



LESSON PLAN

SUBJECT: Th-5 (REFRIGERATION AND AIR CONDITIONING)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	NO. of periods actually needed
1	AIR REFRIGIERATION CYCLE	5	5
2	SIMLE VAPOUR COMPRESSION REFRIGERATION SYSTEM	10	10
3	VAPOUR ABSORPTION REFRIGERATION SYSTEM	7	6
4	REFRIGERATRION EQUIPMENTS	8	11
5	REFRIGERATRION FLOW CONTROLS, REFRIGERANTS & APPLICATION OF REFRIGERANTS	10	9
6	PSYCHOMETRICS & COMFORT AIR CONDITIONING SYSTEM	10	10
7	AIR CONDITIONING SYSTEM	10	9
	Total Period:	60	60

Discipline: Mechanical Engg	Semester: 5 th	Name of the Teaching Faculty: Er. Manoranjan Behera	
		SESSION : 2023-24	EXAMINATION : 2023 (W)
	Class Day	Theory / Practical Topics	
1 st	1 st	1.0 AIR REFRIGERATION CYCLE, Definition of refrigeration and unit of refrigeration	
	2 nd	. Definition of COP, Refrigerating effect (R.E)	
	3 rd	1.3 Principle of working of open and closed air system of refrigeration	
	4 th	1.3.1 Calculation of COP of Bell-Coleman cycle and numerical on it.	
2 nd	1 st	1.3.1 Calculation of COP of Bell-Coleman cycle and numerical on it.	
	2 nd	2.0 SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM	
	3 rd	2.1 schematic diagram of simple vapors compression refrigeration system'	
	4 th	2.2 Types 2.2.1 Cycle with dry saturated vapors after compression	
3 rd	1 st	2.2.2 Cycle with wet vapors after compression.	
	2 nd	2.2.3 Cycle with superheated vapors after compression	
	4 th	2.2.4 Cycle with superheated vapors before compression	
4 th	1 st	2.2.5 Cycle with sub cooling of refrigerant	
	2 nd	2.2.6 Representation of above cycle on temperature entropy and pressure enthalpy diagram	
	3 rd	2.2.7 Numerical on above (determination of COP,mass flow)	
	4 th	2.2.7 Numerical on above (determination of COP,mass flow)	
5 th	1 st	VAPOUR ABSORPTION REFRIGERATION SYSTEM	
	2 nd	3.1 Simple vapor absorption refrigeration system	

	3 rd	3.1 Simple vapor absorption refrigeration system
	4 th	3.2 Practical vapor absorption refrigeration system
6 th	1 st	3.3 COP of an ideal vapor absorption refrigeration system
	2 nd	3.4.Numerical on COP.
	3 rd	Internal Exam
	4 th	4.0 REFRIGERATION EQUIPMENTS
7 th	1 st	4.1.1 Principle of working and constructional details of reciprocating and rotary compressors.
	2 nd	4.1.1 Principle of working and constructional details of reciprocating and rotary compressors.
	3 rd	4.1.1 Principle of working and constructional details of reciprocating and rotary compressors.
	4 th	4.1.2 Centrifugal compressor only theory
8 th	1 st	4.1.3 Important terms. 4.1.4 Hermetically and semi hermetically sealed compressor.
	2 nd	4.2 CONDENSERS 4.2.1 Principle of working and constructional details of air cooled and water cooled condenser
	3 rd	4.2 CONDENSERS 4.2.1 Principle of working and constructional details of air cooled and water cooled condenser
	4 th	4.2.2 Heat rejection ratio. 4.2.3 Cooling tower and spray pond.
9 th	1 st	. 4.3 EVAPORATORS 1.6.1 Principle of working and constructional details of an evaporator
	2 nd	1.6.2 Types of evaporator. 1.6.3 Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	3 rd	5.0 REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATION OF REFRIGERANTS 5.1 EXPANSION VALVES 5.1.1 Capillary tube
	4 th	5.1.2 Automatic expansion valve 5.1.3 Thermostatic expansion valve
	5 th	5.2 REFRIGERANTS 5.2.1 Classification of refrigerants

		5.2.2 Desirable properties of an ideal refrigerant.
10 th	1 st	5.2.3 Designation of refrigerant. 5.2.4 Thermodynamic Properties of Refrigerants.
	2 nd	5.2.5 Chemical properties of refrigerants. 5.2.6 commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 5.2.7 Substitute for CFC
	3 rd	5.3 Applications of refrigeration 5.3.1 cold storage 5.3.2 dairy refrigeratio
	4 th	5.3.3 ice plant 5.3.4 water cooler 5.3.5 frost free refrigerator
11 th	1 st	6.0 PSYCHOMETRICS & COMFORT AIR CONDITIONING SYSTEMS 6.1 Psychrometric terms
	2 nd	6.2 Adiabatic saturation of air by evaporation of water 6.3 Psychrometric chart and uses.
	3 rd	6.4 Psychrometric processes 6.4.1 Sensible heating and Cooling 6.4.2 Cooling and Dehumidification 6.4.3 Heating and Humidification 6.4.4 Adiabatic cooling with humidification
	4 th	6.4.5 Total heating of a cooling process 6.4.6 SHF, BPF,
12 th	1 st	6.4.7 Adiabatic mixing
	2 nd	6.4.8 Problems on above
	3 rd	6.4.8 Problems on above
	4 th	6.4.8 Problems on above
13 th	1 st	6.5 Effective temperature and Comfort chart
	2 nd	7.0 AIR CONDITIONING SYSTEMS 7.1 Factors affecting comfort air conditioning.
	3 rd	7.2 Equipment used in an air-conditioning
	4 th	7.3 Classification of air-conditioning system
14 th	1 st	7.4 Winter Air Conditioning System
	2 nd	7.5 Summer air-conditioning system.
	3 rd	7.6 Numerical on above
	4 th	7.6 Numerical on above

