

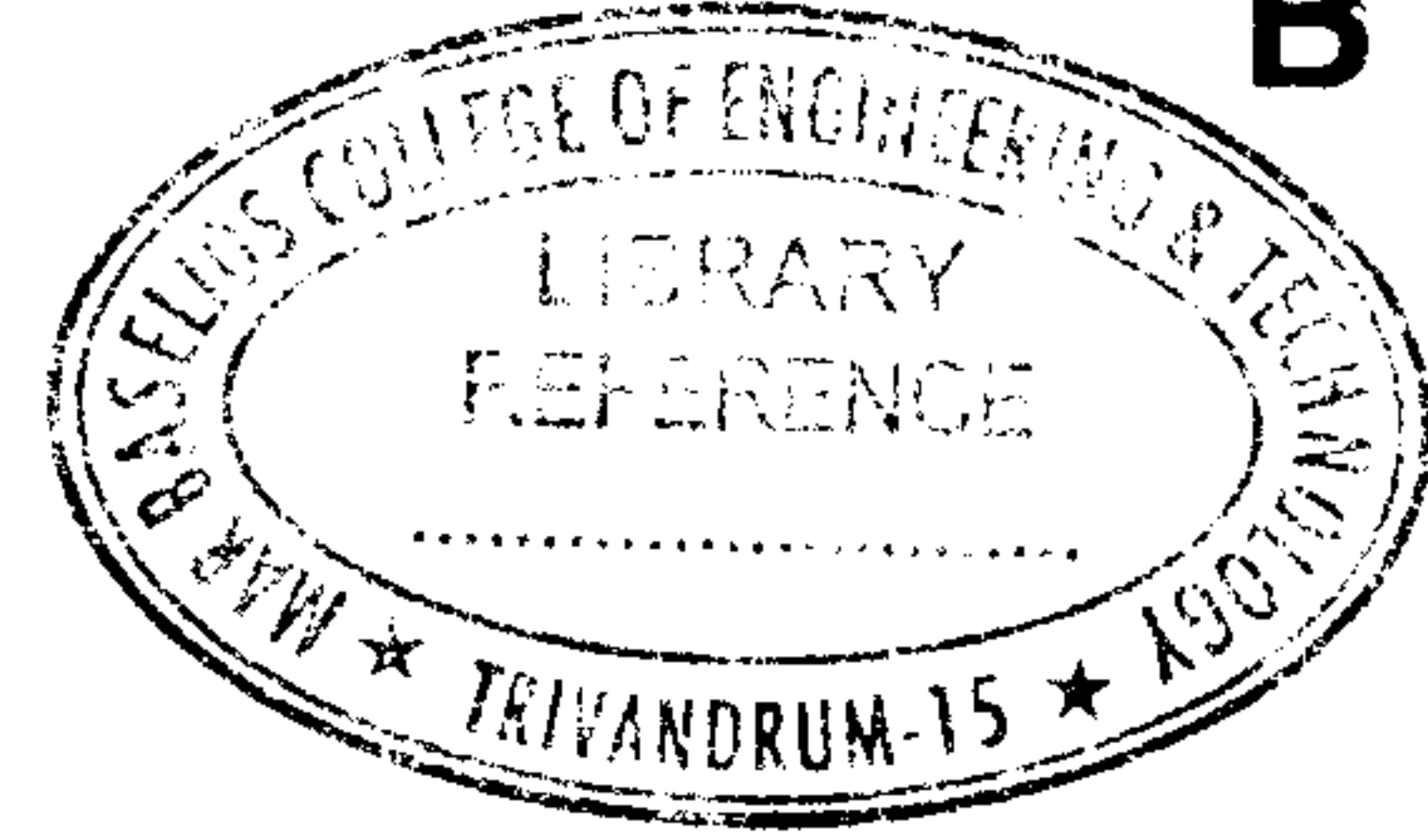


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B – 5260

Reg. No. :

Name :



**Seventh Semester B.Tech. Degree Examination, February 2017
(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. What are the factors by which a refrigerator is different from a heat pump ?
2. Compare vapour compression refrigeration system with an air refrigeration system.
3. Write down the function of liquid suction heat exchanger.
4. What are the advantages of vapour absorption refrigeration system ?
5. State the factors that determine human comfort. Sketch the comfort chart.
6. Explain sub cooling and superheating with help of T-S diagram.
7. Describe the mixing process of two air streams.
8. Describe the function of a condenser in a refrigeration system.
9. What are the methods of improving COP of a simple vapour compression cycle ?
10. Explain the desirable properties of a refrigerant. **(10×4=40 Marks)**

P.T.O.



PART – B

Module – I

11. a) Describe with a schematic diagram and draw the T-S representation of the processes of Boot-strap evaporative type air craft refrigeration system. 10
- b) Discuss the arrangement used for producing low temperature by adiabatic demagnetization of a paramagnetic salt. 10

OR

12. Ammonia vapour compression system the piston displacement is $\alpha \text{ m}^3/\text{min}$, condenser pressure be 12 bar, evaporator pressure 2.5 bar. The liquid is subcooled to 20°C by soldering the liquid line to suction line. Vapour temperature leaving compressor is 100°C . Heat rejected to compressor cooling water is 5000 kJ/hr compressor volumetric efficiency is 80%. Compute capacity, indicated power and COP of the system. 20

Module – II

13. a) Explain with neat sketch, the working of an electrolux system. 10
- b) With a sketch explain the working of steam-jet refrigeration system. 10

OR

14. a) What is the function of a condenser in a refrigeration system? Describe with diagram the working of an evaporative condenser. 12
- b) Explain the different methods used for food preservation. 8

Module – III

15. a) Describe the different methods of air conditioning duct design. 10
- b) With neat diagrams differentiate among unitary, split and centralized air conditioning systems. 10

OR

16. In an air conditioning system :
- a) Sensible heat gain : 4.8 kW
- b) Latent heat gain : 1.6 kW
- c) Conditioned air supply is $0.5 \text{ m}^3/\text{sec}$.
- d) Room condition : 25°C (DBT) and 50% RH.
- Compute the required WBT and DBT of the supply air. 20
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