

5th SEMESTER MECHANICAL ENGINEERING(2023-24)

SUBJECT- REFRIGERATION AND AIR CONDITIONING

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TOTAL PERIOD-60
THEORY-4P/WEEK

Sl No.	week	Day	Topics to be covered
1	1 st	1 st day	Definition of refrigeration and unit of refrigeration
		2 nd day	Definition of COP, Refrigerating effect (R.E)
		3 rd day	Principle of working of open and closed air system of refrigeration.
		4 th day	Calculation of COP of Bell-Coleman cycle and numerical on it.
Sl No.	week	Day	Topics to be covered
2	2 nd	1 st day	Simple vapour compression refrigeration system Introduction
		2 nd day	Schematic diagram of simple vapors compression refrigeration system.
		3 rd day	Cycle with dry saturated vapors after compression.
		4 th day	Cycle with wet vapors after compression.
Sl No.	week	Day	Topics to be covered
3	3 rd	1 st day	Cycle with superheated vapors after compression.
		2 nd day	Cycle with superheated vapors before compression.
		3 rd day	Cycle with sub cooling of refrigerant
		4 th day	Representation of above cycle on temperature entropy and pressure enthalpy diagram and Numericals
Sl No.	week	Day	Topics to be covered
4	4 th	1 st day	Simple vapour absorption refrigeration system
		2 nd day	Practical vapour absorption refrigeration system
		3 rd day	COP of an ideal vapour absorption refrigeration system
		4 th day	Numerical on COP.
Sl No.	week	Day	Topics to be covered
5	5 th	1 st day	Principle of working and constructional details of reciprocating and rotary compressors.
		2 nd day	Centrifugal compressor only theory
		3 rd day	Hermetically and semi hermetically sealed compressor
		4 th day	Principle of working and constructional details of air cooled and water cooled condenser
Sl No.	week	Day	Topics to be covered
6	6 th	1 st day	Heat rejection ratio
		2 nd day	Cooling tower and spray pond of condenser
		3 rd day	Principle of working and constructional details of an evaporator
		4 th day	Types of evaporator
Sl No.	week	Day	Topics to be covered

7	7 th	1 st day	EXPANSION VALVES
		2 nd day	Capillary tube and Automatic expansion valve
		3 rd day	Thermostatic expansion valve
		4 th day	Classification of refrigerants
Sl No.	week	Day	Topics to be covered
8	8 th	1 st day	Desirable properties of an ideal refrigerant.
		2 nd day	Thermodynamic Properties of Refrigerants.
		3 rd day	Chemical properties of refrigerants.
		4 th day	Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
Sl No.	week	Day	Topics to be covered
9	9 th	1 st day	Applications of refrigeration
		2 nd day	cold storage, dairy refrigeration & water cooler
		3 rd day	Frost free refrigerator
		4 th day	Psychometric terms
Sl No.	week	Day	Topics to be covered
10	10 th	1 st day	Adiabatic saturation of air by evaporation of water
		2 nd day	Psychometric chart and uses
		3 rd day	Psychometric processes
		4 th day	Sensible heating and Cooling
Sl No.	week	Day	Topics to be covered
11	11 th	1 st day	Cooling and Dehumidification
		2 nd day	Heating and Humidification
		3 rd day	Adiabatic cooling with humidification
		4 th day	Total heating of a cooling process
Sl No.	week	Day	Topics to be covered
12	12 th	1 st day	SHF, BPF
		2 nd day	Adiabatic mixing
		3 rd day	Problems on above
		4 th day	
Sl No.	week	Day	Topics to be covered
13	13 th	1 st day	AIR CONDITIONING SYSTEMS
		2 nd day	Factors affecting comfort air conditioning.
		3 rd day	Equipment used in an air-conditioning

Sl No.	week	Day	Topics to be covered
14	14 th	1 st day	Classification of air-conditioning system
		2 nd day	Winter Air Conditioning System
		3 rd day	Summer air-conditioning system.
		4 th day	Numerical Problem solving
Sl No.	week	Day	Topics to be covered
15	15 th	1 st day	Numerical Problem solving
		2 nd day	Summer air-conditioning system.
		3 rd day	Numericals problem solving
		4 th day	Doubt clearance and Revision

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