

**LESSON PLAN-5<sup>TH</sup> SEMESTER**

**Subject- [TH.5 ] REFRIGERATION AND AIR CONDITIONING**

**Name of the Faculty- HADU BANDHU DAKUA**

MONTH	CHAPTER /UNIT	COURSE TO BE COVERED	CLASSES REQUIRED	REMARKS (IF ANY)
	<b>Chapter-1</b>	<b>AIR REFRIGERATION CYCLE.</b>	<b>05</b>	
	<b>1.1</b>	Definition of refrigeration and unit of refrigeration.	2	
	<b>1.2</b>	Definition of COP, Refrigerating effect (R.E )	1	
	<b>1.3</b>	Principle of working of open and closed air system of refrigeration.	1	
	<b>1.3.1</b>	Calculation of COP of Bell-Coleman cycle and numerical on it.	1	
	<b>Chapter -2</b>	<b>SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM</b>	<b>10</b>	
	<b>2.1</b>	Layout of steam power stations	1	
	<b>2.2</b>	Types	2	
	<b>2.2.1</b>	Cycle with dry saturated vapors after compression.		
	<b>2.2.2</b>	Cycle with wet vapors after compression		
	<b>2.2.3</b>	Cycle with superheated vapors after compression.	2	
	<b>2.2.4</b>	Cycle with superheated vapors before compression		
	<b>2.2.5</b>	Cycle with sub cooling of refrigerant	3	
	<b>2.2.6</b>	Representation of above cycle on temperature entropy and pressure enthalpy diagram		
	<b>2.2.7</b>	Numerical on above (determination of COP, mass flow)	2	
	<b>Chapter-3</b>	<b>VAPOUR ABSORPTION REFRIGERATION SYSTEM</b>	<b>07</b>	
	<b>3.1</b>	Simple vapor absorption refrigeration system	1	
	<b>3.2</b>	Practical vapor absorption refrigeration system	2	
	<b>3.3</b>	COP of an ideal vapor absorption refrigeration system	2	
	<b>3.4</b>	Numerical on COP.	2	
	<b>Chapter-4</b>	<b>REFRIGERATION EQUIPMENTS</b>	<b>08</b>	
	<b>4.1</b>	REFRIGERANT COMPRESSORS		
	4.1.1	Principle of working and constructional details of reciprocating and rotary compressors.	1	

	4.1.2 4.1.3	Centrifugal compressor only theory Important terms	1	
	4.1.4	Hermetically and semi hermetically sealed compressor	1	
	<b>4.2</b> 4.2.1	<b>CONDENSERS</b> Principle of working and constructional details of air cooled and water cooled condenser	1	
	4.2.2 4.2.3	Heat rejection ratio. Cooling tower and spray pond.	1	
	<b>4.3</b> 4.3.1	<b>EVAPORATORS</b> Principle of working and constructional details of an evaporator.	1	
	<b>4.3.2</b> <b>4.3.3</b>	Types of evaporator. Bare tube coil evaporator, finned evaporator, shell and tube evaporator.	2	
	<b>Chapter-5</b>	<b>REFRIGERANT FLOW CONTROLS, REFRIGERANTS &amp; APPLICATION OF REFRIGERANTS</b>	<b>10</b>	
	<b>5.1</b> <b>5.1.1</b> <b>5.1.2</b>	EXPANSION VALVES Capillary tube Automatic expansion valve	2	
	<b>5.1.3</b>	Thermostatic expansion valve	1	
	<b>5.2</b>	REFRIGERANTS Classification of refrigerants Desirable properties of an ideal refrigerant.	1	
	<b>5.2.3</b>	Designation of refrigerant.	1	
	<b>5.2.4</b> <b>5.2.5</b>	Thermodynamic Properties of Refrigerants. Chemical properties of refrigerants.	1	
	<b>5.6</b>	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 Substitute for CFC	1	
	<b>5.3</b> <b>5.3.1</b> <b>5.3.2</b>	Applications of refrigeration Cold storage Dairy refrigeration	1	
	<b>5.3.3</b> <b>5.3.4</b>	Ice plant water cooler	1	
	<b>5.3.5</b>	Frost free refrigerator	1	
	<b>Chapter-6</b>	<b>PSYCHOMETRICS &amp; COMFORT AIR</b>	<b>10</b>	

	<b>6.1</b>	<b>CONDITIONING SYSTEMS</b> Psychometric terms	<b>1</b>	
	<b>6.2</b>	Adiabatic saturation of air by evaporation of water	<b>1</b>	
	<b>6.3</b>	Psychometric chart and uses.	<b>1</b>	
	<b>6.4</b> <b>6.4.1</b> <b>6.4.2</b>	Psychometric processes Sensible heating and Cooling Cooling and Dehumidification	<b>2</b>	
	<b>6.4.3</b>	Heating and Humidification	<b>1</b>	
	<b>6.4.4</b> <b>6.4.5</b> <b>6.4.6</b>	Adiabatic cooling with humidification Total heating of a cooling process SHF, BPF	<b>1</b>	
	<b>6.4.7</b> <b>6.4.8</b>	Adiabatic mixing Problems on above.	<b>2</b>	
	<b>6.5</b>	Effective temperature and Comfort chart	<b>1</b>	
	<b>7.0</b>	<b>AIR CONDITIONING SYSTEMS</b>	<b>10</b>	
	<b>7.1</b> <b>7.2</b>	Factors affecting comfort air conditioning. . Equipment used in an air-conditioning.	<b>3</b>	
	<b>7.3</b>	Classification of air-conditioning system	<b>1</b>	
	<b>7.4</b> <b>7.5</b>	Winter Air Conditioning System Summer air-conditioning system	<b>2</b>	
	<b>7.6</b>	Numerical on above	<b>4</b>	