Total No. of Questions : 6]

SEAT No. :

P17

[Total No. of Pages : 3

APR-17/BE/Insem.-18

B.E. (Mechanical)

REFRIGERATION AND AIR-CONDITIONING EQUIPMENT DESIGN

(2012 Pattern) (Elective - III(a)) (Semester - II)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) ***Answer three questions out of 6.***
2) ***Solve Q1 or 2, Q3 or 4, Q5 or 6.***
3) ***All the three questions should be solved in one answer book and attach extra supplements if required.***
4) ***Draw diagrams wherever necessary.***
5) ***Use of scientific calculator is allowed.***
6) ***Assume suitable data whereever necessary.***

Q1) a) Explain with neat sketch the internal heat exchange cycle type transcritical refrigeration cycle. **[5]**

b) Explain the performance characteristic curves of Reciprocating compressor. **[5]**

OR

Q2) What is dry ice? Explain with schematic diag. the method of manufacturing dry ice. **[10]**

Q3) a) Explain the construction working of pilot operatedregulating valve. **[5]**

b) Explain the construction working of direct acting solenoid valve. **[5]**

OR

Q4) a) Explain the construction working of direct acting solenoid valve. **[5]**

b) Write a short note on "reverse cycle defrosting" **[5]**

P.T.O.

Q5) a) Explain the importance of Joule Thomson coeffcient and inversion temperature. When operating a system for liquefaction of gases. **[5]**

b) Discuss specific types of insulations used for low temperature applications? **[5]**

OR

Q6) Determine the following for Linde-Hampson system with air as working fluid when the system is operated between 1 bar and 200 bar at 300k. **[10]**

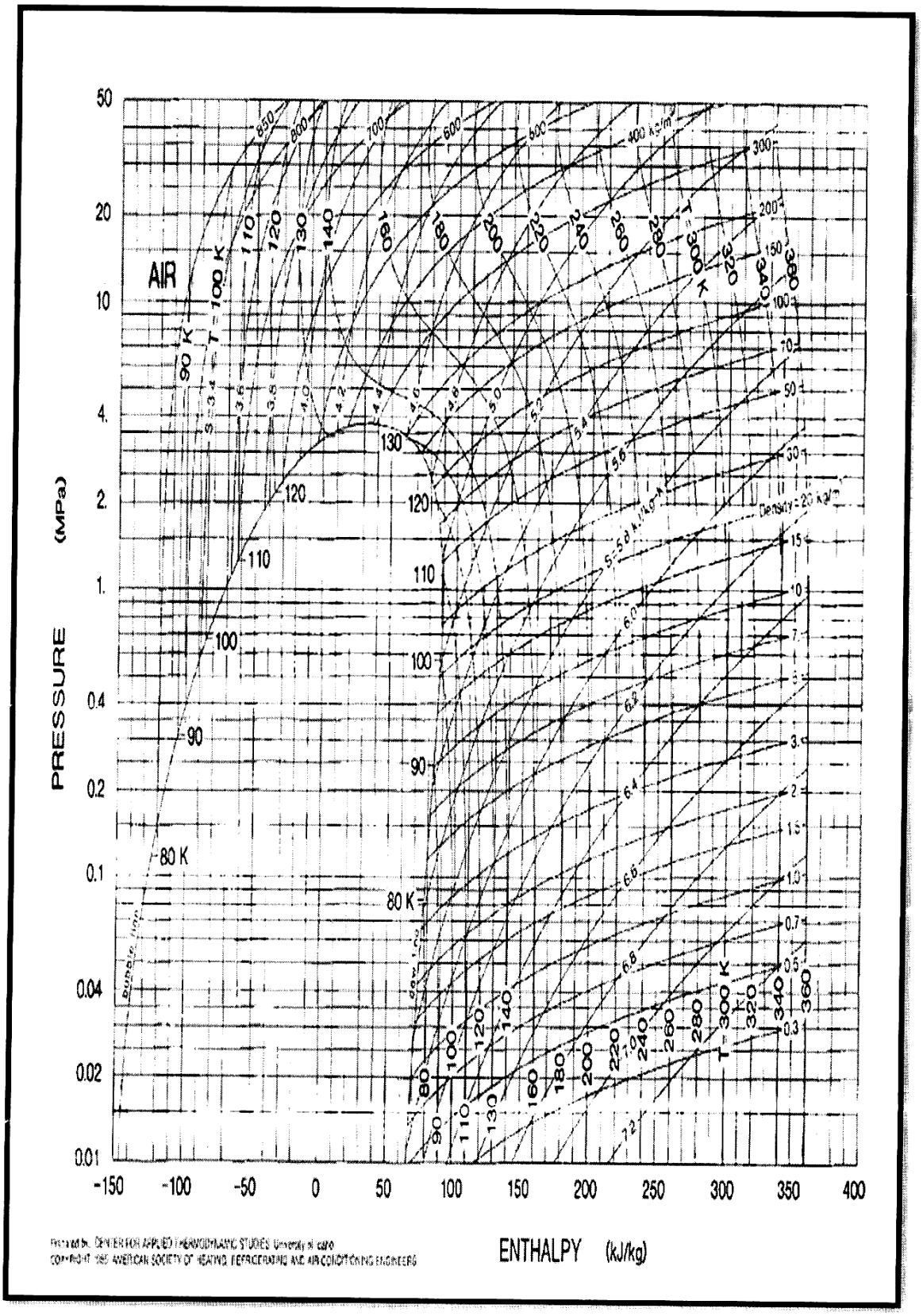
a) Ideal work requirement

b) Liquid yield

c) Work per unit mass of compression

d) Work per unit mass of liquefaction

e) Figure of merit.


AIR
PRESSURE (MPa)
ENTHALPY (kJ/kg)
50
20
10
4.
2.
1.
0.4
0.2
0.1
0.04
0.02
0.01
-150
-100
-50
0
50
100
150
200
250
300
350
400
80 K
90
100
110
120
130
140
T = 100 K
Density = 20 kg/m³