C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2025-2026)

Discipline: Mechanical Engineering	**Semester:** 5th Semester, Winter/2025	**Name of the Faculty:** Dr. Shubhashree Mohapatra, Assistant Professor **Email ID: shubha.shree@cvrp.edu.in**
Subject: REFRIGERATION AND AIR CONDITIONING Theory- 05	**No. of Days/week:** 04	**Start Date: 14/07/2025** **End Date: 15/11/2025**

Week	Class Day	Theory Topics
1st	1st	Definition of refrigeration and unit of refrigeration
	2nd	Definition of COP, Refrigerating effect (R.E)
	3rd	Principle of working of open and closed air system of refrigeration
	4th	Calculation of COP of Bell-Coleman cycle
2nd	1st	Numerical on above
	2nd	Simple Vapour Compression Refrigeration System
	3rd	Types : Cycle with dry saturated vapors after compression
	4th	Cycle with wet vapors after compression
3rd	1st	Cycle with superheated vapors after compression
	2nd	Cycle with superheated vapors before compression, Cycle with sub cooling of refrigerant
	3rd	Numerical on above
	4th	Numerical on above (determination of COP, mass flow)
4th	1st	Simple vapor absorption refrigeration system
	2nd	Practical vapor absorption refrigeration system
	3rd	COP of an ideal vapor absorption refrigeration system
	4th	Numerical on above
5th	1st	Numerical on above
	2nd	Refrigeration Equipments, Refrigerant Compressors
	3rd	Principle of working and constructional details of reciprocating compressors
	4th	Principle of working and constructional details of rotary compressors
6th	1st	Principle of working and constructional details of Centrifugal compressor
	2nd	Hermetically and semi-hermitically sealed compressor
	3rd	Condensors: Principle of working and constructional details of air cooled and water cooled condenser
	4th	Heat rejection ratio, Cooling tower and spray pond
7th	1st	Evaporators: Principle of working and constructional details of evaporator
	2nd	Types of evaporator:

		Bare tube coil evaporator, finned evaporator
	3rd	shell and tube evaporator
	4th	shell and tube evaporator
8th	1st	Expansion Valves, Capillary tube
	2nd	Automatic expansion Valve
	3rd	Thermostatic expansion valve
	4th	Refrigerants: Classification and desirable properties of an ideal refrigerant
9th	1st	Designation of refrigerant, Thermodynamic properties of Refrigerants
	2nd	Chemical properties of refrigerants
	3rd	Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	4th	Substitute for CFC, Applications of Refrigeration
10th	1st	Cold storage, Dairy refrigeration, Ice Plant
	2nd	Water cooler, Frost free refrigerator
	3rd	Doubt clearing class
	4th	Doubt clearing class
11th	1st	Doubt clearing class
	2nd	Psychometrics & Comfort Air Conditioning Systems
	3rd	Psychometric terms Revision and Doubt Clearing
	4th	Adiabatic saturation of air by evaporation of water, Psychometric charts & uses, Psychometric processes
12th	1st	Sensible heating and Cooling
	2nd	Cooling and Dehumidification,
	3rd	Heating and Humidification
	4th	Adiabatic cooling with humidification
13th	1st	Total heating of a cooling process
	2nd	SHF, BPF, Adiabatic mixing
	3rd	Numerical on above
	4th	Numerical on above
14th	1st	Effective temperature and Comfort chart
	2nd	Air Conditioning Systems Factors affecting comfort air conditioning
	3rd	Equipment used in an air-conditioning, Classification of air conditioning system
	4th	Winter Air Conditioning system
15th	1st	Summer Air Conditioning system
	2nd	Numerical on above
	3rd	Revision class
	4th	Revision class

11/7/25
Signature of Faculty

11.7.25
Signature of H.O.D