2.16 30271 REFRIGERATION & AIR CONDITIONING

UNIT-1 INTRODUCTION OF REFRIGERATION SYSTEM

1.1 Definition of thermodynamics
1.2 Pure substance
1.3 Types of Equilibrium
1.4 Laws of thermodynamics and there utilization
1.5 Different process in thermodynamics
1.6 Heat
1.7 Entropy
1.8 Enthalpy
1.9 Refrigeration and second law of thermodynamics unit is kj/k
1.10 Refrigeration
1.11 Units use of refrigeration
1.12 History of refrigeration
1.13 Window type room air conditioner
1.14 Domestic refrigeration
1.15 Several refrigeration system
1.16 Application of refrigeration

UNIT-2 DEFINATION OF REFRIGERATION, CARNOT REFRIGERATION CYCLE

2.1 Refrigeration
2.2 Definition of C.O.P
2.3 Reversed Carnot cycle
2.4 Units of refrigeration
2.5 Limitation of Carnot cycle

UNIT-3 AIR REFRIGERATION SYSTEM

3.1 Characteristic feature of an air refrigeration system
3.2 Advantages of closed or dense system over open system
3.3 Disadvantages of closed system over open system
3.4 Bell Coleman or reversed joule air refrigeration cycle
3.5 Advantage of bell Coleman cycle
3.6 Disadvantage of bell Coleman cycle

UNIT-4 AIRCRAFT REFRIGERATING SYSTEM

4.1 Application of air cycle refrigeration for aircraft
4.2 Advantages of air refrigeration system for aircraft cooling
4.3 Methods of air refrigeration systems
4.4 DART (Dry air rated temperature)
4.5 Comparison of various aircraft cooling system using Dry Air Rated Temperature (DART)

UNIT-5 VAPOUR COMPRESSION REFRIGERATION SYSTEM

5.1 Limitation of air refrigeration cycle
5.2 The Vapour compression Refrigeration system
5.3 reversed Carnot cycle &vapour compression cycle
5.4 Advantages & disadvantages of vapour compression refrigeration system over air refrigeration system
5.5 Pressure – enthalpy (p-h) chart for Refrigerants in vapour compression cycle
5.6 Thermodynamic analysis of vapour compression refrigeration cycle
5.7 Different types of vapour compression cycle
5.8 Assumption in theoretical vapour compression cycle
5.9 Dry compression
5.10 Wet compression
5.11 effects of operating variables on performance of vapour compression refrigerating effect
5.12 Actual vapour compression cycle
5.13 Methods of improvement in simple saturated vapour compression cycle
5.14 Draw backs of vapour compression cycle

UNIT-6 MULTISTATE VAPOUR COMPRESION REFRIGRATION SYSTEM
6.1 Multistage vapor compression refrigeration system
6.2 Multistage compression with intercooling between the stages
6.3 Advantages & disadvantages of multistage compression cycle with intercooling
6.4 Intermediate pressure: for minimum work
6.5 The analysis of two stage compression with intercooler
6.6 Analysis of two stage compression with intercooler and liquid sub cooler

UNIT-7 CASECADE SYSTEM
7.1 Cascade system
7.2 Advantages of cascading system
7.3 Optimum inter stage temperature for cascade system

UNIT-8 VAPOUR ABSORPTION CYCLE
8.1 Introduction
8.2 Principle of basic liquid absorption system
8.3 Simple ammonia water vapour absorption system
8.4 Practical ammonia water vapour absorption system
8.5 Domestic Electrolux (NH3-H2) refrigerator

UNIT-9 PROPERTIES OF BINARY MIXTURE
9.1 Homogeneous and Heterogeneous mixture
9.2 Miscibility
9.3 Concentration
9.4 Temperature – concentration diagram
9.5 Enthalpy concentration diagram (h-c)
9.6 Steady flow process with binary mixture

UNIT-10 RFRIGERANTS

10.1 Refrigerant
10.2 Classification of refrigerants
10.3 Classification of primary refrigerants
10.4 Properties of a good refrigerant
10.5 Other properties of refrigerants
10.6 Properties of an ideal refrigerant
10.7 Secondary Refrigerants
10.8 Advantages of secondary refrigerants
10.9 Important refrigerant
10.10 Refrigerants nomenclature
10.11 Effect of refrigerants on environment
10.12 Green House effect
10.13 Green House effect from CFCs
10.14 Ozone depletion by CFCs and house effect
10.15 Global warming, marine pollution threaten India's prime environment pollution
10.16 Montreal protocol (1987)
10.17 Montreal protocol and India's commitment
10.18 Difficulties in phasing out the CFCs
10.19 Future Refrigerant (CFC free refrigerant)

Reference Book: Refrigeration &Air-Conditioning by Anibar Sur