LESSON PLAN

NAME OF FACULTY: SH SUBHASH CHANDER

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: V

SUBJECT: REFRIGERATION AND AIR CONDITIONING

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: (3lectures, 2 Practical)

WEEK	THEORY		PRACTICALS
	LECTURE NOS	TOPIC	TOPIC
1st	1	**Unit-1 – REFRIGERATION,** Fundamentals of Refrigeration	Practical-1 Identify various tools of refrigeration kit and practice in cutting, bending, flaring, swaging and brazing of tubes
	2	Introduction to refrigeration, and air conditioning	
	3	meaning of refrigerating effect, units of refrigeration, COP, methods of refrigeration	
2nd	4	Natural System and Artificial System	Practical-2 Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.
	5	**Unit-2** Vapour Compression System	
	6	Introduction, principle, function, parts and necessity of vapour compression system,	
3rd	7	T- ϕ and p– H charts, dry, wet and superheated compression.	Practical-3 Identify various parts of a refrigerator and window air conditioner.
	8	Effect of sub cooling, super heating,	
	9	mass flow rate, entropy, enthalpy	
4th	10	work done, Refrigerating effect and COP.	Practical-4 To find COP of Refrigeration system
	11	actual vapour compression system	
	12	Introduction to air refrigeration system, advantage and disadvantage of air refrigeration over vapour compression system.	
5th	13	**Unit-3** Refrigerants, Functions, classification of refrigerants,	Repeat Practical 1 to 4
	14	Properties of R – 717 R – 22, R–134 (a) and CO_2	
	15	Properties of ideal refrigerant, selection of refrigerant	
6th	16	**SESSIONAL TEST -I**	Repeat Practical 1 to 4
	17	**Unit-4**- Vapour Absorption System, Introduction	
	18	Principle and working of simple absorption system and domestic electrolux refrigeration systems	
7th	19	Solar power refrigeration system, advantages and disadvantages of	Repeat Practical 1 to 4

		solar power refrigeration system over vapour compression system	
	20	**Unit-5**-Refrigeration Equipment, Compressor - Function, various types of compressors	
	21	Condenser - Function, various types of condensers, Evaporator - Function, types of evaporators	
8th	**22**	Expansion Valve - Function, various types such as capillary tube, thermostatic expansion valve	Practical-5 To detect trouble / faults in a refrigerator/window type air conditioner
	23	low side and high side float valves, application of various expansion valves	
	24	Safety Devices-Thermostat, overload protector LP, HP cut out switch	
9th	**25**	**Unit-6**- Psychrometry Definition, importance, specific humidity, relative humidity, degree of saturation	Practical-**6** Charging of a refrigerator/window type air conditioner.
	26	DBT, WBT, DPT, sensible heat, latent heat, Total enthalpy of air.	
	27	Unit-7 Applied Psychrometry and Heat Load Estimation. Psychrometric chart, various lines	
10th	**28**	**SESSIONAL TEST -II**	Practical-7 Study of cut section of single cylinder compressor
	29	Psychrometric processes	
	30	By pass factor, room sensible heat factor, effective room sensible heat factor, grand sensibleheat factor	
11th	**31**	ADP, room DPT.	Practical-8 Visit to an ice plant, cold storage plant, central air conditioning plant
	32	Heating and humidification, cooling and dehumidification	
	33	Window air-conditioning,	
12th	**34**	split type air conditioning,	Repeat Practical 5 to 8
	35	Central air-conditioning,	
	36	Car air-conditioning	
13th	**37**	**Unit -8**, Latest development in refrigeration and air conditioning	Repeat Practical 5 to 8
	38	Inverter technology, auto-defrosting	
	39	Blast cooling, star rating.	
14th	**40**	**SESSIONAL TEST -III**	Repeat Practical 5 to 8
	41	Revision	
	42	Practice of Numericals	
15th	**43**	Query	Repeat Practical