



B.E/ B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011

AGRICULTURE AND IRRIGATION ENGINEERING

VI SEMESTER

**ME 509 – REFRIGERATION AND AIRCONDITIONING**

Time : 3 hrs

Max Mark : 100

Answer ALL Questions

Part – A (10 \* 2 = 20 Marks)

1. Define heat pump
2. What do you mean COP?
3. What are secondary refrigerants?
4. What are the desirable properties of ideal refrigerants?
5. Define relative humidity
6. Define Psychrometry
7. What are the factors affecting comfort air-conditioning?
8. What do you mean by sick building syndrome?
9. What is Peltier effect?
10. What are the various techniques employed for freezing foods.

Part B (5 \* 16 = 80 Marks)

11. Sketch the vapour compression refrigeration cycle with p-h and T-s diagram and explain the principle operation of each component.
12. a. Describe with a sketch, principle operation of centrifugal compressor.  
(OR)  
b. Explain following condensers with a neat sketch  
(i) Shell and tube condenser (ii) Evaporative condensers

13. a. Explain the following process on the skeleton psychrometric chart
- (i) Heating and humidification
  - (ii) Cooling and dehumidification
  - (iii) Sensible cooling and sensible heating

(OR)

- b. Explain with a neat diagram of air-conditioning system required for summer season

14. a. Describe unitary and central air conditioning system

(OR)

- b. Describe variable air volume (VAV) air distribution system with its advantage and disadvantage

15. a. Briefly describe the principle operation of steam jet water vapour refrigeration system.

(OR)

- b. Explain with a neat sketch about various components of vapor absorption refrigeration system