Question Bank (K scheme)

Name of subject: POWER ENGINEERING (315371)

Unit Test: I   **Course: ME**   **Semester: V**

Chapter 1: CO1 (REFRIGERATION) (2 Marks)

1. Give unit of Refrigeration and define it.

2. Define COP of refrigeration.

3. What are different secondary refrigerants? State its applications.

4. Give important desirable properties of an Ideal Refrigerants.

5. What is Ozone layer depletion?

Chapter 1: CO1 (REFRIGERATION) (4 Marks)

1. Difference between Heat Pump & Refrigerator.

2. Plot Reversed Carnot cycle on P-V & T-S diagram. Also mention processes involved in the cycle.

3. Represent Bell-Coleman air Refrigeration cycle on P-V & T-S diagram.

4. On p-H & T-S diagram show vapor compression cycle started compression with wet inlet and dry outlet.

5. Explain the concept of Global warming.

6. Explain the working of household refrigerator with neat sketch.

7. Explain with neat sketch storage type water cooler.

8. A Refrigerator of 12 tons capacity works on reversed Carnot cycle and in temperature range of 35 degree Celsius and -15 degree Celsius. Determine

   1. COP of system

   2. Power required to run the system (kW)

   3. Heat rejected by the system in kJ/sec.

9. Temperature limits of ammonia refrigerating system are 25 degree Celsius and -10 degree Celsius. If the gas is dry at the end of compression, find COP. Assume no undercooling. Use following properties of Ammonia

Temp (Celsius)	H_f (kJ/kg)	H_{fg} (kJ/kg)	S_f (kJ/kgK)
25	298.9	1166.94	1.1242
-10	135.37	1297.68	0.5443

Chapter 2: CO2 (Air Conditioning) (2Marks)

1. Classify Air-Conditioning systems.

2. What is Dalton's law of Partial pressure.

3. List psychrometric process.

4. Show the following Psychrometric processes on chart

    (i)   Sensible heating

    (ii)   Sensible Cooling

5. List type of humidifiers..

Chapter 2: CO2 (Air Conditioning) (4Marks)

1. Explain the working of window air-conditioning system..

2. With the help of Psychrometric chart find out the following, if the air is at 24 degree Celsius DBT and 40% relative humidity,

    (i)   DPT

    (ii)   WBT

    (iii) ENTHALPY

    (iv) SPECIFIC HUMIDITY

3. Plot the Psychrometric chart and show the following processes

    (i)   Heating with humidification

    (ii)   Heating with dehumidification

    (iii) Latent heating

    (iv) Cooling with adiabatic humidification

4. Air is dehumidified from an initial condition of 32 degree Celsius DBT and 80% relative humidity to 25 degree Celsius DBT and 15 degree Celsius WBT. Find moisture removed and decrease in enthalpy/kg of dry air.