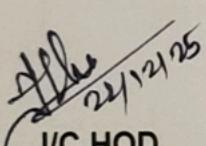
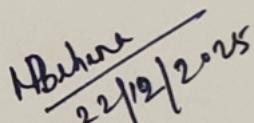


Discipline :MECHANICAL	Semester: <u>4th</u>	Name of the Teaching Faculty Manash Kumar behera Lecturer (Stage-I), Mechanical Engineering
Subject: Thermal Engineering-II (TH:2)	No. of days/per week class allotted: 3	Semester From date: 22/12/2025 to date: 18-04-2026 No. of weeks: 17
Week	Class Day	Theory Topics:
1 st	1 st	Air-standard Brayton cycle; Description with p-v and T-S diagrams
	2 nd	Gas turbines Classification: open cycle gas turbines and closed cycle gas turbines;
	3 rd	Comparison of gas turbine with reciprocating I.C. engines and steam turbines.
2 nd	1 st	Applications and limitations of gas turbines
	2 nd	General lay-out of Open cycle constant pressure gas turbine; P-V and T-S diagrams and working;
	3 rd	General lay-out of Closed cycle gas turbine; P-V and T-S diagrams and working.
3 rd	1 st	Principle of jet propulsion; Fuels used for jet propulsion;
	2 nd	Applications of jet propulsion; Working of a turbojet engine
	3 rd	Principle of Ram effect; Working of a Ram jet engine
4 th	1 st	Principle of Rocket propulsion; Working principle of a rocket engine
	2 nd	Applications of rocket propulsion; Comparison of jet and rocket propulsions.
	3 rd	Formation of steam under constant pressure; Industrial uses of steam;
5 th	1 st	Basic definitions: saturated liquid line, saturated vapor line, liquid region, vapor region, wet region, superheat region, critical point, saturated liquid, saturated vapor
	2 nd	Basic definitions: saturation temperature, sensible heat, latent heat, wet steam, dryness fraction, wetness fraction
	3 rd	Basic definitions: 2saturated steam, superheated steam, degree of superheat; Determination of enthalpy, internal energy, internal latent heat
6 th	1 st	entropy of wet, dry and superheated steam at a given pressure using steam tables and Mollier chart for the following processes: Isochoric process, Isobaric process, Hyperbolic process.

	2 nd	Isothermal process, Isentropic process, Throttling process, Polytropic process;
	3 rd	Simple direct problems on the above using tables and charts
7 th	1 st	Steam calorimeters: Separating, throttling, Combined Separating and throttling calorimeters
	2 nd	Simple direct problems
	3 rd	Function and use of steam boilers; Classification of steam boilers with examples
8 th	1 st	Brief explanation with line sketches of Cochran, Babcock and Wilcox Boilers
	2 nd	Comparison of water tube and fire tube boilers; Description with line sketches and working of modern high pressure boilers Lamont and Benson boilers
	3 rd	Boiler mountings: Pressure gauge, water level indicator, fusible plug, blow down cock, stop valve, safety valve, (dead weight type, spring loaded type, high pressure and low water safety alarm)
9 th	1 st	Boiler accessories: feed pump, economizer, super heater and air preheater; Study of steam traps & separators;
	2 nd	Explanation of the terms: Actual evaporation, equivalent evaporation, factor of evaporation, boiler horse power and boiler efficiency
	3 rd	Formula for the above terms without proof; Simple direct problems on the above
10 th	1 st	Draught systems (Natural, forced & induced)
	2 nd	Flow of steam through nozzle; Velocity of steam at the exit of nozzle in terms of heat drop using analytical method
	3 rd	Flow of steam through nozzle; Velocity of steam at the exit of nozzle in terms of heat drop using Mollier chart
11 th	1 st	Discharge of steam through nozzles
	2 nd	Critical pressure ratio
12 th	1 st	Effect of friction in nozzles
	2 nd	Super saturated flow in nozzles
	3 rd	Working steam jet injector
13 th	1 st	Simple numerical problems.
	2 nd	Simple numerical problems.
	3 rd	Classification of steam turbines with examples; Difference between impulse & reaction turbines
14 th	1 st	Principle of working of a simple De-lavel turbine with line diagrams- Velocity diagrams
	2 nd	Expression for work done, axial thrust, tangential thrust, blade and diagram efficiency, stage efficiency, nozzle efficiency

	3 rd	Methods of reducing rotor speed; compounding for velocity, for pressure or both pressure and velocity
15 th	1 st	Working principle with line diagram of a Parson's Reaction turbine—velocity diagrams; Simple problems on single stage impulse turbines (without blade friction) and reaction turbine including data on blade height.
	2 nd	Bleeding, re-heating and re-heating factors(Problems omitted); Governing of steam turbines: Throttle, By-pass & Nozzle control governing.
	3 rd	Throttle, By-pass & Nozzle control governing.
16 th	1 st	Revision Module I
	2 nd	Revision Module II
	3 rd	Revision Module III
17 th	1 st	Revision Module IV
	2 nd	Revision Module V
	3 rd	Previous Year Question discussion

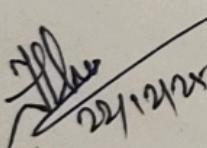

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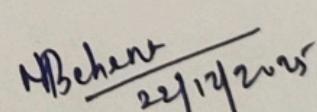

 22/12/25
 Manash Kumar Behera
 Lecturer (Stage-I)
 GP, Gajapati

Discipline: MECHANICAL	Semester: 6th	Name of the Teaching Faculty Manash Kumar Behera Lecturer (Stage-I), Mechanical Engineering
Subject: INDUSTRIAL ENGINEERING & MANAGEMENT(TH:1)	No. of days/ per week class allotted: 4	Semester From date: 22/12/2025 To date: 18-04-26 No. of weeks: 17
Week	Class Day	Theory Topics:
1st	1st	Selection of Site of Industry
	2nd	Define plant layout
	3rd	Describe the objective and principles of plant layout
	4th	Explain Process Layout, Product Layout
2nd	1st	Explain Combination Layout, Techniques to improve layout
	2nd	Principles of material handling equipment
	3rd	Plant maintenance, Importance of plant maintenance
	4th	Break down maintenance
3rd	1st	Preventive maintenance
	2nd	Scheduled maintenance
	3rd	Introduction to Operations Research and its applications
	4th	Define Linear Programming Problem
4th	1st	Solution of L.P.P. by graphical method
	2nd	Solution of L.P.P. by graphical method
	3rd	Evaluation of Project completion time by Critical Path Method
	4th	Evaluation of Project completion time by Critical Path Method
5th	1st	Evaluation of Project completion time by PERT
	2nd	Evaluation of Project completion time by PERT
	3rd	Explain distinct features of PERT with respect to CPM.
	4th	Classification of inventory.

6 th	1 st	Objective of inventory control.
	2 nd	Describe the functions of inventories.
	3 rd	Benefits of inventory control.
	4 th	Costs associated with inventory.
7 th	1 st	Terminology in inventory control
	2 nd	Explain and derive economic order quantity for Basic model
	3 rd	Solving Numerical
	4 th	Define and Explain ABC analysis.
8 th	1 st	Define Inspection and Quality control. Describe planning of inspection.
	2 nd	Describe types of inspection.
	3 rd	Advantages and disadvantages of quality control.
	4 th	Study of factors influencing the quality of manufacture.
9 th	1 st	Explain the Concept of statistical quality control, Control charts X
	2 nd	Control charts R
	3 rd	Control charts (P and C – charts)
	4 th	Methods of attributes. Concept of ISO 9001-2008.
10 th	1 st	Quality management system, Registration /certification procedure.
	2 nd	Benefits of ISO to the organization
	3 rd	Concept of JIT
	4 th	Concept of Six sigma
11 th	1 st	Concept of 7S
	2 nd	Concept of Lean manufacturing
	3 rd	Introduction to production planning and control
	4 th	Major functions of production planning and control

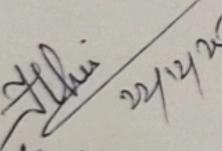
12 th	1 st	Methods of forecasting
	2 nd	Different types of forecasting
	3 rd	Concept of Routing, Scheduling
	4 th	Concept of Dispatching
13 th	1 st	Concept of Controlling
	2 nd	Types of production
	3 rd	Concept of Mass production
	4 th	Concept of Batch production
14 th	1 st	Concept of Job order production
	2 nd	Principles of product and process planning.
	3 rd	Revision of unit -I
	4 th	Revision of unit -II
15 th	1 st	Revision of unit -III
	2 nd	Revision of unit -IV
	3 rd	Revision of unit -V
	4 th	PYQ Discussion

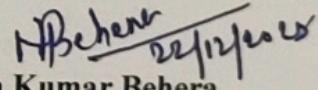

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 22/12/2025
 Manash Kumar Behera
 Lecturer (Stage-I)
 GP, Gajapati

Discipline: MECHANICAL	Semester :4th	Name of the Teaching Faculty Manash Kumar behera Lecturer (Stage-I), Mechanical Engineering
Subject: ESSENCE OF INDIAN KNOWLEDGE & TRADITION	No. of days/ per week class allotted: 2	Semester From date: 22/12/2025 to date: 18-04-2026 No. of weeks: 17
Week	Class Day	Theory Topics:
1st	1st	Define traditional knowledge, nature and characteristics
	2nd	scope and importance
2nd	1st	kinds of traditional knowledge (Unani / Siddha/ Ayurveda),
	2nd	Indigenous Knowledge (IK),
3rd	1st	Its Characteristics
	2nd	Traditional knowledge vis-a-vis indigenous knowledge,
4th	1st	Traditional knowledge of Odisha
	2nd	The need for protecting traditional knowledge
5th	1st	The need for protecting traditional knowledge
	2nd	Significance of TK Protection
6th	1st	Significance of TK Protection
	2nd	Value of TK in global economy
7th	1st	Role of Government to harness TK.
	2nd	Role of Government to harness TK.
8th	1st	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
	2nd	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
9th	1st	Plant Varieties Protection and Farmer's Rights Act, 2001 (PPVFR Act)
	2nd	Plant Varieties Protection and Farmer's Rights Act, 2001 (PPVFR Act)
10th	1st	The Biological Diversity Act 2002 and Rules 2004
	2nd	The protection of traditional knowledge bill, 2016

11 th	1 st	Systems of traditional knowledge protection
	2 nd	Legal concepts for the protection of traditional knowledge
12 th	1 st	Patents and traditional knowledge, Strategies to increase protection of traditional knowledge
	2 nd	, Geographical Indications (GI).
13 th	1 st	Traditional knowledge and engineering
	2 nd	Traditional medicine system, TK in agriculture
14 th	1 st	Traditional societies depend on it for their food and healthcare needs
	2 nd	Importance of conservation and sustainable development of environment
15 th	1 st	Management of biodiversity
	2 nd	Food security of the country and protection of TK
16 th	1 st	Revision
	2 nd	Revision
17 th	1 st	Revision
	2 nd	Revision


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