

Tilak Maharashtra University

Diploma in Engineering

SUB: Refrigeration and Air Conditioning

Assignment No: I

(Write any five)

Q.1 State the application of refrigeration for chemical and industrial processes

Q.2 What is ice refrigeration?

Q.3 Explain in brief steam jet refrigeration

Q.4 What is meant by Bell-Coleman cycle? Enlist various advantages and disadvantages of it.

Q.5 Draw a neat line diagram of simple vapour absorption system and explain its working

Q.6 compare vapour compression and vapour absorption refrigeration for

- a) components
- b) noise
- c) performance
- d) efficiency

Q.7 Ice at -5°C is formed from water at 30°C . Temperature of brine is -10°C .

Find the mass of ice formed per hour if 150 Kw is required to drive the unit

Refrigeration machine works on reversible Carnot cycle. Take latent heat

of freezing of water 335 KJ/Kg, specific heat of water 4.187 KJ/Kg K

and specific heat of ice 2.1 KJ/Kg K.

Assignment No: II

(Write any five)

- Q.1 Explain in brief working of simple vapour compression cycle.
- Q.2 Give advantages and disadvantages of air refrigeration cycle.
- Q.3 Explain in brief working of simple vapour compression cycle.
- Q.4 Explain with neat sketch Electrolux system.
- Q.5 Explain with neat sketch practical vapour absorption system.
- Q.6 What are the criteria used for selection of refrigerant for particular application ?
- Q.7 An ammonia refrigeration machine has to do an amount of refrigeration equal
To production of 20 tones of ice per 24 hour at -3°C from water at 10°C .
If the temperature limits of the compressor are 27°C and -12°C , calculate
The power of compressor assuming the cycle is perfect one. Take enthalpy of
Fusion of ice as 336 KJ/Kg and its specific heat as $2.1\text{ KJ/ kg}^{\circ}\text{K}$

Assignment No: III

(Write any five)

Q.1 Name the components of vapour absorption system that replaces the compressor of vapour compression system.

Q.2 Draw a flow diagram of simple vapour absorption cycle

Q.3 Draw a flow diagram of actual vapour absorption system.

Q.4 Give the classification of compressor. Explain the construction and working Of reciprocating compressor.

Q.5 Distinguish between open type compressor and hermetically sealed compressor.

Q.6 Explain the difference between the winter air conditioning and summer air conditioner?

Q.7 Find COP of household refrigerator uses F-12 as a refrigerant. It operates between Evaporator and condenser temperature of 263° k and 318 respectively.

The refrigerant flow rate is 30 Kg/hr . The compression is to be isentropic from saturated vapour state. Take the enthalpy at the end of compression to be 211.5 KJ/Kg and latent heat of ice as 335 KJ/Kg . The properties of F-12

at Temp $^{\circ} \text{ k}$	Enthalpy KJ/KG		Entropy KJ/KG $^{\circ} \text{ k}$	
	Liquid	Vapour	Liquid	Vapour
263	27.13	183.43	0.1088	0.703
318	81.42	206.58	0.2940	0.687