LESSON PLAN

Name of Faculty : **Sh. Parveen Kumar**

Discipline : **Mechanical Engineering**

Semester : 5**th Semester**

Subject : **Refrigeration and Air conditioning**

Lesson Plan Duration : **15 Weeks**

Work Load (Lecture/Practical) per week(in hours) : **3 Hrs. Lecture & 2 Hrs. Practical**

Week	Theory		Practical	
	Day	Topic(Including Assignement/Test)	Day	Topic
1	1	1. Fundamentals of Refrigeration ,Introduction to refrigeration, and air conditioning, meaning of refrigerating effect	1	Introduction to R&AC Lab
	2	units of refrigeration, COP, difference between COP and efficiency		
	3	methods of refrigeration, Natural system and artificial system.	2	Introduction to R&AC Lab
2	4	Introduction of Vapour Compression System	3	Identify various tools of refrigeration kit
	5	Principle, function, parts and necessity of vapour compression system		
	6	T- S and p– H charts of vapour compression cycle of refrigeration	4	Identify various tools of refrigeration kit
3	7	dry, wet and superheated compression.	5	Practice in cutting, bending, flaring, swaging and brazing of tubes.
	8	Neumericals and problems discussions		
	9	Effect of sub cooling,	6	Practice in cutting, bending, flaring, swaging and brazing of tubes.
4	10	Effect of super heating, Numerical problems	7	Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.
	11	actual vapour compression system		
	12	Introduction to air refrigeration system	8	Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.

5	13	advantage and disadvantage of air refrigeration over vapour compression system.	9	Viva-Voce
	14	**Sessional Test of Unit 1 & 2**		
	15	Functions and classifications of refrigerants	10	Viva-Voce
6	16	Properties of R - 717, R – 22	11	Identify various parts of a refrigerator and window air conditioner
	17	Properties of R–134 (a), CO2, R – 12, R –502 etc.		
	18	Properties of ideal refrigerants, selection of refrigerants.	12	Identify various parts of a refrigerator and window air conditioner
7	19	Principle and working of simple vapour absorption system and domestic electrolux refrigeration systems.	13	To find COP of Refrigeration system
	20	Solar power refrigeration system,		
	21	advantages and disadvantages of solar power refrigeration system over vapour compression system.,	14	To find COP of Refrigeration system
8	22	Refrigeration Equipment ,Compressors- Function, various types of compressors	15	To measure air flow using anemometer
	23	Condensers - Function, various types of condensers		
	24	Evaporators- Function, types of evaporators	16	To measure air flow using anemometer
9	25	Expansion Valves - Function	17	Charging of a refrigerator/ air conditioner
	26	various types such as capillary tube, thermostatic expansion valve,		
	27	low side and high side float valves, application of various expansion valves	18	Charging of a refrigerator/ air conditioner
10	28	Safety Devices-Thermostat, overload protector,	19	Viva-Voce
	29	LP, HP cutout switch		
	30	**2nd Sessional test of Units 3,4&5**	20	Viva-Voce

11	31	Psychrometry ,Definition, importance	21	To detect faults in a refrigerator/ air conditioner
	32	specific humidity, relative humidity, degree of saturation	22	To detect faults in a refrigerator/ air conditioner
	33	DBT, WBT, DPT		
12	34	sensible heat, latent heat, Total enthalpy of air.	23	Visit to an ice plant or cold storage plant. or central air conditioning plant
	35	Applied Psychrometry and Heat Load Estimation	24	To find COP ICE-Plant Refrigeration system
	36	Psychrometric chart, various lines		
13	37	psychrometric process, by pass factor, room sensible heat factor, effective room sensible heat factor	25	To find COP of ICE-Plant Refrigeration system
	38	grand sensible heat factor, ADP, room DPT.	26	To find COP of Cold storage Refrigeration system
	39	Heating and humidification, cooling and dehumidification		
14	40	window air-conditioning, split type air-conditioning	27	To find COP of Cold storage Refrigeration system
	41	car air-conditioning, central air-conditioning.	28	Problems Discussions and feed back
	42	Latest development in refrigeration and air conditioning: Inverter technology, auto-defrosting		
15	43	Blast cooling, Star Rating.	29	Viva-Voce
	44	**3rd Sessional test of Units 6,7&8.**	30	Viva-Voce