

Name of the Trade		Refrigeration & Air Conditioning		
S.No.	Name of the item	Std List No.	Type of the item (Tool / Equipment / Machinery )	Specifications
(i)	(ii)	(iii)	(iv)	(v)
1	File flat rough double cut	1	Tool	Standard file flat rough 200mm,type double cut made from high carbon steel
2	File, half round, fine double cut,	2	Tool	Standard file half round 150mm type double cut made from high carbon steel
3	File, round, fine double cut	3	Tool	Standard file round 150mm,type double cut made from high carbon steel
4	File flat, fine double cut,	4	Tool	Standard file flat fine 150mm,type double cut made from high carbon steel
5	File square, fine double cut,	5	Tool	Standard file square 150mm,type double cut made from high carbon steel
6	File triangular fine double cut	6	Tool	Standard file flat rough 150mm,type double cut made from high carbon steel
7	Scriber	7	Tool	150mm With hardened amd tampered scriber
8	Centre punch	8	Tool	centre punch with face 9mm,100mm length and working point Hardened & Tempered High Carbon Steel
9	Try square	9	Tool	Having length of 150mm blade & having markings in inches, cm & mm made of Hardened Steel
10	Divider spring joint	10	Tool	length 150mm
11	Caliper spring joint in side	11	Tool	length 150mm
12	Caliper, odd leg, spring joint	12	Tool	length 150mm
13	Hammer ball pein	13	Tool	Hammer Ball Peen 0.75 KG with wooden handle
14	Cold Chisel flat and cross cut.	14	Tool	Face size 19mm * length 250 mm,made of hardened and tempered HCS,body type hexagonal
15	Engineers rule (metal)	15	Tool	15 cm LC 1/2 cm measure english and metric
16	Tape measuring	16	Tool	10m graduation in mm with spring steel strip.
17	Pliers combination insulated	17	Tool	length of blade 200mm with insulated handle
18	Pliers long nose	18	Tool	length of blade 200mm with insulated handle
19	Pliers flat nose	19	Tool	length of blade 150mm with insulated handle

20	Line tester	20	Tool	500 v heavy duty
21	Tweezers	21	Tool	10 cm
22	Surface plate	22	Tool	45 x45 cms
23	Oil can	23	Tool	500 ml
24	Surface Gauge universal	24	Tool	150 mm
25	Bench vice	25	Tool	300mm jaw
26	Hack saw tubular metal frame adjustable	26	Tool	300mm
27	Snip sheet metal straight nose	27	Tool	200 mm
28	Snip sheet metal curved nose	28	Tool	200 mm
29	Anvil	29	Tool	100X200mm , 50kg with stand
30	Stakes [ different Types]	30	Tool	100mm
31	Tin smith	31	Tool	400mm
32	Wooden mallet /Nylon mallet	32	Tool	500 gm good finish
33	Round Punch	33	Tool	3mm,4mm,6mm
34	Grover set	34	Tool	4mm forming
35	Electrical drill portable drill with chuck and key,	35	Tool	capacity 6.4mm
36	Tape measuring graduation in mm	36	Tool	2 m (Tape strip spring steel)
37	Screw driver, plastic handle,	37	Tool	6mm TIP length 100mm
38	Screw driver, plastic handle, Flat tip	38	Tool	10mm TIP length 200mm & 250mm
39	Philips screw driver –	39	Tool	complete set in leather case, minimum 5 screw driver blade in leather case .(ratchet type)
40	Screw driver, plastic handle, Flat tip	40	Tool	handle 3mm TIP length 100mm to 150mm insulated(ratchet type)
41	Soldering iron exchangeable copper tip	41	Tool	65 watts
42	Knife folded stainless steel –	42	Tool	150mm
43	Tong tester (clamp on multimeter)	43	Tool	0-10-30 amps 0-500 v
44	Voltmeter, AC/DC portable precision grade.	44	Tool	0 to 500 volt digital panel board type
45	Ammeter, AC/DC portable precision grade.	45	Tool	0 to 30 amp. Digital panel board type.
46	Megger	46	Tool	1000v
47	Wattmeter multi-range up to	47	Tool	1 KW
48	Multimeter digital type	48	Tool	24V-250V AC/DC

49	Tenon saw	49	Tool	250 mm
50	Firmer chisel	50	Tool	6,12,25mm
51	Rawal plug tool	51	Tool	6 mm
52	K.W. meter	52	Tool	0 -1 K w
53	Fire extinguisher	53	Tool	ABC dry powder type2 kg capacity (with cylinder)
54	Fire buckets	54	Tool	10 Liter
55	D.E spanner	55	Tool	6-32 mm
56	Ring spanner	56	Tool	6 -32 mm
57	Diagonal cutter	57	Tool	15 cm
58	Service Oscillator	58	Tool	20 mhz
59	C.R.O Single beam	59	Tool	5 MHZ
60	C.R.O Dual trace/ Double beam	60	Tool	60 MHZ
61	A.F.O Oscillators	61	Tool	20 KHz
62	Tong.	62	Tool	Close mouth and pick up
63	Welding table for gas/Arc	63	Tool	1200x760 or 900x900x700 mm high
64	Flaring tool set, single type for tube.	64	Tool	4.7mm to 16mm O.D
65	Swaging tool, punch type, set of size for tube.	65	Tool	4.7mm to 16mm O.D
66	Swaging tool, screw type with adaptor set of size for tube	66	Tool	4.7mm to 16mm O.D.
67	Bending spring external type, for copper tube	67	Tool	3mm to 16mm DIA
68	Pipe cutter miniature for copper tube	68	Tool	3mm to 16mm DIA
69	Pinch of tool, for copper tube,	69	Tool	6mm to 18mm DIA
70	Ratchet spanner of	70	Tool	6.4 sq.mm reversible
71	Capillary plug gauge	71	Tool	Pressure Gauge, Transmitter or Transducer, Pressure Switch
72	Piercing pliers & reversing valve with access fitting	72	Tool	6-18mm
73	Spanner double ended	73	Tool	4.7mm to 16mm
74	Ring spanner off set	74	Tool	4.7mm to 16mm
75	Wrench adjustable	75	Tool	length 150mm
76	Wrench adjustable	76	Tool	length 200mm
77	Wrench adjustable	77	Tool	length 250mm
78	Valve key handle [Treated as consumable]	78	Tool	- 4.7mm & 6.4mm sq.

79	Pressure gauge Digital type	79	Tool	diameter 63mm with recalibration set
80	Compound gauge, Digital type	80	Tool	diameter 63mm, with recalibration set screw, scale vacuum 76mm. Pressure 15 Kg/sq.cm
81	Service man thermometer in metal case	81	Tool	- 30 C to +30 C
82	Scissor, gasket cutting stainless steel	82	Tool	length 25mm
83	L-Allen key	83	Tool	set size 1.5mm to 6.4mm
84	T-Allen key set	84	Tool	size 5/32" to 1/8"
85	Pipe cutter with built in reamer and space cutter, for copper tube	85	Tool	3mm to 32mm
86	Pipe /Tube bender lever type	86	Tool	a.1/4" b.3/8" c.1/2" d.5/8"
87	Spanner double ended	87	Tool	19mm to 31.8 mm
88	Pipe wrench	88	Tool	size 50mm to 150mm
89	Gas leak detector for halogen gas	89	Tool	In which spirit is used.
90	Sling psychro-meter mounted on aluminum back.	90	Tool	scale 50 C to +50 C
91	Lapping plate	91	Tool	250mm x 200mm
92	Hammer ball peen	92	Tool	450 gms
93	Puller 3 legged with flexible arm	93	Tool	300mm
94	Hand blower portable complete	94	Tool	1/10 HP
95	Spirit level precision metallic	95	Tool	200mm
96	Stop watch	96	Tool	Least count must be in millisecond and it should be digital.
97	Tap set with matching drills	97	Tool	3 mm to 16mm
98	Tap set with matching drills	98	Tool	1/4" to 5/8"
99	Refrigerant cylinder	99	Tool	2.5 Kg.capacity with brass service valve 1/4"
100	Venire caliper	100	Tool	length 250mm
101	Micrometer outside measurement	101	Tool	0 to 25mm
102	Heating kit with infrared bulb	102	Tool	(200 w capacity)
103	Plumbing hammer weight	103	Tool	200 gm.
104	Multimeter	104	Tool	Analog type
105	Tachometer digital, multi range	105	Tool	0 r m p to 3000 r m p. Portable small size in leather case
106	Micron vacuum gauge	106	Tool	capable of reading up to 20 microns
107	Sensor thermometer (digital)	107	Tool	-50 degree Celsius to 150 degree Celsius

108	Fin straightened/fin comb.	108	Tool	With strong steel wire/fiber based combing on wood/fins
109	Filler gauge	109	Tool	0.05 mm – 1 mm (filler should be steel)
110	Wire gauge metric and with worth	110	Tool	Steel plate embossing converse of British & Metric
111	Dial thermometer remote control, armored capillary dial	111	Tool	75mm – 50C to +50 C
112	Anemometer	112	Tool	Digital type
113	Compressors testers for small hermetic compressors	113	Tool	Fixed with electrical input/ output indicating facilities (series circuit, with M.C.B etc.
114	Engineers square	114	Tool	150mm with 5' tolerance
115	Digital thermometer [Treated as consumable]	115	Tool	Graduated disc analogy type
116	Temperature & Humidity recorder	116	Tool	Capacity to record 24 hrs. Record with graphically system.
117	Instrumentation screw driver set	117	Tool	100mm
118	Digital weighing machine	118	Tool	100 kg
119	Cylinder 134 a	121	Tool	5 kg with brass service valve 1/4"
120	Split phase induction motor	1	MACHINERY	¼ hp, 230 V
121	Capacitor start induction motor	2	MACHINERY	½ Hp, 230 V, copper winding, bearing system with all accessories like starting capacitor etc. mount on base frame, suitable analog voltmeter, suitable analog Ammeter, the circuit diagram will be supplied with the motor, instruction manual.
122	AC 3 Phase motor.	3	MACHINERY	2 Hp, 400/50 Hz, copper winding, with all accessories like stator or connector etc. mount on base plate, selector switch control to voltmeter, suitable analog voltmeter, suitable analog Ammeter, the circuit diagram will be supplied with the motor, instruction manual.
123	Star delta starter	4	MACHINERY	2 hp
124	Auto Transformer starter	5	MACHINERY	3 hp
125	D.O.L Starter	6	MACHINERY	2 hp

126	Portable air – LPC brazing kit	7	MACHINERY	2 kg. (cap. Of cylinder should be change) LPG cylinder, torches, houses, stand make, gas consumption with included burner 195 gm./hr. cyclone burner effect with included burner 2500 W, brazing approx. 700 C Maximum pipe 18 mm.
127	Oxy-acetylene welding set complete	8	MACHINERY	Standard size cylinders with pressure gauges, regulators, welding torches, hose-pipe (10 mts) with difference nozzles.
128	Refrigerator	9	MACHINERY	165L carrying with HFC-134a or HC, using reciprocating compressor along with one voltage stabilizer. Condenser should be wire type air-cooled.
129	Frost free refrigerator	10	MACHINERY	200L carrying with HC blend or 134a, using reciprocating compressor along with one voltage stabilizer. Condenser should be plate type air-cooled(compact in the body)
130	Three/four door refrigerator	11	MACHINERY	300L carrying with HC R-600a using reciprocating compressor along with one voltage stabilizer. Condenser should be plate type air-cooled(compact in the body)
131	Bench Drilling machine	12	MACHINERY	20 mm capacity,200-2500rpm, spindle sizeMT-3.3 phase 440 V, 50 Hz, 1400 R.P.M, 1 TO 1.5 h.p. motor, 5 to 12 mm Drilled chuck and key polisher and buffing attachment with suitable accessories. Reputed/popular make with I.S.I Certification.
132	Grinding Machine	13	MACHINERY	200mm,3000rpm,Double ended 1 h.p. Rough and fine wheel wheel dia 8"x1/4"x1" reputed/popular make with I.S.I Certification.

133	Evacuating and refrigerant charging station, consist of-	14	MACHINERY	(CAP. 2 kg.) For charging hydrocarbon a) Rotary two stage vacuum pump and motor (with gas ballast and anti-suck back) b) Manifold with gauges and valves and capable of pulling vacuum up to 50 microns of Hg and with provision of connecting to a microns level with provision for temperature correction and all microns level vacuum gauge.  c) Graduated charging cylinder with provision for temperature correction and all necessary isolating valves  d) Evacuating and charging station as above but fitted with weighing scale up to +/- 1g for charging hydrocarbon.
134	Two stage rotary vacuum pump.	15	MACHINERY	capacity approx. 60 – 100 RPM capable of evacuating to 50 microns of Hg and fitted with gas ballast, anti-suck back valve and single phase motor
135	Air compressor.	16	MACHINERY	Two stage for oil – less dry air, with rush proof tank assembly, heater and controls max. pr. 10 kgs /sq.m Capacity 45 liter. Motor 1 hp. Air supply pipe line without let. With push pull connector motor 3 hp, V-belt guard. Auto cut switch. Free air delivery (1 pm 256 Cfm. 90) Reputed/popular make with I.S.I Certification.
136	Reciprocating compressor	17	MACHINERY	Provision of capacity control etc. for Demonstration. Capacity 9000Kcal/hr. semi hermetic open type. Fitted on base plate
137	Dry N2 in cylinder	18	MACHINERY	2 stage regular or commercial N 2 in cylinder with drier unit and 2 stage regular 7meter cube. 10 Meter hose pipe of good quality with clamp.

138	Window A.C	19	MACHINERY	1 Ton with R-22 or HFC Blend reciprocating compressor with 3 K.V.A capacity voltage stabilizer.
139	Split A.C	20	MACHINERY	1.5 Ton with R-134a or R-22 reciprocating compressor with 4 K.V.A capacity voltage stabilizer.
140	Duct able split A.C 1.5 ton	21	MACHINERY	1.5 Ton with R-134a or R-22 reciprocating compressor with 4 K.V.A capacity voltage stabilizer fitted with all accessories of required duct
141	Recovery unit with cylinders	22	MACHINERY	CFC & 134 a. The sealed compressor capacity can be 1/8 hp with air cooled condenser, LP and HP cut out or dual pressure cut out liquid line indicator, two hand shut-off-valves, Drier fitted with molecular sieves two oil separators etc. complete in all respect.
142	Cassette Air conditioner	23	MACHINERY	4500 kcal/hr.with R-404.
143	De- scaling pump set	24	MACHINERY	With stainless steel impeller and housing complete with motor 1/2 hp and accessories.1" size of all parts comprising in contact of liquid are of stainless steel and suitable to be coupled with 1 HP 1440 RPM single phase motor with starter and main shell/barrel 20 or 22 SWG thickness having the capacity approx. 100 liters. For acid solution capable of giving following performance. Reputed/ popular make I.S.I./ISO Certification.
144	Fan coil unit	25	MACHINERY	with water valves (2 & 3 way) i.e. 1.5 ton capacity fan motor 1/8 hp solenoid valve water valves two way and three way 3/8"
145	Shell and tube, DX chillers (small)	26	MACHINERY	5 Ton with Cu tubing only i.e. horizontal type capacity 15000 kcal/hr.
146	Circulating water pump (small)	27	MACHINERY	0.5 H.P with stainless steel tank capacity 20 literswithin let/ outlet provision.
147	Shell and tube type condenser	28	MACHINERY	5 Ton with Cu tubing only. Horizontal type cap. 15000 kcal/hr.
148	Rotary hermetic compressor	29	MACHINERY	2 Ton capacity with all accessories i.e. relay, olp, capacitors etc.
149	Screw compressor	30	MACHINERY	5Ton(note: Mainly screw compressor provided in market minimum capacity 25 ton)



150	Bottle cooler visible	31	MACHINERY	200 L carrying with HFC-134a & reciprocating Compressor. Capacity in horizontal shape which can maintain +ve temperature. The condenser fan must be covered with shrouds. The compressor capacity must be 1/6 HP. Bottle cooler must be accompanied by 0.5 KVA stabilizer.
151	Deep freezer	32	MACHINERY	200 L carrying with HFC134a & reciprocating Compressor. Capacity in horizontal shape which can maintain -ve temperature -20 c. The condenser fan must be covered with shrouds. The compressor capacity must be 1/6 HP. Deep freezer must be accompanied by 0.5 KVA stabilizer.
152	Water cooler storage type	33	MACHINERY	200 L carrying with HFC-134a or R-22 and reciprocating Compressor Capacity in vertical shape which can maintain +ve temperature. The compressor capacity must be 1.5 ton. Water cooler must be accompanied by 4 KVA stabilizer.
153	Ice candy plant	34	MACHINERY	<p>2 ton with capacity to make 32 ice candy at a time with Forma tray, stainless steel tank on trolley. Motor circuit CSR power 1300Watt, supply voltage 230V 50Hz A/C single phase.</p> <p>Outer body with condensing unit SS 304 G 22 SWG- Buffing finish. Size 1500mm (L) 750(W) 750mm (H) with condensing unit and door capacity (inner storage) 2 mold candy 30 min. Insulation PUF-75 mm thick 40 density/ 75mm thermocol thick.</p> <p>Temperature control setting condenser i.e. digital temp. controller condenser fan motor 1/10 HP 230 V 50Hz</p> <p>Evaporator- copper tubing- 1/2" dia 50 ft. long/ or suitable size tube.</p> <p>Dia and length condenser size 14"x14"x4" Row handle and hangs with locking arrangement Agitator motor 1/2HP 230 V 50Hz single phase.</p> <p>Control panel it should consist of ---</p> <ol style="list-style-type: none"> <li>ELCB switch for mains.</li> <li>HP cut off switch.</li> <li>LP cut off switch.</li> </ol>

154	Air-conditioning, direct and indirect water chiller.	35	MACHINERY	<p>Air conditioning plant of 15000 K.Cal./Hr.direct cool with the following:  controls including humidity control capacity 15000Kcal/hr: 1. Condenser fin and tube type or force draft 2.Cooling coil fin and tube type with appropriate three speed fan.  3.15000k/Cal compressor Open type with R-22 refrigerant, suitable motor ISI mark. 4.High pressure/Low pressure cut out. 5. All electrical controls fitted in a suitable MS box in such a position that it can be demonstrated perfectly of students. 6. The plant will be put on test for 72 hours on site after installation and commissioning. 7. Digital temp meter (5sence). a) temp. of condenser inlet b)temp. of condenser outlet c) liquid line to cooling coil inlet d) suction line outlet of cooling coil e) air temp. ambient</p>
155	Package A/C	36	MACHINERY	<p>7.5 ton capacity, Water cooled type with open type reciprocating compressor. All the following equipment's are fitted in in closed cabinet in such a way as per capacity of unit 7.5 ton :-</p> <ol style="list-style-type: none"> <li>a. Blower motor with blower bearing type.</li> <li>b. Cooling coil with expansion valve.</li> <li>c. Shell and tube type condenser with all safety devices i.e. check valve, safety valve.</li> <li>d. Forced draft- cooling tower with centrifugal pump.</li> <li>e. Reciprocating compressor open type with all valves i.e. suction service valve, discharge service valve, liquid indicator, provision oil pump for lubrication if necessary. All the tube lines should be made of copper.</li> <li>f. Three phase electric motor i.e. 15 HP minimum capacity which is driven to the compressor with V-belt.</li> <li>g. All electrical accessories i.e. electric panel, solenoid valve, HP, LP, oil pressure cut-out switch, temperature control, humidity control, selector switch/electronic, all system wiring should inter locking system.</li> <li>h. Guide manual with wiring.</li> <li>i. On the top of unit duct able system.</li> </ol>

156	Car A.C components(full kit)	37	MACHINERY	<p>Car AC Trainer consists of following items</p> <ol style="list-style-type: none"> <li>Wobble plate compressor with mounting.</li> <li>Condenser parallel flow with fan.</li> <li>Cooling coil serpentine type with blower motor and fan.</li> <li>Hoses, drier with liquid line indicator, expansion valve, tube etc.</li> <li>Electrical component as required.</li> <li>Electrical motor of 1.5 HP ISI of ISO</li> <li>One electrical converter from 220 V to 12 DC supply.</li> <li>Multi-channel digital thermometer with four probes.</li> </ol> <p>Note—All must be fitted on 1.5" square frame of MS and the system must be charged with R-134a</p>
157	CAR AC tutorial model	38	MACHINERY	<p>Car AC Tutorial consists of following items</p> <ol style="list-style-type: none"> <li>Wobble plate compressor with mounting.</li> <li>Condenser parallel flow with fan.</li> <li>Cooling coil serpentine type with blower motor and fan.</li> <li>Hoses, drier with liquid line indicator, expansion valve, tube etc.</li> <li>Electrical component as required.</li> <li>Electrical motor of 1.5 HP ISI of ISO</li> <li>One electrical converter from 220 V to 12 DC supply.</li> <li>Multi-channel digital thermometer with four probes.</li> </ol> <p>Note—All must be fitted on 1.5" square frame of MS and the system must be charged with R-134a.</p>
158	Class room table	1	FURNITURE	<p>One table for each trainee size of 2.5 provision with open rack. Frame square conduit of 1" top ½" sun mica ply board</p>

159	Work bench	2	FURNITURE	2000 x1000 x 700 mm with 2" Pipe frame. Top with teak slab and fixing with 3/4" good quality rubber sheet.
160	Amirah	3	FURNITURE	195 x90 x 48 cm outer sheet 20 SWG inner partition with four selves of 22Swg
161	Lockers	4	FURNITURE	195 x 90 x 48 set six locker in one structure
162	Glass board portable	5	FURNITURE	2.5'X4' with stand
163	Instructor table	6	FURNITURE	4'X2'X2.5' with steel tubular frame & sun mica top
164	Instructor chair	7	FURNITURE	Standard revolving with wheel
165	Computer table	8	FURNITURE	Standard with drawers & self to accommodate UPS&CPU
166	Computer chair	9	FURNITURE	Revolving type metal based & metal wheel standard one
167	White board/board	10	FURNITURE	8'x5' glass/green double frame board which one moves down to upward direction and vise-versa in grooves frame with arrangement of light also as per requirement Magnetic duster for finish surface.
168	Chart stand	11	FURNITURE	6'X3' providing with hanging clip top & bottom plate
169	Computer latest version with printer	12	FURNITURE	Ddr-3 -1333Mega Hz, GB -6,hard disc -1terabite,processor-I5 second generation, laser get ,LED monitor 32"
170	LCD PROJECTOR / LED / LCD TV	13	FURNITURE	Big Size
171	Laptop	14	FURNITURE	Latest version
172	UPS	15	FURNITURE	650 VA
173	Stool	16	FURNITURE	Slandered size
174	Book Self with glass panel	17	FURNITURE	Five no selves 7'x8'x1' (HxLxb), grooves in such a way, as per requirement selves are adjustable.
175	Storage rack	18	FURNITURE	Slandered size
176	Storage shelf	19	FURNITURE	Slandered size