NARSIMHA REDDY ENGINEERING COLLEGE
UGC AUTONOMOUS INSTITUTION

Maisammaguda (V), Kompally - 500100, Secunderabad, Telangana State, India

UGC - Autonomous Institute
Accredited by NBA & NAAC with 'A' Grade
Approved by AICTE
Permanently affiliated to JNTUH

QUESTION BANK

	UNIT-I			
S No	Question	Bloom's Taxonomylevel	Co's	Po's
1	Define the unit of refrigeration.	Understand	Co1	Po1,po2
2	What are the applications of refrigeration?	Remember	Co1	Po1,po2
3	Differentiate refrigerator and heat pump.	Remember	Co1	Po1,po2
4	What are the processes involve in reversed Carnot cycle?	Remember	Co1	Po1,po2
5	What are the limitations of reversed Carnot cycle?	Remember	Co1	Po1,po2
6	What do you mean by temperature limitation in refrigeration cycle?	Understand	Co1	Po1,po2
7	Define COP of refrigerator.	Remember	Co1	Po1,po2
8	What is significance of Mach number on air-craft refrigeration system.	Understand	Co1	Po1,po2
9	What is ramming process?	Understand	Co1	Po1,po2
10	What is the ram efficiency?	Understand	Co1	Po1,po2
11	How is ideal reversed carnot cycle modified to result in Bell Column cycle?	Remember	Co1	Po1,po2
12	What are the factors to be considered for the adoption of a refrigeration system for an aircraft?	Understand	Co1	Po1,po2
13	Explain the Boot strap refrigeration system with a schematic andcycle diagram. Derive the expression for the C.O.P. of Bell Column cycle.	Understand	Co1	Po1,po2
14	Differentiate open and dense air refrigeration cycle	Remember	Co1	Po1,po2

	UNIT-II			
S No	Question	Bloom's Taxonomy level	Co's	Po's
1	Derive an expression for C.O.P of vapor compression cycle from t-s chart when the refrigerant is dry saturated before compression. Understand		C02	Po2
2	An air refrigeration used for fool storage provides 25 TR./ The temperature of air entering the compressor is 7 0 and the temperature at exit of cooler is 27 0 C. Find : 1.C.O.P. of cycle, 2. Power per tonne of refrigeration required by the compressor.The quantity of air circulated in the system is 3000 kg/h. The compression and expansion both follows the law pv 1.3 = constant and take Y= 1.4; and c p = 1 kJ/kg K for air	Remember	C02	Po2

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			C02	Po2
3	Explain the working principle of vapor compression refrigerant	Understand		
4	In an open air refrigeration machine, air is drawn from a cold chamber at -2 0 c and 1 bar and compressed to 11bar. It is thencooled at this pressure, to the cooler temperature of 20 0 c andthen expanded in expansion cylinder and returned to the cold room. The compression and expansion are isentropic, and follows the law pv 1.4 =constant. Sketch the p-v and T-s diagrams of the cycle and for a refrigeration of 15 tonnes, find 1. theoretical C.O.P 2. Rate of circulation of the air in kg/min 3. Piston displacement per minute in the compressor and expander 4. Theoretical power per tonne of refrigeration	Remember	C02	Po2
5	Discuss the advantages of dense air refrigeration system overan open air refrigeration system.	Understand	C02	Po2
6	What are the effect of sub cooling and super heating on vapourcompression cycle.	Understand	C02	Po2

	UNIT-III			
S No	**QUESTION**	**Bloom's Taxonomy level**	**Co's**	**Po's**
1	Explain the working principle of steam jet refrigeration system?	Remember	Co3	Po2,po4
2.	Explain the working principle Of Reciprocating compressor	Understand	Co3	Po2,po4
3.	Explain the working principle Of Rotary compressor	Understand	Co3	Po2,po4
4.	Explain the working principle Of Centrifugal compressor	Remember	Co3	Po2,po4
5.	Explain the working principle Of Screw compressor	Remember	Co3	Po2,po4
6.	Explain the working principle the vapour absorptionrefrigeration system?	Understand	Co3	Po2,po4
7.	Explain the working principle Three fluid absorptionrefrigeration system?	Understand	Co3	Po2,po4
8.	Explain the working principle Practical vapour absorption system?	Remember	Co3	Po2,po4
9.	Explain the working principle Hydrogen-water system?	Remember	Co3	Po2,po4
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S No	QUESTION	Bloom's Taxonomy level	Co's	Po's
1	Represent the following process in a skeleton psychrometric chart. i. Sensible cooling ii. Cooling and humidification iii. Adiabatic mixing of air streams	Understand	Co4	Po1,po4
2	Ten grams of moisture per kg of dry air is removed from atmospheric air when it is passed through an air conditioning system and its temperature becomes 200C. The atmospheric conditions are 400C DBT and 60% RH. Calculate the following for the conditioned air. i. Relative humidity, ii. Wet-bulb temperature, iii. Dew point temperature, iv. Enthalpy change for the air. Assume standard atmospheric pressure.	Understand	Co4	Po1,po4
3	When is dehumidification of air necessary and how it is achieved?	Remember	Co4	Po1,po4
4	120 m3 of air per minute at 350C DBT and 50% R.H is cooled to 200C DBT by passing through a cooling coil Determine the following R.H of out coming air and its WBT ii Capacity of the cooling coil in tons of refrigeration iii Amount of water vapor removed per hr. iv ADP	Understand	Co4	Po1,po4
5	Define the following- i. Partial pressure of water vapour ii. DPT iii. RHand iv. Degree of saturation.	Remember	Co4	Po1,po4
6	The atmospheric air at 180C DBT and 70% RH is supplied to the heating chamber at the rate of 120m3 /min. The leaving air has a temperature of 240C without change in its moisture contents. Determine the heat added to the air per minute and final RH of the air.	Understand	Co4	Po1,po4
7	Write a short note on the bypass factor of the cooling coils.	Understand	Co4	Po1,po4
8	The sensible heat factor of an air-conditioned room is 0.67. The condition of the air leaving the air-conditioned room is 270C DBT and 52% RH. The maximum permissible temperature difference between the inlet air and outlet air is 110C. If the quantity of air flow at the inlet of the room is 180m3 /min, then determine the sensible and latent heat load of air conditioned room.	Understand	Co4	Po1,po4
9	Explain the procedure to construct the RSHF line on a psychrometric chart.	Understand	Co4	Po1,po4
10	800 m3 /min. of recirculated air at 220C DBT and 100C DPT is to be mixed with 300 m3 /min. of fresh air i. at 300C DBT and 50% RH. Determine the enthalpy, specific volume, humidity ratio and DPT of the mixture.	Remember	Co4	Po1,po4
	UNIT-V			
S No	QUESTION	Bloom's Taxonomy level	Co's	Po's

1	What are the sources of heat in nature which can be used for heat pumps?	Understand	Co5	Po2,po5
2	Discuss about the performance of Heat pump when used with the different sources of heat. State the advantages and disadvantages in each case.	Understand	Co5	Po2,po5
3	Differentiate between the unitary and central air conditioning system	Remember	Co5	Po2,po5
4	The amount of air supplied to air conditioned hall is 300 m3 /min. The atmospheric conditions are 350C DBT and 55% RH. The required conditions are 20 0C DBT and 60% RH, determine, the sensible heat and latent heat removed from the air per minute. Also, find SHF for the system	Understand	Co5	Po2,po5
5	Explain the summer air conditioning system with a neat sketch.	Remember	Co5	Po2,po5
6	Explain the procedure of construction of comfort chart.	Understand	Co5	Po2,po5
7	An air conditioned plant is to be designed for a small office for winter conditions: Outdoor conditions are 100C DBT and 80C WBT, required indoor conditions are 200C DBT and 60% RH, amount of air circulation is 0.3 m3 /min./person, seating capacity of the office is 50 persons. The required condition is achieved first by heating and then by adiabatic humidifying, determine; i. Heating capacity of the coil in KW and the surface temperature; if the by-pass factor of the coil is 0.32; and ii. Capacity of the humidifier.	Understand	Co5	Po2,po5
8	Briefly explain the thermodynamics of human body	Understand	Co5	Po2,po5
9	Give the classification of the effects of heat on human body? Explain briefly	Understand	Co5	Po2,po5
10	List out different sources that contribute to the sensible heat load of the room to be air conditioned	Remember	Co5	Po2,po5

UNIT–I

Continuous Internal Assessment Questions
Assignment 1:
Assignment 2: