

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN MECHANICAL ENGINEERING
SEMESTER- VI

Subject Name: **Refrigeration and Air Conditioning Practice**
(Elective Practice -I)
Subject Code: **2361908**

NOTE:- Following are the minimum experiences required, but the college can do more experiences if possible.

LABORATORY EXPERIENCES :			
Experience Type	Experience Number	Description of Laboratory Experience	Hrs.
Preparatory	01	1. Appreciate main objectives of learning this subject: a. Familiarize with refrigeration and air conditioning applications. b. Identify simple and common faults in commercially available refrigeration and air conditioning equipments/systems and repair the same. 2. Strengthen know how for fundamental thermodynamic units, systems and cycles.	2
Study and demonstration	02	Vapour Compression Refrigeration System (VCRS) components-compressor, condenser, expansion devices and evaporators-types, construction, working, common troubles, their causes and remedies.	4
	03	Domestic refrigerator, window air conditioner and split air conditioner.	2
	04	Air handling equipments/elements.	2
Performance	05	Tubing Operations.	6
	06	Leak detection, evacuation of system refrigerant and re-filling the same.	2
	07	Determination of COP of water cooler / any VCRS based system.	2
	08	Determination of properties of air by using different instruments	2
Tutorial and report making	09	Simple cooling load	-

Download and seminar presentation, (Copy downloaded content and seminar of whole batch In one /one set of CD/DVD)	10	a) Prepare and present seminar individually in your batch. (Seminar topic has to be given by teacher). b) Download individually visual aids, movies, content and other related content for the given case/situation. (Case/situation has to be given by teacher)Present and discuss the same in your batch.	6
Industrial visit	11	Visit cold storage plant, ice plant and air-conditioning plant.	-
Service centre visit	12	Visit at least two related refrigerator/air conditioner service centers and get the details for common troubles and their remedies.	-
Assignments (Home Assignment)	13	Solve the given tutorials and assignments. One assignment must be on preparation of chart / diagram / poster / graph / drawing / etc on half imperial size of drawing sheet. (For subject RAC).	-
		Total	28

Notes:

A. FOR STUDENTS.

- a. It is advised that student download this copy of syllabus and plan to achieve the objectives of learning this subject.
- b. Attach copy of syllabus as part of term work.

B. FOR STUDENTS AND SUBJECT TEACHER/S.

- a. Term work report content of each experience should also include following.
 - i. Experience description / data and objectives.
 - ii. Skill/s which is / are expected to be developed in student after completion of experience.
 - iii. Steps / procedure to execute experience.
- b. Term work report of student of regular mode should exclude Distance Learning manual, photocopies, printed content(except visual aids), etc. Focus should be on developing the term work as original efforts of students.
- c. Term work content of industrial visit report should also include following.
 - i. Brief details of industry visited.
 - ii. Type ,location, products, rough layout, human resource, etc of industry.
 - iii. Details, description and broad specifications of machineries/ processes observed.
 - iv. Safety norms and precautions observed.

- v. Student's own observation on Industrial environment, productivity concepts, quality consciousness and quality standards, cost effectiveness ,culture and attitude.
- vi. Any other details / observations asked by accompanying faculty.
- d. Term work should also include experience logbook duly certified by subject teachers.
- e. Term work is to be defended (along with term work) with practical examination by external and internal examiners .Practical examination will include followings:
 - i. Viva
 - ii. Calculate various performance parameters based on given set of conditions. (like COP, RE, WD, OHTC, SHF, BF, CF, etc.)
 - iii. Perform any one experience from experience number 5 to 8.

Reference Books:

1	Principle of Refrigeration	Dossat R.J. Prentice Hall, USA
2	Basic Refrigeration and air conditioning(2nd Edition)	P.N. Anantha narayan Tata Mc Graw Hill
3	Refrigeration and Air conditioning	Domkundwar Dhanpat Rai & Sons
4	Refrigeration and Air conditioning	Khurmi & Gupta S. Chand, New Delhi
5	Refrigeration and Air conditioning	C.P. Arora Tata Mc Graw Hill
6	Refrigeration & Air conditioning	M. Prasad Wiley Easter, Delhi
7	Refrigeration & Air Conditioning	P.S. Desai L.F.Rajput Atul PRakashan
8	Refrigeration & Air Conditioning -	L.R.D.C., A'bad

Additional Reference Books:

1.	Refrigeration and Air conditioning	P.L. Balleney Khanna Publishers
2	Ind. Refrigeration Handbook	Stoecker Mc Graw Hill, USA
3	Modern Refrigeration & Air Conditioning	Althouse etc Galgotia Book source New Delhi
4	Fundamental of refrigeration	Longely Delmar Pub. USA
5	Refrigeration & Air conditioning	ARI P.H.I., USA
6	Handbook of Air conditioning	Wang Mc Graw Hill
7	Air Conditioning Lang	CBS Pub. Co. Delhi
8	Heating, Ventilation and air conditioning	Clifford Reston Pub. USA
9	Air conditioning (4th Edition)	Jones Edward Arnold
10	Air conditioning Principles & Systems	Pita John Wiley USA
11	Refrigeration & air conditioning	Trott Mc Graw Hill Uk
12	HVAC Principles & applications	Mull Mc Graw Hill USA
13	Principles of Heating, Ventilation and air conditioning	Howell saucer coad Ashree 1998
14	HVAC Systems Duct Design -	SMACNA, USA

15	HVAC Systems	Monger Prentice Hall, USA
16	HVAC Systems Design Hand Book	Hains& Wilson Mc Graw Hill USA
17	Fan Application Manual -	AMCA, USA
18	Cooling Towers	Gurney & Cotter Maclaren & Sons , UK
19	ASHRAE Handbook Fundamentals	-ASHRAE
20	ASHRAE Handbook Refrigeration	-ASHRAE
21	ASHRAE Handbook Applications	- ASHRAE
22	ASHRAE Handbook System and Applications	-ASHRAE
23	Prashitan and vatanukulan	A.K. Mehta Uni. Text Book Board, AHN
24	Refrigeration & Air Conditioning	Whitman Johnson Tomczyk Delmar Pub. Co. USA