UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING		
DEPARTMENT OF MECHANICAL ENGINEERING		
LESSON PLAN		
Discipline: Mechanical	**Semester: 5th**	**Name of the Teaching faculty: Amit Kumar Marandi**
Subject: Refrigeration and Air conditioning	**No of Days/Week class alloted: 4**	**Semester: 5TH from Date: 01.10.2021** **To Date: 08.01.2022 No of weeks: 15**
Week	**Class Day**	**Topics**
1st	1st	**CHAPTER-1 (AIR REFRIGERATION CYCLE)** Introduction to Refrigeration and Air Conditioning and definition ofrefrigeration, 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	Solve simple problems on above and class test.
	2nd	**CHAPTER-2(SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM)** Working of simple vapors compression refrigeration system
	3rd	Cycle with dry saturated vapors after compression and representation of the cycle on temperature entropy and pressure enthalpy diagram
	4th	Cycle with wet vapors after compression and representation of the cycle on temperature entropy and pressure enthalpy diagram
3rd	1st	Solve simple problems on above.
	2nd	Cycle with superheated vapors after compression and representation of the cycle on temperature entropy and pressure enthalpy diagram.
	3rd	Cycle with superheated vapors before compression and representation of the cycle on temperature entropy and pressure enthalpy diagram.
	4th	Solve simple problems on above.
4th	1st	Cycle with sub cooling of refrigerant and representation of the cycle on temperature entropy and pressure enthalpy diagram
	2nd	Solve simple problems on above cop and mass flow
	3rd	Solve simple problems on cop and mass flow and class test
	4th	**CHAPTER-3 (VAPOUR ABSORPTION REFRIGERATION SYSTEM)** Working of Simple vapor absorption refrigeration system with schematic diagram.
5th	1st	Function of various components of Simple vapor absorption refrigeration system with schematic diagram
	2nd	Function of various components of Simple vapor absorption refrigeration system with schematic diagram

	3rd	Working of Practical vapor absorption refrigeration system
	4th	Calculation of COP of an ideal vapor absorption refrigeration system
6th	1st	Solve simple problems on above.
	2nd	Comparison between Simple vapor absorption and Practical vapor absorption refrigeration system and class test
	3rd	**CHAPTER-4 (REFRIGERATION EQUIPMENT)** Principle of working and constructional details of reciprocatingcompressors
	4th	Principle of working and constructional details of rotary compressors
7th	1st	Principle of working and constructional details of Centrifugal compressor and Important terms related to compressor
	2nd	Principle of working and constructional details of Hermetically and semi hermetically sealed compressor.
	3rd	Principle of working and constructional details of air cooled and water cooled condenser Heat rejection ratio.
	4th	Principle of working and constructional details of Cooling tower and spray pond.
8th	1st	Principle of working and constructional details of an evaporator.
	2nd	working of different types of evaporator and class test Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	3rd	**CHAPTER-5 (APPLICATION OF REFRIGERANTS)** Function of Expansion Valves and classification
	4th	Function of Capillary tube, Automatic expansion valve and Thermostatic expansion valve.
9th	1st	Classification of refrigerants
	2nd	Desirable properties of an ideal refrigerant.
	3rd	Designation of refrigerant
	4th	Thermodynamic Properties and Chemical properties of Refrigerants
10th	1st	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 properties, Substitute for CFC
	2nd	Applications of refrigeration in cold storage and diary refrigeration
	3rd	Applications of refrigeration in ice plant
	4th	Applications of refrigeration in water cooler and frost free refrigerator and class test
11th	1st	**CHAPTER-6 (PSYCHOMETRICS AND 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, Solve simple problems

12th	1st	Cooling and Dehumidification, Solve simple problems
	2nd	Heating and Humidification, Solve simple problems
	3rd	Adiabatic cooling with humidification, Solve simple problems
	4th	Total heating of a cooling process
13th	1st	SHF, BPF, Adiabatic mixing and solve simple problems.
	2nd	Effective temperature, factor affecting effective temperature and Comfort chart and class test.
	3rd	**CHAPTER-7 (AIR CONDITIONING SYSTEMS)** Definition of comfort air conditioning.
	4th	Factors affecting comfort air conditioning.
14th	1st	Comfort chart
	2nd	Equipment used in an air-conditioning.
	3rd	Classification of air-conditioning system
	4th	Working of Winter Air Conditioning System
15th	1st	Working of Summer air-conditioning system.
	2nd	Solve simple problems on above and class test.
	3rd	Previous year question discussion
	4th	Previous year question discussion