

PNS SCHOOL OF ENGINEERING & TECHNOLOGY, MARSHAGHAL, KENDRAPARA
LESSON PLAN

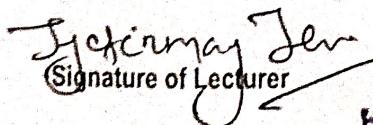
DISCIPLINE-MECHANICAL, SEMESTER-4TH, SUBJECT-TE-II(TH-2)

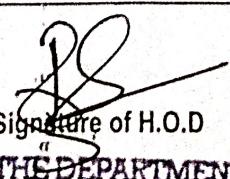
NAME OF THE FACULTY-Er. JYOTIRMAJ JENA

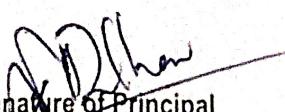
NO. OF HOURS ALLOTTED per WEEK-4.5 NO. OF WEEKS REQUIRED-10

1ST	CHAPTER-1 INTRODUCTION TO GAS TURBINES
2ND	Description with p-v and T-S diagrams; Gas turbines Classification: open cycle gas turbines and closed cycle gas turbines;
3rd	Gas turbines Classification: open cycle gas turbines and closed cycle gas turbines; comparison of gas turbine with reciprocating I.C. engines and steam turbines. Applications and limitations of gas turbines;
4th	General lay-out of Open cycle constant pressure gas turbine; P-V and T-S diagrams and working;
5th	General lay-out of Closed cycle gas turbine; P-V and T-S diagrams and working
6th	Jet Propulsion: Principle of jet propulsion; Fuels used for jet propulsion;
7th	Applications of jet propulsion; Working of a turbojet engine;
8th	Principle of Ram effect; Working of a Ram jet engine; Principle of Rocket propulsion
9th	Working principle of a rocket engine; Applications of rocket propulsion
10th	; Comparison of jet and rocket propulsions.
11th	CH-2 Properties of Steam: Formation of steam under constant pressure; Industrial uses of steam;
12th	Basic definitions: saturated liquid line, saturated vapor line, liquid region
13th	vapor region, wet region, superheat region, critical point, saturated liquid, saturated vapor,
14th	saturation temperature sensible heat, latent heat, wet steam, dryness fraction, wetness fraction,
15th	, saturated steam, superheated steam, degree of superheat
16th	Determination of enthalpy, internal energy, internal latent heat, entropy of wet,
17th	entropy of wet, dry and superheated steam at a given pressure using steam tables and Mollier chart
18th	Steam calorimeters: Separating, throttling,
19th	, Combined Separating and throttling calorimeters
20th	NUMERICALS
21st	CH-3 Steam Generators: Function and use of steam boilers;
22nd	Classification of steam boilers with examples; Brief explanation with line sketches of Cochran

23rd	Babcock and Wilcox Boilers; Comparison of water tube and fire tube boilers;
24th	Description with line sketches and working of modern high pressure boilers Lamont and Benson boilers;
25th	: Boiler mountings: Pressure gauge, water level indicator, fusible plug, blow down cock, stop valve, safety valve,
26th	Boiler accessories: feed pump, economizer, super heater and air preheater; Study of steam traps & separators; Explanation of the terms;
27th	: Actual evaporation, equivalent evaporation, factor of evaporation, boiler horse power and boiler efficiency;
28th	Formula for the above terms without proof; Simple direct problems on the above; Draught systems
29th	CH-4 Steam Nozzles: Flow of steam through nozzle
30th	Velocity of steam at the exit of Nozzle in terms of heat drop using analytical method and Mollier chart
31st	Discharge of steam through nozzles;
32nd	Critical pressure ratio;
33rd	Methods of calculation of cross sectional areas at throat and exit for maximum discharge
34th	Effect of friction in nozzles and Super saturated flow in nozzles;
35th	Working steam jet injector;
36th	NUMERICALS SOLVED
37th	NUMERICALS SOLVED
38th	NUMERICALS SOLVED
39th	CH-5 Steam Turbines: Classification of steam turbines with examples;
40th	Difference between impulse & reaction turbines;
41st	Principle of working of a simple De-lavel turbine with line diagrams- Velocity diagrams;
42nd	; Expression for work done, axial thrust, tangential thrust, blade and diagram efficiency, stage efficiency
43rd	nozzle efficiency; Methods of reducing rotor speed; compounding for velocity, for pressure or both pressure and velocity
44th	Working principle with line diagram of a Parson's Reaction turbine with velocity diagrams; Simple problems on single stage impulse turbine & reaction turbine
45th	Bleeding, re-heating and re-heating factors(Problems omitted); Governing of steam turbines: Throttle, By-pass & Nozzle control governing


Signature of Lecturer


Signature of H.O.D
HEAD OF THE DEPARTMENT
Department of Mechanical Engineering
PNS School of Engg. & Tech.


Signature of Principal
PRINCIPAL
PNS SCHOOL OF ENGL & TECH.
Nishamani Vihar, Marhaznai