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Roll No .....

AU/ME-803 (GS)

B.E. VIII Semester

Examination, May 2019

Grading System (GS)

Refrigeration and Air Conditioning

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Define the following
   i) Refrigeration
   ii) Refrigeration effect
   iii) Ton of refrigeration
   b) Sketch the schematic of a refrigeration system operating on a Bell-Coleman cycle and explain its working on P-v and T-S plots.

2. a) A R-12 vapour compression refrigeration system has a condensing temperature of 50°C. The refrigeration capacity is 7 tons. The liquid leaving the condenser is saturated liquid and compression is isentropic. Determine
   i) Refrigeration flow rate
   ii) Power required to run the compressor
   iii) COP of the system.
   Take the enthalpy at the end of isentropic compression = 210kJ/kg. Take the following properties of R-12

Temperature (°C)	Enthalpy (kJ/kg)	
	Liquid	Vapour
50	84.868	206.298
0	36.022	187.397

PTO

   b) Explain with neat sketch, vapour compression refrigeration system.

3. a) What is simple vapour Absorption system? State how its performance can be improved.
   b) Discuss the concept of steam jet refrigeration system.

4. a) A mixture of dry air and water vapour is at a temperature of 21°C under a total pressure of 736mm of mercury. The partial pressure of water vapour is 1707.5N/m^2 and its saturation pressure is 2489.9 N/m^2 compute the relative humidity specific humidity and degree of saturation.
   b) What is Psychometric chart? What information does it provides?

5. a) State the importance of cooling load in case of an air conditioning system.
   b) What is Sensible heat load and latent heat load?

6. a) Discuss the use of sub cooling and superheating in vapour compression system.
   b) Discuss the various desired properties of a refrigerants.

7. a) Define the term by pass factor and coil efficiency in relation to the processes of sensible heating and sensible cooling.
   b) What is COP? Also explain various application of refrigeration.

8. Write a short note of the following:
   i) Cascade system
   ii) Joule Thomson effect
   iii) Production of dry ice

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