTY: MRS SUNITA SAMAL

ACCADEMIC SESSION: 2023-24

SEMESTER: 5TH

SEC: B

Sd/- 31/07/23
H O D (Mech.Engg.)

Senior Lecturer
Mechanical Engg. Dept.
BOSE, Cuttack

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DISCIPLINE: MECHANICAL ENGINEERING	SEMESTER: 5TH (B)		NAME OF THE TEACHING FACULTY: MRS SUNITA SAMAL
SUBJECT: HYDRAULIC MACHINES AND INDUSTRIAL FLUID POWER	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04 PERIODS PER WEEK (Tues-1 period , Wed-1 period,Thu-1 period, Fri-1 period)		SEMESTER FROM DATE: 01-08-2023 TO DATE: 30-11-2023 NO. OF WEEKS: 17WEEKS
WEEK	**CLASS DAY**	**NO OF PERIOD AVAILABLE**	**THEORY TOPICS**
1ST(4)	01/08/23	1	Introduction , Syllabus Discussion
	02/08/23	1	1.1 Definition and classification of hydraulic turbines
	03/08/23	1	1.2 Construction and working principle of impulse turbine
	04/08/23	1	1.2 Construction and working principle of impulse turbine.
2ND(4)	08/08/23	1	1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
	09/08/23	1	1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
	10/08/23	1	1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	11/08/23	1	1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
3RD(3)	16/08/23	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	17/08/23	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	18/08/23	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine

4TH(4)	22/08/23	1	1.6 Numerical on above
	23/08/23	1	1.6 Numerical on above
	24/08/23	1	1.6 Numerical on above
	25/08/23	1	1.7 Distinguish between impulse turbine and reaction turbine.
5TH(3)	29/08/23	1	**2.0 CENTRIFUGAL PUMPS** 2.1 Construction and working principle of centrifugal pumps
	31/08/23	1	2.1 Construction and working principle of centrifugal pumps
	01/09/23	1	2.2 work done and derivation of various efficiencies of centrifugal pumps.
6TH(3)	05/09/23	1	2.2 work done and derivation of various efficiencies of centrifugal pumps.
	07/09/23	1	2.3 Numerical on above
	08/09/23	1	2.3 Numerical on above
7TH(4)	12/09/23	1	**CLASS TEST-1**
	13/09/23	1	**3.0 RECIPROCATING PUMPS** 3.1 Describe construction & working of single acting reciprocating pump.
	14/09/23	1	3.2 Describe construction & working of double acting reciprocating pump.
	15/09/23	1	3.3 Derive the formula foe power required to drive the pump (Single acting & double acting)
8TH(2)	21/09/23	1	3.5 Define slip. 3.5 State positive & negative slip & establish relation between slip & coefficient of discharge.
	22/09/23	1	3.6 Solve numerical on above
9TH(3)	26/09/23	1	**4.0 PNEUMATIC CONTROL SYSTEM** 4.1Elements –filter-regulator-lubrication unit
	27/09/23	1	4.2 Pressure control valves 4.2.1 Pressure relief valves
	28/09/23	1	4.2.2 Pressure regulation valves

10TH(4)	03/10/23	1	4.3 Direction control valves 4.3.1 3/2DCV,5/2 DCV,5/3DCV
	04/10/23	1	4.3.2 Flow control valves
	05/10/23	1	4.3.3. Throttle valves
	06/10/23	1	4.4 ISO Symbols of pneumatic components
11TH(4)	10/10/23	1	4.5. Pneumatic circuits 4 .5.1 Direct control of single acting cylinder
	11/10/23	1	**INTERNAL ASSESSMENT**
	12/10/23	1	4.5.2 Operation of double acting cylinder
	13/10/23	1	4.5.3 Operation of double acting cylinder with metering in and metering out control
12TH(4)	17/10/23	1	4.5.3 Operation of double acting cylinder with metering in and metering out control
	18/10/23	1	**5.0 HYDRAULIC CONTROL SYSTEM** 5.1 Hydraulic system, its merit and demerits
	19/10/23	1	5.2 Hydraulic accumulators 5.2.1 Pressure control valves
	20/10/23	1	5. 2.2 Pressure relief valves
13TH(4)	31/10/23	1	5.2.3 Pressure regulation valves
	01/11/23	1	5.3 Direction control valves 5.3.1 3/2DCV,5/2 DCV,5/3DCV
	02/11/23	1	5.3.2 Flow control valves
	03/11/23	1	5.3.3 Throttle valves
14TH(4)	07/11/23	1	5.4 Fluid power pumps 5.4.1 External and internal gear pumps
	08/11/23	1	5.4.2 Vane pump
	09/11/23	1	5.4.3 Radial piston pumps
	10/11/23	1	5.5 ISO Symbols for hydraulic components.

15TH(4)	14/11/23	1	5.6 Actuators
	15/11/23	1	5.7 Hydraulic circuits 5.7.1 Direct control of single acting cylinder
	16/11/23	1	5.7.2 Operation of double acting cylinder
	17/11/23	1	5.7.3 Operation of double acting cylinder with metering in and metering out control
16TH(4)	21/11/23	1	5.7.3 Operation of double acting cylinder with metering in and metering out control
	22/11/23	1	5.8 Comparison of hydraulic and pneumatic system
	23/11/23	1	Revision
	24/11/23	1	CLASS TEST-2
17TH(3)	28/11/23	1	Revision
	29/11/23	1	Revision
	30/11/23	1	Previous year question discussion

Closing of attendance shifted from 30th NOV 2023 to 04th Dec 2023

[redacted]	01/12/23		Previous Year question discussion
18th(4)	05/12/23		Possible question/Answer discussion
	06/12/23		— do —
	07/12/23		— do —
	08/12/23		— do —