

FUNDAMENTAL OF REFRIGERATION & AIR CONDITIONING (5000)				
Teaching Schedule per week		Marking Scheme		
Lecture - 3	Practical - 2	Term work	Orals	Total
		25	-	
		Theory 75	Test -25	125

COURSE CONTENTS	Hrs	Mks
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**Fundamentals of Refrigeration and Air Conditioning.** 03hrs. 06

**1. Fundamentals of Refrigeration**

Second law of Thermodynamic, Clausius statement, Kelvin-Planck statement. Definition of Refrigeration coefficient of performance. Standard rating of a refrigeration machine.

**2. Refrigerants:-**

04hrs 04

Classification of refrigerants. Designation of refrigerants, Desirable properties of an ideal refrigerants. Properties and uses of commonly used refrigerants like R-12, R-22, R-134A, Ammonia. Comparison of refrigerants. Application of refrigerants, Green House effect.

**3. Simple vapour compression System:-**

06hrs 10

(No numerical/mathematical treatments)

Vapour compression cycle. Functions of parts of vapour compression system. Representation of vapour compression cycle on T-s and P-h diagram. Factors affecting the performance of vapour compression system.

**4. Vapour Absorption System.**

04 hrs 09

Simple vapour absorption cycle. Functions of parts of vapour absorption system. Electrolux refrigerator construction and working.

**5. Refrigeration components & control:-**

06 hrs. 10

Compressor, Hermetically sealed compressor, open type compressor, screw compressor, centrifugal compressor, condensers- Air cooled, Water cooled, evaporative Evaporators – flooded type, dry type.

Refrigeration controls: - Thermostatic expansion valve, capillary tube.

**6. Psychrometric:**

05 hrs. 06

Definition of Psychrometry, Psychrometrics.

Various properties of air (i) Dry air (ii) Saturated air (iii) DBT (iv) WBT (v) DPT (vi) specific humidity (vii) relative humidity (viii) wet bulb depression (ix) Dew point depression (x) Sensible heat (xi) Enthalpy.

Psychrometers. Psychrometric charts.

**7. Psychrometrics. Processes :- (No numerical)**

05 hrs. 06

Description and representation of various processes on psychrometric charts, Mixing of air streams, Sensible heating, sensible cooling and dehumidification, cooling and humidification, adiabatic saturation, Heating and dehumidification, Definition of sensible heat factors, such as RSHF & GSHF.

**8. Air conditioning components and controls.**      08 hrs      12

Air conditioning components : Filters, fans, air washer, radiator & convertor.

Air conditioning control: Manually control system.

Automatic system, Semi automatic control system,

Automatic humidity control, Air movement system.

Automatic temperature control.

Limit & switches , time switches.

**9. Refrigeration and air conditioning:**      07 hrs      12

Construction, working and practicals applications of following units:-

Domestic refrigerator,

Ice Plant,

Window air conditioner,

Central air conditioning plant, and

Cold storage.

Practicals:

1. Study of a domestic refrigerator,
2. Study of a Water cooler,
3. Study of cold storage plant.
4. Study of window A.C.
5. Study of centralized A.C plant.
6. Study of Ice plant.
7. Study of Auto A.C.
8. Study of compressor.

