

AMM-23 REFRIGERATION AND AIR-CONDITIONING

UNIT-1 REFRIGERATION

- 1.1 Theory of Refrigeration machines
- 1.2 Reversed Carnot cycle
- 1.3 Cold air refrigeration machine
- 1.4 Co-eff. of performance
- 1.5 Applications of air cycles for cooling aircraft cabins
- 1.6 Vapor compression machines
- 1.7 Refrigeration effects per kg of working substance-primary and secondary refrigerants
- 1.8 Multistage compression and expansion systems, with flash inter cooling
- 1.9 Cascade system of refrigeration
- 1.10 Vapor absorption machine
- 1.11 Commercial ice making plant
- 1.12 Household refrigerators, cryogenics
- 1.13 Liquefaction of gases, manufacturing of dry ice

UNIT-2 AIR-CONDITIONING

- 2.1 Thermodynamic properties of air-water vapor mixtures
- 2.2 Psychrometry, use of psychrometric charts of various types, study of heating, cooling, humidification and dehumidification
- 2.3 Processes on air-water-vapor mixtures
- 2.4 Adiabatic mixing of air streams
- 2.5 Reheating and bypassing of air
- 2.6 Room apparatus dew point, coil apparatus dew point
- 2.7 Sensible heat factor, coil bypass factor, inside and outside design, comfort air conditioning, comfort zone, effective temperature
- 2.8 Air conditioning load calculations

UNIT-3 AIR DISTRIBUTION

- 3.1 High and low velocity ducts
- 3.2 Duct design, zoning, fans and blowers (applications only)

UNIT-4 COLD STORAGE

- 4.1 Cold storages-load calculations
- 4.2 Optimum insulation
- 4.3 Design conditions for storage of various commodities
- 4.4 Air circulation
- 4.5 Types of evaporators
- 4.6 defrosting
- 4.7 Controls in air conditioning plants
- 4.8 Refrigerant feed control
- 4.9 Safety controls

- 4.10 H.P. and L.P. switches
- 4.11 Oil pressure failure switch
- 4.12 Interlocking control
- 4.13 Humidity and temperature measurement and control
- 4.14 Air velocity measurement
- 4.15 Electric, pneumatic circuits for refrigeration plant used in air-conditioning

UNIT-5 CONSTRUCTION

- 5.1 Layouts, operation and maintenance of air-conditioning plants
- 5.2 Noise and vibration control, fault location, causes and remedies, preventive maintenance

UNIT-6 APPLICATION OF SUMMER

- 6.1 winter and weather air-conditioning plants
- 6.2 Testing of air conditioning plants

Reference Books:

1. Refrigeration and Air Conditioning by Arora C P
2. A Text book of Refrigeration and Air conditioning by Kurmi R S and J K Gupta
3. Thermal Engineering by R Rudramoorthy

