Reg. No. : ....

Name : ....

Seventh Semester B.Tech. Degree Examination, April 2015
(2008 Scheme)
08.704 : REFRIGERATION AND AIR CONDITIONING (M)

Time : 3 Hours   Max. Marks : 100

Instructions : 1) Use of **Psychrometric chart** and **Refrigeration properties** **tables** are **permitted**.

2) Answer **all** questions from Part – **A** and **one full** question from **each** Module of Part – **B**.

PART – A

1. Sketch reversed Carnot cycle on P-V and T-S plane and name the different processes.

2. Describe a liquid suction heat exchanger.

3. Explain difference between refrigerator and heat pump.

4. What are the advantages of vapour absorption system ?

5. List the factors that cause the spoilage of food.

6. Discuss on ozone depletion and green house effect.

7. Distinguish between slow freezing and quick freezing.

8. Compare a summer AC system with a winter AC system.

9. Explain RSHF and GSHF.

10. Represent different psychometric processes on a psychometric chart.

(10×4=40 Marks)

PART – B

Module – I

11. a) Derive an expression for the COP of a reversed Joule cycle in terms of pressure ratio and index of compression. **10**

b) An R 22 vapour compression system operating at a condenser temperature of 45° C and an evaporator temperature of –10° C has a capacity of 20 TR. Determine the mass flow rate of refrigerant, COP and the total heat rejected at the condenser. **10**

12. a) Compare the performance of different aircraft refrigeration cycles. **10**

b) An ammonia refrigerating machine has working temperatures of 35° C in the condenser and 15° C in the evaporator. Assume two cases dry compression and wet compression. Calculate for each i) theoretical piston displacement per Ton of refrigeration ii) theoretical horse power per Ton of refrigeration and iii) COP. **10**

Module – II

13. a) Explain the different methods adopted for food preservation. **10**

b) Explain the working of Lithium Bromide water absorption refrigeration system. **10**

14. a) With the help of neat sketch explain working of a steam jet refrigeration system. **10**

b) Explain the working of different types of compressors. **10**

Module – III

15. a) Mention the advantages and disadvantages of split AC system. **10**

b) Represent the following processes in a psychometric chart and explain how they can be achieved.

   a) Heating and dehumidification

   b) Cooling and dehumidification

   c) Only humidification

   d) Sensible heating. **10**

16. a) Describe an air conditioning system for a hospital. **10**

b) What are the important factors considered in cooling load calculation ? **10**