

**Badriprasad Institute of Technology, Sambalpur**

**Lesson plan for Theory -3,Element Of Mechanical Engineering**

**Semester & Branch : 3rd Sem , Electrical Engineering**

**Total Periods-60**

**Name of the faculty : Nitesh Jha**

**No of periods /week-4**

<b>Week</b>	<b>Class Days</b>	<b>Theory /Practical Topics</b>
1	1	Thermodynamics, thermodynamic system, heat and work and unit of heat and work
	2	1st law of thermodynamics
	3	Laws of perfect gases; Boyle's law, Charles' law and Gay-Lussac law
	4	Specific heat of gases, Specific heat of gases at constant volume and specific heat of gases at constant pressure
2	1	Relationship of specific heat of gases at constant volume and constant pressure
	2	Numerical problems based on Boyle's law and Charles' law and 1st law of thermodynamics
	3	Steam and definition of steam table
	4	uses of steam table, Numerical problem based on steam table
3	1	Total heat, latent heat of steam
	2	Types of steams, wet steams, dry steams and superheated steam
	3	Total heat of wet, dry and superheated steam
	4	Numerical on above topic
4	1	Definition of Boilers
	2	Different parts of Boiler, Types of Boilers
	3	Cochran boiler
	4	application, advantages and disadvantages of Cochran boiler
5	1	Babcock Wilcox boiler
	2	application, advantages and disadvantages of Babcock Wilcox boiler
	3	Boiler Mountings and Accessories, Water level indicator, Pressure gauge
	4	Safety valves Stop valve Blow off cock Feed check valve and Fusible plug
6	1	<b>Class test</b>
	2	Steam engines, definition and working principle of simple steam engine
	3	Important Parts of a Steam Engine
	4	Important Terms used in Steam Engines
7	1	Indicator Diagram of a Simple Steam Engine
	2	Mean effective pressure, IHP, BHP AND Mechanical efficiency...continue
	3	Numerical of mean effective pressure
	4	Numerical questions answers
8	1	Steam turbines
	2	advantages of steam turbines
	3	classifications of steam turbines
	4	Impulse turbine

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9	1	Reaction turbine
	2	Differentiate between Impulse and Reaction turbines
	3	<b>Class test</b>
	4	Condenser, advantages of condenser
10	1	functions of condenser, types of condensers
	2	Jet condenser or mixing type condenser and its types
	3	Surface condenser or non-mixing type condenser and its types
	4	I.C. Engine and its classifications, Difference between two stroke and four stroke cycle engine.
11	1	Working of two stroke engine; Petrol and Diesel...continue
	2	Working of two stroke diesel engine, working of four stroke engine; Petrol and Diesel...continue
	3	working of four stroke diesel engine, comparison of Petrol and Diesel engines.
	4	Hydrostatics, properties of Fluid, mass density
12	1	Specific weight, specific volume, specific gravity
	2	Pressure, Absolute, gauge and differential pressures, determining pressure at a point
	3	Pressure measuring instruments, pressure gauges or vacuum gauges
	4	Types of manometer: Simple manometer, U-tube manometer and Differential manometer
13	1	Hydrokinetics, mechanical behavior and properties of fluids in motion... continue
	2	mechanical behavior and properties of fluids in motion, Streamlines and Streamtubes
	3	Continuity Equation
	4	Various energies of fluid or liquid ( pressure energy, kinetic energy and potential energy), total energy.
14	1	Bernoulli's theorem and equation and its explanation.
	2	Hydraulic devices and Pneumatics: Hydraulic intensifier
	3	Hydraulic ram
	4	Hydraulic Accumulator, Hydraulic Lift and its classifications...continue
15	1	Direct Acting Hydraulic Lift
	2	Suspended Hydraulic Lift
	3	Revision and doubt clearing
	4	<b>Class test</b>

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