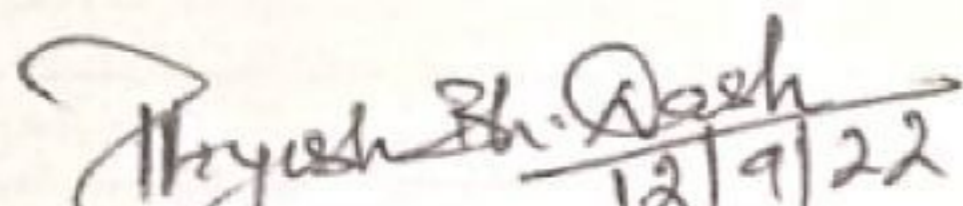
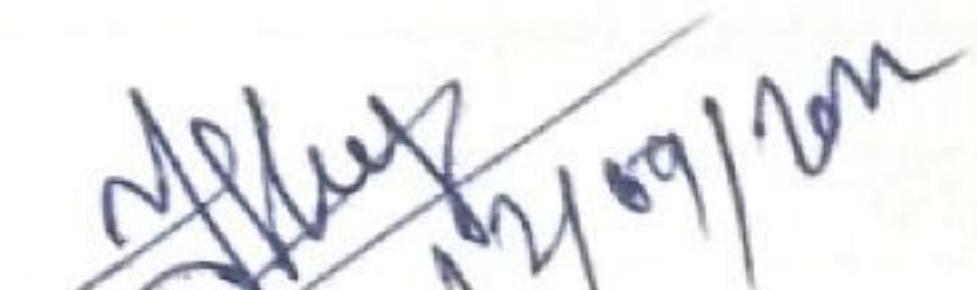


LESSON PLAN		
Discipline : Mechanical engineering	Semester : 5th	Name of the Teachnig Faculty : Mr. Piyush Bhusan Dash
Subject: Hydraulic Machines & Industrial Fluid Power	No. of days/Per weeks Class Alloted Weeks : 4	Semester from date : 15.09.2022 To Date : 22.12.2022 No. of Weeks : 15
Weeks	Class day	Theory
3rd (Sept-2022)	1st	Definition hydraulic turbines
	2nd	classification of hydraulic turbines
	3rd	Construction and working principle of impulse turbine
	4th	Velocity diagram of moving blades of pelton wheel
4th (Sept-2022)	1st	work done and derivation of various efficiencies
	2nd	work done and derivation of various efficiencies
	3rd	Numericals
	4th	work done and derivation of various efficiencies
5th (Sept-2022)	1st	work done and derivation of various efficiencies
	2nd	Numericals
	3rd	Velocity diagram of moving blades of kaplan turbine
	4th	Numericals
2nd (Oct-2022)	1st	work done and derivation of various efficiencies
	2nd	work done and derivation of various efficiencies
	3rd	Numericals
	4th	Distinguish between impulse turbine and reaction turbine.
3rd (Oct-2022)	1st	Construction and working principle of centrifugal pumps
	2nd	Construction and working principle of centrifugal pumps
	3rd	work done and derivation of various efficiencies of centrifugal pumps.
	4th	Numericals
4th (Oct-2022)	1st	Numericals
	2nd	Describe construction & working of double acting reciprocating pump.
	3rd	Describe construction & working of double acting reciprocating pump.
	4th	Derive the formula for power required to drive the pump (Single acting & double acting)
1st (Nov-2022)	1st	Derive the formula for power required to drive the pump (Single acting & double acting)
	2nd	Derive the formula for power required to drive the pump (Single acting & double acting)
	3rd	Derive the formula for power required to drive the pump (Single acting & double acting)
	4th	Define slip
2nd (Nov-2022)	1st	State positive & negative slip & establish relation between slip & coefficient of discharge.
	2nd	
	3rd	Numericals
	4th	Elements –filter-regulator-lubrication unit
3rd (Nov-2022)	1st	Pressure relief valves
	2nd	Pressure regulation valves
	3rd	3/2DCV, 5/2 DCV, 5/3 DCV
	4th	Flow control valves
4th (Nov-2022)	1st	Throttle valves
	2nd	ISO Symbols of pneumatic components
	3rd	ISO Symbols of pneumatic components

	4th	Direct control of single acting cylinder
5th (Nov-2022)	1st	Operation of double acting cylinder
	2nd	metering in
	3rd	metering out
	4th	Comparison of hydraulic and pneumatic system
1st (Dec-2022)	1st	Hydraulic system-Merits & Demerits
	2nd	Pressure control valves
	3rd	Pressure relief valves
	4th	Pressure regulation valves
2nd (Dec-2022)	1st	3/2DCV, 5/2 DCV, 5/3 DCV
	2nd	Flow control valves
	3rd	Throttle valves
	4th	External gear pumps, Internal gear pumps
3rd (Dec-2022)	1st	Vane pump
	2nd	Radial piston pumps
	3rd	ISO Symbols for hydraulic components.
	4th	Actuators
4th (Dec-2022)	1st	Direct control of single acting cylinder
	2nd	Operation of double acting cylinder
	3rd	Operation of double acting cylinder with metering in and metering out control
	4th	Comparison of hydraulic & pneumatic system


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Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr. Nilamadhaba Sabat
Subject : Mechatronics	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 15.09.2022 To Date :22.12.2022 No.of Weeks : 15
Weeks	Class day	Theory
3rd (Sept-2022)	1st	Definition of Mechatronics
	2nd	Advantages & disadvantages of Mechatronics
	3rd	Application of Mechatronics
	4th	Scope of Mechatronics in Industrial Sector
4th (Sept-2022)	1st	Components of a Mechatronics System
	2nd	Importance of mechatronics in automation
	3rd	Defination of Transducers
	4th	Classification of Transducers
5th (Sept-2022)	1st	Electromechanical Transducers
	2nd	Transducers Actuating Mechanisms
	3rd	Displacement & Positions Sensors
	4th	Velocity, motion, force and pressure sensors
2nd (Oct-2022)	1st	Velocity, motion, force and pressure sensors
	2nd	Temperature and light sensors
	3rd	Mechanical Actuators
	4th	Machine, Kinematic Link, Kinematic Pair
3rd (Oct-2022)	1st	Mechanism, Slider crank Mechanism
	2nd	Mechanism, Slider crank Mechanism
	3rd	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	4th	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
4th (Oct-2022)	1st	Belt & Belt drive
	2nd	Belt & Belt drive
	3rd	Bearings
	4th	Bearings
1st (Nov-2022)	1st	Electrical Actuator
	2nd	Electrical Actuator
	3rd	Switches and relay
	4th	Solenoid
2nd (Nov-2022)	1st	D.C Motors
	2nd	A.C Motors
	3rd	Stepper Motors
	4th	Specification and control of stepper motors
3rd (Nov-2022)	1st	Servo Motors D.C & A.C
	2nd	Introduction to PLC
	3rd	Advantages of PLC
	4th	Selection and uses of PLC
4th (Nov-2022)	1st	Architecture basic internal structures
	2nd	Input/output Processing and Programming
	3rd	Mnemonics
	4th	Master and Jump Controllers
5th (Nov-2022)	1st	Introduction to Numerical Control of machines and CAD/CAM
	2nd	NC machines

	3rd	CNC machines
	4th	CAD
1st (Dec-2022)	1st	CAM
	2nd	Software and hardware for CAD/CAM
	3rd	Functioning of CAD/CAM system
	4th	Features and characteristics of CAD/CAM system
2nd (Dec-2022)	1st	Application areas for CAD/CAM
	2nd	Introduction to elements of CNC machines
	3rd	Machine Structure
	4th	Introduction and Types of Guideways
3rd (Dec-2022)	1st	Factors of design of guideways
	2nd	Spindle drives
	3rd	Feed drive
	4th	Spindle and Spindle Bearings
4th (Dec-2022)	1st	Definition, Function and laws of robotics
	2nd	Types of industrial robots
	3rd	Robotic systems
	4th	Advantages and Disadvantages of robots

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LESSON PLAN

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 : 15.09.2022 To Date :22.12.2022 No.of Weeks : 15
Weeks	Class day	Theory
3rd (Sept-2022)	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.
4th (Sept-2022)	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'
5th (Sept-2022)	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.
2nd (Oct-2022)	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)
3rd (Oct-2022)	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.
4th (Oct-2022)	1st	Numerical on COP.
	2nd	Principle of working and constructional details of reciprocating and rotary compressors.
	3rd	Centrifugal compressor only theory
	4th	Important terms.
1st (Nov-2022)	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.
2nd (Nov-2022)	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
3rd (Nov-2022)	1st	Thermostatic expansion valve
	2nd	Classification of refrigerants
	3rd	Desirable properties of an ideal refrigerant.
	4th	Designation of refrigerant.
4th (Nov-2022)	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

5th (Nov-2022)	1st	cold storage, dairy refrigeration
	2nd	ice plant, water cooler
	3rd	frost free refrigerator
	4th	Psychometric terms
1st (Dec-2022)	1st	Adiabatic saturation of air by evaporation of water
	2nd	Psychometric chart and uses.
	3rd	Psychometric processes
	4th	Sensible heating and Cooling
2nd (Dec-2022)	1st	Cooling and Dehumidification
	2nd	Heating and Humidification
	3rd	Adiabatic cooling with humidification
	4th	Total heating of a cooling process
3rd (Dec-2022)	1st	SHF, BPF,
	2nd	Adiabatic mixing
	3rd	Problems on above.
	4th	Effective temperature and Comfort chart
4th (Dec-2022)	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		
Discipline : Mechanical Engg.	Semester : 5th	Name of the Teaching Faculty : Mr. Pradeep Kumar Padhy
Subject : ENTREPRENEURSHIP MNGT & SMART TECHNOLOGY	No. of days/Per weeks Class Alloted Weeks : 4	Semester from date : 15.09.2022 To Date : 22.12.2022 No. of Weeks : 15
Weeks	Class day	Theory
3rd (Sept-2022)	1st	Concept /Meaning of Entrepreneurship ☐ Need of Entrepreneurship ☐ Characteristics, Qualities and Types of entrepreneur, Functions
	2nd	Barriers in entrepreneurship ☐ Entrepreneurs vrs. Manager
	3rd	Forms of Business Ownership: Sole proprietorship, partnership forms and others ☐ Types of Industries, Concept of Start-ups
	4th	Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC, O. C, SIDBI, NABARD, Commercial Banks, KVIC etc
4th (Sept-2022)	1st	Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks
	2nd	Business Planning ☐ SSI, Ancillary Units, Tiny Units, Service sector Units
	3rd	Time schedule Plan, Agencies to be contacted for Project Implementation ☐ Assessment of Demand and supply and Potential areas of Growth
	4th	Identifying Business Opportunity ☐ Final Product selection
5th (Sept-2022)	1st	Preliminary project report ☐ Detailed project report, Techno economic Feasibility
	2nd	Project Viability
	3rd	Definitions of management ☐ Principles of management
	4th	Functions of management (planning, organising, staffing, directing and controlling etc.)
2nd (Oct-2022)	1st	Level of Management in an Organisation
	2nd	Production management ☐ Functions, Activities ☐ Productivity ☐ Quality control
	3rd	Production Planning and control b) Inventory Management ☐ Need for Inventory management
	4th	Models/ Techniques of Inventory management c) Financial Management ☐ Functions of Financial management
3rd (Oct-2022)	1st	Management of Working capital ☐ Costing (only concept)
	2nd	Break even Analysis ☐ Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash
	3rd	Break even Analysis ☐ Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash
	4th	Brief idea about Accounting Terminologies: Book Keeping
4th (Oct-2022)	1st	Brief idea about Accounting Terminologies: Book Keeping
	2nd	Journal entry, Petty Cash
	3rd	book, P&L Accounts, Balance Sheets(only Concepts)
	4th	Concept of Marketing and Marketing Management
1st (Nov-2022)	1st	Marketing Techniques (only concepts) ☐ Concept of 4P s (Price, Place, Product, Promotion)
	2nd	Functions of Personnel Management
	3rd	Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages
	4th	Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages
2nd (Nov-2022)	1st	Theories of motivation (Maslow) ☐ Methods of Improving Motivation ☐ Importance of Communication in Business

	2nd	Human relationship and Performance in Organization
	3rd	Types and Barriers of Communication
	4th	Human relationship and Performance in Organization
3rd (Nov-2022)	1st	Relations with Peers, Superiors and Subordinates
	2nd	TQM concepts: Quality Policy
	3rd	Quality Management, Quality system
	4th	☒ Accidents and Safety,
4th (Nov-2022)	1st	Cause, preventive measures
	2nd	General Safety Rules
	3rd	Personal Protection Equipment(PPE)
	4th	Leadership ☒ Definition and Need/Importance ☒ Qualities and functions of a leader
5th (Nov-2022)	1st	Manager Vs Leader ☒ Style of Leadership (Autocratic, Democratic, Participative
	2nd	Definition and characteristics ☒ Importance of motivation ☒ Factors affecting motivation
	3rd	Theories of motivation (Maslow) ☒ Methods of Improving Motivation ☒ Importance of Communication in Business
	4th	Types and Barriers of Communication
1st (Dec-2022)	1st	Human relationship and Performance in Organization
	2nd	Relations with Peers, Superiors and Subordinates
	3rd	TQM concepts: Quality Policy
	4th	Quality Management, Quality system
2nd (Dec-2022)	1st	☒ Accidents and Safety,
	2nd	Cause, preventive measures
	3rd	General Safety Rules
	4th	Personal Protection Equipment(PPE)
3rd (Dec-2022)	1st	Intellectual Property Rights(IPR)
	2nd	Patents, Trademarks, Copyrights
	3rd	Features of Factories Act 1948 with Amendment (only salient points)
	4th	Features of Payment of Wages Act 1936 (only salient points)
4th (Dec-2022)	1st	Concept of IOT, How it works
	2nd	Components of IOT, Characteristics of IOT
	3rd	Categories of IOT, Application of IOT
	4th	Smart Transportation, Smart Home, Smart Healthcare, Smart, Agriculture, Smart Energy

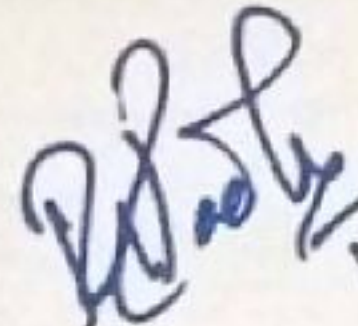
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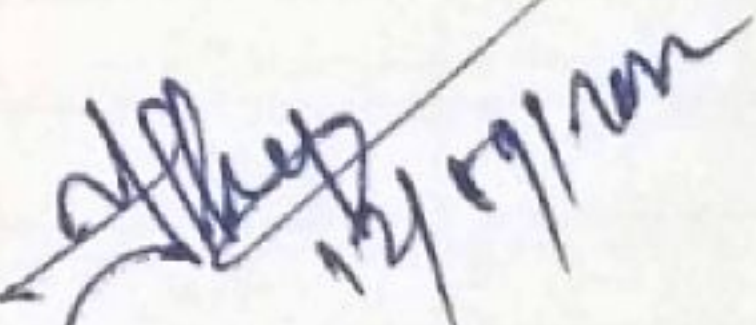
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LESSON PLAN

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr. Pradeep Kumar Padhy
Subject : Design of Machine Elements	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 15.09.2022 To Date :22.12.2022 No.of Weeks : 15
Weeks	Class day	Theory
3rd (Sept-2022)	1st	Introduction to Machine Design and Classify it
	2nd	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	3rd	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
	4th	Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.
4th (Sept-2022)	1st	Modes of Failure (By elastic deflection, general yielding & fracture
	2nd	Modes of Failure (By elastic deflection, general yielding & fracture
	3rd	State the factors governing the design of machine elements
	4th	Describe design procedure.
5th (Sept-2022)	1st	Joints and their classification.
	2nd	State types of welded joints .
	3rd	State advantages of welded joints over other joints.
	4th	Design of welded joints for eccentric loads.
2nd (Oct-2022)	1st	State types of riveted joints and types of rivets.
	2nd	State types of riveted joints and types of rivets.
	3rd	Describe failure of riveted joints
	4th	Determine strength & efficiency of riveted joints.
3rd (Oct-2022)	1st	Determine strength & efficiency of riveted joints.
	2nd	Design riveted joints for pressure vessel
	3rd	Design riveted joints for pressure vessel
	4th	Design riveted joints for pressure vessel
4th (Oct-2022)	1st	Design riveted joints for pressure vessel
	2nd	Solve numerical on Welded Joint and Riveted Joints
	3rd	Solve numerical on Welded Joint and Riveted Joints
	4th	Solve numerical on Welded Joint and Riveted Joints
1st (Nov-2022)	1st	State function of shafts. 3.2 State materials for shafts.
	2nd	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity
	3rd	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity
	4th	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity
2nd (Nov-2022)	1st	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	2nd	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	3rd	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	4th	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.

3rd (Nov-2022)	1st	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	2nd	Describe failure of key, effect of key way.
	3rd	Design rectangular sunk key considering its failure against shear & crushing.
	4th	8 Design rectangular sunk key by using empirical relation for given diameter of shaft.
4th (Nov-2022)	1st	State specification of parallel key, gib-head key, taper key as per I.S.
	2nd	State specification of parallel key, gib-head key, taper key as per I.S.
	3rd	Solve numerical on Design of Shaft and keys
	4th	Solve numerical on Design of Shaft and keys
5th (Nov-2022)	1st	Design of Shaft Coupling
	2nd	Requirements of a good shaft coupling
	3rd	Types of Coupling.
	4th	Types of Coupling.
1st (Dec-2022)	1st	Design of Sleeve or Muff-Coupling
	2nd	Design of Clamp or Compression Coupling
	3rd	Solve simple numerical on above.
	4th	Solve simple numerical on above.
2nd (Dec-2022)	1st	Materials used for helical spring
	2nd	Standard size spring wire. (SWG).
	3rd	Standard size spring wire. (SWG).
	4th	Terms used in compression spring
3rd (Dec-2022)	1st	Terms used in compression spring
	2nd	Stress in helical spring of a circular wire.
	3rd	Stress in helical spring of a circular wire.
	4th	Deflection of helical spring of circular wire
4th (Dec-2022)	1st	Deflection of helical spring of circular wire
	2nd	Surge in spring
	3rd	Solve numerical on design of closed coil helical compression spring.
	4th	Solve numerical on design of closed coil helical compression spring.


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