



VISION

"To excelling the field of technology by creating technocrats with value-based "professionalism."

MISSION

- To provide technical expertise to fulfill the need to the industry.
- To impact ethical values & professional responsibilities.
- To achieve excellence in academics.

TYME

Subject Name: RAC (22660)

Assignment No: 1

Course Outcome: CO605.1

Questions.

1. Define COP and "Ton of refrigeration".
2. Represent Carnot cycle on P-V and T-S diagram.
3. Draw a block diagram of "Air refrigeration system". State the function of each component which is use in Air refrigeration system.
4. List applications of refrigeration and State the necessity of air conditioning.
5. Plot "reverse Carnot cycle" on P-V and T-S diagram. Also mention processes involved in the cycle.
6. A refrigerator of 12 tons capacity works on reversed Carnot cycle and in the temperature range of 35°C and -15°C. Determine:
 - (i) COP of the system
 - (ii) Power required to run the system (kW)
7. A dense air machine operates on reversed Brayton cycle, & having capacity 10 TR. Its pressure limits are 1.4 bar and 4.2 bar. The air cooled in cooler at a temperature of 50 °C and temp of air at inlet to compressor is -20°C. Determine - (i) COP of the cycle (ii) Mass of air circulated per minute.
8. The temperature limits of an ammonia refrigerating system are 25° C and -10°C. If the gas is dry at the end of compression. Calculate COP of the system, assuming there is no sub-cooling of liquid refrigerant.

Temp °C	Liquid Heat (kJ/kg)	Latent Heat (kJ/kg)	Liquid Entropy (kJ/kg °k)
-10	133.37	1297.68	0.5443
25	298.9	1166.94	1.1242

Course co-ordinator :-Mrs. Pushpa Patil

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Subject Name: RAC (22660)

Assignment No: 2

Course Outcome: CO605.2

Questions.

1. Explain the effect of superheating and undercooling on the performance of vapour compression refrigeration system.
2. Give important desirable properties of an 'Ideal refrigerant'.
3. Explain the term Montreal protocol and Kyoto protocol.
4. Compare Vapour compression system and vapour absorption system.(at least 4 points)
5. Describe construction and working of Li-Br absorption system.
6. A 5 ton R-12 refrigeration plant has saturated suction temperature of -5°C . The condensation takes place at 32°C and there is no under-cooling of refrigerant liquid. Assuming isentropic compression, find
 - COP of the plant.
 - Mass flow rate of refrigerant in kg/sec.
 - Power required to run the compressor in kW.

If refrigerant is dry and saturated at the inlet to compressor. Take the following properties of R-12.

T ($^{\circ}\text{C}$)	P (bar)	h_f (kJ/kg)	h_g (kJ/kg)	S_g (kJ/kg K)
32	7.85	130.5	264.5	1.542
-5	2.61	124.2	249.3	1.557

Take C_p (vapour) = 0.615 kJ/kg K.

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Subject Name: RAC (22660)

Assignment No: 3

Course Outcome: CO605.3

Questions.

1. Draw constructional features of 'Hermetically sealed compressor'.
2. Explain with neat sketch the working of "Thermostatic expansion valve".
3. Explain with neat sketch working of 'capillary tube'.
4. Distinguish between water cooled condenser and air cooled condenser.
5. State and explain classification of evaporators with its applications.
6. Explain with neat sketch the working of flooded evaporator.
7. For 'storage tank type water cooler' suggest –
 - Compressor
 - Condenser
 - Expansion device
 - Evaporator
 - Refrigerant.
8. Explain 'frosting of evaporator'. On this basis classify evaporators.

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Subject Name: RAC (22660)

Assignment No: 4

Course Outcome: CO605.4

Questions.

1. Represent Following psychrometric processes on psychrometric chart
 - a) Heating with Humidification
 - b) Sensible heating
 - c) Cooling with Dehumidification
 - d) Sensible heating
 - e) Cooling with adiabatic humidification
2. State and explain Dalton's law of partial pressure.
3. A surrounding air having DBT 38°C and relative humidity 60% is converted to conditioned air having DBT 26°C and WBT 24°C. Plot the process on psychrometric chart and find out following properties of conditioned air: a) Relative Humidity b) Specific humidity
4. Explain different types and construction of Psychrometers.
5. Explain the function of filters and cooling coils in air conditioning system.
6. Atmospheric air at a dry bulb temperature of 16°C and 30% relative humidity passes through a furnace and then through a humidifier, in such a way that the final dry bulb temperature is 30°C and 50% relative humidity. Plot the process on Psychrometric chart and find
 - (iii) Heat added to the air,
 - (iv) Moisture added to the air,
 - (v) Sensible heat factor of the process.

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Subject Name: RAC (22660)

Assignment No: 5

Course Outcome: CO605.5

Questions.

1. List of various types of heat load to be considered while designing air conditioning system.
2. State the factors affecting on human comfort.
3. Explain the term sensible heat and latent heat.
4. Discuss the different types of heat loads which have to be taken into account in order to estimate the total heat load of auditorium of your institute for summer air conditioning for 200 students.
5. Explain the term heat exchange by human body with environment.
6. A surrounding air having DBT = 38°C and 60% of Relative humidity ratio is converted to conditioned air having DBT = 26°C and RH = 50%. Plot the process on psychrometric chart and find out all other properties of conditioned air.
7. A surrounding air having DBT 38 deg C and RH 60% is converted to conditioned air having DBT 26 deg C and WBT 24deg C. Plot the process on psychrometric chart and find out following properties of conditioned air : (1) Relative Humidity(2) Specific humidity



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Subject Name: RAC (22660)

Assignment No: 6

Course Outcome: CO605.6

Questions.

1. Design the layout of "summer air conditioning system" for Delhi city
2. Enlist insulating materials used in Refrigeration field.
3. Sketch and explain extended plenum duct system.
4. List different pressure losses in ducts.
5. Explain the working of window air conditioner with neat sketch.
6. Enlist different types of fans used in air-conditioning system. Explain anyone with a sketch.
7. Explain with neat sketch the working of Automobile Air conditioning.
8. Explain with neat sketch the working of 'Direct central Air conditioning system'

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