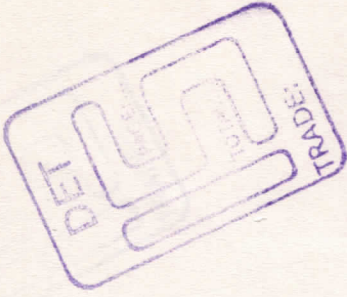


**SYLLABUS FOR REFRIGERATION AND  
AIR-CONDITIONING MECHANISM AND MAINTENANCE**



**UNDER CODE OF REGULATION  
FOR INDUSTRIAL SCHOOLS**

**AS APPROVED BY  
DEPARTMENT OF EMPLOYMENT AND TRAINING  
GUNIDY, CHENNAI- 600 032.**

**LIST OF COMMITTEE MEMBERS**



**I. MEMBERS AND EXPERTS.**

1. **E. SANKARAN. B.E.,**  
PRINCIPAL  
GOVT, I.T.I, GUINDY,  
CHENNAI - 600 032.
2. **R. RAVINDRAN. D.M.E.,**  
ASST. TRAINING OFFICER,  
GOVT, R.I. CENTRE, GUINDY,  
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3. **K. SASIDHARAN. D.M.E.,**  
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4. **N. SELVARAJ.**  
ASST. TRAINING OFFICER,  
GOVT, I.T.I. GUINDY,  
CHENNAI - 600 032.

**GOVERNMENT OF TAMILNADU.**

**INDUSTRIAL SCHOOL COMMON SYLLABUS FOR THE TRADE OF REFRIGERATION  
AND AIR CONDITIONING MECHANISM AND MAINTENANCE**

**DURATION: 2 YEARS (104 Weeks)**

**QUALIFICATION 10<sup>TH</sup> PASS/FAIL**

**Name of the Trade : Refrigeration And Air-Conditioning  
Mechanism And Maintenance**

**Qualification : X Pass/Failed.**

**Duration : 2 Years.**

**No. Trainees : 20 Per unit.**

**No. of practical hour : 32 Hrs / week.**

**No. of trade theory hours : 8 Hrs/week, 2Hour Engg Drawing. 2 Hour W/Shop Calculation.**

**Space required for  
Practical lab (in sq.f) : As per Norms.**

**Power required (in kw) : 5 k.w.**

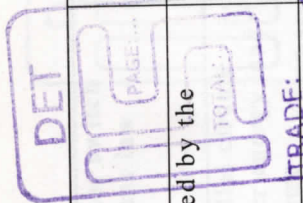


WEEK NO.	PRACTICAL	TRADE THEORY	W/SCAL	E/D
1.	Induction training familiarisation with the institute type of practical training be followed workshop safety	1. Importance of the trade in the industrial and commercial field theoretical subjects to be taught achievement to be made.		
2.	Use of simple marking and measuring tools marking out as per blue print chipping flat grinding chisel hacks awing to a line.	2. Method of marking marking media simple marking and measuring tools and their uses chisel hacksaw frame and blade type specification and use.	Friction addition and subtraction	Free hand sketching of straight line square rectangle etc.
3.	Filling flat square round and profile Drilling clear and blind hole counter sinking counter boring grinding drill bit.	3. Files and drills, types, specification use, care, and safety. Drilling speed feed and coolants.	Fraction multiplication division.	Freehand sketching polygon hexagon circle & hollow circle.
4.	Tapping clear and blind hole threading by die fitting stud and removing broken stud hand reaming and fitting dowel pin.	Taps and dies their specification use and safety Reamers types specification use and safety.	Decimal fraction addition and subtraction	Free hand sketching of simple solid cubes cuboids etc
5.	Inspecting and checking longitudinal angular parallelisms squareness, flatness and concentricity	Important precision measuring, making and checking tools type specification use and safety	Decimal Fraction multiplication & subtraction.	Free hand sketching of simple solid cubes cuboids etc
6.	Scraping flat surface, sharpening of scraper. Lapping and polishing flat surface.	Limit fit and tolerance I.S.I specification scraper type specification and use lap material and plate type specification and use.	Conversion of common to decimal fraction.	Uses of different type of lines
7.	Use of sheet metal tools and equipment care and safety. Making sheet metal joints as used in ducting Riveting on sheet metal.	Sheet metal tools and equipment type specification care and safety types of sheet metal joints and their use Rivet and riveting their types and use.	Conversion of decimal to common fraction	Uses of different symbol for drawing
8.	Soldering and brazing on sheet metal joints.	Soldering and brazing different type of solder composition and use of flux	Reduction of common fraction to decimal fraction.	Free hand sketching of nut bolt & washers etc.

			their detect on metal method of soldering and brazing.		
9.	Welding tools and equipment care and safety setting oxyacetylene plant lighting and adjustment flame simple joint m.s	Welding tools and equipment type specification and use safety method in welding gas method of gas welding gas uses and flames adjustment	Unit and measurement with some constants.	Free hand sketching on simple trade objects	
10.	Electric welding current setting striking and maintaining arc simple electric weld joint on M.S.	Method of electric welding electrode type and application object of flux coating welding symbols and I.S.I. code for gas and arc welding.	Fundamental and derived units and their uses.	Free hand sketching on simple trade objects	
11.	Use of electrician hand tools safety precaution and first aid joints on single and standard conductors and soldering.	Electrician hand tools type specification use care and safety common terms used in the trade conductors and insulators	Study of laws of motion force and their measurement.	Simple or the graphic projection using 1 <sup>st</sup> angle	
12.	Measuring of current voltage, power and energy by wattmeter. Ammeter and energy meter.	Electrical work power, and energy their calculation in simple electrical circuit type use and construction of common electrical measuring instruments.	Work power, energy sources of energy kinetic and potential energy.	Simple orthographic projection using 3 <sup>rd</sup> angle projection.	
13.	Formation of simple electrical circuit, series circuit and parallel circuit, measuring insulation resistance and earth resistance	Simple electrical circuit essential requirement of electrical circuit, series and parallel circuit different types of resistance Ear thing and fuses.	Problems based on work power & energy.	Practices of simple orthographic projection on 1 <sup>st</sup> angle and 3 <sup>rd</sup> angle projection.	
14.	Fixing and connecting electrical switches, holders fuses, plug sockets on T.W board and testing.	Types grades and sizes of insulated wire and cables, their selection and use list of material for wiring.	Heat and temperature units of heat differences between heat & temperature.	Simple orthographic 1 <sup>st</sup> projection using angle and 3 <sup>rd</sup> angle projection.	
15.	Care maintenance and running of A.C. single and polyphase motor, starters and transformer	A.C. motor, starters and transformer. Their working principles, specification and	Measurement of temperature pressure atmospheric absolute barometric and gauge pressure	Sketching of different views of simple solid and hollow bodies.	

			use, care and safety.	bourdon gauges compound and vacuum gauge.	
16.	Care and maintenance and running of A.C. single and poly phase motor, starters and transformers.	A.C. motor, starters and transformer. Their working principles specification and use care and safety.	Evaporation boiling condensation freezing effect type of heat vapor and gas saturated and super heated vapors.	Sketching of different views of simple solid and hollow bodies.	
17.	Identification of transistors diodes, S.C. R. S. U.J.T I.C.S. construction of low voltage power supply unit.	Electronic conduction, bad conductor insulator, semi-conducting materials and diodes formed biasverse bias of diodes.	Conversion of centigrade and fahrenheit and problems percentage and it application.	Percentage its application and square root based problem.	
18.	Full wave and bridge rectifier, circuit, voltage regulators. Construction of transistor amplifier circuit.	Rectification zener diode as voltage regulator transistors parameters CB CECC. Configuration. Amplification.	Application of Algebraic symbol, addition, subtraction multiplication & division	Ratio & proportion & its application	
19.	Multi-Vibrator Circuit and C.R. Circuits for wave Shaping	Photo Diodes, Photo Transistors, MultiVibrator, CR and LR circuit.	Simple equation & transposition problems	Use of drawing instrument T-Square drawing boards.	
20.	Wiring of SCR, UJT for motor control	SCrs-UJTs-Ics Functions	Simple algebraic problems and modes of heat transfer	Use of different types of scales, inch & mm.	
21.	Revision	Revision	Gas laws & perfect & real gases Dalton's law geometric, properties like angle triangle circle, line etc	Use of different types of scales, inch & mm. lettering, number of alphabets.	
22.	Test	Test	Properties and uses of copper, zinc, lead, tin, aluminium brass, bronze etc.	Drawing of simple figure and solid with dimensions & titles.	
23.	Use of Refrigeration Service tools care and safety	Refrigeration Service tools-type, specification and use refrigeration components type specification and use.	Meaning of tenacity, elasticity	Projection of square	
24.	Cutting, bending and joining of copper tubing flaring, swaging and silver soldering	Refrigeration principle system of refrigeration and application of refrigeration			
25.	Identification of refrigeration	Vapour compression system,			

	system stripping components, care and safety.	cycle of operation components classification and application	malleability etc hardening, tempering on heat treatment	circle polygon etc
26.	Dismantling reciprocating compressor, checking component parts-valve plae, reeds piston, piston pin, seal etc.	Refrigeration compressor its function-mode of drive, type of compression, classification and application.	In Menstruation finding the values area of square rectangle and volume of cube & cuboids on rectangular solid	Projection of square circle polygon etc.
27.	Servicing and testing compressor service valve, shaft seal, piston assembly and valve plate assembly etc.	Reciprocating compressor, name construction and function of component parts.	Find the values area of triangle circle, hollow circle and volume of cylinder study of mass and density	projection of sphere: object.
28.	Cutting gasket of compressor Assembly of compressor parts, testing pumping effect	Reciprocating compressor, name construction and function of component parts.	Solving of simple equation	projection of solid & hollow object
29	Dismantling of hermatic compressor Checking and servicing of components assembly of compressor and testing.	Hermetic compressor its construction and application advantage and disadvantage of open unit and hermatic unit.	Properties and case of cast iron wrought iron and alloy steel	Projection of solid & hollow cylinder.
30.	Dismantling of rotary compressors. Checking and servicing component parts assembly and testing.	Rotary compressor, type construction and application name and function of component parts.	Solving simple simultaneous equations with two unknown quantities.	View of various solid and hollow object & cut by section plane.
31	Servicing air cooled condenser and liquid receiver checking leak repair and testing	Condenser-its function type and classification construction and application.	Young modulus of elasticity.	View of various solid and hollow object & cut by section plane.
32.	Servicing evaporator, removal of oil from evaporator, checking leak repair and testing.	Evaporator-its function. type and classification and application.	Revision & test	Revision & test
33.	Checking thermal over load protector, motor starting relays and capacitor. Servicing and testing.	Thermal overload, motor starting relay and capacitors, types, function, construction and application.	Simple machines mechanical advantage in wheel and axle & simple screw jack.	Isometric views to orthographic views.
34.	Checking automatic and thermostatic expansion valves and capillary tube servicing and testing.	Refrigeration control function and type automatic, thermostatic and capillary control construction and application.	Problem based on simple machines pulley block and lever.	Isometric views to orthographic views.
35.	Checking thermostatic switch, high	High pressure, low pressure operation and application.	Problem based on linear	Isometric views to



	pressure and low pressure switch and oil failure switch servicing and testing.	and oil failure switch construction operation and application.	expansion.	orthographic views.
36.	Checking solenoid valve, pilot control valve and suction regulating valve servicing and testing.	Solenoid valve, pilot control and suction regulating valve, construction. Operation and application.	Heat loss or gained by the body.	Isometric views to orthographic views.
37.	Servicing refrigerated cabinet, checking body inside liner and door liner repair defect.	Refrigerated cabinet, type and classification construction and application.	Problems based on heat loss or gained by the body.	Isometric views to orthographic views.
38.	Replacing thermal insulating material instal body and door liners and door gasket adjusting door alignment	Thermal insulating material their type properties, use and safety.	Velocity and speed and its applied problem.	Isometric views to orthographic views.
39.	Handling of gas cylinders repair leaky cylinder. Transfer of refrigerant.	Safety in handling refrigerant and cylinder colour code of refrigerant transfer.	Problems based on power transmission.	Isometric views to orthographic views.
40.	Oil charging to compressor installing compressor, cooling coil and condenser of refrigeration unit.	Oil used in refrigeration system their desirable properties of refrigerant oil.	Problems based on power transmission.	Isometric views to orthographic views.
41.	Electric wiring of refrigeration system. Open and sealed units.	Study of electric wiring diagram of refrigeration system of open and sealed unit.	Horse power indicated and brake horse power and its unit.	Isometric views to orthographic views.
42.	Testing leak in the system using dry air carbon-di-oxide, nitrogen vacuumizing using and drying the system using deep vacuum pump micron gauge etc.	Vacuum pump vacuum gauge, and leak detectors their type, Specification use care and safety.	Industrial training on central air conditioning plant etc.	Industrial training on central air conditioning plant etc.
43.	Charging gas in the system study of gauge readings effect of over charging and under charge.	Refrigerants their desirable characteristics.	Industrial training on various refrigeration appliances & central plant training.	Industrial training on various refrigeration appliances & central plant training.
44.	Testing leakage in the refrigeration system using halide torch electronic leak detector repair leakage and testing.	Freon gas refrigerants their properties and use care and safety in handling refrigerant.	Electricity, Introduction use of electricity molecule atom, particles in atom the electric current electromotive force voltage.	Isometric views to orthographic views.
45.	Servicing absorption type	Absorption type refrigerator	Potential difference resistance	Isometric views to

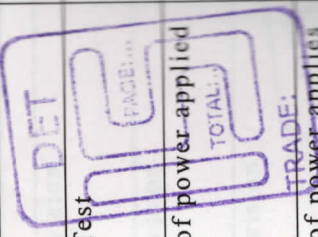


	refrigerator checking component adjusting oil burner repair/replacing heating elements and testing	its principle construction and application	conductor insulator switch fuse circuit & ohms law	orthographic views.
46.	Checking compression type refrigerator and different type fault finding servicing and testing	Refrigerator different types their type function and use trouble diagnosis and remedies	Service and parallel circuit power horsepower energy and its related problems	Freehand sketch on various types of compressor and condenser
47.	Checking compression type refrigerator and different type fault finding servicing and testing	Refrigerator different types their type function and use trouble diagnosis and remedies	Estimating and costing applied problems based on various equipments refrigerator air conditioner water cooler etc.	Free hand sketch on applied theory subject hand tools & equipments like refrigerator air conditioner etc.
48.	Checking window types air conditioner fault finding service and testing	Window type air conditioner their type function and application trouble diagnosis and remedies	Heat load calculation based on air conditioner capacity of voltage stabilizer etc.	Free hand sketch on applied theory subject Based on wiring circuit on various appliances
49.	Checking window types air conditioner fault finding service and testing	Window type air conditioner their type function and application trouble diagnosis and remedies	Study of insulating material and their uses	Free hand sketch on applied theory subject Based on wiring circuit on various appliances like Refrigerator a/c water cooler etc.
50.	Industrial training in service /manufacturing firm dealing with domestic and commercial refrigeration	Window type air conditioner their type function and application trouble diagnosis and remedies	Study of various materials used in the component like compressor condensor etc	Free hand sketch on applied theory subject Based on wiring circuit on various appliances like Refrigerator a/c water cooler etc.
51.	Revision	Window type air conditioner their type function and application trouble diagnosis and remedies	Test	Test
52.	Test	Window type air conditioner their type function and	Test	Test

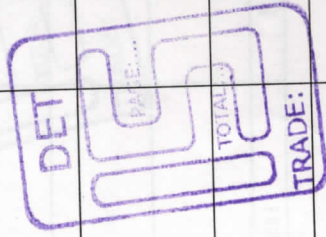
		application trouble diagnosis and remedies		DEI	
53.	Checking water cooler instantaneous and storage type bottle cooler deep freezer fault finding service and testing	Water cooler and bottle cooler dep freezer their type function and use trouble diagnosis and remedies	Trigonometry - Trigonometric -function - standard formula	Drawing of different types of thread and nuts.	
54.	Checking water cooler instantaneous and storage type bottle cooler deep freezer fault finding service and testing	Water cooler and bottle cooler dap freezer their type function and use trouble diagnosis and remedies	Meaning of tenacity elasticity-malleability brittle-hardness,duetility.	Locking devices.	
55.	Checking ice candy plant and ice cream storage fault finding servicing and testing.	Ice candy plant and ice cream storage their type function and application trouble diagnosis and remedies.	Meaning of tenacity elasticity, malleability brittle-hardness,duetility	Keys and cutters.	
56.	Checking ice candy plant and ice cream storage fault finding servicing and testing.	Ice candy plant and ice cream storage their type function and application trouble diagnosis and remedies.	Meaning of tenacity elasticity, malleability brittle-hardness,duetility	Locking devices.	
57.	Dismantling of commercial type reciprocating compressor checking component parts.	Performance of reciprocating compressor volumetric efficiency, factor, influencing volumetric efficiency.	Meaning of tenacity elasticity, malleability brittle-hardness,duetility	Drawing of rivet and riveted joints.	
58.	Checking servicing valve plate and piston assembly lapping valve ploote etc. titting and testing.	Commercial type reciprocating compressor their type construction and application.	Heat and temperature measurement of temperature.	Drawing of rivet and riveted joints.	
59.	Checking lubricating system servicing oil pump etc. titting and testing.	Compressor lubrications type of lubrication, splash and forced feed, compresses.	Use of trigonometrically label applied problem.	Drawing of rivet and riveted joints.	
60.	Checking and servicing capacity control of the compressor titting and testing.	Compressor capacity control different method and application.	Quality of heat and its different units their mutual relations.	Drawing of rivet and riveted joints.	
61.	Checking and servicing bearing shaft seal etc. fitting and testing.	Multistage compressor their function construction and application.	Quality of heat and its different units their mutual relations.	Drawing of rivet and riveted joints.	
62.	Cutting gasket and assembly of compressor testing efficiency.	Centrifugal compressor construction and application Refrigerant used	Calculation of area of triangle polygon etc	Drawing of different types of thread and nuts locking devices keys and cutters	
63.	Service of water cooled condenser	Condenser its type and	Calculation of area of triangle	Drawing of different	

	and receiver checking leakage repairing and testing	capacity water cooled condenser their type construction and application	polygon etc	types of thread and nuts locking devices keys and cutters
64.	Servicing evaporative condenser checking repairing testing	Evaporative condenser their function construction and application	Specific heat sensible heat latent heat	Drawing of different types of thread and nuts locking devices keys and cutters
65.	Servicing of cooling tower its care and maintenance	Cooling tower its principal type capacity construction and application	Specific heat sensible heat latent heat	Drawing of different types of thread and nuts locking devices keys and cutters
66.	Servicing of water softening and iron removing plant its care and maintenances	Water treatment plant construction and application method of iron removing and water softening	Specific heat sensible heat latent heat	Drawing of different types of thread and nuts locking devices keys and cutters
67.	Servicing of water circulating pump and accessories its care and maintenance	Water circulating pump and accessories their type function and application	Volume and weight of simple solid bodies	Drawing of different types of thread and nuts locking devices keys and cutters
68.	Servicing of water regulating valve solenoid valve high pressure safety control etc	Water regulating valve and control high pressure safety control etc. their type construction and application	Volume and weight of simple solid bodies	Drawing of pulley and pulley drives
69.	Servicing of commercial type evaporator its care and maintenances	Evaporator its type and capacity air cooling Evaporator natural and forced convection their type construction application	Volume and weight of simple solid bodies	Drawing of pulley and pulley drives
70.	Servicing of commercial type liquid chiller its care and maintenances	Liquid chilling evaporator their type construction and application	Gas law perfect and real gases Dalton's law	Drawing of pulley and pulley drives
71.	Servicing of heat exchanger its care and maintenances	Heat exchanger its function construction and application	Gas law perfect and real gases Dalton's law	Drawing of engine compressor and pump parts
72.	Servicing of commercial refrigerant and electric control its care and safety	Commercial type refrigerant and electric control their construction and application	Volume and weight of simple solid bodies	Drawing of engine compressor and pump parts
73.	Servicing cold store cooling system control.	Food preservation spoilage agents control of spoilage	Revision	Revision

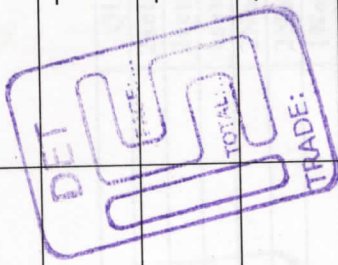
		agents preservation by refrigeration	Test	Test
74.	Servicing cold store cooling system control and instrument	Cold storage type construction capacity and specification	Transmission of power-applied problems	Drawing of engine compressor and pump parts
75.	Installing commercial type compressor use of vibration eliminator and checking absorber	Method of installing compressor vibrating eliminator and shock absorber their type and application	Transmission of power-applied problems	Drawing of engine compressor and pump parts
76.	Electric wiring of the compressor and checking the wiring system of the plant	Study of lay out and electric wiring of the storage plant	Transmission of power-applied problems	Drawing of engine compressor and pump parts
77.	Pressure testing leak detection and evacuating the system	Method Pressure testing leak detection and vacuum zing the system	Transmission of power-applied problems	Drawing of engine compressor and pump parts
78.	Charging to the system and testing the efficiency	Method of charging gas to the system and testing efficiency	Estimating & costing applied problems	Drawing of engine compressor and pump parts
79.	Cold storage plant operation its care and safety	Cold storage plant operation its common trouble and remedies	Estimating & costing applied problems	Drawing of engine compressor and pump parts
80.	Cold storage plant operation its care and safety	Cold storage plant operation its common trouble and remedies	Estimating & costing applied problems	Drawing of engine compressor and pump parts
81.	Revision	Revision	Estimating & costing applied problems	Drawing of engine compressor and pump parts
82.	Test	Test	Estimating & costing applied problems	Drawing of engine compressor and pump parts
83.	Care maintenance and use of sling psychrometer hygro meter humidistat remote bulb thermometric thermostat etc	Study of air dew point psychrometric chart humidity measurement of humidity etc	Estimating & costing applied problems	Drawing of engine compressor and pump parts
84.	Care maintenance and use of anemometry remote bulb thermometer thermostat etc	Air distribution ducting size and construction measurement of air flow	Estimating & costing applied problems	Drawing of engine compressor and pump parts
85.	Servicing of blower damper air filters etc care and maintenance	Blower damper air filter etc their type construction and	Estimating & costing applied problems	Drawing of engine compressor and pump parts



		application	Revision	drawing by ISI
86.	Servicing of humidifier and dehumidifier its care and maintenance	humidifier and dehumidifier their type construction and application	Revision	Revision
87.	Servicing the heating system of the plant its care and safety	Space heating various method of heating function and application	Revision	Revision
88.	Servicing and testing of air conditioning system and its control	Air conditioning comfort condition factors influencing comfort chart	Revision	Revision
89.	Installing compressor electric wiring and checking the wiring system of the plant	Capacity and selection of air conditioning plant study of lay out and wiring diagram of the plant	-	-
90.	Leak detecting vocalizing gas charging and testing the system	Method of leak detecting vocalizing gas charging and testing the system	-	-
91.	Air conditioning plant operation care and safety.	Air conditioning plant operation common trouble and remedies	-	-
92.	Air conditioning plant operation care and safety.	Air conditioning plant operation common trouble and remedies	-	-
93.	Repair and maintenance of bottle cooler Refrigerator and deep freezer.	Refrigerator and deep freezer their maintenance trouble diagnosis and remedies.	-	-
94.	Repair and maintenance of bottle cooler Refrigerator and deep freezer.	Refrigerator and deep freezer their maintenance trouble diagnosis and remedies.	-	-
95.	Repair and maintenance of bottle cooler and water cooler.	Bottle cooler and water cooler and their maintenances trouble diagnosis and remedies.	-	-
96.	Repair and maintenance of bottle cooler and water cooler.	Bottle cooler and water cooler and their maintenances trouble diagnosis and remedies.	-	-
97.	Repair and maintenance of ice candy plant.	Ice candy plant their maintenance	-	-

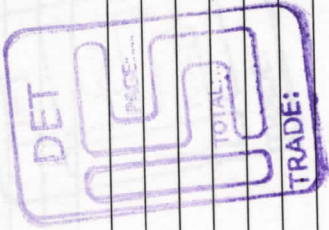


98.	Repair and maintenance of ice candy plant.	Ice candy plant their maintenance trouble diagnosis and remedies.	-	-
99.	Repair and maintenance of window air conditioner.	Window air conditioner their maintenance trouble diagnosis and remedies.	-	-
100.	Repair and maintenance of window air conditioner.	Window air conditioner their maintenance trouble diagnosis and remedies.	-	-
101.	Industrial Training cold store ice and ice cream plant etc.	Window air conditioner their maintenance trouble diagnosis and remedies.	-	-
102.	Industrial Training central air conditioning plant Direct and Indirect system	Window air conditioner their maintenance trouble diagnosis and remedies.	-	-
103/104	Revision./ Test	Revision./ Test	Revision./ Test	Revision./ Test.



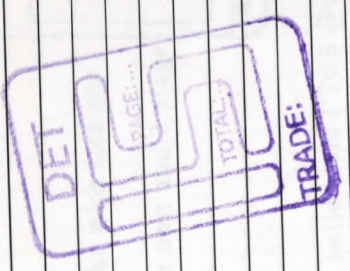
**LIST OF TOOLS & EQUIPMENT FOR THE TRADE OF ~~MECHANISMS~~ REFRIGERATION AND AIR CONDITIONING  
MECHANISMS AND ~~SYSTEMS~~ MAINTENANCE.**

(FOR A BATCH OF 20 TRAINEES)



SL.NO	DESCRIPTION	QUANTITY
1.	flaring tool set single type for tube 4.7 to 16mm od.	2sets.
2.	Swaging tool punch type set of size tube 4.7 to 16mm od	2sets.
3.	Bending spring external type for copper 3 to 16 mm dia	1sets.
4.	Pipe cutter miniature for copper tube 3 to 16 mm dia	2Nos.
5.	Pinch off tool per copper tube 6 to 18 mm	2Nos.
6.	Ratchet spanner of 6.4 mm sq.reversible	1Nos.
7.	Capillary plug gauge	1Nos.
8.	Pinch off plier/crimping plier tool 6.18mm	1Nos.
9.	Spanner, double ended 4.7 to 16mm	1sets.
10.	Spanner, double ended 19mm to 31.8mm	1sets.
11.	Ring spanner off set 4.7mm to 16mm	1sets.
12.	Ring spanner off set 19mm to 31.8mm	1Nos.
13.	Wrench adjustable length 150mm	1Nos.
14.	Wrench adjustable length 200mm	1Nos.
15.	Pipe Wrench size 50 and 150mm	2sets.
16.	Valve key- T handle-4.7 and 6.4mm s.q	1Nos.
17.	Pressure gauge diameter 65mm with recalibration set screw scale 0 to 35kg/sq.cm	1Nos.
18.	Compound gauge diameter 63mm.with recalibration set screw scale vacuum 76mm pressure 15kg/sq.cm	1Nos.
19.	Service man thermometer in metal case, 30 to 130deg c	1Nos.
20.	Sling psychometric mounted on aluminum Bach scale-50deg,c to +50deg c	1Nos.
21.	Lapping plate 250X200mm	1Nos.
22.	Punch hole for cutting gasket 4.7 to 16mm dia	1Nos.
23.	Scissor, gasket cutting stainless steel, length 25mm	2each.
24.	Screw driver, plastic handle 10mm tip length 200, 250mm	2each.
25.	Screw driver, plastic handle 6mm, tip length , 100, 150mm	1sets.
26.	Philips screw driver-complete set in length 200mm	1Nos.
27.	Pliers combination insulated length 200mm.	1Nos.
28.	Pliers long nose, length 200mm.	1Nos.
29.	Pliers, flat nose, length 150mm	1Nos.
30.	Hammer ball pein 450 gms	1Nos.
31.	Hammer ball pein 220 gms	1Nos.
32.	Chisel flat length 150mm	1Nos.
33.	Hack saw tubular metal framer adjustable	2Nos.

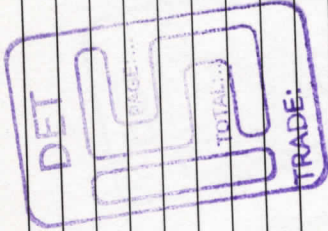
34.	Scriber 150mm, length	1Nos.
35.	Oilcan	1Nos.
36.	File flat medium, double cut length 200mm	2Nos.
37.	File half round medium, double length 200mm	2Nos.
38.	File half round fine double cut length 150mm	1Nos.
39.	File half fine double cut length 150mm	2Nos.
40.	File flat fine double cut length 150mm	1Nos.
41.	File square, fine double cut length 150mm	1Nos.
42.	Soldering iron exchangeable copper tip 85 watts	1sets.
43.	Pipe bending tool lever type with degree indicator for tube OD 6.4 to 16mm	2Nos.
44.	Blow lamp capacity 1/2 litre	1Nos.
45.	Hand blower portable complete 1/10 hp	1Nos.
46.	Snipper sheet metal straight nose 200mm	2Nos.
47.	Bench vice 75mm-jaw	1Nos.
48.	Oxy acetylene welding set complete with cylinder	2Nos.
49.	Line tester 500 volt heavy duty	1Nos.
50.	Tong-tester 0-10-30amps 0-500 (lamp on multimeter)	1Nos.
51.	Knife folded stainlers steel-150mm	1Nos.
52.	Volt meter AC 0 to 5 amp	1Nos.
53.	Ammeter AC 0 to 5 amp	1Nos.
54.	Ammeter AC 0 to 30 amp	1Nos.
55.	Multimeter-digital type	1set.
56.	Filler gauge 0.05mm 1mm	2Nos.
57.	Refrigerant cylinder capacity 1/2 kg	1Nos.
58.	Refrigerant cylinder capacity 2 kg	1Nos.
59.	Evacuating and charging station as above but fitted with weighing scale up to 2kg in lica of (b)above and with accuracy of/- 1gram for charging hydrocarbon	1Nos.
60.	Refrigerator compression type 165 liters	1Nos.
61.	Window air condition ting capacity 3000k.cal/hr	1Nos.
62.	Bottle cooler 110 liters 1/6 hp	1Nos.
63.	Water cooler storage type 100liters 1/6 hp	1Nos.
64.	Reciprocating compressor	1Nos.
65.	Welding table 900X900X700mm.high	1Nos.
66.	Work bench 1000X600X800mm.high	1Nos.
67.	Alimirah 195X90X49cm	1Nos.
68.	Chalk board portable	1Nos.
69.	Instructor table and chair	1Nos.
70.	Sensor thermometer (digital)	1Nos.
71.	Fin straightener/fin comb	1Nos.





72.	HC refrigerant in cylinders/disposable containers	1Nos.
73.	134A refrigerant in cylinder 2Kg capacity.	1Nos.
74.	Refrigerator using 134-A refrigerate.	1Nos.
75.	Portable Air-LPG braking kit with 2Kg LPG Cylinder. Torches hoses standard make with straight flame/cyclone swirl jet flame.	1Nos.
76.	Dry N2 in cylinder with 2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulators.	1Nos.
77.	Trichloroethylene bottle.	1Nos.
78.	Two way manifold with gouges.	2Nos.
79.	Filters drier for CFC-12 & HFC-134a for repairs retrofits	1Nos.
80.	Sealed ex-proof components for use in HC appliances thermostats sealed OLPS, solid state PTCS Door switch-lamp holders.	2Nos.
81.	Safety gloves, eye protection glasses.	1Nos.
82.	Hemetic compressor for 134a	1set.
83.	Brazing alloy rods for 1/4" to 7/8" tubes- cu to cu, cu to steel, cu to Brass and appropriate fluxes	2Nos.
84.	i) Hermetic compressor (1/8hp to 1/2 hp) for use in repair work of appliances for CFCS and HCS	1Nos.
85.	Compressor tester for small hermetic compressors	1Nos.
86.	Hemetic compressor 1.5T (AC).	1Nos.
87.	Evaporator of frost free refrigerator	
88.	Accessories:- Thermostatic expansion valve, distributors driers pencil solid cone type ect, accumulators, relievers ,bellows, type thermostat, HP stat, LP stat humidi stat solenoid valves.	1Nos.
89.	Electrical accessories: current & potential relays, start & run capacitors, PTCS, overlord protectors, relays contactors.	1Nos.
90.	Fire extinguisher.	1Nos.
91.	Box spanner size 6.4 to 10mm	1Nos.
92.	Wrench adjustable length 250mm	1Nos.
93.	L-Allen key set, size 1.5 to 6.4mm	1Nos.
94.	T-Allen key set, size 5/32" to 1/8	1Nos.
95.	Divider, spring joint length 150mm	1Nos.
96.	Caliper spring joint out side length 150mm	1Nos.
97.	Caliper spring joint inside length 150mm	1Nos.
98.	Caliper, odd leg, spring joint length 150mm	1Nos.
99.	Marking block, universal spindle 200mm	1set.
100.	V-block, with clamp 75mm	1Nos.
101.	Surface plate with stand 600X450mm	1set.
102.	Bench vice 120mm jaw	1set.
103.	Tap set with matching drill 3mm to 16mm size	1set.
104.	Tap set with matching drills 1/4" to 5/8" SAE size	1set.
105.	Tap and die set 3mm to 16mm size	1set.

106.	Vernier caliper length 250 mm	1Nos.
107.	Micrometer, outside measurement 0-25mm	1Nos.
108.	Lockers of eight compartments.	1Nos.
109.	Pipe threading dies & pipe vice.	1Nos.
110.	Schraeder valve core removal tool.	1Nos.
111.	First aid box.	1set.
112.	Filler gauge 0.05mm-1mm	1set.
113.	Wine gauge metric and whit worth	1Nos.
114.	Dial thermometer remote control, armoured capillary dial 75mm-50deg-c to+50degc	1Nos.
115.	Window A/C capacity 4500 kal/hr	1Nos.
116.	Air cooler	1Nos.
117.	Electrical testing boards	1Nos.





## ACHIEVEMENTS

- General Engineering Training.
- Identification and servicing, Praches basics of tools, components & accessories of refrigeration system.
- Identification and servicing of domestic & commercial appliances.
- Study of refrigerants and servicing of commercial refrigerator.
- Studing overhaul of commercial compressor, controls and storages, commercial refrigerator.
- Servicing overhaul of commercial compressor, controls and refitting of various appliances.
- Servicing of small AC plants, repair maintenance and refitting of various appliances.