

PSIET, KARANDA, DHENKANAL

LESSON PLAN Session (2022-2023)

Discipline: Mechanical Engg.	Semester: 5 th , Winter/2022	Name of the Faculty: Pradumna Sahu, Lecturer
Subject: Refrigeration and Air Conditioning Theory-05	No of Days/week: 04	Start Date: 15/09/2022 End Date: 21/01/2023

Week	Class Day	Theory Topics
1st	1 st	Concept of refrigeration and unit of refrigeration.
	2 nd	Definition of COP, Refrigerating effect (R.E)
	3 rd	Principle of working of open and closed air system of refrigeration.
	4 th	Calculation of COP of Bell-Coleman cycle and Problem Solving.
2nd	1 st	Schematic diagram of simple vapor compression refrigeration system
	2 nd	Cycle with dry saturated vapor after compression
	3 rd	Cycle with wet vapor after compression.
	4 th	Cycle with superheated vapor after compression.
3rd	1 st	Cycle with superheated vapor before compression
	2 nd	Cycle with sub cooling of refrigerant
	3 rd	Representation of above cycle on temperature entropy and pressure enthalpy diagram. Problem solving (determination of COP, mass flow)
	4 th	Practice Test/Assignment
4th	1 st	Working principle of Simple vapour absorption refrigeration system
	2 nd	Working principle of Practical vapour absorption refrigeration system
	3 rd	COP of an ideal vapour absorption refrigeration system Problem solving on COP
	4 th	Refrigerant compressors, Working Principle of working and constructional details of reciprocating and rotary compressors.
5th	1 st	Centrifugal compressor, Hermetically and semi hermetically

		sealed compressor.
	2 nd	Principle of working and constructional details of air cooled and water cooled condenser.
	3 rd	Heat rejection ratio. Cooling tower and spray pond
	4 th	Quiz test.
6th	1 st	Recap/Summarize
	2 nd	Principle of working and constructional details of an evaporator.
	3 rd	Types of evaporator.
	4 th	Bare tube coil evaporator.
7th	1 st	Function of expansion valves Working of Capillary tube
	2 nd	Working principle of Automatic expansion valve
	3 rd	Working principle of Thermostatic expansion valve
	4 th	Classification of refrigerants
8th	1 st	Desirable properties of an ideal refrigerant.
	2 nd	Designation of refrigerant.
	3 rd	Thermodynamic Properties of Refrigerants.
	4 th	Chemical properties of refrigerants.
9th	1 st	Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	2 nd	Applications of refrigeration
	3 rd	Working details of cold storage
	4 th	Substitute for CFC
10th	1 st	Ice plant and dairy refrigeration
	2 nd	Working principle of water cooler
	3 rd	Discussion about frost free refrigerator.
	4 th	Psychometric terms
11th	1 st	Adiabatic saturation of air by evaporation of water
	2 nd	Psychometric chart and uses.
	3 rd	Psychometric processes
	4 th	Sensible heating and Cooling
12th	1 st	Cooling and Dehumidification
	2 nd	Heating and Humidification, Adiabatic cooling with humidification, Total heating of a cooling process

		SHF, BPF,
	3 rd	Adiabatic mixing, Problem solving. Effective temperature and Comfort chart.
	4 th	Quiz test
15 th	1 st	Factors affecting comfort air conditioning. Equipment used in an air-conditioning.
	2 nd	Classification of air-conditioning system, Winter Air Conditioning System
	3 rd	Summer air-conditioning system. Numerical on above
	4 th	Revision and Question discussion

Pradumna Sahu
Signature of the faculty


15/19/22
Signature of the Principal