LESSON PLAN: 2025-26(W)

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Miss. Tapati Panigrahy
Subject : REFRIGERATION AND AIR CONDITIONING	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 14.07.2025 To Date : 15.11.2025 No.of Weeks : 18 W.e.f:04/08/2025(15 weeks)
Weeks	Class day	Theory
1st	1st	Definition of refrigeration and unit of refrigeration.
	2nd	Definition of COP, Refrigerating effect (R.E)
	3rd	Definition of COP, Refrigerating effect (R.E)
	4th	Principle of working of open and closed air system of refrigeration.
2nd	1st	Principle of working of open and closed air system of refrigeration.
	2nd	Calculation of COP of Bell-Coleman cycle and numerical on it.
	3rd	schematic diagram of simple vapors compression refrigeration system'
	4th	schematic diagram of simple vapors compression refrigeration system'
3rd	1st	Cycle with dry saturated vapors after compression.
	2nd	Cycle with wet vapors after compression.
	3rd	Cycle with superheated vapors after compression.
	4th	Cycle with superheated vapors before compression.
4th	1st	Cycle with sub cooling of refrigerant
	2nd	Representation of above cycle on temperature entropy and pressure enthalpy diagram
	3rd	Representation of above cycle on temperature entropy and pressure enthalpy diagram
	4th	Numerical on above (determination of COP,mass flow)
5th	1st	Simple vapor absorption refrigeration system
	2nd	Practical vapor absorption refrigeration system
	3rd	COP of an ideal vapor absorption refrigeration system
	4th	Numerical on COP.
6th	1st	Numerical on COP.
	2nd	Principle of working and constructional details of reciprocating and rotary compressors.
	3rd	Centrifugal compressor only theory
	4th	Important terms.
7th	1st	Hermetically and semi hermetically sealed compressor.
	2nd	Principle of working and constructional details of air cooled and water cooled condenser
	3rd	Heat rejection ratio.
	4th	Cooling tower and spray pond.
8th	1st	Principle of working and constructional details of an evaporator.
	2nd	Types of evaporator.
	3rd	Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	4th	Automatic expansion valve
9th	1st	Thermostatic expansion valve
	2nd	Classification of refrigerants
	3rd	Desirable properties of an ideal refrigerant.
	4th	Designation of refrigerant.

10th	1st	Thermodynamic Properties of Refrigerants.
	2nd	Chemical properties of refrigerants.
	3rd	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	4th	Substitute for CFC
11th	1st	cold storage,dairy refrigeration
	2nd	ice plant, water cooler
	3rd	frost free refrigerator
	4th	Psychometric terms
12th	1st	Adiabatic saturation of air by evaporation of water
	2nd	Psychometric chart and uses.
	3rd	Psychometric processes
	4th	Sensible heating and Cooling
13th	1st	Cooling and Dehumidification
	2nd	Heating and Humidification
	3rd	Adiabatic cooling with humidification
	4th	Total heating of a cooling process
14th	1st	SHF, BPF,
	2nd	Adiabatic mixing
	3rd	Problems on above.
	4th	Effective temperature and Comfort chart
15th	1st	Factors affecting comfort air conditioning. .
	2nd	Equipment used in an air-conditioning.
	3rd	Classification of air-conditioning system
	4th	Winter Air Conditioning System, Summer Air Conditioning

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LESSON PLAN 2025-26(W)		
Discipline : Mechanical Engg.	**Semester : 3rd**	**Name of the Teachnig Faculty : Miss Tapati Panigrahy**
Subject:Strength Of Material	**No.of days/Per weeks Class Alloted Weeks :3**	**Semester from date : 14.07.2025 To Date : 15.11.2025** **No.of Weeks : 18 W.e.f:04/08/2025(15 weeks)**
Weeks	**Class day**	**Theory**
1st	**1st**	**CH.1 Simple Stresses and Strains:** Types of forces
	2nd	Stress, Strain and their nature
	3rd	Mechanical properties of common engineering materials
2nd	**1st**	Significance of various points on stress – strain diagram for M.S. specimens
	2nd	Significance of various points on stress – strain diagram for C.I. specimens
	3rd	Significance of factor of safety
3rd	**1st**	Elastic constants. Relation between elastic constants
	2nd	Stress and strain values in bodies of uniform section under the influence of normal forces
	3rd	Stress and strain values in bodies of of composite section under the influence of normal forces
4th	**1st**	Thermal stresses in bodies of uniform section& composite sections
	2nd	Related numerical problems on the above topics.
	3rd	**Strain Energy:** Strain energy or resilience, proof resilience and modulus of resilience; Derivation of Strain energy for the Gradually applied load,
5th	**1st**	Derivation of Strain energy for the Suddenly applied load , Impact/ shock load
	2nd	Related numerical problems
	3rd	**CH.2 Shear Force & Bending Moment Diagrams:** Types of beams with examples: a)Cantilever beam, b)Simply supported beam, c)Overhanging beam, d)Continuous beam, e) Fixed beam; Types of Loads – Point load, UDL and UVL
6th	**1st**	Definition and explanation of shear force and bending
	2nd	Drawing the S.F and B.M. diagrams by the analytical method only for Cantilever with point loads and uniformly distributed load
	3rd	Drawing the S.F and B.M. diagrams by the analytical method only for Simply supported beam with point loads, UDL
7th	**1st**	Drawing the S.F and B.M. diagrams by the analytical method only for Cantilever with point loads,
	2nd	Drawing the S.F and B.M. diagrams by the analytical method Overhanging beam with point loads at the centre & at free ends,

7th	3rd	Drawing the S.F and B.M. diagrams by the analytical method Over hanging beam with UDL throughout Combination of point and UDL for the above; Related numerical problems.
8th	1st	**CH.3. Theory of Simple Bending and Deflection of Beams:** Explanation of terms: Neutral layer, Neutral Axis, Modulus of Section, Moment of Resistance, Bending stress, Radius of curvature
	2nd	Assumptions in theory of simple bending;
	3rd	Bending Equation M/I =σ/Y=E/R with derivation
9th	1st	Problems involving calculations of bending stress, modulus of section and moment of resistance; Calculation of safe loads and safe span and dimensions of cross- section
	2nd	Definition and explanation of deflection as applied to beams
	3rd	Deflection formulae without proof for cantilever and simply supported beams with point load only (Standard cases only);
10th	1st	Deflection formulae without proof for cantilever and simply
	2nd	Related numerical problems.
	3rd	**Ch iv. Torsion in Shafts and Springs:** Definition and function of shaft
11th	1st	Calculation of polar M.I. for solid shafts & hollow shafts
	2nd	Assumptions in simple torsion. Derivation of the equation
	3rd	Problems on design of shaft based on strength and rigidity
12th	1st	Numerical Problems related to comparison of strength and weight of solid and hollow shafts
	2nd	Numerical Problems related to comparison of strength and weight of solid and hollow shafts
	3rd	Classification of springs; Nomenclature of closed coil helical spring
13th	1st	Deflection formula for closed coil helical spring (without
	2nd	stiffness of spring
	3rd	Numerical problems on closed coil helical spring to find safe
14th	1st	Numerical problems on closed coil helical spring to find safe load, deflection, size of coil and number of coils.
	2nd	**Ch-V: Thin Cylindrical Shells:** Explanation of longitudinal and hoop stresses in the light of circumferential and longitudinal, failure of shell;
	3rd	Derivation of expressions for the Longitudinal and hoop stress for seamless
15th	1st	Derivation of expressions for the Longitudinal and hoop stress for seamshells
	2nd	Related numerical Problems for safe thickness and safe working pressure
	3rd	Previous year question discussion.

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LESSON PLAN 2025-26 (W)		
Discipline :Mechanical engineering	**Semester : 3rd**	**Name of the Teachnig Faculty : Ms.TAPATI PANIGRAHY**
Subject: Fluid Mechanics and Fluid Power	**No.of days/Per weeks Class Alloted Weeks :3**	**Semester from date :14.07.2025 To Date : 15.11.2025** **No.of Weeks : 18 W.e.f:04/08/2025(15 weeks)**
Weeks	**Class day**	**Theory**
1st	1st	**PROPERTIES OF A FLUID AND HYDROSTATICS**: Definition of a fluid, classification of fluids
	2nd	Various fluid properties such as density, specific weight, specific gravity
	3rd	Viscosity and surface tension and state the units, fluid pressure, total pressure (hydrostatic force)
2nd	1st	Location of centre of pressure on vertical, horizontal, inclined and curved surfaces by fluid
	2nd	
	3rd	working of various measuring devices for pressure
3rd	1st	The principle of manometers of simpledifferential and inverted types
	2nd	
	3rd	Principle of buoyancy and floatation. Simple numericals on Manometer
4th	1st	**KINEMATICS AND DYNAMICS OF FLUID MECHANICS** Various types of flow, circulation and vorticity
	2nd	stream-line, path line and streak-line, various energies of fluid,
	3rd	Law of conservation of mass, energy equation -Bernoulli's theorem, the limitations of same-application of Bernoulli's equation
5th	1st	The working of venturimeter, pitot tube
	2nd	Equation of flow rate and velocity with respect to venturimeter and pitot tube respectively
	3rd	The working of flowmeter: current meter, Simple numericals
6th	1st	**FLOW THROUGH ORIFICES AND NOTCHES, PIPES:** Definition –orifice,orifice coefficient such as Cc, Cv, Cd, Relationship between orifice coefficients
	2nd	
	3rd	Weir and notch, Discharge over rectangular notch and weir, triangular notch.Simple numericals.
7th	1st	
	2nd	Definition of a pipe. laws of fluid friction, Equation of loss of head through pipe due to friction
	3rd	Darcy's formula and Chezy's formula, hydraulic gradient and total energy line,
8th	1st	Nozzle and its application,
	2nd	Power transmission through nozzle The condition of maximum power transmission through nozzle

8th	3rd	Expression for diameter of nozzle for maximum power transmission.
9th	1st	**Turbines and Pumps:** Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available
	2nd	Construction and working principle of Pelton wheel, Francis and Kaplan turbines
	3rd	
10th	1st	Draft tubes – types and construction, Concept of cavitation in turbines,
	2nd	Calculation of Work done, Power, efficiency of turbines. Simple numericals
	3rd	Centrifugal Pumps: Principle of working and applications, Types of casings and impellers
11th	1st	Concept of multistage, Priming and its methods, Manometric head,
	2nd	Work done, Manometric efficiency, Overall efficiency. Simple numericals
	3rd	Reciprocating Pumps: Construction, working principle and applications of single and doubleacting reciprocating pumps,
12th	1st	
	2nd	Concept of Slip, Negative slip
	3rd	Cavitation and separation. Simple numericals
13th	1st	**FLUID POWER:** Definition of fluid power
	2nd	Classification – hydraulic power and pneumatic power, Hydraulic Systems
	3rd	Basic principle of enclosed hydraulic system – Pascal's law
14th	1st	Oil hydraulic system – reservoir, filter pressure limiting valves, direction control valves
	2nd	Flow control valves, actuators (linear and rotary), accumulator
	3rd	Pipes and fittings, various positive displacement pumps-gear
15th	1st	Vane, piston, drawing of hydraulic circuits - extension and retraction of linear actuator
	2nd	
	3rd	motion of rotary actuator, holding a job, hydraulic press etc.

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LESSON PLAN: 2025-26(W)		
Discipline : Mechanical Engg.	**Semester : 3RD**	**Name of the Teachnig Faculty : Miss. Tapati Panigrahy**
Subject :FLUID MECHANICS AND FLUID POWER LAB	**No.of days/Per weeks Class Alloted Weeks :4**	**Semester from date : 14.07.2025 To Date : 15.11.2025 No.of Weeks : 18 W.e.f:04/08/2025(15 weeks)**
Weeks	**Class days**	**Practicals**
1st	**1st**	Verification of Bernoulli's theorem
	2nd	Verification of Bernoulli's theorem
	3rd	Verification of Bernoulli's theorem
	4th	Verification of Bernoulli's theorem
2nd	**1st**	Determination of Coefficient of Discharge of Venturi meter
	2nd	Determination of Coefficient of Discharge of Venturi meter
	3rd	Determination of Coefficient of Discharge of Venturi meter
	4th	Determination of Coefficient of Discharge of Venturi meter
3rd	**1st**	Determination of Coefficient of Discharge, coefficient of contraction and coefficient of velocity of Orifice meter
	2nd	Determination of Coefficient of Discharge, coefficient of contraction and coefficient of velocity of Orifice meter
	3rd	Determination of Coefficient of Discharge, coefficient of contraction and coefficient of velocity of Orifice meter
	4th	Determination of Coefficient of Discharge, coefficient of contraction and coefficient of velocity of Orifice meter
4th	**1st**	Determination of coefficient of friction of flow through pipes
	2nd	Determination of coefficient of friction of flow through pipes
	3rd	Determination of coefficient of friction of flow through pipes
	4th	Determination of coefficient of friction of flow through pipes
5th	**1st**	Determination of force exerted by the jet of water on the given vane
	2nd	Determination of force exerted by the jet of water on the given vane
	3rd	Determination of force exerted by the jet of water on the given vane
	4th	Determination of force exerted by the jet of water on the given vane

6th	1st	Determination of minor losses of flow through pipes
	2nd	Determination of minor losses of flow through pipes
	3rd	Determination of minor losses of flow through pipes
	4th	Determination of minor losses of flow through pipes
7th	1st	Calibration of pressure gauge using dead weight pressure gauge tester
	2nd	Calibration of pressure gauge using dead weight pressure gauge tester
	3rd	Calibration of pressure gauge using dead weight pressure gauge tester
	4th	Calibration of pressure gauge using dead weight pressure gauge tester
8th	1st	Trial on centrifugal pump to determine overall efficiency
	2nd	Trial on centrifugal pump to determine overall efficiency
	3rd	Trial on centrifugal pump to determine overall efficiency
	4th	Trial on centrifugal pump to determine overall efficiency
9th	1st	Trial on reciprocating pump to determine overall efficiency
	2nd	Trial on reciprocating pump to determine overall efficiency
	3rd	Trial on reciprocating pump to determine overall efficiency
	4th	Trial on reciprocating pump to determine overall efficiency
10th	1st	Trial on Pelton wheel /Francis/Kaplan turbine to determine overall efficiency
	2nd	Trial on Pelton wheel /Francis/Kaplan turbine to determine overall efficiency
	3rd	Trial on Pelton wheel /Francis/Kaplan turbine to determine overall efficiency
	4th	Trial on Pelton wheel /Francis/Kaplan turbine to determine overall efficiency
11th	1st	Analysis of Hydraulic circuits in a hydraulic trainer
	2nd	Analysis of Hydraulic circuits in a hydraulic trainer
	3rd	Analysis of Hydraulic circuits in a hydraulic trainer
	4th	Analysis of Hydraulic circuits in a hydraulic trainer

12th	1st	Analysis of pneumatic circuits in a pneumatic trainer
	2nd	Analysis of pneumatic circuits in a pneumatic trainer
	3rd	Analysis of pneumatic circuits in a pneumatic trainer
	4th	Analysis of pneumatic circuits in a pneumatic trainer
13th	1st	Lab practice and revision
	2nd	Lab practice and revision
	3rd	Lab practice and revision
	4th	Lab practice and revision
14th	1st	Lab practice and revision
	2nd	Lab practice and revision
	3rd	Lab practice and revision
	4th	Lab practice and revision
15th	1st	Lab practice and revision
	2nd	Lab practice and revision
	3rd	Lab practice and revision
	4th	Lab practice and revision

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