

RAJA KISHORE CHANDRA ACADEMY OF TECHNOLOGY
NILGIRI, BALASORE

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT- THERMAL ENGINEERING-II

BRANCH-MECHANICAL

NAME OF THE FACULTY- ER.PABITRA PRASAD PANI
SESSION-

SEMESTER-4TH

PERIOD	UNIT	DATE	TOPICS TO BE COVERED
1	1		PERFORMANCE OF I.C ENGINES: PRE-REQUISITES OF I.C ENGINES, CLASSIFICATION OF ENGINE, PROCESSES INSIDE ENGINE, TECHNICAL TERMS RELATED TO ENGINE
2			PERFORMANCE PARAMETERS: INDICATED POWER, BRAKE POWER AND FRICTIONAL POWER, MECHANICAL EFFICIENCY
3			MEAN EFFECTIVE PRESSURE AND ITS DETERMINATION USING INDICATOR DIAGRAM AND CALCULATIONS
4			AIR-FUEL RATIO, CALORIFIC VALUE OF FUEL, SPECIFIC FUEL CONSUMPTION
5			EFFICIENCY OF I.C ENGINES LIKE MECHANICAL EFFICIENCY, INDICATED THERMAL EFFICIENCY
6			CALCULATIONS ON EFFICIENCY OF I.C ENGINES
7			MEAN EFFECTIVE PRESSURE, BRAKE MEAN EFFECTIVE PRESSURE AND CALCULATIONS BASED ON IT, OVERSQUARE RATIO, 50% LOAD, QUARTER LOAD PROBLEMS
8			DISCUSSION OF IMPORTANT QUESTIONS
9	2		AIR COMPRESSOR- INTRODUCTION TO AIR COMPRESSOR, USES OF COMPRESSED AIR
10			CLASSIFICATION OF AIR COMPRESSOR
11			PRINCIPLE OF OPERATION OF AIR COMPRESSOR
12			DESCRIPTION OF PARTS AND WORKING PRINCIPLE OF RECIPROCATING AIR COMPRESSOR
13			TERMINOLOGY OF RECIPROCATING AIR COMPRESSOR
14			DERIVATION OF WORK DONE OF SINGLE STAGE RECIPROCATING AIR COMPRESSOR WITH AND WITHOUT CLEARANCE VOLUME
15			DERIVATION OF WORK DONE OF DOUBLE OR TWO STAGE RECIPROCATING AIR COMPRESSOR WITH AND WITHOUT CLEARANCE VOLUME
16			CALCULATIONS BASED ON WORK DONE OF SINGLE STAGE RECIPROCATING AIR COMPRESSOR WITHOUT CLEARANCE VOLUME
17			CALCULATIONS BASED ON WORK DONE OF SINGLE STAGE RECIPROCATING AIR COMPRESSOR WITH CLEARANCE VOLUME
18			CALCULATIONS BASED ON WORK DONE OF DOUBLE STAGE RECIPROCATING AIR COMPRESSOR WITHOUT CLEARANCE VOLUME
19			CALCULATIONS BASED ON WORK DONE OF DOUBLE STAGE RECIPROCATING AIR COMPRESSOR WITH CLEARANCE VOLUME
20			DISCUSSION OF IMPORTANT QUESTIONS
21	3		INTRODUCTION TO PROPERTIES OF STEAM: DIFFERENCE BETWEEN GAS AND VAPOUR, CRITICAL TEMPERATURE AND CRITICAL PRESSURE
22			FORMATION OF STEAM, REPRESENTATION ON P-V, T-S, H-S AND T-H DIAGRAM
23			DEFINITION AND PROPERTIES OF STEAM
24			USE OF STEAM TABLE AND MOLLIER CHART FOR FINDING UNKNOWN PROPERTIES
25			FLOW AND NON-FLOW PROCESS OF VAPOUR

26			P-V,T-S AND H-S DIAGRAM
27			CALULATIONS OF QUALITY OF STEAM BASED ON STEAM TABLES
28			CALCULATIONS OF SUPERHEATED STEAM USING STEAM TABLES.
29			CALCULATIONS BASED ON CHANGE IN ENTHALPY
30			CALCULATIONS ON PROPERTIES OF STEM USING MOLLIER CHART
31			DISCUSSION OF IMPORTANT QUESTIONS
32			DISCUSSION OF IMPORTANT QUESTIONS
33		4	
34			CLASSIFICATION OF BOILER AND ITS TYPES
35			IMPORTANT TERMS FOR BOILER
36			COMPARISON OF FIRE TUBE AND WATER TUBE BOILER
37			WORKING OF COCHRAN BOILER
38			WORKING OF LANCASHIRE BOILER
39			WORKING OF BABCOCK AND WILCOX BOILER
40			BOILER DRAUGHT AND ITS TYPES
41			COMPARISON OF FORCED AND INDUCED DRAUGHT,MECHANICAL DRAUGHT
42			BOILER ACCESSORIES
43			BOILER MOUNTINGS
44			DISCUSSION OF IMPORTANT QUESTIONS
45	5		INTRODUCTION TO STEAM POWER CYCLE:- CYCLE, TYPES OF CYCLE, LIMITATIONS AND ASSUMPTIONS OF A THERMODYNAMIC CYCLE
46			CARNOT CYCLE WITH VAPOUR, DERIVATION OF WORK AND EFFICIENCY OF CARNOT CYCLE
47			SIMPLE CALCULATIONS ON CARNOT VAPOUR CYCLE
48			RANKINE CYCLE, REPRESENTATION OF RANKINE CYCLE IN P-V,T-S AND H-S DIAGRAM
49			DERIVATION OF WORK AND EFFICIENCY,EFFECT OF VARIOUS END CONDITIONS IN RANKINE CYCLE
50			REHEAT CYCLE AND REGENERATIVE CYCLE
51			SIMPLE CALCULATIONS ON RANKINE CYCLE
52			DISCUSSION OF IMPORTANT QUESTIONS
53	6		INTRODUCTION TO HEAT TRANSFER: HEAT TRANSFER, DIFFERENT MODES OF HEAT TRANSFER
54			FOURIER LAW OF HEAT CONDUCTION AND THERMAL CONDUCTIVITY
55			NEWTON'S LAW OF COOLING
56			RADIATION HEAT TRANSFER: STEFAN BOLTZMANN LAW
57			RADIATION HEAT TRANSFER: KIRCHOFF'S LAW
58			BLACKBODY RADIATION,WHITE BODY,GREY BODY
59			EMISSIBILITY,ABSORPTIVITY,TRANSMISSIBILITY
60			DISCUSSION OF IMPORTANT QUESTIONS
SIGNATURE OF FACULTY MEMBER		SIGNATURE OF H.O.D	