Discipline : **MECHANICAL ENGG**	Semester : **5th**	Name of the Teaching Faculty: **Tapan kumar nayak**
Subject: **RAC**	No. of days/per week class allotted: **04**	Semester From : **july** To: december No. of Weeks: **15**
Week	Class Day	Theory / Practical Topics
1ST	1ST	**AIR REFRIGERATION CYCLE.** 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 and numerical on it
2ND	1ST	Calculation of COP of Bell-Coleman cycle and numerical on it
	2ND	**SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM** schematic diagram of simple vapors 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.
	3RD	Cycle with sub cooling of refrigerant
	4TH	Representation of above cycle on temperature entropy and pressure enthalpy diagram
4TH	1ST	Numerical on above (determination of COP,mass flow)
	2ND	Numerical on above (determination of COP,mass flow)
	3RD	Numerical on above (determination of COP,mass flow)
	4TH	**VAPOUR ABSORPTION REFRIGERATION SYSTEM** Simple vapor absorption refrigeration system
5TH	1ST	Practical vapor absorption refrigeration system
	2ND	COP of an ideal vapor absorption refrigeration system
	3RD	Numerical on COP.
	4TH	Numerical on COP.
6TH	1ST	Numerical on COP.
	2ND	Numerical on COP.
	3RD	**REFRIGERATION EQUIPMENTS** REFRIGERANT COMPRESSORS Principle of working and constructional details of reciprocating and rotary compressors
	4TH	Centrifugal compressor only theory Important terms
7TH	1ST	Hermetically and semi hermetically sealed compressor.
	2ND	**CONDENSERS** Principle of working and constructional details of air cooled and water cooled condenser
	3RD	Heat rejection ratio.

		Cooling tower and spray pond.
	4TH	**EVAPORATORS** Principle of working and constructional details of an evaporator.
8TH	1ST	Types of evaporator.
	2ND	Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	3RD	**REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATIONOF REFRIGERANTS** EXPANSION VALVES Capillary tube Automatic expansion valve Thermostatic expansion valve
	4TH	REFRIGERANTS Classification of refrigerants
9TH	1ST	Desirable properties of an ideal refrigerant. Designation of refrigerant.
	2ND	Thermodynamic Properties of Refrigerants. Chemical properties of refrigerants.
	3RD	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	4TH	Substitute for CFC
10TH	1ST	Applications of refrigeration cold storage
	2ND	dairy refrigeration
	3RD	ice plant water cooler
	4TH	frost free refrigerator
11TH	1ST	**PSYCHOMETRICS &COMFORT AIR CONDITIONING SYSTEMS** Psychometric terms
	2ND	Adiabatic saturation of air by evaporation of water Psychometric chart and uses.
	3RD	Psychometric processes Sensible heating and Cooling
	4TH	Cooling and Dehumidification Heating and Humidification
12TH	1ST	Adiabatic cooling with humidification Total heating of a cooling process
	2ND	SHF, BPF,

		Adiabatic mixing
	3RD	Problems on above.
	4TH	Problems on above.
13TH	1ST	Problems on above.
	2ND	Effective temperature and Comfort chart
	3RD	**AIR CONDITIONING SYSTEMS** Factors affecting comfort air conditioning. .
	4TH	Equipment used in an air-conditioning
14TH	1ST	Classification of air-conditioning system
	2ND	Winter Air Conditioning System
	3RD	Summer air-conditioning system.
	4TH	Numerical on above
15TH	1ST	Numerical on above
	2ND	Numerical on above
	3RD	Numerical on above
	4TH	Numerical on above

Learning Resouces:

01. **REFRIGERATION AND AIRCONDITIONING BY C.P ARRORA, TMH**
02. **REFRIGERATION AND AIRCONDITIONING BY R.S.KHURMI&J.K.GUPTA, S.CHAND**
03. **REFRIGERATION AND AIRCONDITIONING BY P.L BALLANY, KHANNA PUBLISHER**
04. **REFRIGERATION AND AIRCONDITIONING BY DOMKUNDRA ANDARORA, DHANPAT RAYAND SONS**