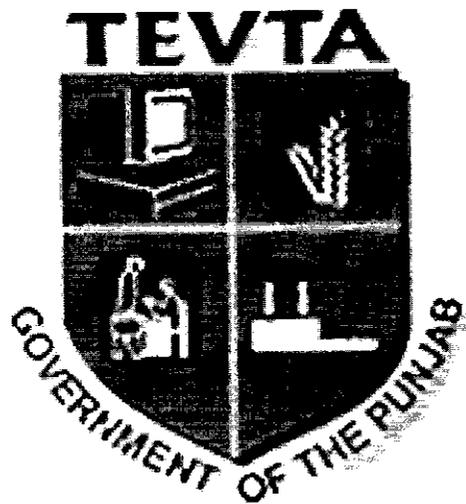


GOVERNMENT OF PUNJAB
**TECHNICAL EDUCATION & VOCATIONAL
TRAINING AUTHORITY**



CURRICULUM FOR
**HEATING VENTILATION AIR CONDITIONING
& REFRIGERATION**

(3 – Months Course)
Revised April 2016

APPROVED

Date: 7-4-16

Sign: 

**CURRICULUM SECTION
ACADEMICS DEPARTMENT**

96-H, GULBERG-II, LAHORE
Ph # 042-99263055--9, 99263064
gm.acad@tevta.gop.pk, manager.cur@tevta.gop.pk

TRAINING OBJECTIVES

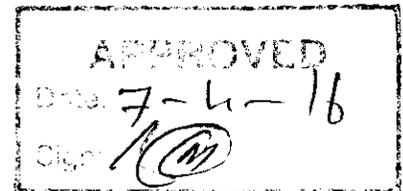
The objective of this course is to produce semi-skilled labor through imparting training to fresh entrant's i.e. practical skill and theoretical knowledge about installation, repair and trouble shooting of refrigerator and domestic air-conditioners.

On completion of course the trainee will be able to use common hand tools, measuring instruments, install and dismantle Air Conditioners find faults and rectify the same in AC & refrigerators. He will be conversant with common refrigerants / CFCs understand auto car air conditioning, dismantle and reassemble different types of compressors, understand evaporating, condensing, Expansion, Heating, cooling etc.

After the completion of this course trainee will be able to start a career in industry his own workshop and earn his livelihood by offering his skills.

CURRICULUM SALIENTS

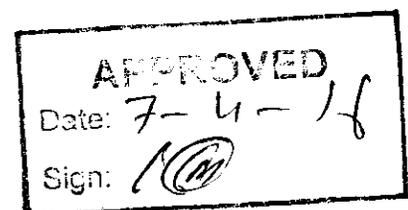
Entry Level:	Middle
Total Duration of Course:	3 Month
Total Training Hours:	400 Contact Hours
Training Methodology:	80 % Practical 20 % Theory
Medium of Instruction:	Urdu / English



SKILL COMPETENCY DETAIL

After the completion of this course the student will learn the following skills:

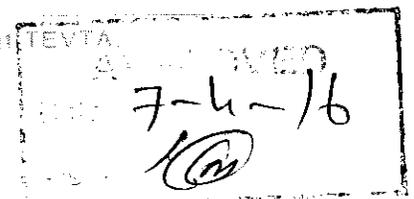
1. Selection, use and precautions of tools and measuring instruments for the maintenance of domestic Refrigerator and Air-Conditioner (Window & Split Type).
2. To do the installation of domestic A/C & Refrigerators.
3. Measure, bend, pinch off & cutting of copper tubes.
4. Joining tubing to tubing and tubing to fittings by flaring.
5. Connecting two pieces of soft copper tubing of the same diameter.
6. Making the leak proof connections by brazing or silver soldering.
7. Identification of symbols in electrical circuit of Refrigerator, A/C (Window & split) and deep freezer and checking the circuit.
8. Leak detection in Domestic units e.g. A/C, Refrigerator, water cooler, water dispenser etc.
9. Perform the routine maintenance and seasonal servicing of Refrigerator & Air-Conditioner.
10. Check & adjust doors and replaces gas kits on domestic refrigerator & deep freezers.
11. Remove, check, repair, replace or service compressors, condensers& evaporators.
12. Check, clean, remove and replace capillary tubes.
13. Evacuate and charge with refrigerant of domestic units.
14. Observe good house keeping and ethics in carrying out services and customer satisfaction.



KNOWLEDGE PROFICIENCY DETAIL

After the completion of the course the student will have knowledge of:

1. Selection of proper tools and materials.
2. Handling the Refrigerators/ Air Conditioning Units.
3. To follow the safety precautions of the shop floor.
4. Basic principles of electricity, electric tools, devices and their uses.
5. Selection of proper safety devices in domestic Refrigerators/ Air Conditioning Units.
6. Operation and maintenance of domestic Refrigerators, Deep Freezers, Air Conditioner (Window and split type) and desert cooler.
7. Electrical circuit diagrams of domestic units.
8. Identification of Refrigerators, their properties and precautions/awareness about CFCs free products.
9. Installation of window type and split type Air-Conditioners.
10. Fault detection and trouble shooting of domestic units.
11. Gas charging in Refrigeration and Air-Conditioning units.
12. Leak detection in Refrigerator, Deep Freezer and Air-Conditioner units with halide torch and electronic leak detector.
13. Dismantle, check and reassemble the domestic refrigeration and air conditioning units.



SCHEME OF STUDIES
Heating Ventilation Air-Conditioning & Refrigeration
 (3 - Months Course)

S. No	Main topics	Theory Hours	Practical Hours	Total Hours
1.	Workshop Practice	10	36	46
2.	Fundamental of Electricity & Electronics	10	40	50
3.	Servicing	5	34	39
4.	Fundamental of Refrigeration	20	90	110
5.	Gas Charging & Troubleshooting	15	80	95
6.	I.T Fundamentals	4	16	20
7.	Functional English	15	25	40
Total		71	321	400

DETAIL OF COURSE CONTENTS
Heat Ventilation Air-Conditioning & Refrigeration
 (3- Months Course)

S. No.	Topics	Theory Hours	Practical Hours
1.	Workshop Practice	10	36
1.1	Workshop safety.		
1.2	First aid for electric shock and simple injury.		
1.3	Use of cutting tools, chisels, Hacksaw, Files, Drills.		
1.4	Use of tube cutters, pipe cutters & wire cutters.		
1.5	Use of swaging tools, Flaring tools & Tube bending tools.		
1.6	Joining of copper tubes of equal & Unequal sizes by silver soldering, brazing with oxyacetylene flame(Gas welding/ Arc Welding)		
1.7	Introduction of brass fitting.		
1.8	Introduction of copper fitting and Copper pipe sizing.		
1.9	Flaring of tube.		
1.10	Swaging of tube.		
1.11	Bending of tube.		
1.12	Cutting of capillary tube & sizing.		
1.13	Welding(Arc, Soldering & Brazing)		
2.	Fundamental of Electricity	10	40
2.1	Basic Electricity		
2.2	Ohms law (Resistance, volt & current relation.		
2.3	Series circuit.		
2.4	Parallel circuit.		

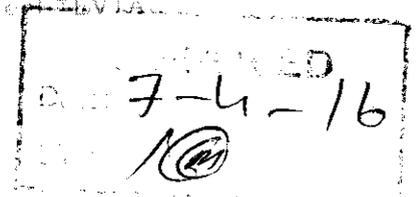
Approved by the Director, Government of Karnataka

APPROVED
 Date: 7-4-16
 Sign: 

2.5	Single lamp with one switch.				
2.6	Series parallel Test Board. <ul style="list-style-type: none"> • Introduction of Electronics. • Carbon Resistance. • Color Coding of Resistance • Diode. • Bridge Rectifier • Light Emitting Diode • Semi-Conductor • Transistor. 				
2.7	Tube light connection				
2.8	Use of Volt, Amp and Watt Meter				
2.9	Use of multi meter(AVO Meter)				
2.10	Use of clamp on meter				
2.11	Electric wiring of direct cool (frost type) Refrigerator.				
2.12	Electric wiring of Water Cooler.				
2.13	Electric wiring of Deep Freezer.				
2.14	Electric wiring of window AC.				
2.15	Electric wiring of Split AC.				
2.16	Electric wiring of Non-frost refrigerators.				
3	Servicing			5	34
3.1	Overhauling and assembling of all type of domestic compressors.				
3.2	Making of Gas kit(Head & valve plate) of compressors				
3.3	Air gap adjustment(Rotor& Stator)				

APPROVED
 Date: 7-6-16
 Sign: 

3.4	Checking of terminal(Compressors & Motors)		
3.5	Identification of relays and its checking.		
3.6	Identification of overloads and its checking.		
3.7	Identification of Thermostat and its checking.		
3.8	Identification of Capacitors and its checking.		
3.9	Identification of pressure switches and it's checking.		
4	Fundamental of Refrigeration	20	90
4.1	Introduction of Automobile Air-Conditioning.		
4.2	Introduction and use of Refrigerant control (AEV, TEV, HSFV & LSFV, HEV, and EEV).		
4.3	Introduction of electric motor (single phase).		
4.4	Compressor Efficiency.		
4.5	Identification and use of Defrosting Timer.		
4.6	Use of Tachometer		
4.7	Making joints of door gas kit of refrigerators/ deep freezers		
4.8	Introduction & use of insulating material.		
4.9	Introductions of valves, solenoid valve, & Service valve.		
4.10	Introduction of Refrigeration Accessories, Muffler, Moisture indicator, Heat Exchanger, Oil Separator, accumulator, Sight Glass, Vibration Absorber, relief valve, Oil pressure control and Liquid receiver.		
4.11	Energy, understanding of pressure works and atmospheric pressure.		
4.12	Understanding of Heat, Sensible Heat, Latent Heat & specific heat		

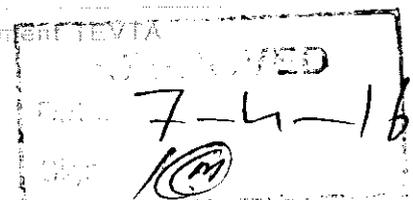


4.13	Laws of Refrigeration.		
4.14	Refrigeration Cycle.		
4.15	Properties of Refrigerants and Replacement of Refrigerants (R-12, R-22, R-134a, R-404a).		
4.16	Identification and working of Temperature, Pressure and Vacuuming instruments/ devices		
5	Gas Charging & Troubleshooting	15	80
5.1	Vacuuming of all type of domestic refrigeration and air-conditioning units.		
5.2	Leak testing of all type of domestic refrigeration and air-conditioning units.		
5.3	Gas charging of Refrigerators.		
5.4	Gas charging of Deep Freezer/ water coolers.		
5.5	Gas charging of window AC.		
5.6	Gas charging of Split AC. <ul style="list-style-type: none"> • Recovery of Refrigerant from a Unit • Reclaiming of Refrigerant • Recycling of Refrigerant • Retrofitting 		
5.7	Oil charging in compressor.		
5.8	Introduction of ducts.		
5.9	Introduction of Filters.		
5.10	Trouble shooting of Refrigerator.		
5.11	Trouble shooting of Window AC.		
5.12	Trouble shooting of Split AC.		
5.13	Trouble shooting of Deep Freezer/ water cooler.		

APPROVED
 Date: 7-4-16
 Sign: 

LIST OF PRACTICALS

S.No	Name of Practical
1.	Cutting exercise(MS flat ¼)
2.	Filing exercise(MS flat ¼)
3.	Drilling exercise(MS flat ¼)
4.	Cutting of copper tube ¼ inch
5.	Reaming of copper tube
6.	Flaring of copper tube 3/8 inch
7.	Flaring of copper tube ¼ inch
8.	Swaging of copper tube
9.	Soldering of copper tube
10.	Brazing of copper tube
11.	Cutting of capillary tube
12.	Bending of copper tube
13.	Series circuit
14.	Parallel circuit
15.	Connection of lamp
16.	Tube light connection
17.	Connection of volt amp watt meter
18.	Use of multi meter
19.	Checking of Carbon Resistance
20.	Checking of Diode
21.	Checking of Semi Conductor
22.	Checking of Transistor
23.	Checking of DC Supply
24.	Electric wiring direct cool refrigerator
25.	Electric wiring of water cooler
26.	Electric wiring of deep freezer



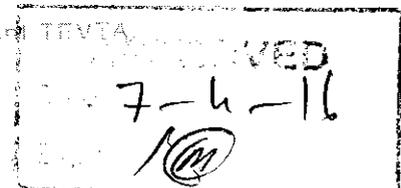
27.	Electric wiring window AC
28.	Electric wiring of split AC
29.	Servicing of domestic compressors
30.	Making of gas kit(head and wall plate) of compressor
31.	Air gap adjustment(rotor and stator)
32.	Checking of terminals(compressor and motor)
33.	Lubrication of fan motor
34.	Checking of relay
35.	Checking of over load
36.	Checking of thermostat
37.	Checking of capacitor
38.	Checking of selector switch
39.	Checking of pressure switch
40.	Finding of fan speed
41.	Pump down
42.	Compressor efficiency
43.	Oil charging
44.	Checking of defrost timer
45.	Checking of termination switch
46.	Measurement of air flow
47.	Earth testing
48.	Making of door gas kit(refrigerator)
49.	Vacuuming of domestic units
50.	Leak testing of domestic units
51.	Gas charging of refrigerator
52.	Gas charging of deep freezer
53.	Gas charging of water cooler
54.	Gas charging of window AC
55.	Gas charging of split AC

56.	Recovery of Refrigerant from a Unit
57.	Reclaiming of Refrigerant
58.	Recycling of Refrigerant
59.	Retrofitting
60.	Troubles of refrigerator
61.	Troubles of deep freezer
62.	Troubles of window AC
63.	Troubles of split AC
64.	Troubles of water cooler
65.	Trouble shooting of split Air Conditioner (DC inverter)
66.	Gas charging of split Air Conditioner (DC inverter)



SCHEME OF STUDIES
I.T Fundamentals

S.No	Main Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction to Computers	1	4	5
2.	Typing - Microsoft Word	2	6	8
3.	Internet & Electronic Mail	1	6	7
Total		04	16	20



DETAIL OF COURSE CONTENTS
I.T Fundamentals

S. No	Detail of Topics	Theory Hours	Practical Hours
1	<p>Introduction to Computers</p> <p>1.1 What is a computer- Definition, functions and general features?</p> <p>1.2 What is Hardware – 1.2.1 Computer parts and units 1.2.1.1 Input Unit - Keyboard, Mouse etc. 1.2.1.2 Central Processing Unit 1.2.1.3 Output Unit</p> <p>1.3 What is Software – 1.3.1 Electronic Parts of a Pc it is 1.3.1.1 Software and Its types 1.3.1.2 System Software, Application Software</p> <p>1.4 Working with windows Operating System 1.4.1 How does windows desktops work?</p> <p>1.5 What are the Icons, Shortcuts and other graphic, 1.5.1 How to see computer contents on different drives etc</p>	1	4
2	<p>Typing and Word processing (MS Word)</p> <p>2.1 Proper way of typing correct and speedy - getting familiar with the keys</p> <p>2.2 Where to type in computer? How to save a file? How to get it back? Where to find your saved work?</p> <p>2.3 How to get it printed?</p>	2	6
3	<p>Emailing and Internet Surfing</p> <p>3.1 How to go to Internet, what is required for an</p>	1	6

7-4-16


	internet connection etc.		
3.2	How to use email? How to search on web? Etc		
3.3	How to make new email account, login and logout an email account etc.?		
Total		04	16

APPROVED
 Date: 7-4-16
 Sign: *[Signature]*

SCHEME OF STUDIES
Functional English

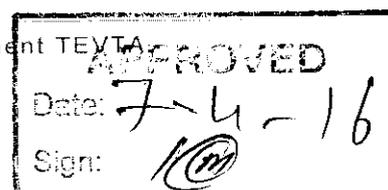
S.No	Main Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction of English Sentence Structure	2	3	5
2.	Use of present indefinite tense	2	3	5
3.	Use of 'is' 'are' 'am' questions and negatives	2	3	5
4.	Ask questions	2	3	5
5.	Express daily routines	2	3	5
6.	Know how to address people	1	2	3
7.	Provide written feedback	1	2	3
8.	Dialogues	1	2	3
9.	Understand vocabulary	1	2	3
10.	Application/C.V.	1	2	3
Total		15	25	40

DETAIL OF COURSE CONTENTS
Functional English

S. No	Detail of Topics	Theory Hours	Practical Hours
1	Introduction of English sentence structure	2	3
2	Use of present indefinite tense with exercises	2	3
3	Use of 'is' 'are' 'am' questions and negatives	2	3
4	4.1 Ask questions 4.1.1 At work place 4.1.2 In the market 4.1.3 In classroom	2	3
5	5.1 Express daily routines 5.1.1 Before going to college 5.1.2 Dealing with colleagues 5.1.3 Going to market	2	3
6	6.1 Know how to address people 6.1.1 In Meetings 6.1.2 In class	1	2
7	7.1 Provide written feedback 7.1.1 After visiting the market 7.1.2 On some official task	1	2
8	8.1 Dialogues 8.1.1 With colleague 8.1.2 Teacher/student 8.1.3 Employer/employee 8.1.4 Booking on railway station	1	2
9	Understand vocabulary	1	2
10	Application / C.V.	1	2
Total		15	25

LIST OF PRACTICALS
Functional English

S. No.	Practical
1.	Group discussion
2.	Interviews
3.	Role play



LIST OF LABS

HVACR

- Basic Lab / Workshop
- Electric Lab / Workshop
- HVACR Lab / Workshop

I.T Fundamentals

- Computer Lab

7-4-16
/ (M)

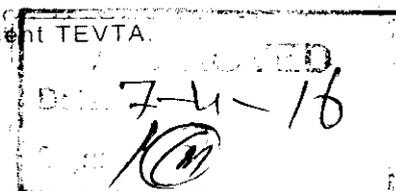
LIST OF TOOLS & EQUIPMENT'S

(For a Class of 25 Students)

Name of trade	HVACR Mechanic
Duration of course	3-Months

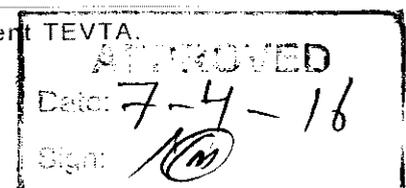
S. No.	Nomenclature of Equipment / Tools	Quantity
1	Tube Cutter with reamer	10 Nos.
2	Pinch off pliers	05Nos.
3	Hack saw frame	10Nos.
4	Chisels set	02 Nos.
5	Combination Pliers	25Nos.
6	Snipers	05Nos.
7	Venire Calipers	10Nos.
8	Measuring Taps	10Nos.
9	Electric hand drill machines	04Nos.
10	Multimeter (AVO Meter)	10Nos.
11	Absolute Vacuum pump	01No.
12	Wheel Pullers (Pulley Pullers)	02Nos.
13	Taps, dies and reamers	03 sets
14	Tachometer	02 Nos.
15	Clamp on meter	05Nos.
16	Work Tables (4'x6')	13Nos.
17	Flaring tools	05Nos.
18	Tube benders (lever type/ spring type)	05 set each

Developed by Curriculum Section, Academics Department TEVTA.



19	Files sets	25Nos.
20	Punches (Hollow , Centre & Number Punch)	5 set each
21	Spanners Set (mm & Inch)	5 set each
22	Adjustable screw wrench (8" & 12")	05 each
23	Pair of Scissors	05Nos.
24	Wire Brushes (Metal)	05Nos.
25	Ratchet wrench	05Nos.
26	Gas welding set	01 set
27	Thermometers (digital & Dial type)	05 Each
28	Amp Meters (Digital)	05 Nos.
29	1000 Volt magger Insulators	01 No.
30	Testing & Charging Gauge manifold set	05 set
31	Pipe cutters	10Nos.
32	Electronic Leak Detector	2 Nos.
33	Humidistat digital	01 No.
34	Air-Conditioners (Window type)	02Nos.
35	Air Velocity meter	01 No.
36	Swaging Tools	05 sets
37	Hammer set	02 set
38	Screw drivers set	05 set
39	Socket set (inch & mm)	02 each
40	Allen key set	05Nos.
41	Fin comb set	05 set
42	Arc Welding Equipments	01 sets

43	Spirit Levels (metal)	05Nos.
44	Capacitor Analyzer	02Nos.
45	Refrigerators Direct Cool, Non Frost	3 each
46	A/C Split (1 ton, 1 ½ ton, 2 ton)	01 each
47	Deep Freezers	01No.
48	Nitrogen cylinder set	01 set
49	Capillary tube cutter	05Nos.
50	Grip Pliers	05Nos.
51	Thimble fixing pliers	05Nos.
52	Soldering Iron 75 w	05Nos.
53	Hand Electric Blower	01 No.
54	Frillier gauge set	01No.
55	Door gas kit heater set	01 No.
56	Long nose pliers	05Nos.
57	Lock Pliers set	01 set



COMPUTER LAB

S. No.	Tools / Equipment	Quantity
1.	Desktop computer (Specifications as per notification issued by MIS Section, TEVTA)	26 (1 for each student & 1 for the teacher)
2.	Printer (Laser)	01
3.	Scanner	01
4.	Internet Connection (At least 1 MB speed)	01
5.	UPS 10 KVA	01
6.	Air Conditioner 1 ½ Ton	02
7.	Multimedia Projector	01

CONSUMABLE MATERIALS**HVACR**

S.No	Name of Item	For 1 trainee	For 25 trainees
1.	MS flate 1/4 inch	4 inch	8.33 ft
2.	Soft copper tube ¼ inch	8 inch	16.66 ft
3.	Soft copper tube 3/8 inch	6 inch	12.5 ft
4.	Capillary tube 0.036 inch	4 inch	8.33 ft
5.	Oxygen gas		2 cylinder refill
6.	Accitileen gas		1 cylinder refill
7.	Nitrogen gas		1cylinder refill
8.	Soldering rod		250 gram
9.	Brazing rod		250 gram
10.	Welding flux		250 gram
11.	PVC wire 3/29		1 coil
12.	PVC tap		6 no
13.	Fuse 6 Amp		12 no
14.	Single pole switch		12 no
15.	Two pin socket		12 no
16.	Lamp Holder		12 no
17.	Electric board 8x6		12 no
18.	Tube Rod 40 w		5
19.	Choke 40w		5
20.	Starter		5
21.	Connector		10
22.	Voltmeter		5
23.	Amp meter		5
24.	Watt meter		5
25.	Flexible wire 40/76		1 coil
26.	Bulb 60 w		12
27.	Bulb refrigerator		12
28.	Bulb deep freezer		12
29.	Indication light (red,green)		12
30.	Refrigerator bulb holder		5
31.	Deep freezer bulb holder		5
32.	Door switch		5
33.	Double door switch		5
34.	Female thembols		12 dozen
35.	Current relay(non capacitor)		5
36.	Current relay(capacitor type)		5
37.	Potential relay		5
38.	PTC relay(electronics)		5
39.	Overload		5
40.	Thermostat (refrigerator)		5
41.	Thermostat(AC)		5

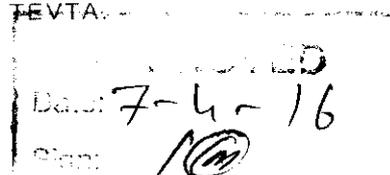
42.	Selector switch(AC)		2
43.	Defrost timer		5
44.	Defrost heater		2
45.	Defrost termination switch + fuse		2
46.	Defrost fan motor		1
47.	Fan capacitor 5 micro farad		2
48.	Running capacitor 50 micro farad		5
49.	Starting capacitor 80-110 micro farad		54 liter
50.	Compressor oil		18.75 kg
51.	Refrigerator R 134 A	750 gram	75 kg
52.	Refrigerator R 22 A	3 kg	100 no
53.	Filter drier	4	1
54.	Drill bit set		5
55.	PCB kit remote type (split AC)		5
56.	Gas kit sheet	6 inch	12.5 foot
57.	Door gas kit refrigerator type	6 inch	12.5 foot
58.	Deep freezer motor type		5
59.	DC Invertor AC		1 No

Functional English

S. No.	Item	Quantity
1.	Stationery	As per requirement
2.	Board Markers	As per requirement

I.T Fundamentals

S. No.	Item	Quantity
1.	Printing Paper	As per requirement
2.	Printer Toner	As per requirement



REFERENCE BOOKS

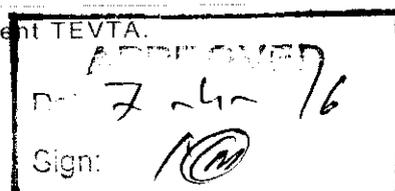
- 1 Modern Refrigeration and Air-Conditioning by Athous Tranquest And Good Heart.
- 2 Principal of Refrigeration by Roy J.Dossat.
- 3 Refrigeration & Air Conditioning Practice By Billy C. Langelly
- 4 Refrigeration, Air-Conditioning and Cold Storage by Raymond C. Gunther.

Functional English

1. High School English Grammar By Wren & Martin
2. Oxford English Grammar

I.T Fundamentals

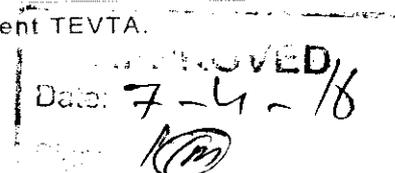
1. Introduction to Computer by Peter Norton
2. 2007 Microsoft® Office System Step by Step by Joyce Cox, Steve Lambert and Curtis Frye
3. Internet and E-mail with Windows 7 by Studio Visual Steps



EMPLOYABILITY OF PASS-OUT

The pass outs of this course may find job / employment opportunities in the following sectors / areas: -

1. Self-employment/run their workshop efficiently and effectively.
2. Maintenance mechanic in offices, hospitals etc.
3. Mechanic in Refrigerator and Air Conditioner manufacturing industry.
4. Salesman at dealers/spare parts seller shops



MINIMUM QUALIFICATION OF INSTRUCTOR**HVACR**

- DAE in Refrigeration & Air Conditioning Technology with two years experience in the relevant field

OR

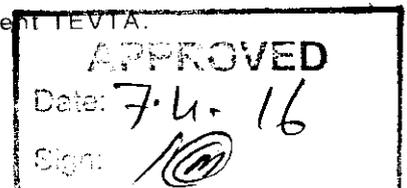
- Two Years certificate of HVACR (G-II Level) with six years experience in the relevant field.

Functional English

- M.A (English)

I.T Fundamentals

- DAE CIT/ BCS from HEC recognized university



LIST OF TRADE RELATED JARGON

Ambient Temperature	کسی بھی مشین کے اردگرد کا درجہ حرارت	Ventilation	ہوا کی آمد و رفت کا انتظام
Duct	ہوا کے گزارنے کا آلہ	Calibration	تعیین کا طریقہ کار
Scriber	نشان لگانے والا اوزار	Caliper	پیمائش کا آلہ
Knurling	کھردرا پن	Prick punch	چھوٹا سوراخ کرنے کا آلہ
Sledge	ایک قسم کا بڑا ہتھوڑا	Thermal	حرارت سے متعلق
Fusion	پگھلاہٹ کا عمل	Vapor	بخارات
Conduction	ایصالیت	Emit	خارج کرنا
Compression	دباؤ	Sensible heat	حرارت حسی
Latent heat	مخفی حرارت	Specific heat	حرارت نوعی
Sublimation	ٹھوس کا مائع میں تبدیل ہوئے بغیر بخارات میں تبدیل ہو جانا	BTU	حرارت کی اکائی برٹش تھرمل یونٹ
CHU	حرارت کی اکائی سینٹی گریڈ ہیٹ یونٹ	AHU	ایئر ہینڈلنگ یونٹ
Convection	مائع اور گیسوں میں حرارت کا انتقال	Radiation	اشعاع حرارت
Ton of refrigeration	ٹھنڈک کی اکائی	Lubrication	چکنائی
Condensation	عمل تکثیف	Evaporation	بخارات بنانے کا عمل
Expansion	پھیلانا۔ سپرے کرنا	Thermostat	درجہ حرارت کو کنٹرول کرنے والا آلہ
Frosting	سردی سے جمنے والا	Split	حصے کرنا
Psychrometer	ہوا کی خصوصیات معلوم کرنے والا آلہ	Enthalpy	ہوا میں حرارت کی کل مقدار

Absorption	ملانے کا عمل	Refrigerant	ٹھنڈک پیدا کرنے والا محلول
Thermal	حرارت سے متعلق	Axial	محوری
Muffler	آواز روکنے والا آلہ	Capillary Tube	باریک قطر والی تانبے کی نالی
Dehydrater	نمی کو خشک کرنے والا آلہ	Brine	پانی اور نمک کا محلول
VRF	ویری ایبل ریفریجرنٹ فلو	Boiler	پانی کو بھاپ میں تبدیل کرنے کی مشین
Vibration	تھرتھرا ہٹ	Viscosity	گاڑھاپن
Vacuum/evacuation	ہوا کو خارج کرنے کا عمل	choke	بند ہونا
FCU	فین کوائٹل یونٹ	Energy	توانائی

Curriculum Revision Committee

1. **Muhammad Farooq,** **Convener**
Sr. Instructor,
GSPCT

2. **Muhammad Haroon,** **Member**
Sr. Instructor,
GCT Railway Road, Lahore