

GOVERNMENT POLYTECHNIC BALASORE
LESSIONPLAN–REFRIGERATION & AIR CONDITIONING

Discipline: MECHANICAL ENGG.	Semester: 5TH	NameoftheTeachingFaculty: SRI MIHIRA KUMAR SOREN
Subject: RAC (TH-5)	No. of Days/perweek classallotted:4 P/W	SemesterFromdate: 14.07.2025 ToDate: 15.11.2025 No.ofWeeks:15Week
Week	ClassDay	TheoryTopics
1 ST	1 st	AIR REFRIGERATION CYCLE Definition 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.
2 ND	1 st	Numerical on Bell-Coleman cycle.
	2 nd	SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM Schematic diagram of simple vapors compression refrigeration system.
	3 rd	Cycle with dry saturated vapors after compression.
	4 th	Cycle with wet vapors after compression.
3 RD	1 st	Cycle with superheated vapors after compression.
	2 nd	Cycle with superheated vapors before compression.
	3 rd	Cycle with sub cooling of refrigerant.
	4 th	Representation of above cycle on temperature entropy and pressure enthalpy diagram.
4 TH	1 st	Numerical on above (determination of COP, mass flow).
	2 nd	Numerical on above (determination of COP, mass flow).
	3 rd	Monthly test or Previous year question discussion.
	4 th	VAPOUR ABSORPTION REFRIGERATION SYSTEM Simple vapor absorption refrigeration system.
5 TH	1 st	Practical vapor absorption refrigeration system.
	2 nd	Practical vapor absorption refrigeration system.
	3 rd	COP of an ideal vapor absorption refrigeration system.
	4 th	COP of an ideal vapor absorption refrigeration system.
6 TH	1 st	Numerical on COP.
	2 nd	Numerical on COP.
	3 rd	REFRIGERATION EQUIPMENTS REFRIGERANT COMPRESSORS , Principle of working and constructional details of reciprocating and rotary compressors.
	4 th	Centrifugal compressor only theory, Important terms.
7 TH	1 st	Hermetically and semi hermetically sealed compressor.
	2 nd	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.
8 TH	1st	Types of evaporator, Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	2nd	Monthly test or Previous year question discussion.
	3rd	REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATION OF REFRIGERANTS EXPANSION VALVES, Capillary tube, Automatic expansion valve.
	4th	Thermostatic expansion valve.
9 TH	1st	REFRIGERANTS, Classification of refrigerants, Desirable properties of an ideal refrigerant.
	2nd	Designation of refrigerant, Thermodynamic Properties of Refrigerants.
	3rd	Chemical properties of refrigerants.
	4th	Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717.
10 TH	1st	Substitute for CFC.
	2nd	Applications of refrigeration, cold storage, Dairy refrigeration.
	3rd	Ice plant, Water cooler.
	4th	Frost free refrigerator.
11 TH	1st	PSYCHOMETRICS & COMFORT AIR CONDITIONING SYSTEMS Psychometric terms.
	2nd	Adiabatic saturation of air by evaporation of water.
	3rd	Psychometric chart and uses.
	4th	Psychometric processes, Sensible heating and Cooling.
12 TH	1st	Cooling and Dehumidification, Heating and Humidification.
	2nd	Adiabatic cooling with humidification, Total heating of a cooling process.
	3rd	SHF, BPF, Adiabatic mixing.
	4th	Problems on above.
13 TH	1st	Effective temperature and Comfort chart.
	2nd	Monthly test or Previous year question discussion.
	3rd	AIR CONDITIONING SYSTEMS Factors affecting comfort air conditioning.
	4th	Equipment used in an air-conditioning.
14 TH	1st	Equipment used in an air-conditioning.
	2nd	Classification of air-conditioning system.
	3rd	Winter Air Conditioning System.
	4th	Summer air-conditioning system.
15 TH	1st	Summer air-conditioning system.
	2nd	Numerical on above.
	3rd	Numerical on above.
	4th	Monthly test or Previous year question discussion.