

10 ME 41C REFRIGERATION AND AIR CONDITIONING (SI UNITS)

IV B.Tech I Semester

(with effect from the academic year 2013-2014)

Lectures/week: 4 Hrs.
University Exam: 3 Hrs

Credits: 4
Sessional Marks: 40
End Examination Marks: 60

UNIT –I

Refrigeration: Cycles: Thermodynamic analysis of vapour compression, absorption, air cycle, steam jet and thermoelectric refrigeration systems. Comparison of COP and cost – Properties and selection of refrigerants – alternative refrigerants.

UNIT-II

Component parts: Reciprocating compressors, Condensers – Air cooled and Water cooled – Economical water rate, Evaporators – Defrosting, Design of cooling towers and evaporative condensers.

UNIT-III

Refrigeration Control: Automatic and thermostatic expansion valve, Capillary tube, Compressor controls, miscellaneous controls. Testing and charging of refrigeration units. Cryogenics – liquification and purification of gases. Applications of refrigeration – dry ice, walk-in-Cooler, Water Coolers, refrigerators, Transportation, Food processing & Preservation, recent developments in refrigeration.

UNIT-IV

Air Conditioning: Basic Concepts : Fundamental functions of air conditioning – psychrometrics – air and humidity calculations – sensible heat factor – analysis of air conditioning process and cycles with psychrometric chart – Cooling load calculations.

UNIT-V

Comfort Air Conditioning: Physiological reactions to cooling – The effective temperature and its use in the determination of standards of comforts – comfort chart – comparison of domestic, industrial and commercial applications of air conditioning.

Ventilation system: Summer and winter ventilation – Ventilation of hot working spaces – industrial ventilation – air cleaning.

Controls: Automatic control of air conditioning systems, Duct work, selection of fans.

TEXT BOOKS:

1. A Course in Refrigeration and Air Conditioning : Arora S.C. & Domkundwar S.
2. Refrigeration and Air Conditioning : Misra L.N.

REFERENCES:

1. Refrigeration and Air Conditioning : Jordan & Priester
2. Principles of Refrigeration : Dossat
3. Refrigeration and Air Conditioning : Stocker