DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
MECHANICAL ENGG.	4TH	SRI. BIPIN KUMAR DASH,SR.LECT. MECHANICAL

SUBJECT:THEORY OF MACHINE(TH-1)	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 16.01.2024
		NO. OF WEEKS : 16 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
	1ST	INTRODUCTION TO THEROY OF MACHINE
	2ND	LINK, TYPE OF LINK, KINEMATIC PAIR
	3RD	KINEMATIC CHAIN, MECHANISM, MACHINE
1ST WEEK	4TH	FOUR BAR CHAIN, KUTZBACK & GUBLER EQUATION
	1ST	INVERSION OF MECHANISM, INVERSION OF FOUR BAR CHAIN
	2ND	INVERSION OF SINGLE SLIDER CRANK CHAIN
	3RD	INVERSION OF DOUBLE SLIDER CRANK CHAIN
2NDWEEK	4TH	CAM & FOLLOWER, RELATED NUMERICAL PROBLEM
	1ST	INTRODUCTION TO FRICTION
	2ND	FRICTION BETWEEN NUT AND SCREW FOR SQUARE THREAD
	3RD	NUMERICAL PROBLEM
3RDWEEK	4TH	NUMERICAL PROBLEM
	1ST	SCREW JACK AND NUMERICAL PROBLEM
	2ND	BEARING AND ITS CLASSIFICATION
	3RD	DESCRIPTION OF ROLLER
4THWEEK	4TH	NEEDLE ROLLER AND BALL BEARING
	1ST	TORQUE TRANSMISSION IN FLAT PIVOT BEARING
	2ND	CONICAL PIVOT BEARING AND NUMERICAL PROBLEM
	3RD	FLAT COLLAR BEARING AND NUMERIC PROBLEM
5THWEEK	4TH	TORQUE TRANSMISSION FOR SINGLE PLATE CLUTCH
	1ST	TORQUE TRANSMISSION FOR MULTIPLE PLATE CLUTCH
	2ND	WORKING OF SIMPLE FRICTIONAL BRAKES
	3RD	WORKING OF ABSORPTION TYPE OF DYNAMOMETER
6THWEEK	4TH	CONCEPT OF POWER TRANSMISSION
	1ST	TYPE OF DRIVES BELT, GEAR DRIVE AND CHAIN DRIVE
	2ND	COMPUTATION OF VELOCITY RATIO
	3RD	LENGTH OF BELT DRIVES(OPEN & CLOSE)
7THWEEK	4TH	RATIO OF BELT TENSIONS, CENTRIFUGAL TENSION
	1ST	INITIAL TENSION, POWER TRANSMITTED BY BELT
	2ND	DETERMINATION OF BELT THICKNESS AND WIDTH
	3RD	V-BELTS AND V-BELT PULLYS
8THWEEK	4TH	CONCEPT OF CROWNING OF PULLY
	1ST	GEAR DRIVES AND ITS TERMINOLOGY
	2ND	GEAR TRAINS, SIMPLE GEAR TRAIN
	3RD	COMPOUND, RIVERTED AND EPICYCLIC GEAR TRAIN
9THWEEK	4TH	SOLVE NUMERICAL PROBLEM
	1ST	SOLVE NUMERICAL PROBLEM
	2ND	SOLVE NUMERICAL PROBLEM
	3RD	SOLVE NUMERICAL PROBLEM
10THWEEK	4TH	FUNCTION OF GOVERNER AND CLASSIFICATION
	1ST	WORKING OF WATT GOVERNER AND NUMERICAL PROBLEM
	2ND	WORKING OF PROEL GOVERNOR AND NUMERICAL
	3RD	WORKING OF HARTNELL GOVERNOR AND NUMERICAL
11THWEEK	4TH	CONCEPT OF SENSITIVITY, STABILITY, ISOCHRONISM
	1ST	FUNCTION OF FLYWHEEL AND COMPARISSION WITH GOVERNOR
	2ND	FUNCTION OF ENERGY & CO-EFFICIENT OF SPEED
	3RD	NUMERICAL PROBLEM
12THWEEK	4TH	NUMERICAL PROBLEM
	1ST	CONCEPT OF STATIC AND DYNAMIC BALANCING
	2ND	STATIC BALANCING OF ROTATING PARTS
	3RD	PRINCIPLE OF BALANCING OF RECIPROCATING PARTS
13THWEEK	4TH	CAUSES AND EFFECTS OF UNBALANCE
	1ST	DIFFERENCE BETWEEN STATIC AND DYNAMIC BALANCING
	2ND	NUMERICAL PROBLEM
	3RD	NUMERICAL PROBLEM
14THWEEK	4TH	VIBRATION OF MACHINE PARTS INTRODUCTION
	1ST	DISCUSION OF AMPLITUDE, TIME PERIOD, FREQUENCY
	2ND	CLASSIFICATION OF VIBRATION, NATURAL VIBRATION
	3RD	FORCED VIBRATION AND DAMPED VIBRATION
15THWEEK	4TH	RELATED SIMPLE PROBLEM SOLVE
	1ST	TORSIONAL VIBRATION AND LONGITUDINAL VIBRATION
	2ND	CAUSES AND REMADIES OF VIBRATION
	3RD	REVISION CLASSES
16THWEEK	4TH	REVISION CLASSES

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DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
MECH. ENGG	4TH	SRI SAKTI RANJAN BHUYAN,SR.LECT. MECHANICAL

SUBJECT: MANUFACTURING TECHNOLOGY

SEMESTER FROM 16/01/2024

WEEK	CLASS	TOPIC
1	1	introduction of manufacturing technology
	2	composition of various tool material
	3	Physical properties& uses of such tool materials.
	4	uses of such tool materials.
2	1	Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer
	2	Turning tool geometry and purpose of tool angle
	3	Turning tool geometry and purpose of tool angle
	4	Machining process parameters (Speed, feed and depth of cut)
3	1	Machining process parameters (Speed, feed and depth of cut)
	2	Coolants and lubricants in machining and purpose
	3	Construction and working of lath
	4	Major components of a lathe and their function
4	1	Operations carried out in a lathe
	2	Safety measures during machining
	3	Major components and their function of capstan lathe
	4	Define multiple tool holders
5	1	Major components and their function turret lathe
	2	Draw the tooling layout for preparation of a hexagonal bolt &bush
	3	Potential application areas of a shaper machine
	4	Major components and their function
6	1	Explain the automatic able feed mechanism
	2	Explain the construction &working of tool head
	3	Explain the quick return mechanism through sketch
	4	State the specification of a shaping machine.
7	1	Application area of a planer and its difference with respect to shaper
	2	Major components and their functions
	3	The table drive mechanism
	4	The table drive mechanism
8	1	Working of tool and tool support
	2	Clamping of work through sketch.
	3	introduction to milling machine
	4	Types of milling machine and operations
9	1	CNC milling machine
	2	Explain work holding attachment
	3	Construction & working of simple dividing head
	4	Construction & working of universal dividing head
10	1	Procedure of simple and compound indexing
	2	Illustration of different indexing methods
	3	introduction to slotting machine
	4	Major components and their function
11	1	Construction and working of slotter machine
	2	Construction and working of slotter machine
	3	various operations of slotting machine
	4	Tools used in slotter
12	1	Significance of grinding operations
	2	Manufacturing of grinding wheels
	3	Criteria for selecting of grinding wheels
	4	Specification of grinding wheels with
13	1	Cylindrical Grinder
	2	Surface Grinder and Centreless Grinder
	3	Classification of drilling machines
	4	Classification of drilling machines
14	1	Working of Bench drilling machine, Pillar drilling machine
	2	Working of Radial drilling machine
	3	Boring machine and Basic Principle of Boring
	4	Different between Boring and drilling
15	1	Broaching machine, Types of Broaching(pull type, push type)
	2	Advantages of Broaching and applications
	3	Definition of Surface finish
	4	Description of lapping& explain their specific cutting.

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DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
MECHANICAL ENGG.	4th	SRI.SANTOSH KUMAR SAHU

SUBJECT:THERMAL ENGINEERING -II	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 16/01/2024
		NO. OF WEEKS : 16 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	INTRODUCTION AND CLASSIFICATION OF I.C. ENGINE.
	2ND	COMPONENTS OF I.C. ENGINE AND FUNCTIONS, MATERIAL & METHOD OF MANUFACTURING.
	3RD	CALCULATION OF BRAKE THERMAL EFFICIENCY, INDICATED THERMAL EFFICIENCY.
	4TH	RELATIVE EFFICIENCY, OVERALL EFFICIENCY, MEAN EFFECTIVE PRESSURE.
2NDWEEK	1ST	INDICATER DIAGRAM, SPECIFIC FUEL CONSUMPTION.
	2ND	DEFINITION OF AIR-FUEL RATIO,& CALORIFIC VALUE OF FUEL.
	3RD	NUMERICALS RELATED TO DIFFERENT EFFICIENCY.
	4TH	NUMERICALS RELATED TO SPECIFIC FUEL CONSUMPTION.
3RDWEEK	1ST	AIR COMPRESSORS, USES OF COMPRESSED AIR.
	2ND	CLASSIFICATION OF AIR COMPRESSOR & PRINCIPLE OF OPERATION.
	3RD	PARTS AND WORKING PRINCIPLE OF RECIPROCATING AIR COMPRESSOR.
	4TH	TERMINOLOGY OF RECIPROCATING AIR COMPRESSOR, SUCH AS BORE, STROKE.
4THWEEK	1ST	PRESSURE RATIO, FREE AIR DELIVERED.
	2ND	CALCULATION OF VOLUMETRIC EFFICIENCY WITH OR WITHOUT VALVE CLEARANCE.
	3RD	DERIVATION OF WORKDONE OF A SINGLE STAGE AIR COMPRESSOR WITHOUT VALVE CLEARANCE.
	4TH	DERIVATION OF WORKDONE OF A TWO STAGE COMPRESSOR WITHOUT VALVE CLEARANCE.
5THWEEK	1ST	CALCULATION OF WORKDONE OF A SINGLE STAGE AIR COMPRESSOR WITH VALVE CLEARANCE.
	2ND	WORKDONE OF A 2-STAGE AIR COMPRESSOR WITH VALVE CLEARANCE.
	3RD	EFFECT OF INTERCOOLING, OPTIMUM INTERSTAGE PRESSURE.
	4TH	NUMERICALS.
6THWEEK	1ST	DIFFERENCE BETWEEN GAS & VAPOURS.
	2ND	FORMATION OF STEAM.
	3RD	REPRESENTATION ON P-V & T-S DIAGRAM.
	4TH	REPRESENTATION ON H-S & T-H DIAGRAM.
7THWEEK	1ST	DEFINITIONS AND PROPERTIES OF STEAM.
	2ND	USE OF STEAM TABLE AND MOLLIER CHART FOR FINDING UNKNOWN PROPERTIES.
	3RD	NON-FLOW AND FLOW PROCESS OF VAPOUR.
	4TH	P-V, T-S, H-S DIAGRAM.
8THWEEK	1ST	DETERMINATION OF CHANGE IN PROPERTIES.
	2ND	DETERMINATION OF DRYNESS FRACTION OF STEAM.
	3RD	PROBLEM SOLVING.
	4TH	PROBLEM SOLVING.
9THWEEK	1ST	CLASSIFICATION AND TYPES OF BOILER,
	2ND	IMPORTANT TERMS OF BOILER.
	3RD	COMPARISION BETWEEN FIRE TUBE AND WATER TUBE BOILER.
	4TH	DESCRIPTION & WORKING OF COCHRAN BOILER.
10THWEEK	1ST	DESCRIPTION & WORKING OF LANCASHIRE BOLIER.
	2ND	DESCRIPTION AND WORKING OF BOBCOCK BOILER.
	3RD	DESCRIPTION AND WORKING OF WILCOX BOILER.
	4TH	BOILER DRAUGHT.
11THWEEK	1ST	FORCED DRAUGHT.
	2ND	INDUCED DRAUGHT.
	3RD	BALANCED DRAUGHT.
	4TH	BOILER MOUNTINGS AND ACCESSORIES.
12THWEEK	1ST	CARNOT CYCLE WITH VAPOUR.
	2ND	WORKDONE AND EFFICIENCY OF CARNOT VAPOUR CYCLE.
	3RD	REPRESENTATION OF RANKINE CYCLE IN P-V, T-S, H-S DIAGRAM.
	4TH	EFFECT OF VARIOUS END CONDITION IN RANKINE CYCLE.
13THWEEK	1ST	WORKDONE AND EFFICIENCY OF RANKINE CYCLE.
	2ND	WORKDONE IN REHEAT RANKINE CYCLE.
	3RD	REGENERATIVE RANKINE CYCLE.
	4TH	NUMERICALS ON CARNOT VAPOUR CYCLE AND RANKINE CYCLE.
14THWEEK	1ST	DIFFERENT MODES OF HEAT TRANSFER.(CONDUCTION, CONVECTION, READIATION)
	2ND	FOURIER LAW OF HEAT CONDUCTION.
	3RD	NEWTONS'S LAW OF COOLING.
	4TH	STEFAN BOLTZMAN'S LAW OF RADIATION HEAT TRANSFER.
15THWEEK	1ST	KIRCHOFF'S LAW.
	2ND	BLACK BODY RADIATION.
	3RD	EMISSIVITY, ABSORPTIVITY, TRANSMISSIBILITY.
	4TH	NUMERICALS.
16THWEEK	1ST	REVISION.
	2ND	REVISION.
	3RD	PREVIOUS YEAR QUESTION DISCUSSION.
	4TH	PREVIOUS YEAR QUESTION DISCUSSION.

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DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY .
MECHANICAL ENGG.	4th	SRI. SAGAR KUMAR BEHERA,LECT.,MECH.
SUBJECT:FLUID MECHANICS.	NO. OF DAYS PER WEEK CLASS ALLOTED:	SEMESTER FROM 16/01/2024 NO. OF WEEKS : 16 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Define fluid
	2ND	Description of fluid properties
	3RD	Density, Specific weight, specific gravity, specificvolume
	4TH	solve simple problems
2NDWEEK	1ST	Definitions f Dynamic viscosity, kinematic viscosity,
	2ND	surface tension Capillary phenomenon
	3RD	Units of Dynamic viscosity, kinematic viscosity,surface tension Capillary phenomenon
	4TH	DO
3RDWEEK	1ST	Definations of pressure, pressure intensity and pressure head
	2ND	Units of pressure, pressure intensity and pressure head
	3RD	Statement of Pascal's Law
	4TH	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolutepressure
4THWEEK	1ST	Pressure measuring instruments Manometers (Simple and Differential)
	2ND	Bourdon tube pressure gauge(Simple Numerical)
	3RD	Solve simple problems on Manometer.
	4TH	DO
5THWEEK	1ST	Definition of hydrostatic pressure
	2ND	Total pressure and centre of pressure onimmersed bodies(Horizontal)
	3RD	Solve Simple problems
	4TH	Total pressure and centre of pressure on immersed bodies(vertical)
6THWEEK	1ST	Solve simple problems
	2ND	Archimedes 'principle, concept of buoyancy
	3RD	meta center and meta centric height
	4TH	Concept of floatation
7THWEEK	1ST	Types of fluid flow
	2ND	Continuity equation(Statement and proof for one dimensional flow)
	3RD	Bernoulli's theorem(Statement and proof)
	4TH	Applications and limitations of Bernoulli's theorem (Venturimeter)
8TH WEEK	1ST	Applications and limitations of Bernoulli's theorem (Pitot Tube)
	2ND	Solve simple problems on venturimeter
	3RD	Solve simple problems on Pitot Tube
	4TH	DO
9THWEEK	1ST	Define orifice
	2ND	Flow through orifice
	3RD	Orifices coefficient & the relation between the orifice coefficients
	4TH	Classifications of notches & weirs
10THWEEK	1ST	Discharge over a rectangular notch or weir
	2ND	Discharge over a triangular notch or weir
	3RD	Simple problems on above
	4TH	Simple problems on above
11THWEEK	1ST	Definition of pipe
	2ND	Loss of energy in pipes
	3RD	Head loss due to friction: Darcy's and Chezy's formula (Expression only)
	4TH	Solve Problems using Darcy's equation
12THWEEK	1ST	Solve Problems using Chezy's formula
	2ND	Hydraulic gradient Line
	3RD	Total gradient line
	4TH	Solve Problems using Darcy's and Chezy's formula
13THWEEK	1ST	DO
	2ND	DO
	3RD	Impact of jet on fixed Plate
	4TH	Impact of jet on movint vertical flat plates
14THWEEK	1ST	Derivation of work done on series of vanes
	2ND	condition for maximum efficiency.
	3RD	Impact of jet on moving curved vanes
	4TH	illustration using velocity triangles
15THWEEK	1ST	derivation of work done
	2ND	derivation of efficiency
	3RD	DO
	4TH	DO
16THWEEK	1ST	Revision.
	2ND	Revision.
	3RD	PYQ discussion.
	4TH	PYQ discussion.

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