REFRIGERATION AND AIR CONDITIONING TECHNICIAN

Tender Inviting Organization	**EDCIL (INDIA) LIMITED**
NIT No:	**EdCIL/EIS & EPS/PROC/2021/06 Dated: 23/07/2021**
Name of Work	**Supply, Installation & Commissioning of Mechanic (Refrigeration & Air Conditioner) trade items of ITI for NLC India Limited, Neyveli (TN)**
Name of Bidder/Firm/ company	

LIST OF TOOLS AND EQUIPMENT(For batch of 24 candidates)

BOQ S. No.	Name of the Tool & Equipment	Specification	Make	Quantity	Unit	Unit Price (Rs.)	Amount (Exclusive of Tax) (Rs.)	Taxes. (%)	Taxes in (Rs.)	Amount (Inclusive of Tax) (Rs.)
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit Sl. 1-21 is required additionally)										
RAC1	File flat rough double cut	200mm	JK/Taparia	50	No.		0		0	0
RAC2	File, half round, fine double cut	length 150mm	JK/Taparia	50	No.		0		0	0
RAC3	File, round, fine double cut	length 150mm	JK/Taparia	50	No.		0		0	0
RAC4	File flat, fine double cut	length 150mm	JK/Taparia	50	No.		0		0	0
RAC5	File square, fine double cut	length 150mm	JK/Taparia	50	No.		0		0	0
RAC6	File triangular fine double cut	length 150mm	JK/Taparia	50	No.		0		0	0
RAC7	Scriber	150mm length	Bharat/Sagar	50	No.		0		0	0
RAC8	Centre punch	length 100mm	Bharat/Sagar	50	No.		0		0	0
RAC9	Try square	150 mm	Kundan/Kranti	50	No.		0		0	0
RAC10	Divider spring joint	length 150mm	Bharat/Sagar	50	No.		0		0	0
RAC11	Caliper spring joint in side	length 150mm	Bharat/Sagar	50	No.		0		0	0
RAC12	Caliper, odd leg, spring joint	length 150mm	Bharat/Sagar	50	No.		0		0	0
RAC13	Hammer ball pane	220 gms	Venus/Pye	50	No.		0		0	0
RAC14	Cold Chisel flat and cross cut	length 150mm	Standard Quality	50	No.		0		0	0
RAC15	Engineers rule	300mm long	Omega/Sharp	50	No.		0		0	0
RAC16	Tape measuring	10m graduation in mm	Freeman	50	No.		0		0	0
RAC17	Pliers combination insulated	length 200mm	Venus/Pye	50	No.		0		0	0
RAC18	Pliers long nose	200 mm	Venus/Pye	50	No.		0		0	0
RAC19	Pliers flat nose	150mm	Venus/Pye	50	No.		0		0	0
RAC20	Line tester	500 v heavy duty	Venus/Pye	50	No.		0		0	0
RAC21	Tweezers	10 cm	Standard Quality	50	No.		0		0	0
B. GENERAL SHOP OUTFIT AND INSTRUMENT										
GENERAL SHOP OUTFIT										
RAC22	Surface plate	45 x45 cms	Luthra	1	No.		0		0	0
RAC23	Oil can	500 ml	Prima/Kapson	5	No.		0		0	0
RAC24	Surface Gauge universal	150 mm	Bharat/Sagar	5	No.		0		0	0
RAC25	Bench vice	150 to 300mm jaw	Lion/Apex	12	No.		0		0	0
RAC26	Hack saw tubular metal frame adjustable	300mm	Jolly/Hira	12	No.		0		0	0
RAC27	Snip sheet metal straight nose	200 mm	Standard Quality	12	No.		0		0	0
RAC28	Snip sheet metal curved nose	200 mm	Standard Quality	12	No.		0		0	0
RAC29	Anvil	100X200mm	Standard Quality	1	No.		0		0	0
RAC30	Stakes [different Types]	100mm	Standard Quality	1	1 no. each		0		0	0
RAC31	Tin smith	400mm	Standard Quality	1	No.		0		0	0
RAC32	Wooden mallet /Nylon mallet	500 gm good finish	Standard Quality	5	No.		0		0	0
RAC33	Round Punch	3mm,4mm,6mm	Bharat/Sagar	5	each		0		0	0
RAC34	Electrical drill portable drill with chuck and key	capacity 6.4mm	Bosch/Black & Deccar	5	No.		0		0	0
RAC35	Screw driver, plastic handle,	6mm TIP length 100mm to 150mm	Venus/Pye	6	No.		0		0	0
RAC36	Screw driver, plastic handle, Flat tip	10mm TIP length 200mm & 250mm	Venus/Pye	6	each		0		0	0
RAC37	Philips screw driver -	complete set in leather case	Venus/Pye	5	No.		0		0	0
RAC38	Screw driver, plastic handle, Flat tip	handle 3mm TIP length 100mm to 150mm insulated	Venus/Pye	5	No.		0		0	0
RAC39	Soldering iron exchangeable copper tip	65 watts	Standard Quality	12	No.		0		0	0
RAC40	Knife folded stainless steel -	150mm	Standard Quality	12	No.		0		0	0
RAC41	Tong tester (clamp on multi meter)	0-10-30 amps 0-500 v	Standard Quality	5	No.		0		0	0
RAC42	Tenon saw	250 mm	Standard Quality	5	No.		0		0	0
RAC43	Firmer chisel	6,12,25mm	Standard Quality	2	Each		0		0	0
RAC44	Rawal plug tool	6 mm	Standard Quality	2	No.		0		0	0
RAC45	Fire extinguisher	ABC dry powder type2 kg capacity	Standard Quality	2	No.		0		0	0
RAC46	Fire buckets	10 Litre	Standard Quality	3	No.		0		0	0
RAC47	D.E spanner	6-32 mm	Venus/Ambitech	5	Set		0		0	0
RAC48	Ring spanner	6 -32 mm	Venus/Ambitech	5	Set		0		0	0
RAC49	Quick couples, process tube adopter	¼" & 3/8"	Standard Quality	4	each		0		0	0
RAC50	Tong Close mouth and pick		Standard Quality	1	No.		0		0	0
RAC51	Welding table for gas/Arc	1200x760	Standard Quality	1	each		0		0	0
RAC52	Flaring tool set, single type for tube.	4.7mm to 16mm O.D	Standard Quality	5	No.		0		0	0
RAC53	Swaging tool, punch type, set of size for tube.	4.7mm to 16mm O.D	Standard Quality	5	Set		0		0	0
RAC54	Bending spring external type, for copper tube	3mm to 16mm DIA	Standard Quality	5	Set		0		0	0
RAC55	Pipe cutter miniature for copper tube	3mm to 16mm DIA	Standard Quality	5	Set		0		0	0
RAC56	Pinch of tool, for copper tube,	6mm to 18mm DIA	Standard Quality	5	Set		0		0	0
RAC57	Ratchet spanner	6.4 sq.mm reversible	Standard Quality	5	Set		0		0	0
RAC58	Capillary plug gauge		Standard Quality	5	Set		0		0	0
RAC59	Piercing pliers & reversing valve with access fitting	6-18mm	Standard Quality	5	Set		0		0	0
RAC60	Spanner double ended	4.7mm to 16mm	Venus/Ambitech	5	Set		0		0	0
RAC61	Ring spanner off set	4.7mm to 16mm	Venus/Ambitech	5	Set		0		0	0
RAC62	Wrench adjustable	length 150mm	Venus/Ambitech	5	Set		0		0	0
RAC63	Wrench adjustable	length 200mm	Venus/Ambitech	5	Set		0		0	0

RAC64	Wrench adjustable	length 250mm	Venus/Ambitech	5	Set		0		0	0
RAC65	Valve key handle[Treated as consumable]	4.7mm & 6.4mm sq.	Standard Quality	5	Set		0		0	0
RAC66	(Hollo) Punch hole for cutting gasket	4.7-16mm die	Standard Quality	2	Set		0		0	0
RAC67	Scissor, gasket cutting stainless steel	length 25mm	Standard Quality	5	Set		0		0	0
RAC68	L-Allen key	set size 1.5mm to 6.4mm	Venus/Taparia	5	Set		0		0	0
RAC69	T-Allen key set	size 5/32" to 1/8"	Venus/Taparia	5	Set		0		0	0
RAC70	Pipe cutter with built in reamer and space cutter, for copper tube	3mm to 32mm	Inder/Std	5	No.		0		0	0
RAC71	Pipe /Tube bender lever type	3-16 mm	Inder/Std	1	each		0		0	0
RAC72	Spanner double ended	19mm to 31.8 mm	Venus/Ambitech	5	No.		0		0	0
RAC73	Pipe wrench	size 50mm to 150mm	Venus/Ambitech	5	No.		0		0	0
RAC74	Lapping plate	250mm x 200mm	Luthra	2	No.		0		0	0
RAC75	Hammer ball peen	450 gms	Standard Quality	5	No.		0		0	0
RAC76	Puller 3 legged with flexible arm	300mm	Venus/Pye	5	No.		0		0	0
RAC77	Hand blower portable complete	1/10 HP	Prabhat/Std	2	No.		0		0	0
RAC78	Spirit level precision metallic	200mm	Standard Quality	2	No.		0		0	0
RAC79	Tap set with matching drills	3 mm to 16mm	Humma/Metro	3	No.		0		0	0
RAC80	Tap set with matching drills	V to 5/8"	Humma/Metro	3	No.		0		0	0
RAC81	Refrigerant cylinder	2.5 Kg Refrigerant cylinder Technical Specification : Empty Refrigerant Gas Cylinders fitted with valve, guard: - Type: Two piece welded - Capacity: Minimum 2.5 Kg , - Working pressure: 25-30 KG/CM2 -Minimum Pneumatic leakage test pressure: Min. 10 Kgf/cm2 - Wall Thickness : Minimum 3 MM Features : - Painted with refrigerant colour code. R-22(Light Green) Standard Accessories & Spare Parts :	Standard Quality	3	No.		0		0	0
RAC82	Heating kit with infrared bulb	(200 w capacity)	Standard Quality	2	No.		0		0	0
RAC83	Plumbing hammer weight	200 gm	Standard Quality	2	No.		0		0	0
RAC84	Cylinder 134 a	5 kg Cylinder 134 a Technical Specification : Empty Refrigerant Gas Cylinders fitted with valve, guard : - Type: Two piece welded - Capacity: Minimum 5 Kg , - Working pressure: 25-30 KG/CM2 -Minimum Pneumatic leakage test pressure: Min. 10 Kgf/cm2 - Wall Thickness : Minimum 3 MM Features : - Painted with refrigerant colour code. R-134a (Light Blue) Standard Accessories & Spare Parts : - Cylinder valve key	Standard Quality	1	No.		0		0	0
RAC85	Torque Wrench	300mm-12.7mm	Macmaster/Std	1	No.		0		0	0
RAC86	Piercing Valve	¼ Inch	Standard Quality	2	No.		0		0	0
RAC87	Feeler gauge	0.05mm to 1mm	Standard Quality	3	No.		0		0	0
RAC88	Four way reversible valve	Four way reversible valve Technical Specification : Four way reversible valve for 1.5 to 2.0 Ton Air Conditioner: - Connection Size Suction: Min. 1/2" - Connection Size Discharge: Min 3/8". - Body Test Pressure: 4.95MPa{49.5bar} - Operation Pressure Difference : Maximum 2.25 MPa - Max. Working Pressure : 3.3MPa{33bar} Features : - Shall be Composed of three components: a pilot valve , a valve body and a solenoid coil assembly.	Standard Quality	1	No.		0		0	0
INSTRUMENT										
RAC89	Vernier height gauge	300mm, LC 0.02	Insize/Precision	1	Set		0		0	0
RAC90	Tape measuring graduation in mm	2 m	Freeman	5	No.		0		0	0
RAC91	Voltmeter, AC/DC portable precision grade Digital Panel board type	0 to 500 volts	Standard Quality	5	No.		0		0	0
RAC92	Ammeter, AC/DC portable precision grade Digital Panel board type	0 to 30 amp	Standard Quality	5	No.		0		0	0
RAC93	Megger	1000v	Standard Quality	5	No.		0		0	0
RAC94	Wattmeter multi-range up	1 KW	Standard Quality	1	No.		0		0	0
RAC95	Multi meter digital type		Standard Quality	5	No.		0		0	0
RAC96	K.W. meter	0 -1 K w	Standard Quality	4	No.		0		0	0
RAC97	Service Oscillator	RF Signal Generator 100kHz ~ 150MHz (Analog) Features: • A low cost signal source for laboratory use • Output Waveform: Sine and Amplitude modulation wave • RF/AM output, max, intensity > 10V p-p • External modulation signal can be set between 50Hz~20kHz Technical Specifications : • Frequency range : A - 100kHz ~300kHz : B - 300 kHz ~1MHz : C - 1MHz ~ 3.2MHz : D - 3MHz ~ 10MHz : E - 10MHz ~ 35MHz : F - 32MHz ~ 150MHz • Frequency range : 100kHz~150MHz (3rd harmonic wave up to 450MHz) • Frequency accuracy : ±3% • Output waveform : RF/AM signal waveform • Output impedance : 600ohms • Radio frequency : Over 100mVrms (when frequency <35MHz) • Level control : 1mV~100mV • Internal modulation : 1kHz ± 2% >2Vrms output • External modulation : 50Hz ~ 20kHz for any setting • Power requirement : 220 VAC +10% , 50 Hz • Weight : 2.0Kg Approx.	Standard Quality	1	No.		0		0	0
RAC98	C.R.O Single beam	5 MHZ Features: • DC ~ 30MHz(• Inbuilt 6 Digit seven segment display frequency counter (30MHz) • Dual channel, X Y mode • 6" display cathode ray tube, sensitivity triggering up to 1mV/divison • TV synchronous separation circuit to observe stable TV signal • Polarity reversal, CH 1Sync output Technical Specifications: • CRT : 6" Rectangular screen with internal graticule,8 x 10 Div (1Div=1cm) Vertical Deflection • Vertical Operation Mode : CH1, CH2, ADD, ALT, CHOP (CH1, CH2) • Sensitivity : 5mV/div to 5V/div +3%, 1mV/div to 1V/div +5% (x5),10 steps • Rise time : <17.2ns Input impedance : 1Mohm • Max. Input voltage : 250V (DC+AC peak value) at 1kHz (250V, DC+AC) • Input coupling : AC, DC, GND • Polarity selection : +(CH2 only) • Display mode : 1, 10, X-Y Horizontal Deflection • Sweep time : 0.2micros/div to 0.2s/div • Sweep expansion : x10 • Accuracy : 3% Trigger System • Triggering mode : Auto, NORM, TV-V, TV-H • Trigger source : VERT,CH1, LINE, EXT	Standard Quality	2	No.		0		0	0

RAC99	C.R.O Dual trace/ Double beam	60 MHZ Features: • DC ~ 60MHz • CH 1 increment amplification function for clear display • Dual channel, X Y mode • 6" display cathode ray tube, sensitivity triggering up to 1mV/divison • TV synchronous separation circuit to observe stable TV signal • Polarity reversal, CH 1Sync output Technical Specifications: • CRT : 6" Rectangular screen with internal graticule,8 x 10 Div (1Div=1cm) Vertical Deflection • Vertical Operation Mode : CH1, CH2, ADD, ALT, CHOP (CH1, CH2) • Sensitivity : 5mV/div to 5V/div +3%, 1mV/div to 1V/div +5% (x5),10 steps • Rise time : <17.2ns Input impedance : 1Mohm • Max. Input voltage : 250V (DC+AC peak value) at 1kHz (250V, DC+AC) • Input coupling : AC, DC, GND • Polarity selection : +(CH2 only) • Display mode : 1, 10, X-Y Horizontal Deflection • Sweep time : 0.2micros/div to 0.2s/div • Sweep expansion : x10 • Accuracy : 3% Trigger System • Triggering mode : Auto, NORM, TV-V, TV-H • Trigger source : VERT,CH1, LINE, EXT	Standard Quality	2	No.		0		0	0
RAC100	A.F.O Oscillators	Technical Specifications: ⍰ Display : LCD type displaying setted frequency & type of waveform selected. ⍰ Frequency Range : 1Hz - 200KHz in six steps. ⍰ Waves : SINE / SQUARE / TRIANGULAR selectable using "WAVEFORM" selector bandswitch. ⍰ Amplitude : 0 - 20V peak to peak(approx.) ⍰ Accuracy : + 3% on all ranges. ⍰ Output Impedance : 60 Ohms (Approx.) ⍰ Power Recruitment : 220VAC + 10V, 50Hz	Standard Quality	2	No.		0		0	0
RAC101	Pressure gauge Digital type	diameter 63mm with recalibration set	Standard Quality	5	Set		0		0	0
RAC102	Compound Digital type gauge,	diameter 63mm, with recalibration set screw, scale vacuum 760mm. Pressure 15 Kg/sq.cm	Standard Quality	5	Set		0		0	0
RAC103	Service man thermometer in metal case	- 30 C to +110 C	Standard Quality	5	Set		0		0	0
RAC104	Gas leak detector for halogen gas	Gas leak detector for halogen gas Technical Specification : Gas leak detector for halogen gas: - Max Sensitivity: to halogenated refrigerants, 3gr/yr - Working temperature :0C~-50C - Working Mode: Continuous and no limit - Resetting time :2 seconds - Warm-up time :about 6 seconds - Probe length : Minimum 30 cm Features : - Detects Halogen leak, such as R134a, R12, R410a, R22 and R600a etc. - Monochromatic LED display with six-level leakage alarm. - Convenient and fast reset function. - High sensitivity sensor, speedy response(about 3 seconds) - Quality sensor that can detect finely-leaked halogen gases. Standard Accessories & Spare Parts : - Suitable Batteries - Should be provided in Rugged blow moulded hard case with removable lid	Standard Quality	2	No.		0		0	0
RAC105	Electronic leak detector	Electronic leak detector Technical Specification : Electronic leak detector : - Max Sensitivity: to halogenated refrigerants, 3gr/yr - Working temperature :0C~-50C - Working Mode: Continuous and no limit - Resetting time :2 seconds - Warm-up time :about 6 seconds - Probe length : Minimum 30 cm Features : - Detects Halogen leak, such as R134a, R12, R410a, R22 and R600a etc. - Monochromatic LED display with six-level leakage alarm. - Convenient and fast reset function. - High sensitivity sensor, speedy response(about 3 seconds) - Quality sensor that can detect finely-leaked halogen gases. Standard Accessories & Spare Parts : - Suitable Batteries - Should be provided in Rugged blow moulded hard case with removable lid	Standard Quality	2	No.		0		0	0
RAC106	Sling psychrometer mounted on aluminum back,	scale -10 deg C to +110deg C Sling psychro meter mounted on aluminium back Technical Specification : Sling psychro meter mounted on aluminium back : - Response time: 2 minutes - Display: thermometers - Power: hand operated - Humidity Range :10 to 100% - Humidity Resolution: 2%, - Humidity Accuracy: ±5% - Temperature Range: -5°C to 50°C - Temperature Resolution: 0.1°C - Temperature Accuracy: ±0.5°C Features : -Red spirit mercury-free thermometer Standard Accessories & Spare Parts : - Psychometric chart - Rugged blow moulded hard case with removable lid	Standard Quality	5	No.		0		0	0
RAC107	Stop watch		Standard Quality	2	No.		0		0	0
RAC108	Vernier caliper	length 250mm	Standard Quality	2	No.		0		0	0
RAC109	Micrometer outside measurement	0 to 25mm	Standard Quality	2	No.		0		0	0
RAC110	Multi meter analogue type		Standard Quality	5	No.		0		0	0
RAC111	Tachometer digital, multi range	0 r m p to 3000 r m p. Portable small size in leather case	Standard Quality	2	No.		0		0	0
RAC112	Micron vacuum gauge	capable of reading up to 20microns Micron vacuum gauge Technical Specification : Micron vacuum gauge - Type : Digital - Operating Range:(Minimum): Atmosphere to 20 Microns - Resolution(Minimum): 1 Micron - Accuracy: +/- 10% - Over pressure: Minimum 20 Bar	Standard Quality	2	No.		0		0	0
RAC113	Sensor thermometer (digital)	minus 50 degree Celsius to +150 deg Celsius	Standard Quality	2	No.		0		0	0
RAC114	Fin straightened/fin comb.	With strong steel wire-based combing on wood Fin straightened/fin comb. Technical Specification : Fin Comb Straightener, Cleaner, Condenser Evaporator Cleaning Tool : - Material: Stainless steel - Minimum Size: 14cm x 3cm Features : - Suitable to straighten and repair damaged fins in most radiators, coolers, and air conditioning condensers Standard Accessories & Spare Parts : Standard	Standard Quality	3	No.		0		0	0
RAC115	Filler gauge	0.05 mm - 1 mm	Standard Quality	3	No.		0		0	0
RAC116	Wire gauge metric & British.	Steel plate embossing converse of British & Metric	Standard Quality	2	No.		0		0	0
RAC117	Dial thermometer remote control, armored capillary dial	75mm - 50C to +50 C	Standard Quality	3	No.		0		0	0
RAC118	Anemometer	Digital type Anemometer Technical Specification : Anemometer : - Display Type: LCD / LED - Operating Temperature: 0 to 50 deg C - Temperature Resolution : 0.1 deg C - Operating Humidity Range : Upto 85% - Humidity Accuracy : +- 3 % - Air Flow Measurement Range : 0 to 63,000 CMM - Area Measurement Range : 0.001 to 30 Sq. M - Air Velocity Range : 0.4-35 m/s - Air Velocity Resolution : 0.1 m/sec - Probe for Measurement - Rugged blow moulded hard case with removable lid Features : - Suitable to check Air Conditioning, Heating Systems, Measure air Velocity and Temperature - Shall have Metal Vane probe, Heavy Duty -Wide Range Measurement	Standard Quality	1	No.		0		0	0
RAC119	Compressors testers for small hermetic compressors	Fixed with electrical input/ output indicating facilities	Standard Quality	2	No.		0		0	0
RAC120	Digital thermometer	Graduated disc analogy type	Standard Quality	1	No.		0		0	0
RAC121	Temperature &Humidity recorder	Capacity to record 24 hrs. record	Standard Quality	1	No.		0		0	0
RAC122	Instrumentation screw driver set	100mm	Standard Quality	5	No.		0		0	0

RAC123	Digital weighing machine	100 kg	Standard Quality	1	No.		0		0	0
RAC124	Split phase induction motor	1hp, 230 V	Standard Quality	1	No.		0		0	0
RAC125	BLDC motor with controller	15 – 30 watts,315 Volt DC	Standard Quality	2	No.		0		0	0
RAC126	IDU Pulse Generation type motor	15watt,230volt A.C	Standard Quality	2	No.		0		0	0
RAC127	Capacitor start induction motor	1 Hp, 230 V	Standard Quality	1	No.		0		0	0
RAC128	AC 3 Phase motor, 400/50 Hz	2 Hp	Standard Quality	1	No.		0		0	0
RAC129	Star delta starter	2 hp	Standard Quality	1	No.		0		0	0
RAC130	Auto Transformer starter	3 hp	Standard Quality	1	No.		0		0	0
RAC131	D.O.L Starter	2 hp	Standard Quality	1	No.		0		0	0
RAC132	Portable air - LPG brazing kit	2 kg. LPG cylinder, torches, houses, stand make Portable air – LPG brazing kit - 2Kg Capacity Technical Specification : Portable air – LPG brazing kit Consisting of : - LPG Cylinder Minimum : 2 KG - Two Stage LPG Regulator - Flashback arrestor for Cylinder and Torch - Hose 10 m - Hose Clamp - Brazing Torch : Minimum Length 320 mm Features : - Torch designed To use with LPG gas.	Standard Quality	1	No.		0		0	0
RAC133	Oxy-acetylene welding set complete	cylinders, regulators welding torches with difference nozzles	Standard Quality	1	No.		0		0	0
RAC134	Single door direct cool refrigerator, carrying with HFC and HC	185 L	Standard Quality	1	each		0		0	0
RAC135	Frost free refrigerator	200L carrying with HC blend	Standard Quality	2	No.		0		0	0
RAC136	Three/four door refrigerator (Inverter type)	300L carrying with HC R-600a	Standard Quality	2	No.		0		0	0
RAC137	Core drill machine.		Standard Quality	1	No.		0		0	0
RAC138	Bench Drilling machine	20 mm capacity,200-2500rpm	Standard Quality	1	No.		0		0	0
RAC139	Grinding Machine	200mm,3000rpm,Double ended1/2 hp	Standard Quality	1	No.		0		0	0
RAC140	Evacuating and refrigerant charging station, consist of a) Rotary two stage vacuum pump and motor (with gas ballast and anti-such 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 vacuum gauge c) Graduated charging cylinder with provision for temperature correction and all necessary isolating valves	(CAP. 2 kg. In lieu of (b)above and with accuracyof + / - g for charging hydrocarbons) Evacuating and refrigerant charging station, consist of 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 vacuum gauge b)Graduated charging cylinder with provision for temperature correction and all necessary isolating valves Technical Specification : Evacuating and refrigerant charging station : - Gas tank Capacity: 12 Litres. - Charging Accuracy: +/- 1 gm - Power Supply: 220 V, 50 Hz, - Working Temp.: +10°C to +50°C - manifold with gauges and valves for pulling vacuum up to 50 microns of Hg - Provision of connecting to a microns level vacuum gauge - Graduated charging cylinder with provision for temperature correction - All isolating valves Rotary Two Stage Vacuum Pump:- - Gas Ballast and anti-suck back - Power Supply: 220 V / 50 Hz - Ultimate Vacuum / displacement : up to 50 Microns / 40 L/min	Standard Quality	1	No.		0		0	0
RAC141	Evacuating and charging station as above but fitted withweighing scale	Evacuating and refrigerant charging station, consist of 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 vacuum gauge b)Graduated charging cylinder with provision for temperature correction and all necessary isolating valves Technical Specification : Evacuating and refrigerant charging station : - Gas tank Capacity: 12 Litres. - Charging Accuracy: +/- 1 gm - Power Supply: 220 V, 50 Hz, - Working Temp.: +10°C to +50°C - manifold with gauges and valves for pulling vacuum up to 50 microns of Hg - Provision of connecting to a microns level vacuum gauge - Graduated charging cylinder with provision for temperature correction - All isolating valves Rotary Two Stage Vacuum Pump:- - Gas Ballast and anti-suck back - Power Supply: 220 V / 50 Hz - Ultimate Vacuum / displacement : up to 50 Microns / 40 L/min	Standard Quality	1	No.		0		0	0
RAC142	Two stage rotary vacuum capacity pump,3or 4 CFM.	Two stage rotary vacuum pump Technical Specification : Two Stage Rotary Vacuum Pump: - Capacity: 60 - 10 rpm - Capable of evacuating to 50 microns of Hg - Fitted with gas ballast, anti-suck back valve - Single Phase Motor, 240V, 50 Hz	Standard Quality	1	No.		0		0	0
RAC143	Dry N2 cylinder	2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulator & meter cube	Standard Quality	1	No.		0		0	0
RAC144	Window A.C	1 Ton with R-22 Blend reciprocating compressor	Standard Quality	2	No.		0		0	0
RAC145	Split A.C	1.5 Ton with R134a or R-22 reciprocating compressor	Standard Quality	2	No.		0		0	0
RAC146	Duct able split A.C 1.5 ton	1.5Ton with R134a or R-22 reciprocating compressor Duct able split A.C 1.5 ton Technical Specification : Duct able split A.C 1.5 ton: - Tonnage / BTU: 1.5 Ton / 18000 BTU/hr - Compressor Type: Reciprocating or Rotary (R134a or R-22) - Air Circulation: Minimum 650 CFM - Cooling: 5000 - 5500 Watts - Static Pressure: 40 Pa - Noise Level: 30 dB(A) - Pipe Connections-Liquid (Flare): 1/4 inch - Pipe Connections -Gas (Flare) - 1/2 inch - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz Features : - Wide Operation Range up to 53°C - E.S.P. (External Standard Static Pressure) Control - Precise Temperature Control - Standby Mode	Standard Quality	1	No.		0		0	0
RAC147	Recovery unit with cylinders	CFC, HFC&HCFC Recovery unit with cylinders Technical Specification : Recovery unit with cylinders: - Power: 220/240 VAC/50HZ - Compressor minimum HP: 1/3 HP - Pressure High side : 3200Kpa - Pressure Low side 1600Kpa -Temperature Range :10°C to 40°C - Recovery cylinders of minimum - 5Kg for R-134a, R-22 and R-410A Features : - Inlet (suction) and Discharge pressure gauges shall allow the process to be monitored from start to finish. - Oil less no inlet valve, AC motor Drive Standard Accessories & Spare Parts : - Refrigerant hoses, Recovery cylinders, filter, Extension cord	Standard Quality	1	each		0		0	0
RAC148	Decibel meter	30-100 db Decibel meter Technical Specification : Decibel meter: -Sensor: electret (prepolarized) condenser microphone - Power: four AAA batteries. -Display: 3½" LCD approximate. -Measurement range: Low: 30 dB to 90 dB & - High: 75 dB to 130 dB - Frequency range: 31.5 Hz to 8000 Hz - Resolution: 0.1 dB - Accuracy: 1.5 dB (ref 94 dB @ 1 kHz)	Standard Quality	1	No.		-		0	0

RAC149	Cassette Air conditioner	4500 kcal/hr Cassette Air conditioner Technical Specification : Cassette Air conditioner - 4500 kcal/hr: - Tonnage / BTU: 1.5 Ton / 18000 BTU/hr. - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz Indoor Unit - Air Circulation: Minimum 650 CFM - Noise Level: 35 dB or less - Outdoor Unit - Compressor Type: Reciprocating or rotary - Refrigerant: R-22 - Pipe Connections-Liquid (Flare): 1/4 inch - Pipe Connections-Gas (Flare) - 1/2 inch Features : - Fresh Air Intake - Self-Diagnostic - Sleep and Timer Control - Flexi Air Control Standard Accessories & Spare Parts : - Remote Control - Voltage Stabilizer suitable rating	Standard Quality	1	No.		0		0	0
RAC150	De scaling pump set	with stainless steel impeller and housing complete with motor 1/2 hp and accessories De scaling pump set Technical Specification : De scaling pump set : - Motor: 0.5 HP - Motor Enclosure: IP 55 - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz - Max. Flow Rate: 90 Ltr/Min - Max. Head: up to 20 Meters - Impeller material: Stainless steel Features : - Arrangement for flow reversing system. - Corrosion resistance. Standard Accessories & Spare Parts : - Flow and Return Hoses: 2 x 3 meter - Hose and Fittings: 1/2 inch BSP	Standard Quality	1	No.		0		0	0
RAC151	Fan coil unit	with water valves (2 & 3 way) Fan coil unit Technical Specification : Fan coil unit with 2 & 3 way water valves : - Air Volume m3/h: 190-340 - Cooling Capacity(W) :2300, - Heating Capacity (W) : 3600, - Water Flow l/min : 7.7 - Fan Type :Centrifugal, forward-curved Blades. - Motor Type : Permanent Split Capacitor. - Coil row : 3 or more - Working pressure : 1.6 Mpa Features : Standard Accessories & Spare Parts : - Remote Controller	Standard Quality	1	No.		0		0	0
RAC152	Shell and tube, DX chillers (small)	5 Ton with Cu tubing only Shell and tube, DX chillers (small),5 Ton with Cu tubing only Technical Specification : Shell and tube, DX chillers with Cu tubing : - Tonnage :5 Ton - Diameter: 4 inches - Length: 40-45 inches - Height: 7-9 inches - Refrigerant Inlet: 5/8 inches - Refrigerant outlet: 1-1/8 inches - Refrigerant Working Pressure: 220-230 psig - Water Female Terminal Standard: 1-1/4 inches - Water Working Pressure: 220-230 psig - Tubing: Copper Features : - Special design finned type of Copper (Cu) tubes. - Easy to install. - Can be easily opened for Inspection - Condensers pressure and leak tested before delivery - Carbon Steel construction with copper tubes	Standard Quality	1	No.		0		0	0
RAC153	Circulating water pump (small)	0.5 H.P with stainless steel tank capacity 20 liters within let/ outlet provision. Circulating water pump (small),0.5 H.P with stainless steel tank capacity 20 litres with in let/ outlet provision. Technical Specification : Circulating water pump 0.5 Hp with stainless steel tank : - Tank Capacity:20-30 Litres - Tank material : Stainless steel - Motor: 0.5 HP - Motor Enclosure: IP 55 - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz - Max. Flow Rate: 90 Ltr/Min - Max. Head: up to 20 Meters - Impeller: Stainless steel Features : - Corrosion resistance. - Built-in flapper/check valve permits self-priming. - Arrangement for flow reversing system.	Standard Quality	1	No.		0		0	0
RAC154	Refrigerant Cylinder	10 kg capacity Refrigerant cylinder Technical Specification : Empty Refrigerant Gas Cylinders fitted with valve, guard : - Type: Two piece welded - Capacity: Minimum 10 Kg - Working pressure: 25-30 KG/CM2 -Minimum Pneumatic leakage test pressure: Min. 10 Kgf/cm2 - Wall Thickness : Minimum 3 MM Features : - Painted with refrigerant colour code. R-134a (Light Blue) Standard Accessories & Spare Parts : - Cylinder valve key,	Standard Quality	2	No.		0		0	0
RAC155	Gauge manifold with gauges	Different size of hoses for R 134a,R22 and R 410. Gauge Manifold with Gauges with different sizes of hoses for R 134a,R22 and R410 Technical Specification : Gauge manifold with gauges - Material: Brass or Forged aluminium alloy body - Temperature Scale: Celsius - Max Working Pressure: 500PSI - Burst pressure: 2500PSI - Hose Length: around 55" (inches) - Blue gauge (low): 2-1/2" diameter, 0-500 PSI - Red gauge (high): 2-1/2" diameter, 0-800 PSI - Red & Blue 5 feet long charging hose (1/4" FFL x 60 " with knurled fittings) - Yellow 5 feet long charging hose (1/4" ACME x 60" with knurled fittings) Features : - High Quality and Convenience Built in viewing glass for automotive or household air conditioning unit - Celsius C degree reading - Each coupler have a shut off valve to prevent loss of refrigerant - Quick disconnect couplers for High/Low fittings should be included Standard Accessories & Spare Parts : - Different size of hoses for R 134a,R22 and R410 - 3 Nos. 5ft Charging hoses (Red, Yellow & Blue) - 2 Nos. Quick couplers - 1 No. Corkscrew - 1 No. moulded carrying case	Standard Quality	3	each		0		0	0
RAC156	Shell and tube type condenser	5 Ton Shell and tube type condenser Technical Specification : Shell and tube type condenser - Condenser Capacity (Tons): Minimum 5 Ton - Max. Flow: 1.25-1.35 cu.m/hr - Pressure Drop: 0.27-0.30 bar -Tubes: Copper Tubes - Connections: Pip thread or Flange - End Cover: Detachable, to allow mechanical cleaning - No. of Passes: 4 - Inlet: 1/2" - Outlet: 1/2" Features : - Special design finned type of Copper (Cu) tubes. - Should be easily opened for Inspection & Maintenance. Standard Accessories & Spare Parts : - Safety valve, - Service valve	Standard Quality	1	No.		0		0	0

RAC157	Rotary hermetic compressor	2 Ton Rotary hermetic compressor Technical Specification : Rotary hermetic compressor - Power supply:220-240V/50Hz -COP :3.10. - Capacity: Minimum 2 Ton. - Power consumption: 1645W - Refrigerant: R22 - Capacitor: 35/370µF or equivalent Features : Standard Accessories & Spare Parts :	Standard Quality	1	No.		0		0	0
RAC158	Bottle cooler visible	200L carrying with HFC-134a& reciprocating compressor Bottle cooler visible,200 L carrying with HFC-134a& reciprocating compressor Technical Specification : Bottle cooler visible with HFC-134a & reciprocating compressor: - Capacity : Minimum 200 L - Temperature Control : Electro mechanical. - Shelf Type : Adjustable - Cabinet Temperature Range : 1°C to 8 °C - Electric Supply: 230V/1Phase/50 Hz Features : - Uniform cooling by forced air circulation. - Clear visibility with dual glass - Self-closing door . - Provision for Locking - Light	Standard Quality	1	No.		0	2	0	0
RAC159	Deep freezer	200L carrying with HFC-134a& reciprocating compressor	Standard Quality	1	No.		0		0	0
RAC160	Display Cabinet	2 ton capacity	Standard Quality	1	No.		0		0	0
RAC161	Water cooler storage type	200L carrying with HFC-134a& reciprocating compressor Water cooler storage type,200 L carrying with HFC- 134a & reciprocating compressor Technical Specification : Water cooler storage type with HFC- 134a : - Storage capacity: Minimum 200 L - No. of faucet: 4 nos. - Supply Power: 240 AC/50HZ, single phase. -Compressor Type: reciprocating compressor Features : - Faster cooling - Silent operation - PUF insulation - Stainless steel body - Stainless steel tank - Easy controls - Speedy drainage	Standard Quality	1	No.		0		0	0
RAC162	Water dispenser bubble type (Hot and Cold)	2.5 to 3ltr. Delivery capacity per hour	Standard Quality	1	No.		0		0	0
RAC163	Ice candy plant	2 ton with capacity to make 32 ice candy at a time with Forma tray, stainless steel tank on trolley Ice candy plant, 2-ton compressor with capacity to make 32 ice candy at a time with ice form Tray, with use of hfc-134a refrigerant,stainless steel tank on trolley Technical Specification : Ice candy plant :- - Capacity: 2 ton - Type: Conventional - Brine Storage Capacity (Approx): 340 Ltrs. - Temp : -26° C to -30° C - Body : Outer - S.S. Grade 304 Thick 1mm, & Inner - S.S. Grade 316 Thick 1.2mm	Standard Quality	1	No.		0		0	0
RAC164	Air-conditioning, direct system.	Complete with all controls including humidity control Air-conditioning, direct System Complete with all controls including humidity control capacity 15000Kcal/hr Technical Specification : Air-conditioning, direct System with all controls including humidity control, Air-conditioned air should pass through, evaporator blower 2 hp, condenser blower 1 hp - System capacity: 15000Kcal/hr - System type: split - Blower: 18 inch Evaporator : - cooling capacity: 15000Kcal/hr - Coil material: Cu / Al Compressor: - Type: reciprocating or rotary - Minimum capacity: 5 ton Condenser: - Type: Air cooled - Coil: Cu / Al - Thermostatic Expansion valve - Air filter - Thermostat - High pressure low pressure control switch Features : - Fresh Air Intake	Standard Quality	1	No.		0		0	0
RAC165	Air-conditioning, indirect system. (water cooled)	Complete with all controls including humidity control Air-conditioning, indirect System(water cooled) Technical Specification : Air-conditioning, direct System with all controls including humidity control, Air-conditioned air should pass through, evaporator blower 2 hp, condenser blower 1 hp System capacity: 15000Kcal/hr - System type: split - Blower: 18 inch approximate -Motor: 1 HP or more Chiller: -Type: shell and tube type -cooling capacity: 15000Kcal/hr Water circulating pump -Type: centrifugal -Minimum hp: 2 Compressor: -Type: reciprocating or rotary -Minimum capacity: 5 ton Condenser -Type: Air cooled -Coil: Cu / Al Thermostatic Expansion valve Air filter Thermostat High pressure low pressure control switch Power Supply: 380/420V, 3 PH, 50 HZ. Features :	Standard Quality	1	No.		0		0	0
RAC166	Package A/C	5-ton capacity, Air cooled type with open type compressor reciprocating type Package A/C Technical Specification : Package A/C - 5 Ton - Capacity:5-5.5 TR. - Refrigerant: R-407c or R-22, -Power Supply:380/420V, 3 PH, 50 HZ. - Compressor Type: Reciprocating, Scroll hermetically sealed, Compressor should be belts driven through 5 hp electric motor - Controller: Microprocessor with LCD display. - Condenser Type: Air cooled. Features : - Low noise Standard Accessories & Spare Parts : - Electrical Wires / Sockets: as required	Standard Quality	1	No.		0		0	0
RAC167	Car A.C components (full kit) a) Wobble plate compressor with mounting brackets. b) Serpentine Evaporator c) Parallel Flow Condenser d) Hoses, tubes, Receiver, Ex.valve. e) Electrical components & wiring Harness	Car A.C components(full kit) a) Wobble plate compressor with mounting brackets. b) Serpentine Evaporator c) Parallel Flow Condenser d) Hoses, tubes, Receiver, Ex. valve. e) Electrical components & wiring Harness Technical Specification : Car A.C components full kit consisting of : Compressor with mounting brackets: - Capacity: 1 - 1.5 ton - Type: Wobble Plate type - Power Supply: 12 V Evaporator : - Type: Serpentine Expansion valve : - Type: Thermostatic Condenser : - Type: Parallel flow - Hoses, tubes, Receiver, Valves, Electrical components & wiring Harness Features : - Un-used items in sealed packs	Standard Quality	1	Set		0		0	0
RAC168	CAR AC tutorial model		Standard Quality	1	Set		0		0	0
RAC169	Bus AC tutorial model		Standard Quality	1	Set		0		0	0
RAC170	Automatic ice cube m/c	Automatic Ice cube m/c Technical Specification : Automatic Ice cube Machine : - Production capacity:43-50Kg/24 Hrs. - Storage capacity: 25Kg. - Cooling System: Air cooled. - Usable bin: Built in. Features : - Fully insulated ice bin. - Fully foamed, - Self standing housing. - Ideal ice and water ratio. - Low noise Standard Accessories & Spare Parts : - Electrical Wires / Sockets: as required	Standard Quality	1	No.		0		0	0

RAC171	Storage type water cooler (hot and cold)	Storage type water cooler(Hot and Cold), 40 Ltr Technical Specification : Storage type water cooler (Hot and Cold) : - Water cooler body :stainless steel - Capacity : 40 litres minimum - Compressor - Hermetically Sealed - Refrigerant: R-134a. - Provision for Hot & Cold water - Power Supply: 230 V / 50 Hz / 1 Phase Features : - Electrical Wires / Sockets: as required	Standard Quality	1	1 no.		0		0	0
RAC172	Visi cooler	Visi Cooler, 185 L Technical Specification : Visi Cooler - Power Supply: 230 V / 50 Hz / 1 Phase - Type: Visible - Capacity: Minimum 185 L - Inner Temperature: 2°C to 8°C Features : - Microprocessor controller for precision temperature . - Rust free ABS plastic	Standard Quality	1	No.		0		0	0
RAC173	VRF/VRV unit with two indoor units 2.5TR each and 5TR capacity out door unit complete with air cooled condenser, accessories and controls.	Variable Refrigerant Volume(VRV)/ Variable Refrigerant Flow(VRF)unit with two indoor unit 2.5 TR each and 5TR Capacity outdoor Unit Complete with air cooled condenser. Accessories and controls Technical Specification : Variable Refrigerant Volume(VRV)/ Variable Refrigerant Flow(VRF)unit Indoor Unit: - Type: Wall mounted. - Cooling capacity: 9.0KW min - Heating capacity: 10 Kw. min - Power Supply: 230 V / 50 Hz / 1 Phase - Air flow (CMH): 1320 - Controls: Standard wire less remote controller. - Noise level: 49db. Out door unit: - Type: Individual. - Cooling capacity: 20.0Kw min - Heating capacity: 22 Kw. min - Power Supply: 230 V / 50 Hz / 1 Phase - Refrigerant: R-410a Features : - High efficiency full DC inverter compressor - High efficiency oil balance and oil return Technology Automatic heating and cooling. - Air cooled condenser - Two indoor unit s Standard Accessories & Spare Parts : - Central remote controller.	Standard Quality	1	1 no.		0		0	0
RAC174	Split A/C (inverter technology)	SPLIT A/C (INVERTER TECHNOLOGY) Specification:- Split A/C with inverter technology: Capacity: 1.5 Ton. Compressor:- Rotary Type, Suitable for medium sized rooms (111 to 150 sq ft); Energy Rating: 4 Star. High energy efficiency. Annual Energy Consumption: 928 units. ISEER Value: 4.17 (Please refer energy label on product page or contact brand for more details	Standard Quality	2	No.		0		0	0
RAC175	Walk in cooler PUF insulated for cold room 6X4.5X8 cft.	Walk in cooler PUF insulated for cold room 6x4.5x8 cft.,temperature 0 degree -5 degree c Technical Specification : Walk in cooler PUF insulated for cold room 6x4.5x8 cft. Cold Room: - Temperature: 0 - 5 Degree C - PUF panel thickness: 100mm. - Sheet metal thickness inside and out side: 0.5 mm. - Door Type: Flush and sliding. - Stationary Standard load carrying for floor: 318 Kg/sq. Ft. Evaporator unit: - Cooling capacity: 12000 BTU/hr. - Power Supply: 230 V / 50 Hz / 1 Phase - Fan motor qty. - 2 minimum - Total defrost heater load: 3000 Watt. min Condensing Unit: - Compressor Type: Reciprocating/rotary sealed. - Refrigerant: R-22 Features : - Modular construction - Digital temperature indicator - Stainless steel body. Standard Accessories & Spare Parts : - Electrical Wires / Sockets: as required	Standard Quality	1	Complete set		0		0	0
RAC176	Absorption system	Absorption system Technical Specification : Vapour Absorption System - small size. - Vapour Absorption Cycle. Refrigerator including - Electrically Heated Generator - Absorber - Condenser - Evaporator - Insulated cabinet. - Energy meter: Digital Indicator - Temperature Sensors - Temperature Indicator: Range 0-200 deg C Features : - The System should be mounted on iron frame painted	Standard Quality	1	No.		0		0	0
RAC177	Work bench (RAC Lab)	2000 x1000 x 700 mm with 2" pipe frame. Top with teak slab and fixing with3/4" good quality rubber sheet.	Standard Quality	6	No		0		0	0
Total (Rs.)				**1518**			0		0	0

Note:

1.Unit price should include the cost of warranty for one year and freight and other charges such as loading/unloading, storage etc.
2.In case of discrepancy between unit price and total amount, the unit price shall prevail.
3.Bids shall be evaluated based on total amount with taxes.
4. The bidder quoting for the above items then the bidder has to comply with all the specifications as prescribed in the BOQ sheet.
5. All the tools and equipment should be as per BIS specification.