

Section 6- Schedule of supply

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1. List of Goods and Related Services

Package Name: Supply of Mechanical and related equipment's for Industrial Training Institutes to enhance technical and vocational skills among the youth of Himachal Pradesh (Package -04)

The Goods and Related Services are grouped in Lots. Bidders shall have the option of submitting Bids for one, any combination, or all of the lots. Lots shall not be further subdivided for the purpose of bidding. The bidder is required to supply the items as mentioned below for the respective Package and Lot(s) for which bidding.

Besides the supply of equipment, the bidder shall also carry-out required related services including unloading, installation & commissioning, after sales warranty & maintenance as well as the relevant handholding to the trainers of the ITI for proper usage and operations. The bidder shall do the necessary site preparation including electrical work, earthing, minor civil work, etc. as required for installation & commissioning of the equipment's/goods. While doing the site preparation the bidder shall ensure that aesthetics of the labs/workshops, IT Lab and the Library shall maintain /restored.

Lot No : 1							
Lot Name: General purpose machinery							
Item No	Name of Goods or Related Services	Description	Unit of Measure -ment	Quantity	Specification by the supplier (To be filled by the supplier)	Detailed information brochure attached at Page No.	Pass/Fail (By Purchaser)
1.	Pillar Type Electric motorized Drilling machine of 20 mm Capacity	Pillar Type Drilling machine: - Drilling Capacity : 20mm Max - Chuck Capacity : 0-20 mm - Spindle Taper : Minimum MT-3 - Spindle Traverse : Minimum 100mm - Distance between Spindle and Table: Minimum 300mm - Distance between Spindle and Base : Minimum 500 mm - Table Working Surface Area : Minimum 200 x 200 mm	No.	16			

		<ul style="list-style-type: none"> - Swivel Table - Number of Spindle Speeds: atleast 8, - Pillar Diameter: Minimum 57mm - Spindle Speed - between 115 rpm – 2060 rpm or Higher - Coolant System with Coolant Pump with tank. - Main Motor not less than 1HP - Operating Voltage: 440V, 3 Phase. - Suitable Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 					
2.	Motorised Bench Grinder	Motorised Bench Grinder : <ul style="list-style-type: none"> - Grinding Wheel Diameter : Minimum 150mm - Double sided - Two wheels rough and smooth with Tool Base - No Load Speed : 1500-3600 rpm - Operating Voltage: 440 V , 3 phase - Motor Power : Minimum 1 HP - Suitable DOL Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	No.	14			
3.	Bench grinder fitted with fine grain size silicon carbide green grinding wheel dia. 150 mm	Bench Grinder : <ul style="list-style-type: none"> - Grinding Wheel Diameter : 150mm minimum - Double sided - No load Speed : 1800-3600 RPM or Higher - Motor Power : Minimum 1 HP - Operating Voltage: 440 V , 3 phase 	No.	1			

		<ul style="list-style-type: none"> - Two wheels fine grain size silicon carbide green - Suitable DOL Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 					
4.	Bench type Electric Motorized Drilling Machine of 12 mm capacity	Bench Drilling Machine : <ul style="list-style-type: none"> - Drilling Capacity: 12 mm - Chuck Capacity 1.5-12 mm - Minimum spindle travel :80 mm - Spindle taper: Solid - Minimum No. of spindle speed : 2 - Range of spindle speed:500-3000 rpm - Electric Motor: Minimum 0.5 H.P, 3 Phase - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	No.	13			
5.	Bench type Electric Motorized Drilling Machine of 20 mm capacity	Bench Drilling Machine : <ul style="list-style-type: none"> - Drilling Capacity: 20 mm - Chuck Capacity 1.5-20 mm - Minimum spindle travel :80 mm - Spindle taper: Solid - Minimum No. of spindle speed : 2 - Range of spindle speed:200-2500 rpm - Electric Motor: Minimum 0.5 H.P, 3 Phase - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	No.	1			

6.	Double Ended pedestal Grinding machine with 250mm wheels.	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth - Grinding Wheel Diameter : 250 mm each - Thick wheel guards with built in dust chutes - No load Speed : Minimum 1500 RPM - Operating Voltage :440 V , 3Phase - Motor Capacity: Minimum 2 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	No.	4			
7.	Double Ended pedestal Grinding machine with 300mm wheel.	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> - Grinding Wheel Diameter : 300 mm each - Two wheels One coarse and One medium grain size - No load Speed : Minimum 1500 RPM - Operating Voltage :440 V , 3Phase - Motor Capacity: Minimum 2 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	No.	5			
8.	Double Ended pedestal Grinding machine with 200mm wheels	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth - Grinding Wheel Diameter : 200 mm each - No load Speed : Minimum 1500 RPM 	No.	1			

		<ul style="list-style-type: none"> - Motor Capacity: Minimum 0.75 KW - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length 					
9.	Double Ended pedestal Grinding machine with 200mm wheels	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth - Grinding Wheel Diameter : 200 mm each - No load Speed : Minimum 3000 RPM - Motor Capacity: Minimum 0.5 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length 	No.	1			
10.	D.E. pedestal Grinding machine with 178mm wheel rough and smooth	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth - Grinding Wheel Diameter : 178 mm each - No load Speed : Minimum 1500 RPM - Motor Capacity: Minimum 0.5 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length 	No.	1			
11.	Transformer welding set - continuous welding current, with all accessories and electrode holder	Transformer welding set: <ul style="list-style-type: none"> - Operating Voltage: 415-440V, 3 Phase - Open circuit voltage range: 60-100 V - Welding Current Range : 60 – 400A - Current @ 60% duty cycle 300A - Display of Current & Voltage Digital 	No.	8			

	60% Duty Cycle with Standard Accessories	<ul style="list-style-type: none"> - Step less and smooth variable current regulation. - Swivel front wheel and rear wheel arrangement. - Forced Air Cooling. - Suitable and safe On/Off switch control and Current control with indicators 					
12.	Welder cable	Welder cable : <ul style="list-style-type: none"> - Size: 50 sq. mm - Material: copper with Tough Rubber - Length : 50 meter - Max Current carrying capacity: Not less than 400 Amps 	No.	6			
13.	Earth clamps	Heavy duty earth clamp for welding : <ul style="list-style-type: none"> - Jaw opening up to 60 mm. - Zinc coated steel with copper plated jaws and copper mesh. 	No.	10			
14.	Oxy - acetylene gas welding set equipment with hoses, Oxygen & Acetylene cylinders, regulator and other accessories.	Oxy - acetylene gas welding set equipment consisting of : <ul style="list-style-type: none"> - Oxygen cylinder of standard industrial Capacity - Acetylene cylinder of standard Industrial Capacity - Double stage oxygen regulator - Double stage acetylene regulator - Oxygen & Acetylene Flashback arrestor for Cylinder and Torch - Twin hoses(Acetylene & Oxygen)10m Each - Welding torch with Nozzles - Twin Cylinders Trolley 	No.	11			
15.	Gas welding table with positioner with	Gas welding table with positioner with Fire Bricks	No.	8			

	Fire Bricks 900 X 600 X 750 mm	<ul style="list-style-type: none"> - Size : 900 X 600 X 750 mm made with 40 x 40 x 4 mm angle iron and top tray covered with 5mm MS sheet, with positioner suitable for all weld positions. - Top tray covered with refractory bricks - Refer Specification as per Drawing No DWG-MM-01 Attached - Gas Welding Table Spray Painted 					
16.	Gas Welding Table with fire bricks top and stand	Gas welding table with positioner : <ul style="list-style-type: none"> - With Fire Bricks - Size : 1220 X760 mm made with 40 x 40 x 4 mm angle iron and top tray covered with 5mm MS sheet with positioner suitable for all weld positions. - Top tray covered with refractory bricks - Refer Specification as per Drawing No DWG-MM-03 Attached. - Gas Welding Table Spray Painted 	No.	10			
17.	Welding torch tips of different sizes for Oxy- acetylene gas welding	Welding torch tips: <ul style="list-style-type: none"> - Welding torch tips of different sizes for Oxy- acetylene gas welding To fit nozzle no. 1, 2, & 3 	No.	10			
18.	Spark lighter for Gas Welding	Spark Lighter for Gas Welding <ul style="list-style-type: none"> - Spark Lighter used for Gas Welding & Cutting - Made of Stainless steel 	No.	13			
19.	Trolley for Twin gas cylinders.	-Trolley for Twin gas cylinders <ul style="list-style-type: none"> - To carry Two Cylinders of standard Industrial Capacity. - Movable trolley with solid tyre wheels. - refer Specification as per Drawing No DWG-MM-02 Attached 	No.	7			
20.	Welding torches.	Welding Torch for Oxy-Acetylene with Nozzles no. 1, 2, & 3	No.	6			

		- Material of Torch : Brass					
21.	Anvil 50 Kgs with Stand	Anvil with Stand: <ul style="list-style-type: none"> - Made up of Solid cast steel hardened and tempered. - Single Horn Anvil With Curved Base Size/Working Area at least 12 Sq. Inches - Weight: 50 KGs - 45-60 Rockwell Hardness is required - Fine finish and corrosion free - Suitable and sturdy Anvil Stand 	No.	23			
22.	Arbor press hand operated 2 ton capacity	Arbor Press : <ul style="list-style-type: none"> - Mechanical Type hand operated with attachments. - Precision cut steel rams and pinions for accurate operation - Tables and slotted table-plates should be flat and parallel to provide accurate support - Pressure Capacity: 2 tons - Rust Proof 	No.	14			
23.	Bench lever shears 250mm Blade x 3mm Capacity	Bench lever shears : <ul style="list-style-type: none"> - Blade Length: 250mm - Capacity : 3mm - Rust Proof 	No.	3			
24.	Pipe bending machine -Hydraulic type - 12 to 30mm	Pipe Bending Machine : <ul style="list-style-type: none"> - Type : Hydraulic - Size : 12 to 30 mm - Capacity: 14 to 24 gauge aluminium, copper and steel pipes with formers of 5/8", 3/4" and 1" or any three formers up to 1". 	No.	4			
25.	Pneumatic rivet gun	Pneumatic rivet gun : <ul style="list-style-type: none"> - Blows Per Minute (BPM) : 500-1800 - Air Consumption : 5-15 CFM 	No.	6			

		- Stroke Length : 3-5 inch					
26.	Chain Pulley Block of 3 ton capacity with tripod stand	Chain Pulley Block with compatible tripod stand: - Capacity :3 Ton Tripod Stand Specifications : - Capacity to lift minimum 3 Ton of load - Minimum Height to Eye : 3000 mm - Minimum Leg Length : 3400 mm - Legs should be Adjustable for uneven level ground, shallow slopes and slight inclines. - Feet Should be suitable for hard and soft ground.	No.	11			
27.	Tin smiths bench folder	Tin smiths bench folder - Size 600 x 1.6mm	No.	2			
28.	Drilling Machine with hammer action -13 mm capacity	Hand Held Portable Drilling Machine with hammer action : - Drilling Capacity :13mm max - Chuck Capacity 1.5–13mm - No Load Speed 0-2800 rpm - Impact Rate 0 - 45000 bpm -Two way Hammering/drilling mode selector switch - Auxiliary handle with depth stop - Operating Voltage 240V, 50Hz	No.	2			
29.	Air impact wrench with standard accessories	Air impact wrench with standard accessories: - Impacts Per Minute: 800-1200 - Air Inlet : 1/4 Inch (NPTF) - Air Consumption : 3- 6 CFM	No.	8			

		<ul style="list-style-type: none"> - Working Torque Range (fwd) : 30-500 N-m - Working Torque Range (Reverse) : 30-500 N-m - Square Drive (Inch) : 1/2 Inch - Min. hose size : 10 mm 					
30.	Air ratchet with standard accessories	Air ratchet with standard accessories: <ul style="list-style-type: none"> - Free Speed : 150-200 RPM - Torque : 50-90 Nm - Air Inlet : 1/4 Inch (NPTF) - Avg. Air Consumption : 3- 6 CFM - Air Hose Size: 3/8" 	No.	4			
31.	Belt Tensioner gauge	Belt Tensioner gauge : <ul style="list-style-type: none"> - To work with all belt drive models with a 10 lb. specification 	No.	1			
32.	Twist Drill set 1.5-15 mm	Twist Drill Set : <ul style="list-style-type: none"> - Set of Sizes : 1.5 mm to 15 mm by 0.5mm - Material : High Speed Steel(HSS) - straight shank spiral flute - Hard care for safe storage 	No.	8			
33.	Flow meter 0-400 ltr/min	Flow meter : <ul style="list-style-type: none"> - Range : 0-400 ltr/min - Material : Brass - Dial Type : Analog - Size : 1/2" to 1 " - Operating Pressure : 5 to 10 bar 	No.	4			
34.	Forks clips 02 tonnes	Forks clips : <ul style="list-style-type: none"> - Capacity : 2 Tonnes - Safety Lock spring. 	No.	2			
35.	Forks clips 05 tonnes	Forks clips : <ul style="list-style-type: none"> - Capacity : 5 Tonnes - Safety Lock spring. 	No.	2			
36.	Foundation bolts	Foundation bolts: <ul style="list-style-type: none"> - Type : Eye - Diameter : 12MM,16MM & 20 MM(One 	No.	8			

		Each) - Material : Mild Steel - Specification as per Drawing No DWG-MM-04 Attached - Nut & Washers of suitable size for each.					
37.	Hydraulic wheel and bearing puller	Hydraulic wheel and bearing puller: - Spread : 150-300 MM - Capacity : Minimum 4 Ton - Stroke : 50-90 mm	No.	4			
38.	Pneumatic scraper with adjustable stroke	Pneumatic scraper with adjustable stroke: - Strokes Per Minute : 2500-3500 SPM - Working Air Pressure : 5-7 KG/CM2 - Avg. Air Consumption : 4 CFM @ 6.3 KG/CM2 - Air Hose Size : 3/8" - Piston Stroke Length : 10-20 mm adjustable	No.	3			
39.	Pressure gauge 0 -5 Kg/cm2	Pressure gauge : - Type : Analog - Dial Size : 150 MM - Measuring Range : 0-5 Kg/cm2 - Connection : 3/8" BSP	No.	2			
40.	Rollers (steel tubes) from 40 to 65 mm dia.	Rollers (steel tubes) : - Nominal Bore : 40mm,50mm and 65 mm (One Each) - Length : Minimum 360 mm - Heavy Duty (Class C) Tubes	No.	6			
41.	Self-alignment roller ball bearing	Self-alignment roller ball bearing : - BEARING (1306E) - Bore Dia : 30mm - Out Side Dia : 72mm - Width : 19mm	No.	2			
42.	SRDG ball bearing, DRDG ball bearing,	Single row deep groove bearing (6020-2 Z)	No.	2			

	self-aligning ball bearing	<ul style="list-style-type: none"> - Inside dia.: 100 mm, - Outside dia. : 150 mm - Width : 24mm, Double row deep groove bearing (4211ATN9) <ul style="list-style-type: none"> - Inside dia.: 55 mm, - Outside dia. : 100 mm - Width : 25 mm Self aligning ball bearing: (1306E) <ul style="list-style-type: none"> - Bore Dia : 30mm - Out Side Dia : 72mm - Width : 19mm 					
43.	Thermostat	Thermostat: <ul style="list-style-type: none"> - Working temperature : 65-80 deg. C 	No.	2			
44.	Thimbles of different sizes	Thimbles of different sizes : <ul style="list-style-type: none"> - Material: Copper - Size (mm²) : 0.5 – 0.75, 1.0 – 1.5 , 2.5, 4,6 	No.	2			
45.	Threaded fastener type B	Threaded fastener type B : <ul style="list-style-type: none"> - Material: Steel - Size : 0.0860 to 0.1250 	No.	2			
46.	Threaded fastener type C	Threaded fastener type C: <ul style="list-style-type: none"> - Material: Steel - Thread forming screw, size: 8x35 	No.	2			
47.	Threaded fastener type F	Threaded fastener type F <ul style="list-style-type: none"> - Material: Steel - Thread Cutting Screws screw, size : 8x35 	No.	2			
48.	Travelling and gantry cranes	Travelling and gantry cranes : <ul style="list-style-type: none"> - Capacity : Minimum 2 T - Span Length: 3-6 M - Lifting Height: 2.5 to 6 m - Wheel Dia : Minimum 150 mm - Lifting Speed : 0.8-8 m/min. 	No.	2			
49.	Tube expander up to 62 mm	Tube expander : <ul style="list-style-type: none"> - Tube Size : Up to 62 mm(OD) 	No.	2			

		- Tube Gauge : 2 to 3 mm					
50.	Universal puller for removing pulleys, bearings	Universal puller for Removing Pulleys and Bearings : - Size Range : 1" to 8 " - Universal Puller Material : Steel	No.	1			
51.	V' Block 75 x 38 mm pair with Clamps	V Block Pair with Clamps - Length : 75 MM - Width : Minimum 38 MM - Width of Vee : Minimum 25 MM - Width of U shaped Slot : Minimum 15 MM - Material : Tool Steel 50 to 60 HRC - One pair of Clamp	No.	2			
52.	Vacuum gauge to read 0 to 760 mm of Hg.	Vacuum Gauge - 0 to 760 mm Hg : - Type : Analog - Range : 0 to 760 mm of Hg - Rugged blow moulded hard case with removable lid for storing	No.	2			
53.	Vibrometer	Vibro Meter : - Measurement Range : 1 to 55 mm/s(RMS) - Frequency Range : 10 Hz to 1000 Hz - Display : LCD - Battery Operated - Temp Range : 0 to 50 deg C	No.	2			
54.	Wall hoists	Wall hoists : - Capacity : Minimum 1 Ton - I- Beam Height: 1500-2500 mm - Boom Length: 2000-3000 mm - Operating Voltage: 220 v, 50 HZ	No.	2			
55.	Water pump for dismantling and assembling	Water pump Set for dismantling and assembling : - Head (Mtrs): 18 - 27 Mtrs - Suc x Del (mm): 50 x 40 mm - Power (HP) : 2 HP minimum	No.	2			

56.	Back pull out type centrifugal pump	Back pull out type centrifugal pump : - Power rating: 1 HP minimum - Suc x Del (mm): Minimum 25 x 25 mm - Head : Minimum 15 m	No.	1			
57.	Horizontal split casing pump	Horizontal split casing pump : - Power rating: 2 HP Minimum - Suc x Del (mm): Minimum 50 x 50 mm - Head : Minimum 13 m	No.	1			
58.	Hydraulic jack HI-LIFT type -3 ton capacity	Hydraulic Jack : - Hydraulic Jack HI-LIFT type -Capacity : 3 Ton	No.	2			
59.	Liquid penetrant Inspection kit	Liquid penetrant Inspection kit Consisting of : - Cleaner - Penetrant - Developer	No.	4			
60.	Overhead tank, pump, minimum 5000 litres with level indicators piping layout	Overhead tank with 3 layers with level indicators and pipe arrangement : - Tank Capacity: 5000 Liters - Suitable robust stand for the tank made of MS Angle to bear the full load weight of the tank. - All exposed metal parts painted for corrosion resistance. - Suitable size thick Piping and fittings for Connection to & from the Pump. - Suitable Float Level control fitted in the tank Centrifugal pump : - Power rating: 1 HP minimum - Suc x Del (mm): Minimum 25 x 25 mm - Head : Minimum 15 m	No.	1			

61.	Dital Spring tension tester	Digital Motorised Coil Spring Tension Tester: <ul style="list-style-type: none"> - Measuring Capacity:2500 N - Measuring Range :0-2500 N - Least Count :0.1 N - Accuracy of measurement % : $\pm 1\%$ from 2% to 100 % of machine capacity - Maximum clearance between crosshead :250 mm - Operating voltage: 220 V 50 Hz 	No.	3			
62.	Wash Basin (16"X14"X10")Equivalent metric	Wall Hung Wash Basin with full pedestal <ul style="list-style-type: none"> - Material : Ceramic - Size: (16"x14"x10") Equivalent metric - Suitable CP Waste pipe - Suitable angles & bolts for fixing 	No.	2			
63.	Water closet (European, type p) complete with overhead cistern	Water closet (European, type p) complete with overhead cistern <ul style="list-style-type: none"> - Closet Material : Ceramic - Minimum Size : 480x350x380 mm Cistern : <ul style="list-style-type: none"> - Capacity : Minimum 10 Ltrs - Cistern Material : PVC - Complete fittings of Cistern(Float Valve and Connection Hoses) - Suitable angles & bolts for fixing 	No.	1			
64.	Flash back arrester (torch mounted)	Pair of Flash back arrester (Torch mounted) for Oxygen and Acetylene : <ul style="list-style-type: none"> - Material: Brass 	No.	8			
65.	Flash back arrester (cylinder mounted)	Pair of Flash back arrester (cylinder mounted) for Oxygen and Acetylene Cylinder : <ul style="list-style-type: none"> - Working Pressure : 15 bar(Oxygen) & 1.5 bar(Acetylene) - Material: Brass 	No.	8			

66.	Transformer welding set - continuous welding current, with all accessories and electrode holder with Standard Accessories	Welding Transformer with all accessories <ul style="list-style-type: none"> - Three Phase ,415V - Open circuit voltage range : 60-100 V - Welding Current Range 80– 500 A - Current @ 60% duty cycle: 400 A - Display of Current & Voltage Digital - Electrode holder 	No.	1			
67.	D.C Arc welding rectifiers set with all accessories	D.C Arc welding rectifiers set with all accessories <ul style="list-style-type: none"> - Open circuit voltage range : 60-100 V - Welding Current Range 50– 400 A - Current @ 60% duty cycle: 400 A - Display of Current & Voltage : Digital 	No.	1			
68.	Gas Metal Arc Welding 400 A Capacity with with air cooled torch, Regulator, Gas pre-heater, Gas hose and Standard accessories	Gas Metal Arc Welding (GMAW) Machine : <ul style="list-style-type: none"> - Input Voltage : 415, 3 Phase Output <ul style="list-style-type: none"> - Open Circuit Voltage : 65 Volts +/-5% - Welding Current Range : 50-400 A - Welding Current (40°C 10 minutes cycle) @ 60% duty cycle : 400 A - Welding Voltage Range :16-39 V - Crater Current Range : 50-400 A - Crater Voltage Range : 16-39 V - Mode of operation :2 track, 4 track, Gas check, OCV check facility - Efficiency : 87% @ 100% duty cycle - Wire feed speed : 1.5-18 m/min 	No.	2			

		<ul style="list-style-type: none"> - Suitable Welding Wire Diameter : Aluminium 1.2 – 1.6 ,Steel 0.8,1.0,1.2 & 1.6 - Cooling : Forced Air 					
69.	Gas Tungsten Arc Welding 400 A Capacity with water cooled torch, Regulator, Gas pre-heater, Gas hose and Standard accessories	GTAW welding machine Input : <ul style="list-style-type: none"> - Input Voltage : 415, 3 Phase Rating <ul style="list-style-type: none"> - Welding Current DC @ 60% duty cycle : 300 A - Welding Current AC @ 60% duty cycle : 250 A - Gas Preflow Time :0.1-5 sec - Gas Postflow Time : 1-30 sec - Water Tank Capacity : Minimum 8 Litre - Torch : Water Cooled - Torch Length : Minimum 4 Mtr - Torch Electrode Capacity :1.6, 2.4, 3.2 & 4.0 	No.	2			
70.	Air Plasma cutting equipment	Air Plasma Cutting Machine : <ul style="list-style-type: none"> - Voltage : 230, 50 Hz - Technology : IGBT Inverter Based - Input Current : 30- 100 A - Cutting Thickness: 1-12 mm - Output Current Range: 30-100 A - Minimum Operating Air Pressure: 4.5 Bar 	No.	3			
71.	Spot welding machine	Spot welding machine: <ul style="list-style-type: none"> - Rocker Arm Diameter : 38 - 60 mm - Foot Operated - Throat Clearance : 160-300mm - Types of Transformer Cooling : Air / Water - Output: 15 KVA - Spot Size : up to 6 mm - Rocker Arm Diameter : 30-55 mm 	No.	2			

		<ul style="list-style-type: none"> - Electrode Holder Diameter : 18-25 MM - Length of Upper Electrode Holder : Minimum 200 MM - Length of Lower Electrode : Minimum 200 MM - Arms & Electrode Cooling : Water 					
72.	Portable gas cutting machine	Portable gas cutting machine with track : <ul style="list-style-type: none"> - capable of cutting straight and circular - Cutting Speed 190-800 mm/min - Gas Hose Connection: ¼ Inch BSP RH & LH - Bevel Cutting : Upto 50 mm Thick MS - Circular Cutting : 75-1140 mm Dia 	No.	1			
73.	AG 4 Grinder	AG 4 Grinder : <ul style="list-style-type: none"> - Rated input power: Minimum 750 W - No-load speed : Minimum 11.000 rpm - Grinding spindle thread : M 10 - Disc diameter : 100 mm 	No.	3			
74.	Hand shearing lever type hand operated	Hand shearing machine Lever type : <ul style="list-style-type: none"> - Operation Mode : Manual - Minimum Capacity: to cut 6mm sheets & Flats - Blade Size : Minimum 300mm 	No.	2			
75.	Power saw machine 14" Blade Size	Power Saw Machine : <ul style="list-style-type: none"> - Cutting Capacity (Round) : Min. Upto 175 mm - Cutting Capacity (Square) : Min. Upto 125 mm - Blade Size : 14 inch - Electric Motor : Minimum 1 HP - Strokes per min. (approx) : 100-120 	No.	1			

76.	Portable drilling machine(Cap. 6 mm)	Hand held Portable drilling machine : <ul style="list-style-type: none"> - Operating Voltage 220V-240V - No Load Speed : 2000-4000 rpm - Chuck Capacity 1.5–6 mm - Drilling Capacity :6-7 mm in steel - Auxiliary handle with depth stop 	No.	1			
77.	Oxy Acetylene Gas cutting blow pipe	Oxy Acetylene Gas cutting blow pipe : <ul style="list-style-type: none"> - Cutting Capacity: Upto 300mm Thickness MS Plate - Type: Blow Pipe Mixing Cutting - Fuel Gas Used: Acetylene - Length of Cutter: Minimum 400 mm - Head Angle: 90° - Torch Connection: 3/8 BSP RH for Oxygen 3/8 BSP LH Fuel Gas (Acetylene) - Body: forged brass material - Head: forged brass material 	No.	2			
78.	Oxygen, Acetylene Cylinders (Filled)	Oxygen Cylinder (Filled): <ul style="list-style-type: none"> - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2 - Colour : Black Acetylene Cylinder(Filled) : <ul style="list-style-type: none"> - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2 	No.	2			

		- Colour : Maroon					
79.	CO2 cylinder (Filled)	CO2 cylinder(Filled):- Capacity : 6-8.5 Cub. m- Type : Seamless- Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2- Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2- Body Colour : Black- Neck Colour : White	No.	2			
80.	Argon gas cylinder (Filled)	Argon gas cylinder(Filled) : - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2 - Colour : Sky Blue	No.	4			
81.	Swage block	Swage block with stand - Specification as per Drawing No DWG-MM-05 Attached - Material : Cast Iron	No.	1			
82.	Magnetic particle testing Kit	Magnetic particle testing Kit : - Minimum Cord length of Yoke: 6 Ft - Operating Voltage of Yoke : 230V AC, 50 HZ - Output Current of MPI : 1000 Amp minn - Minimum Lifting Capacity of yoke: 0-5 Kg in AC - Leg Spacing : 0-30 cms across poles - Lifting Capacity in DC of yoke: 0-30 Kg	No.	2			
83.	Portable abrasive cut-off machine	Portable abrasive cut-off machine : - Rating Input : Minimum 2,000W - Wheel dia. : 355mm (14") - No load speed : Minimum 3,800rpm - Rated Voltage :220-240v	No.	2			

		- Frequency :50Hz					
84.	Gas cutting table	Gas Cutting table - Size : 1020 X 600 X 700 mm - Made using 40 x 40 x 4 mm angle iron - angles and metal parts of Cutting table suitably painted - Refer Specification as per Drawing No DWG-MM-06 Attached	No.	2			
85.	S.S. & S.C. Centre Lathe(All Geared)	S.S. & S.C. Centre Lathe(All Geared): - Bed Type: Flat Bed - Height of Centre: 150 mm and above - Distance between centres: 1000 mm and above - Swing Over bed: 450 mm and above - Swing over cross slide: 225 mm and above - Movement of cross slide: 225 mm and above - Movement of compound slide: 100 mm and above - Bed Width: 275 mm and above Main & Spindle: - Spindle nose: Threaded type, Dia 70 mm and above - Spindle Bore: Dia 50 mm and above Tail Stock: - Tail Stock Spindle/Quill Dia: 50 mm and above - Spindle Travel/Quill Travel: 140 mm and above Speed: - No. os spindle speeds: 8 Minimum - RPM/ Range: 80 - 1000 Minimum Feed: - Longitudinal Feeds & Range: 24/0.045 -	No.	18			

		0.63 mm/rev - Transverse feeds and Range: 24/0.015 - 0.21mm/rev Threads: - Metric : Minimum 20, 0.5 - 7 mm - Inch: Minimum 24, 56-4 TPI Electrical : - Motor capacity: Minimum 5.5 KW - Power Supply: Three Phase, 415 - 440 V, 50 Hz					
86.	Compression testing gauge suitable for diesel Engine with standard accessories	Compression testing gauge: - Suitable for Diesel Engines - Analog Type - 2-1/2 inch gauge - Dual scale gauge reads 0-300 psi (0-2100 kPa) - Rugged blow moulded hard case	No.	2			
87.	Cylinder bore gauge capacity 20 to 160 mm	Cylinder Bore Gauge : - Display Type: Analog - Accuracy: 0.01mm - Measuring Range:20 to 160 mm - Rugged blow moulded hard case	No.	4			
88.	Depth micrometer 0-25 mm	Depth micrometer : - Measuring range : 0 to 25mm - Resolution : 0.01 mm - Accuracy: 0.01mm - Measuring rod clamp. - Carbide-tipped measuring rod - Ratchet stop for constant force - Rugged blow moulded hard case	No.	4			

89.	Dial gauge type 1 Gr. A (complete with clamping devices and with magnetic stand)	Dial gauge with clamping devices and Magnetic Stand : <ul style="list-style-type: none"> - Type 1 Gr. A - Maximum Reach : 145 mm - Indicator Range : 10 mm - Resolution : 0.01 mm - Accuracy: 0.013 mm - Clamping Force (N) : Minimum 600 N 	No.	4			
90.	Engineers stethoscope	Engineers stethoscope: <ul style="list-style-type: none"> - Type : Electronic stethoscope - Frequency range :30 Hz-15kHz - Operating temperature : - 10 to + 45 °C (14-113 °F) - Output volume :Adjustable in 32 levels - Maximum recorder output :250 mV - Headset :48 Ohm (with ear defender) or Equivalent - Probe length :70 and 300 mm (2.8 and 11.8 in.) - Suitable type and rated Batteries 	No.	1			
91.	Granite surface plate with stand and cover Size : 1600 x 1000mm	Granite surface plate with stand and cover: Adjuster: <ul style="list-style-type: none"> -Size : 1600 x 1000 X 200 MM - GRADE : 0 - Six level adjustable - Dust proof Cover 	No.	1			
92.	Hand Operated Grease Gun heavy duty trolley type 10 kg capacity	Hand Operated Grease Gun heavy duty trolley type : <ul style="list-style-type: none"> - Minimum Out put per stroke (gm): 3 - Minimum Delivery hose length: 2000mm - Minimum Blocked pressure (bar): 140 - Minimum ID of hose : 6mm - Minimum Drum capacity: 10 Kg - Wire Braided, Oil resistant, High pressure Hose 	No.	1			

		- Portable with wheels.					
93.	Lifting jack screw type 3 ton	Lifting Jack Screw Type: -Capacity: 3 Ton	No.	1			
94.	Lifting jack screw type 5 Ton capacity	Lifting Jack Screw Type: -Capacity: 5 Ton	No.	1			
95.	Lifting jack screw type 20 Ton capacity	Lifting Jack Screw Type: -Capacity: 20 Ton	No.	1			
96.	Oil pump for dismantling and assembling.	Oil pump for dismantling and assembling : - Type : Gear - Min Working Pressure : 7 Bar	No.	2			
97.	Outside micrometer 0-25mm	Outside micrometer : - Range : 0 to 25 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage	No.	2			
98.	Outside micrometer 25-50 mm	Outside micrometer : - Range : 25 to 50 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage	No.	2			
99.	Outside micrometer 50-75mm	Outside micrometer : - Range : 50 to 75 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage	No.	1			
100.	Outside micrometer 75-100mm	Outside micrometer: - Range : 75 to 100 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated	No.	1			

		with carbide Tips - Suitable case for storage					
101.	Pipe cutting tool	Pipe cutting tool : - Pipe or Tube Diameter Capacity : 1/8-inch to 1-1/8-inch - Contact rollers ; Minimum 3 Nos. for stable cutting & reduced spiralling	No.	2			
102.	Pipe flaring tool	Pipe flaring tool : - Diameter range of pipe expansion:5-16mm - Material: Alloy Steel	No.	2			
103.	Rivet sets Snap and Dolly combined	Rivet sets Snap and Dolly combined: - Size : 3mm, 4mm, 6mm	No.	2			
104.	Thread pitch gauge Metric	Thread pitch gauge : - Measurement System : Metric - Range (mm) 0.4-7 mm	No.	2			
105.	Torque wrenches 5-35 Nm	Torque wrench: - Torque Range : 5-35 Nm - Type : Ratchet Type - Drive Size : 3/8" Sq.	No.	1			
106.	Torque wrenches 12-68 Nm	Torque wrench: - Torque Range : 12-68 Nm - Type : Ratchet Type - Drive Size : 1/2"Sq.	No.	1			
107.	Torque wrenches 50-225 Nm	Torque wrench: - Torque Range : 5-35 Nm - Type : Ratchet Type - Drive Size : 1/2"Sq.	No.	1			
108.	Trammel	Trammel : Range 30cm Material - Stainless Steel	No.	2			
109.	Hydraulic jack HI-LIFT type - 5 Ton	Hydraulic Jack : - Hydraulic Jack HI-LIFT type:	No.	1			

	capacity	-Capacity : 5 Ton					
110.	Side and face milling cutter mm Φ 100 x 10 X 27 mm	Side and face milling cutter: - Diameter : 100 mm - Bore : 27 mm -Width : 10 mm - Material: High Speed Steel (HSS)	No.	2			
111.	Side and face cutter Φ 80 x 10 X 27mm	Side and face cutter : - Diameter : 80 mm - Bore : 27 mm -Width : 10 mm - Material: High Speed Steel (HSS)	No.	2			
112.	Cylindrical milling cutter Φ 63 x 70 X 27 mm	Cylindrical milling cutter : - Diameter : 63 mm - Bore : 27 mm -Length : 70 mm - Material: High Speed Steel (HSS)	No.	2			
113.	Slitting Saw cutter Φ 75 x 4 X 27mm	Slitting Saw cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 4 mm - Material: High Speed Steel (HSS)	No.	2			
114.	Slitting Saw cutter Φ 100 x 6 X 27 mm	Slitting Saw cutter : - Diameter : 100 mm - Bore : 27 mm -Width : 6 mm - Material: High Speed Steel (HSS)	No.	4			
115.	Single angle cutter Φ 75 x 16 x 27mm	Slitting Saw cutter : - Diameter : 75 mm min - Bore : 27 mm -Width : 16 mm -Angle : 60 deg -Measured between Flat Side and Conical Side ,measured in a radial Plane - Material: High Speed Steel (HSS)	No.	4			

116.	Dovetail cutter	Dovetail cutter: - Diameter : 20 mm - Shank Diameter : 8 mm - Included Angle : 60 deg - Material: High Speed Steel (HSS)	No.	4			
117.	Single angle cutter	Slitting Saw cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 20 mm -Angle : 45 deg - Measured between Flat Side and Conical Side ,measured in a radial Plane - Material: High Speed Steel (HSS)	No.	4			
118.	Equal angle cutter	Equal angle cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 30 mm -Included Angle : 90 deg (Measured between Two Conical sides, measured in a radial Plane) - Material: High Speed Steel (HSS)	No.	4			
119.	Shell End Mill	Shell End Mill : - Type : Inserted Tip - Diameter : 75 mm - Bore : 22 mm -Width : 50 mm - Material: High Speed Steel (HSS)	No.	2			
120.	Parallel shank end mills Φ 6 - double fluted	Parallel shank end mills : - Diameter : 6 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	No.	8			
121.	Parallel shank end mills Φ 10 double fluted	Parallel shank end mills : - Diameter : 10 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	No.	8			

122.	Parallel shank end mills Φ 16 double fluted	Parallel shank end mills : - Diameter : 16 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	No.	8			
123.	Parallel shank end mills Φ 20 four fluted	Parallel shank end mills : - Diameter : 20 mm - Type : Four Fluted - Material: High Speed Steel (HSS)	No.	8			
124.	Parallel shank end mills Φ 25 four fluted	Parallel shank end mills : - Diameter : 25 mm - Type : Four Fluted - Material: High Speed Steel (HSS)	No.	8			
125.	Concave Milling cutter Φ 63 x 6 radius/10 radius x 27 mm	Concave Milling cutter : - Diameter : 63 mm - Bore : 27 mm - Radius : 6/10 mm - Material: High Speed Steel (HSS)	No.	2			
126.	Convex Milling cutter Φ 63 x 6 radius/ 10 radius x Φ 27 mm	Convex Milling cutter : - Diameter : 63 mm - Bore : 27 mm - Width :Minimum 10mm - Radius : 6/10 mm - Material: High Speed Steel (HSS)	No.	2			
127.	Disc type form milling cutter for gear cutting (involute form -2 module, 20° pressure angle).	Disc type form milling cutter for Gear cutting: - Module: 2 mm - Pressure Angle : 20 deg - Material: High Speed Steel (HSS)	No.	2			
128.	Tool holder straight to suit 6, 8 mm sq. bit size	Tool holder straight - to hold 6, 8 mm sq. bit size - Holder hardness:48-55HRC	No.	2			
129.	Parting tool holders to suit	Parting tool holder - to hold 3 and 4 mm thick tool blade	No.	2			

130.	Boring bars with holders	Boring bars with holders: - To accommodate 4, 6 and 8 mm HSS tool bits	No.	3			
131.	Radial Drill machine	Radial Drill machine: - Drilling Capacity in steel :32 mm - Diameter of column : Minimum 160 mm - Arm rotation angle : 360 deg - Spindle taper : MT-3/MT-4 - Distance from center line of spindle to the bus of column 220-1000 mm - Distance from spindle end to base surface :500-1220mm - Spindle Travel : Minimum 200 mm - Spindle Speed : Minimum 6 Steps - Drill Head Motor: Minimum 1.5 HP - Elevating Motor: Minimum 0.5 HP - Feed range of spindle: 0.10-0.25 mm/rev - Work Table : Minimum 300x300x385 mm	No.	2			
132.	Power saw machine 21" or more length blade	Power saw machine : - Cutting Capacity (Round) : Min. Upto 175 mm - Cutting Capacity (Square) : Min. Upto 125 mm - Blade Size : Minimum 21 inch - Electric Motor : Minimum 2 HP - Strokes per min. (approx) : 85-100	No.	1			
133.	Arc welding table with all metal top and with positioner.	Arc welding table with positioner - Size : 1200X1200 X 750 mm - Made with 40 x 40 x 4 mm angle iron with positioner suitable for all weld positions. - All Metal Top - Refer Specification as per Drawing No DWG-MM-07 Attached - - The Arc welding table should be suitably	No.	19			

		painted					
134.	Universal Milling Machine	Universal Milling Machine : Table Size (mm) : Minimum 1350x310 mm Longitudinal traverse: 700 - 800 mm Cross traverse : 250 - 400 mm Vertical traverse :200 - 350 mm Speed range rpm : 30 to 1800 Swivel of table on either side : 45 Degree Spindle Motor Power : Minimum 2 HP	No.	3			
135.	Vertical milling machine	Vertical milling machine - Table Size (mm) : Minimum 1350x310 mm - Longitudinal traverse: 700 - 800 mm - Cross traverse : 200 - 265 mm - Vertical traverse : 300 - 400 mm - Speed range rpm : 20 to 1800 - Spindle Motor Power : Minimum 2 HP	No.	1			
136.	Horizontal milling machine	Horizontal milling machine - Table Size (mm) : Minimum 1350x310 mm - Longitudinal traverse: 700 - 800 mm - Cross traverse : 200 - 265 mm - Vertical traverse : 300 - 400 mm - Speed range rpm : 20 to 1800 - Spindle Motor Power : Minimum 2 HP	No.	2			
137.	Hydraulic Surface Grinding Machine	Hydraulic Surface Grinding Machine - Table-Clamping area:- Minimum 600 x178 mm - Max. longitudinal travel:- 400mm - Max. cross traverse : 200 mm - Max. spindle centre height above table - 400 - 500 mm, - Table speed- 1-25 m/min - Least Count of vertical feed head wheel : Minimum 0.01 mm - Least count of micro feed : Minimum 0.002	No.	1			

		mm - Spindle motor : Minimum 2 HP - Speed of grinding spindle :1400- 2800 RPM - Hydraulic System :Working Pressure : Min. 10 Kg/Cm2 - Hydraulic System Motor : Minimum 2 HP - Hydraulic System Tank capacity : Minimum 40 Ltrs					
138.	Universal cylindrical Grinding Machine	Universal cylindrical Grinding Machine : - Height of centre : Minimum 130 mm - Max. dia ground (effective) :250 mm - Max. grinding length :300 mm - Max. distance between centres :340 mm - Wheel Head Swivel : + / - 60 deg - Work Head Electrical Motor : Minimum 0.5 HP - Electric motor for table drive : Minimum 1 HP	No.	2			
139.	Spark erosion EDM with standard accessories	Spark erosion EDM : - Working(LXW): : Minimum 500X300mm - Work Tank Minimum :800x500x320 mm - Longitudinal Travel(X) : Minimum 300mm - Transverse Travel (Y): Minimum 200mm - Quill Travel (Z) : Minimum 200mm - Max Electrode Weight: 50kg. - Oil Tank Capacity : Min 250 L - Max Work piece Weight : 200 KG Pulse Generator - Max. Working Current ; 40 Amp - Max MRR (mm'/min):200	No.	2			
140.	Polishing kit	Polishing kit consisting of : - Polishing or grinding machine - 1/4" , 1/2" & 3/4 " felt wheels and holders	No.	2			

		<ul style="list-style-type: none"> - polishing brushes 1/8" diameters shank mould - polishing and lapping compounds 					
141.	Welding torches.	Welding Torch for Oxy-Acetylene with Nozzles 5 to 10 number: <ul style="list-style-type: none"> - Material of Torch : Brass 	No.	1			
142.	Welding helmets with coloured glass	Welding Helmet : <ul style="list-style-type: none"> - Black Glasses, - both side plane glass with side shield 	No.	17			
143.	Hydraulic Leak Testing equipment	Hydraulic Leak Testing equipment: <ul style="list-style-type: none"> - Minimum Capacity: 60 Kg/Cm2 - Minimum Tank Capacity: 5 Ltr - Minimum Suction Capacity: 13 ml/Stroke 	No.	1			
144.	Welding Simulators for SMAW/GTAW/GMAW	Welding Simulators for Shielded metal arc welding/Gas Tungsten Arc Welding /Gas Metal Arc Welding: <ul style="list-style-type: none"> - Enables learning of all position welding (1G-6G and 1 F-4F) - Supports 3 different processes of welding (GMAW, GTAW and SMAW) - Learn from pre-defined-programs like but-joint, V-groove joint, etc - Feel of the real arc - Training session can be repeated 'N' number of times Adjustable Parameters : <ul style="list-style-type: none"> - Arc Length - Welding Speed - Angle Of Electrode Inclination - Parameters such as specified angle of electrode inclination, weave pattern, arc striking and maintenance Welding speed and heat input can be monitored	No.	2			

145.	Bearing and gear tester	Bearing and gear tester : <ul style="list-style-type: none"> - Accuracy: +/-3 dBsv - Display: Graphical Monochrome LCD - Frequency Range (Hz):Upto 32 K - Temp. Range (C): -10 to 185 deg C - Data Hold: Minimum 10 Reading - Shock Pulse Measurement : -9 to 90 dBsv 	No.	4			
146.	T slot cutter with parallel shank	T slot cutter with parallel shank <ul style="list-style-type: none"> - Diameter of Cutter: 17.5 mm - Diameter of Shank :8 mm - Width : 8 mm - Material: High Speed Steel (HSS) 	No.	1			

Note: For detailed specifications please refer table 3: Technical Specifications

Lot No : 2							
Lot Name: Tool & Die and PPO related machinery							
Item No	Name of Goods or Related Services	Description	Unit of Measure -ment	Quantity	Specification by the supplier (To be filled by the supplier)	Detailed information brochure attached at Page No.	Pass/Fail (By Purchaser)
1.	Test Equipment for plastic -MFI	Test Equipment for plastic -MFI - Range: 40 – 400°C - Resolution: 0.1°C - Accuracy : 0.2°C - Power 120V/230V; 50Hz/60Hz Temperature Probe Specifications Measurement 3 x PT 100 Sensors - Range : 0 – 500°C - Accuracy: 0.1°C	No.	1			
2.	Digitally controlled Universal Testing machine of 100 KN capacity	Digitally controlled Universal Testing machine : - Maximum Capacity: 100 KN - 1st Measuring Range : 0-20 KN - Load Resolution : 0.005 KN - 2nd Measuring Range : 0-40 KN - Load Resolution: 0.01 KN - 3rd Measuring Range: 0-100 KN - Load Resolution: 0.025 KN - Resolution of Piston Movement (Displacement): 0.1 mm - Clearance for tensile test at fully descended working piston : 50-700 mm - Clearance for compression test at fully descended working piston : 0-700 mm	No.	1			

		<ul style="list-style-type: none"> - Clearance between columns: 500 mm - Straining / Piston speeds (at no load): 0-150 mm - Voltage: 440 V, 3 Phase 					
3.	Impact tester	Impact tester : <ul style="list-style-type: none"> - Maximum capacity : 300 J - Minimum scale graduation :2 J - Pendulum drop angle : 140° - Pendulum effective Wt. : 21.819 kg. - Striking velocity of pendulum: 5.182 m/sec 	No.	1			
4.	Hand operated Injection Moulding machine of 15 gm capacity	Hand operated Injection Moulding machine : <ul style="list-style-type: none"> - Minimum Capacity : 15gm - Temperature controller unit : 0- 200°C - Weight of piece : Minimum 15 gm 	No.	3			
5.	Hand operated Injection Moulding machine of 30gm capacity	Hand operated Injection Moulding machine : <ul style="list-style-type: none"> - Minimum Capacity : 30 gm - Temperature controller unit : 0- 200°C - Weight of piece : Minimum 30 gm 	No.	3			
6.	Microprocessor/PL C controller Automatic screw type Injection Moulding Machine of 80-85 tons capacity	Screw Type Injection Moulding Machine : <ul style="list-style-type: none"> - Capacity 80 to 85 T with the following minimum specifications: - Screw diameter (mm) :36 mm - Injection Pressure (bar) : 1,815 - Stroke Volume : 163 cm³ - Screw Stroke : 160 mm - Max Injected Weight(GPPS) gm :155 - Injection Rate cc/s :141 - Plasticising rate(GPPS)@ speed g/s :17 - Screw Speed : 350 rpm - L/D Ratio :21.2 - Heating Capacity :8.9 KW 	No.	3			

		<ul style="list-style-type: none"> - No of Heating Zones :5 - Nozzle Protrusion :45 MM - Nozzle Contact Force : 60 kN - Oil Tank capacity : 200 Ltr. - Hopper Capacity : 60 Ltr. CLOSING UNIT <ul style="list-style-type: none"> - Closing Force : 1000 KN - Mould Open Stroke : 350 mm - Mould Height :180-410 mm - Distance between Platens : 760 mm - Distance between Tie-Bars(hxv):410X410 mm - Clamping Platens(hxv):610X610 mm - Ejector Force :51 KN - Ejector Stroke :130 mm 					
7.	Hand operated Compression Moulding Machine of 60 ton capacity	Hand operated Compression Moulding Machine of 30-60 tons capacity : <ul style="list-style-type: none"> - Suitable for processing Acrylonitrile Butadiene Styrene(ABS)- - Maximum working pressure = 25 kN - Pressure gauge : Analog Type - Heated Platen area = 200x 200 mm - Maximum travel distance of platen = 150 mm max - Maximum working temp = 200 degree C - Digital Temperature control with an accuracy of $\pm 2^{\circ}\text{C}$ 	No.	5			
8.	Hand operated Blow Moulding Machine of 250 ml	Hand operated Blow Moulding Machine of 250 ml capacity : <ul style="list-style-type: none"> - Minimum Manufacturing capacity: 8 inches 	No.	3			

	capacity	<ul style="list-style-type: none"> - Plasticising capacity : 1.5kg/hr - Minimum Shots per hour : 100 - Screw Dia - 38mm - Max article weight - 50gm - Max mould size : 120x130 - Max mould open stroke : 125mm - Max Volume : 250ml 					
9.	Hand Injection Moulding Machine	Hand operated Injection Moulding machine : <ul style="list-style-type: none"> - Minimum Capacity : 50 gm - Temperature controller unit : 0- 200°C - Weight of piece : Minimum 50 gm 	No.	2			
10	Microprocessor/PLC controller based Automatic compression moulding machine of 100 tons capacity	Microprocessor / PLC controller based Automatic compression moulding machine : <ul style="list-style-type: none"> - Capacity Minimum : 100 Tons;4 pillars type up stroking ram movement. - Minimum Stroke Length : 510 mm - Minimum Shut Height :190 mm - Minimum Platen size :600 x 600 mm - Electrical heating load of the platens: 6 KW / Platen - Operation: PLC based touch type screen. 	No.	1			
11	Microprocessor/PLC controller based Automatic Extrusion Blow moulding machine of 2 litres capacity	Automatic Extrusion Blow Moulding Machine <ul style="list-style-type: none"> - Capacity: 1 to 2 litre - Screw Dia. (mm): 32-50 - Screw Speed: 1-60 m/sec - Platen Length Size: 200-610 mm - Platen Width Size: 200-610 mm 	No.	1			
12	Extruder of 40kg/hr Plasticizing capacity with re-processing die and	Extruder of 40 kg/hr Plasticizing capacity with re-processing die and granulator/cutter for PE & PP. <p>with the following minimum specifications:</p> <ul style="list-style-type: none"> - Output: 40Kg /hr 	No.	1			

	granulator/cutter for PE & PP.	<ul style="list-style-type: none"> - Screw dia x L/D : 40 x 24mm - Control : Through Variable Frequency AC Drive - Speed reducer type : Helical gear box with inbuilt thrust bearing, - Feed section : Grooved sleeve - Thrust capacity (Dynamic) : 397KN - Lubrication : Sump type - Power transmission :Through pulley and V-belts - Hopper Capacity : 35 litre. , Stainless Steel - Material for screw and barrel : Nitralloy steel - Barrel heating load : with ceramic heaters) - Barrel cooling : 1 No. cooling blower - Screen Pack : Cylindrical screen pack with strainer - Heating load : with ceramic heaters) - Temperature controllers : Digital PID controllers, Range0- 400°C. - A motorized cutter with motor for PE & PP 					
13	Pipe extruder of Minimum 40 kg/hr. Plasticizing capacity with pipe die 0.5 inch and 1 inch	<p>Pipe extruder of Minimum 40 kg/hr. Plasticizing capacity with pipe die 0.5 inch and 1 inch:</p> <p>with the following minimum specifications;</p> <ul style="list-style-type: none"> - Maximum output: 40Kg/hr - Screw dia x L/D Ratio : 65mm, 28:1 - Screw Speed Range : 14 - 140rpm - Barrel Heating : Ceramic Band Heaters - Heating load:10.5Kw, No. of zones : 5 - Barrel Cooling : Provided in 5 zones each by means of 0.18 Kw, having auto on-off arrangement. - Feed system : Hopper of 125 litr. capacity. - Main motor rating :AC Motor, - Drive : AC variable frequency drive <p>DIE HEAD</p> <p>Pipe dia range : 20 to 50 mm</p> <p>No. of heating zones : 5</p>	No.	1			

		<p>VACUUM SIZING TANK Cross Section of Tank Profile Octagonal - Standard Pipe dia range :20 – 110mm; - Length of cooling section : 6000mm - Through Size: 325 x 350mm; - Vacuum Pump, Spray Pump - Centre height of work: 1150mm</p> <p>TUBE TRACTION UNIT. - Pipe size :20- 110 mm; No. of Tracks :2; Length of contact: 800 mm - Operating distance of grips Min. 0 mm, Max. 250 mm</p> <p>TUBE CUTTING UNIT. - Pipe dia range :20 - 110 mm ; Blade dia : 350 mm ; Trolley stroke : 1100 mm - No. of cuts :12; Cutter, Trolley Retraction Pneumatic cylinder 50x1200mm</p> <p>UTILITIES REQUIRED - Compressed Air : 2.5 m3/hr. at 7 Bar; - Cooling Water : 6.6 lps (22m head) 15 °C - Chilling Plant : 25 TR; - Electrical Power Supply : 415V, 3 Phase, 50 Hz - Voltage Stabilizer of suitable capacity.</p>					
14	Extruder of 40 kg/hr. Plasticizing capacity	<p>Extruder of 40 kg/hr. Plasticizing capacity with Die -18inch LFW & Accessories : - Maximum output: 40Kg/Hr. - Film : Single Layer Flattened Tubular - Film Layout Width (LFW) : 300 - 650 mm for HDPE ;Thickness : 6-70 micron ; Output : 40-45Kg/Hr</p> <p>EXTRUDER : -Screw dia x L/D : 40 x 24mm - Control Through Variable Frequency AC Drive - Speed reducer type :Helical gear box with inbuilt thrust bearing , Lubrication : Sump type - Hopper Capacity : 35 litre; - No. of heating zones : 2 ; Barrel cooling : 1 No. cooling blower - Screen Pack : Cylindrical screen pack with strainer</p> <p>DIE : - Die size : 100 mm ;Design : Spiral Mandrel type; Working direction :Upwards</p>	No.	1			

		<ul style="list-style-type: none"> - Material & surface Treatment : High strength steel with - Electro-less Nickel plating on full melt path. - Die gap adjustment : By moving die ring with the adjusting bolts - No of heating zones : 05 <p>COOLING SYSTEM AIR COOLING RING : Type : Single lip</p> <p>COOLING BLOWER : Type : Centrifugal Drive type/load , 2.2KW , AC Induction motor</p> <p>TAKE OFF UNIT NIP ROLLER UNIT : Roll width : 750mm ; Roll material : One rubber roller & one steel roller;</p> <ul style="list-style-type: none"> - Nip actuation : Pneumatic; - Power Transmission : Through Chain & Sprocket ; Haul-off speed rang : 8-80 m/min <p>COLLAPSING BOARD: Type :Fix type, mounted on MS frame ;Contact Material: Velvet on Wooden Slat</p> <p>SINGLE STATION WINDER : Type : Surface winder ; Roller width : 750mm; Roller Material : Neoprene Rubber, Application: Winding of flattened film ; No of stations :One</p> <ul style="list-style-type: none"> - Winder drive : AC; Torque, Expander roller: Base Standard roller - Core Tube Details: 75 (ID) x 95 (OD) x 750 (L) <p>ELECTRICALS :Temperature controllers : Standard make Digital PID - controllers Range 0 - 400° C (± 1° C) with necessary circuitry Drive ;Variable frequency AC Drive with necessary circuitry</p> <ul style="list-style-type: none"> - Switch Gears : Reputed make and of adequate capacity; Panels : Powder coated Panels with exhaust fan <p>CONNECTED LOAD : Drive Load : 15 KW ; Heating Load : 15KW</p>					
15	Automatic Thermo/Vacuum forming Machine	<p>Thermo/Vacuum forming Machine with Mould :</p> <ul style="list-style-type: none"> - Connecting Load :22 kw 	No.	1			

	with Mould	<ul style="list-style-type: none"> - Cycle time :4 to 5 min - Vacuum Power: 50 mm Hg - Minimum Thickness of Foil :0.35 mm - Maximum Thickness of Foil : 0.40 mm - Heat Producer System Tubes - Motor: 1440 RPM 					
16	Automatic Rotational moulding Machine with Moulds	<p>Automatic Rotational Moulding Machine with two moulds :</p> <ul style="list-style-type: none"> - Spindles: 1 - Maximum Weight on Straight Arm: 600 Kg - Spider Diameter: 1500 mm - Major Axis R.P.M. (x-axis): 0-4 - Minor Axis R.P.M. (y-axis): 0-6 <p>Furnace / Oven :</p> <ul style="list-style-type: none"> - Maximum Kcal / Hr : 200,000 - Usage Normal (Kcal/cycle) : 50,000 - Maximum Temperature °C : 250 - Circulating Blower C.F.M : 9,000 - Oven Circulating Blower - Major Axis Drive AC Motor - Minor Axis Drive AC Motor - Burner - Operating Voltage: 415 V, 50 Hz ,3Ph 	No.	1			
17	Stretch Blow Moulding Machine of 1 Litre capacity with mould	<p>Stretch Blow Moulding Machine-1 Litre with mould :</p> <ul style="list-style-type: none"> - Capacity - 50 ml to 1000 ml minimum - Production Capacity - 1100~1200 BPH - Max. Mould thickness - 150 MM - Min. Mould thickness - 140 MM - Clamping force - 8 Ton <p>Oven:</p> <ul style="list-style-type: none"> - Number of Preform Holders - 74 - Number of Heating modules - 1 - Number of Heating zones - 6 	No.	1			

		<ul style="list-style-type: none"> - Lamp Power - 2000 W - Number of stretch Rods - 2 - Stretching stroke Max. - 400 MM 					
18	Air blow gun with standard accessories	Air blow gun with standard accessories : <ul style="list-style-type: none"> - Material : Stainless Steel - Working Pressure: 4-8 Bar - Avg. Air Consumption: 10 to 15 CFM - Air Hose Size: 3/8" 	No.	1			

Note: For detailed specifications please refer table 3: Technical Specifications

Lot No : 3							
Lot Name: Refrigeration & Air- Conditioning, pneumatic & Hydraulic components							
Item No	Name of Goods or Related Services	Description	Unit of Measure -ment	Quantity	Specification by the supplier(To be filled by the supplier)	Detailed information brochure attached at Page No.	Pass/Fail (By Purchaser)
1.	Compressor Unit of 8 Bar capacity	Compressor Unit (Horizontal): <ul style="list-style-type: none"> - Type : Reciprocating - Suitable for Pressure: Min 8 bar, - Delivery: 50 lpm (or more), - Reservoir capacity: 24 Litres (or more), - With Pressure regulator and water separator - protective enclosed belt guard - Overload motor protection - Accessible drain valve and - Automatic start/stop pressure switch control - Cast Iron Cylinder and frame - Operating Voltage: 230V, 50 Hz, 	No.	10			
2.	Cut section model for pneumatic components	Cut section model for pneumatic components: <ul style="list-style-type: none"> - Compressor - Filter - Oil/Water Separator - Ball Valve - Unloader Valve, - Solenoid Valve, - Relay Valve, - Air Drier - Filter/Regular/Lubricator(FRL) - Other essential components of pneumatic - The sectioned parts to be complete in itself to demonstrate the internal construction details. 	No.	10			

		<ul style="list-style-type: none"> - The Cut section model components should be mounted on a suitable frame. - The model shall have a detachable transparent fabric sheet all around for protection against dust and moisture. 					
3.	Cut-section models for hydraulic components	Cut section model for Hydraulic components: <ul style="list-style-type: none"> - Hydraulic pump - Accumulator - Solenoid Valve - Filter - Pressure Relief Valve - Directional Valve - Flow Control Valve - Check Valve - Hydraulic Cylinder - Other essential components of Hydraulic. - The sectioned parts to be complete in itself to demonstrate the internal construction details. - The Cut section model components should be mounted on a suitable frame. - The model shall have a detachable transparent fabric sheet all around for protection against dust and moisture. 	No.	11			
4.	Trolley type portable air compressor single cylinder with 45 litres capacity Air tank, along with accessories with working pressure 6.5 kg/sq cm	Trolley type portable air compressor : <ul style="list-style-type: none"> - Cylinder : Single - Working Pressure: Min 6.5 Kg/sq cm - Reservoir capacity: Min. 45 Litres - Operating Voltage: 230V, 50 Hz, - With pressure regulator and water separator - Protective enclosed belt guard - Overload motor protection - Accessible drain valve - Automatic start/stop pressure switch control 	No.	14			

5.	Air compressor with Air treatment - capacity 5HP	Air compressor with air treatment accessories <ul style="list-style-type: none"> - Discharge: 14.8 - 46 CFM - Type: Reciprocating or Single Stage Rotary Screw - Minimum Normal Working Pressure: 7 Bar - Sound Level in dB (A) : Maximum 62dB(A) - Electrical Motor: Minimum 5 HP - Tank capacity: Vertical Air receiver, 500 Litres @ 12.5 Bar working pressure 	No.	1			
6.	Solar water heater system	Solar water heater system : <ul style="list-style-type: none"> - Type of Collector : Evacuated Tube Collectors (ETC) - Tube Dimensions : 47 – 1800 mm or 58 – 1800 mm or suitable - Inner Tank Materials : High-grade Stainless Steel - Outer Tank Materials : Stainless Steel / Powder Coated - Working Temperature : 65 degree C to 85 degree C - Tank Insulation : High-quality PUF - Tank Volume : Min. 200 Ltr - Stand Frame : Galvanized Powder Coated - Type of Circulation : Thermo Siphon - Type of Grommets : Silicon Rubbers 	No.	1			
7.	Refrigerant cylinder	Empty Refrigerant Gas Cylinders fitted with valve, guard: <ul style="list-style-type: none"> - 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 	No.	3			

8.	Cylinder 134 a	Empty Refrigerant Gas Cylinders fitted with valve, guard : <ul style="list-style-type: none"> - 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 	No.	1			
9.	Four way reversible valve	Four way reversible valve for 1.5 to 2.0 Ton Air Conditioner: <ul style="list-style-type: none"> - 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} 	No.	1			
10.	Gas leak detector for halogen gas	Gas leak detector for halogen gas: <ul style="list-style-type: none"> - 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 	No.	5			
11.	Electronic leak detector	Electronic leak detector : <ul style="list-style-type: none"> - 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 	No.	2			
12.	Sling psychro meter mounted on aluminium	Sling psychro meter mounted on aluminium back : <ul style="list-style-type: none"> - Response time: 2 minutes 	No.	5			

	back	<ul style="list-style-type: none"> - 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 					
13.	Micron vacuum gauge	Micron vacuum gauge <ul style="list-style-type: none"> - Type : Digital - Operating Range:(Minimum): Atmosphere to 20 Microns - Resolution(Minimum): 1 Micron - Accuracy: +/- 10% - Over pressure: Minimum 20 Bar 	No.	2			
14.	Fin straightened/fin comb.	Fin Comb Straightener, Cleaner, Condenser Evaporator Cleaning Tool : <ul style="list-style-type: none"> - Material: Stainless steel - Minimum Size: 14cm x 3cm 	No.	2			
15.	Anemometer	Anemometer : <ul style="list-style-type: none"> - 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 	No.	1			

16.	Hermetic compressor Tester	Hermetic compressor Tester: - operation Voltage: 120/240 V AC - PWR Breaker: combination of 25A circuit breaker and a POWER ON switch. - Rugged blow moulded hard case with removable lid	No.	4			
17.	Temperature & Humidity recorder - 24 Hr Capacity	Temperature & Humidity recorder - 24 Hr Capacity - Display: Multi-function LCD - Measurement ranges: 0 to 100% RH -40 to 158°F, -40 to 70°C - Resolution : 0.1°, 0.1RH - Humidity values Sample rate: 1s to 24h - Operating Temperature : -40 to 158°F, -40 to 70°C - Operating Humidity: 0 to 100% RH - Accuracy Humidity : ± 3% - Accuracy Temperature: ± 2 deg C - Capacity to record: 24 Hrs - Rugged blow moulded hard case with removable lid	No.	1			
18.	Portable air – LPG brazing kit - 2Kg Capacity	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	No.	1			
19.	Evacuating and refrigerant charging station, consist of a) Rotary two stage vacuum	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	No.	1			

	<p>pump and motor (with gas ballast and anti-suck back)</p> <p>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</p> <p>b) Graduated charging cylinder with provision for temperature correction and all necessary isolating valves</p>	<ul style="list-style-type: none"> - 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 <p>Rotary Two Stage Vacuum Pump:-</p> <ul style="list-style-type: none"> - Gas Ballast and anti-suck back - Power Supply: 220 V / 50 Hz - Ultimate Vacuum / displacement : up to 50 Microns / 40 L/min 					
20.	<p>Evacuating and refrigerant charging station fitted with weighing scale, consist of</p> <p>a) Rotary two stage vacuum pump and motor (with gas ballast and anti-suck back)</p> <p>b) manifold with</p>	<p>Evacuating and refrigerant charging station :</p> <ul style="list-style-type: none"> - 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 	No.	1			

	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	<ul style="list-style-type: none"> - Fitted with Weighing scale Rotary Two Stage Vacuum Pump:- <ul style="list-style-type: none"> - Gas Ballast and anti-suck back - Power Supply: 220 V / 50 Hz - Ultimate Vacuum / displacement : up to 50 Microns / 40 L/min 					
21.	Two stage rotary vacuum pump	Two Stage Rotary Vacuum Pump: <ul style="list-style-type: none"> - 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 	No.	1			
22.	Two Stage regular / Commercial Dry N2 in cylinder with drier unit	Two Stage regular / Commercial Dry N2 in cylinder with drier unit: Nitrogen:- Formula : N2 <ul style="list-style-type: none"> - Molecular Weight: 28.01 - Specific Volume : 0.861 m3/Kg - Purity: 99.995% Cylinder <ul style="list-style-type: none"> - Diameter / Capacity : 210-240 mm / 20L - 25L - Manifold: Two way with Gauges and valves Dryer:- <ul style="list-style-type: none"> - Process rate : Minimum 7 Kg / Hr 	No.	2			

		<ul style="list-style-type: none"> - Capacity: Minimum 25 Kg - Power: 220 V / 50 Hz / 1 Phase - Regulator: Max. Inlet Pressure(in bar)=100, - Max. Outlet Pressure (in bar)=10, - Flow Rate(LPM)=566.67, - Inlet Connection Type=G-5/8"A-14 BSP, RH - Outlet Connection Type=G-3/8"-19 BSP, RH 					
23.	Duct able split A.C 1.5 ton	Duct able split A.C 1.5 ton: <ul style="list-style-type: none"> - 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 	No.	2			
24.	Recovery unit with cylinders	Recovery unit with cylinders: <ul style="list-style-type: none"> - 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 	No.	2			
25.	Decibel meter	Decibel meter: <ul style="list-style-type: none"> -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 	No.	2			

		<ul style="list-style-type: none"> - Resolution: 0.1 dB - Accuracy: 1.5 dB (ref 94 dB @ 1 kHz) 					
26.	Cassette Air conditioner	Cassette Air conditioner - 4500 kcal/hr: <ul style="list-style-type: none"> - Tonnage / BTU: 1.5 Ton / 18000 BTU/hr. - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz Indoor Unit <ul style="list-style-type: none"> - 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 	No.	2			
27.	De scaling pump set	De scaling pump set : <ul style="list-style-type: none"> - 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 	No.	1			
28.	Fan coil unit	Fan coil unit with 2 & 3 way water valves : <ul style="list-style-type: none"> - 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 	No.	2			
29.	Shell and tube, DX chillers (small),5 Ton	Shell and tube, DX chillers with Cu tubing : <ul style="list-style-type: none"> - Tonnage :5 Ton - Diameter: 4 inches 	No.	2			

	with Cu tubing only	<ul style="list-style-type: none"> - 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 					
30.	Circulating water pump (small), 0.5 H.P with stainless steel tank capacity 20 litres with in let/ outlet provision.	Circulating water pump 0.5 Hp with stainless steel tank : <ul style="list-style-type: none"> - 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 	No.	1			
31.	Refrigerant cylinder	Empty Refrigerant Gas Cylinders fitted with valve, guard : <ul style="list-style-type: none"> - 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 	No.	2			
32.	Gauge Manifold with Gauges with different sizes of hoses for R 134a, R22 and R410	Gauge manifold with gauges <ul style="list-style-type: none"> - Material: Brass or Forged aluminium alloy body - Temperature Scale: Celsius - Max Working Pressure: 500PSI - Burst pressure: 2500PSI 	No.	6			

		<ul style="list-style-type: none"> - 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) 					
33.	Shell and tube type condenser	Shell and tube type condenser <ul style="list-style-type: none"> - 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" 	No.	2			
34.	Rotary hermetic compressor	Rotary hermetic compressor <ul style="list-style-type: none"> - Power supply: 220-240V/50Hz - COP : 3.10. - Capacity: Minimum 2 Ton. - Power consumption: 1645W - Refrigerant: R22 - Capacitor: 35/370µF or equivalent 	No.	2			
35.	Bottle cooler visible, 200 L carrying with HFC-134a & reciprocating compressor	Bottle cooler visible with HFC-134a & reciprocating compressor: <ul style="list-style-type: none"> - 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 	No.	2			
36.	Display cabinet 2 ton capacity	Display cabinet:- Dimension (Approximate):	No.	2			

		<ul style="list-style-type: none"> - Length :2370mm - Depth :640mm - Height: 1240mm. - Shelf Area (m²): 3.8 - Capacity: 2 ton Construction: <ul style="list-style-type: none"> - Exterior : Stainless steel or powder coated zinc steel . - Interior : Stainless Steel - Lighting: LED under-shelf lighting - Glass : Curved double glazed front - Insulation: S-grade Polyfoam - Doors: Sliding, toughened double glazed, - Refrigerant: R-134a - Volts:230 – 240 Volts a.c. 50 Hz, single phase 					
37.	Water cooler storage type,200 L carrying with HFC- 134a & reciprocating compressor	Water cooler storage type with HFC- 134a : <ul style="list-style-type: none"> - Storage capacity: Minimum 200 L - No. of faucet: 4 nos. - Supply Power: 240 AC/50HZ, single phase. -Compressor Type: reciprocating compressor 	No.	2			
38.	Water dispenser bubble type (Hot and Cold), 2.5 to 3ltr Delivery capacity per Hours	Water dispenser bubble type : <ul style="list-style-type: none"> - Dispenser Type: Floor mounted, Hot & Cold Water . - Cooling Capacity: 2.5 litre/hr (minimum) - Storage tank: 2.5 litre minimum - Material: Stainless Steel - Heating Capacity: 5ltr/hr at (85°C) - Refrigerant: R-134a. 	No.	2			
39.	Ice candy plant 2 ton with capacity to make 32 ice candy at a time with Forma tray,	Ice candy plant :- <ul style="list-style-type: none"> - 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, & 	No.	2			

	stainless steel tank on trolley	Inner - S.S. Grade 316 Thick 1.2mm					
40.	Air-conditioning, direct System Complete with all controls including humidity control capacity 15000Kcal/hr	Air-conditioning, direct System with all controls including humidity control - 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	No.	2			
41.	Air-conditioning, indirect System(water cooled)	Air-conditioning, indirect System with all controls including humidity control. 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	No.	2			

		-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.					
42.	Package A/C	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. - Controller: Microprocessor with LCD display. - Condenser Type: Air cooled.	No.	2			
43.	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 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	No.	2			

44.	Automatic Ice cube m/c	Automatic Ice cube Machine : <ul style="list-style-type: none"> - Production capacity:43-50Kg/24 Hrs. - Storage capacity: 25Kg. - Cooling System: Air cooled. - Usable bin: Built in. 	No.	2			
45.	Storage type water cooler(Hot and Cold), 40 Ltr	Storage type water cooler (Hot and Cold) : <ul style="list-style-type: none"> - 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 	No.	2			
46.	Visi Cooler,185 L	Visi Cooler <ul style="list-style-type: none"> - Power Supply: 230 V / 50 Hz / 1 Phase - Type: Visible - Capacity: Minimum 185 L - Inner Temperature: 2°C to 8°C 	No.	2			
47.	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	Variable Refrigerant Volume(VRV)/ Variable Refrigerant Flow(VRF)unit Indoor Unit: <ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> - Type: Individual. - Cooling capacity: 20.0Kw min - Heating capacity: 22 Kw. min - Power Supply: 230 V / 50 Hz / 1 Phase - Refrigerant: R-410a 	No.	2			

48.	Walk in cooler PUF insulated for cold room 6x4.5x8 cft.,temperature 0 degree -5 degree c	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	No.	2			
49.	Absorption system	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	No.	2			
50.	Workstation with 40 square mm aluminium profile legs,	Hydraulic / Pneumatic Workstation - Workstation with 40 square mm aluminium profile legs, wooden work surface, and one pedestal drawer unit having 5 drawers, each	No.	20			

	wooden work surface, and one pedestal drawer unit having 5 drawers, each with handles and individual locks, on metallic full panel drawer slide	with handles and individual locks, on metallic full panel drawer slide: - Work Table : Size(Approx.) L1200mmXW900mmXH900mm, with four castor wheels including two lockable wheels at the front side, (2) - Drawer : Size (Approx.) – L460mmxW495mm xH158mm each, and - Overall size of Drawer unit (Approx.) - L470mmxW495mmxH825mm - Drawer slide height (Approx.) :85mm.					
51.	Hydraulic trainer kit	Hydraulic Trainer Consisting of : - Equipment trays : 2 Nos. - Pressure gauge: 2 Nos. - Hydraulic Motor :1 No. - 4/2- way hand lever valve : 3 Nos - 4/3-way hand lever valve with relieving mid-position : 3 Nos. - 4/3-way hand lever valve with closed mid-position : 3 Nos. - 4/3-way hand lever valve with recirculating mid-position:3 Nos. - Pressure sequence valve : 1 No. - Pressure relief valve : 3 Nos. - 3-way pressure reducing valve : 2 Nos. - 2-way flow control valve : 2 Nos. - One way flow control valve: 4 Nos. - Non-return valves: 4 Nos. - Shut-off valve : 4 Nos. - Diaphragm accumulator with shut-off block : 1 No. - Weight up to 10 kg :1 No. - 2/2 way Plunger / stem actuated :2 Nos. - Standard hoses with quick connectors	No.	1			

		<ul style="list-style-type: none"> - Flow dividing valve : 1 No. - 5-way distributor with pressure gauge : 1 No. - All other items necessary for working of the hydraulic trainer for all experiments. 					
52.	Pneumatic trainer kit	Pneumatic trainer consists of : <ul style="list-style-type: none"> - Pressure Gauge - Pneumatic Motor - Double Acting Cylinder - Air Regulator Lubricator with Pressure Gauge - Hand Lever Operated Valves , 5/2 way & 3/2-way : 2 Nos. - Solenoid Valve: 5/2 way & 3/2 way : 2 Nos. - Pilot Operated Valve:5/3 Spring centered : 1 No. - Pilot Operated Valve:5/2 Spring Returned : 1 No. - Pilot Operated Valve: 3/2 -way : 1 No. - Palm Operated Valve: 3/2-way Valve : 1 No. - Roller Lever Valve : 5/2 way : 1 No. - Roller Lever Valve : 3/2 way : 1 No. - Shuttle Valve: OR Valve, AND Valve: Dual Pressure Valve - Flow Control Valve : 1 No. - Non-Return Valve : 1 No. - Block Manifold: 6 ways, - Plastic Tubing as per required - Quick Push-Pull connectors - Air Compressor - All other items necessary for working of the Pneumatic trainer for all experiments. 	No.	1			
53.	Hydraulic Trainer Kit with components and Accessories	Hydraulic Trainer Kit, each consisting of the following matching components and accessories: <ul style="list-style-type: none"> - One No. Hydraulic Power pack : with (1) external gear pump having a delivery rate of 2.5 lpm, (approx.) @ 1400 rpm operating pressure 60 bar, coupled to a single-phase AC motor (230 V AC) having start 	No.	10			

		<p>capacitor and ON/OFF switch and overload protection, (2) pressure relief valve adjustable from 0 – 60 bar, (3) oil reservoir, ≥5 litres capacity having sight glass, drain screw, air filter, and P and T ports.</p> <ul style="list-style-type: none"> - Pressure relief valve, pilot-operated : 1 No. - Drip tray, steel: size 1160 mm x 760 mm: 1 No. - Pressure Gauge, Glycerine-damped, Indication range of 0 – 100 bar : 1 No. - Four-Way distributor with five ports, equipped with a pressure gauge : 1 No. - Double acting hydraulic cylinder with a control cam, Piston diameter 16 mm, Piston rod diameter 10 mm, Stroke Length 200 mm : 1 No. - Suitable Weight for vertical loading of hydraulic cylinder : 1 No. - Mounting kit for weight for realizing pulling and pushing load : 1 No. - 3/2-way directional control valve with hand lever actuation : 1 No. - 4/2-way directional control valve with hand lever actuation : 1 No. - 4/3-way directional control valve closed-centre position, with hand lever actuation : 1 No. - Non-return valve : 1 No. - Pilot-operated check valve pilot to open : 1 No. - One-way flow control valve with integrated check valve : 1 No. - T-Connector with self-sealing coupling nipples (2 Nos.) and quick coupling socket (1 No.) : 2 Nos. - Quick coupling socket (1 No.) : 1 No. - One Set of Profile plate, Anodised Aluminium, 1100x700 mm, with carriers, mounting frames and mounting accessories (To be fitted onto the Hydraulic workstation) - All other items necessary for working of the hydraulic trainer for all experiments. 					
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54.	Pneumatic Trainer Kit with components and accessories	<p>Pneumatic Trainer Kit, each consisting of the following matching components and accessories::</p> <ul style="list-style-type: none"> - Single acting cylinder, Max. stroke length 50 mm, Bore dia 20 mm : 1 No. - Double acting cylinder, Max. stroke length 100 mm, Bore dia 20 mm, magnetic type : 1 No. - 3/2-way valve, manually-actuated, Normally Closed : 2 Nos. - 3/2-way valve, pneumatically-actuated, spring return : 1 No. - One-way flow control valve : 2 Nos - 5/2-way valve, with manually-operated switch : 1 No. - 5/2-way valve, pneumatically-actuated, spring return : 1 No. - 5/2-way pneumatic actuated valve, double pilot : 1 No. - 3/2-way roller lever valve, direct actuation Normally Closed : 2 Nos - Shuttle valve (OR) : 1 No. - Two-pressure valve (AND) : 1 No. - Non-return valve : 1 No.. - Pressure gauge, 0-16 bar : 1 No. - Manifold with self-closing, NRV, 6-way : 1 No. - Pushbutton station for electrical signal input with 3 illuminated momentary-contact switches (1 NO + 1 NC) and 1 illuminated maintained-contact switch (1 NO + 1 NC), Contact load 2A : 1 No. - Relay station with 3 relays each with 4 contact sets (3NO+1NC or Change-over type), 5 A : 1 No. - 5/2-way single solenoid valve with manual override and LED : 1 No. - 5/2-way double solenoid valve with manual override and LED : 1 No. - Power supply unit, Input voltage 85 – 265 V AC, Output voltage: 24 V DC, Output current: max. 4.5 A, short-circuit-proof : 1 No. - One Set of Profile plate, Anodised Aluminium 	No.	10			
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		1100x700 mm, with carriers, mounting frames and mounting accessories (To be fitted onto the pneumatic workstation) - All other items necessary for working of the Pneumatic trainer for all experiments.						
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Note: For detailed specifications please refer table 3: Technical Specifications

2. Delivery and Completion Schedule

The delivery period shall start as of *date of Signing the Contract*

Lot No.	Description of Goods or Related Services	Delivery Schedule (Duration)	Location	Required Arrival Date of Goods or Completion Date for Related Services
Lot-1	Lot 1: General purpose machinery	Within 365 Days from the Signing of the contract.	The location of Delivery of various items of Lot-1 attached separately	Within 365 Days from the Signing of the contract.
Lot-2	Lot 2: Tool & Die and PPO related machinery	Within 365 Days from the Signing of the contract.	The location of Delivery of various items of Lot-2 attached separately	Within 365 Days from the Signing of the contract.
Lot-3	Lot 3: Refrigeration & Air-Conditioning, pneumatic & Hydraulic components	Within 365 Days from the Signing of the contract.	The location of Delivery of various items of Lot-3 attached separately	Within 365 Days from the Signing of the contract.

3. Technical Specifications

Special Note: 1	As a part of Documentation even if not mentioned all items supplied shall have minimum of 1. User/Operation Manual and 2. Warranty Certificate. Additional requirements for specific items will be explicitly mentioned.
Special Note: 2	The installation has to be carried out as per the guidelines given by the OEM with necessary ground work and fixtures wherever necessary.
Special Note: 3	All Light, Medium and Heavy machineries and item needing installation either on Ground or on Wall is the sole responsibility of the supplier.
Special Note: 4	All costs involved in installation such as materials and Labour is to be borne by the Supplier.
Special Note: 5	Machines and items shall be installed at the identified position in the designated ITI workshop /Laboratory.
Special Note: 6	Warranty of One/Two/.. / means that the Supplier of the item takes full responsibility in ensuring the best working condition of the item during the warranty period.
Special Note: 7	In the event the item is not working the OEM ensure that the item is brought back to best working condition with-in a reasonable period of time not more than 5 days in the worst case.
Special Note: 8	All parts of the machine not intentionally damaged by the user should be replaced free of cost by the supplier.
Special Note: 9	All consumable items if any needing replacement will be supplied by the ITI.
Special Note: 10	All Items of delicate nature shall be supplied in a suitable Cloth/Wooden/ Other suitable storage case/cover for protection of the item from dust and moisture.
Special Note: 11	Detailed information brochures having specifications, make and model number of individual item to be attached.

Lot 1: General purpose machinery

Item No.	Name of Goods or Related Services	Technical Specifications of Item and/or Bureau of Indian Standards (BIS) (if applicable) reference	Features	Accessories	Spare parts	Documents	Installation & Training	Warranty of Equipment/parts
1.	Pillar Type Electric motorized Drilling machine of 20 mm Capacity	Pillar Type Drilling machine: <ul style="list-style-type: none"> - Drilling Capacity : 20mm Max - Chuck Capacity : 0-20 mm - Spindle Taper : Minimum MT-3 - Spindle Traverse : Minimum 100mm - Distance between Spindle and Table: Minimum 300mm - Distance between Spindle and Base : Minimum 500 mm - Table Working Surface Area : Minimum 200 x 200 mm - Swivel Table 	- A Sturdy & heavy body made up of cast steel & having a solid pillar ,hardened & chrome plated/spray painted with a heavy base enough to	- Standard accessories - All the tools & keys required to operate the machine with attachmen	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificates	- To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

		<ul style="list-style-type: none"> - Number of Spindle Speeds: atleast 8, - Pillar Diameter: Minimum 57mm - Spindle Speed - between 115 rpm – 2060 rpm or Higher - Coolant System with Coolant Pump with tank. - Main Motor not less than 1HP - Operating Voltage: 440V, 3 Phase. - Suitable Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	withstand impact & load	ts - Suitable Starter / DOL				
2.	Motorised Bench Grinder	Motorised Bench Grinder : <ul style="list-style-type: none"> - Grinding Wheel Diameter : Minimum 150mm - Double sided - Two wheels rough and smooth with Tool Base - No Load Speed : 1500-3600 rpm - Operating Voltage: 440 V , 3 phase - Motor Power : Minimum 1 HP - Suitable DOL Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	<ul style="list-style-type: none"> - Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation - Adjustable spark detectors for safety, - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes 	- All Standard Accessories and DOL Starter	- one set of rough & smooth grinding wheels suitable to the Grinder	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year

3.	Bench grinder fitted with fine grain size silicon carbide green grinding wheel dia. 150 mm	Bench Grinder : <ul style="list-style-type: none"> - Grinding Wheel Diameter : 150mm minimum - Double sided - No load Speed : 1800-3600 RPM or Higher - Motor Power : Minimum 1 HP - Operating Voltage: 440 V , 3 phase - Two wheels fine grain size silicon carbide green - Suitable DOL Starter with all safety gadgets. - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	<ul style="list-style-type: none"> - Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation - Adjustable spark detectors for safety, - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes 	- All Standard Accessories and DOL Starter	- One Set of Suitable fine grain size silicon carbide green grinding wheel dia. 150 mm	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year
4.	Bench type Electric Motorized Drilling Machine of 12 mm capacity	Bench Drilling Machine : <ul style="list-style-type: none"> - Drilling Capacity: 12 mm - Chuck Capacity 1.5-12 mm - Minimum spindle travel :80 mm - Spindle taper: Solid - Minimum No. of spindle speed : 2 - Range of spindle speed:500-3000 rpm - Electric Motor: Minimum 0.5 H.P, 3 Phase - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	<ul style="list-style-type: none"> - A Sturdy metallic body hardened & chrome plated/spray painted with a heavy base enough to withstand impact & load. 	<ul style="list-style-type: none"> - Standard accessories - All the tools & keys required to operate the machine with attachments. - Suitable Starter 	Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year

5.	Bench type Electric Motorized Drilling Machine of 20 mm capacity	Bench Drilling Machine : <ul style="list-style-type: none"> - Drilling Capacity: 20 mm - Chuck Capacity 1.5-20 mm - Minimum spindle travel :80 mm - Spindle taper: Solid - Minimum No. of spindle speed : 2 - Range of spindle speed:200-2500 rpm - Electric Motor: Minimum 0.5 H.P, 3 Phase - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	- A Sturdy metallic body hardened & chrome plated/spray painted with a heavy base enough to withstand impact & load.	- Standard accessories - All the tools & keys required to operate the machine with attachments. - Suitable Starter	- Standard	- User/operating manual - Warranty certificate	- To be installed at designated ITI's in Himachal Pradesh	One Year
6.	Double Ended pedestal Grinding machine with 250mm wheels.	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth each - Grinding Wheel Diameter : 250 mm - Thick wheel guards with built in dust chutes - No load Speed : Minimum 1500 RPM - Operating Voltage :440 V , 3Phase - Motor Capacity: Minimum 2 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	- Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation	- Standard	- one set of rough & smooth grinding wheels suitable to the Grinder	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

7.	Double Ended pedestal Grinding machine with 300mm wheel.	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> - Grinding Wheel Diameter : 300 mm each - Two wheels One coarse and One medium grain size - No load Speed : Minimum 1500 RPM - Operating Voltage :440 V , 3Phase - Motor Capacity: Minimum 2 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length for connecting with 440V, 3 phase supply 	<ul style="list-style-type: none"> - Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation 	- Standard	- one set of coarse and medium grain size grinding wheels suitable to the Grinder	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year
8.	Double Ended pedestal Grinding machine with 200mm wheels	Pedestal Grinder, Double Ended : <ul style="list-style-type: none"> -Two wheels one rough and one smooth - Grinding Wheel Diameter : 200 mm each - No load Speed : Minimum 1500 RPM - Motor Capacity: Minimum 0.75 KW - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length 	<ul style="list-style-type: none"> - Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation 	- Standard	- one set of rough & smooth grinding wheels	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year

9.	Double Ended pedestal Grinding machine with 200mm wheels	Pedestal Grinder, Double Ended : -Two wheels one rough and one smooth - Grinding Wheel Diameter : 200 mm each - No load Speed : Minimum 3000 RPM - Motor Capacity: Minimum 0.5 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length	- Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation	- Standard	- Suitable one set of rough & smooth grinding wheels	- User/operating manual - Warranty certificate	To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year
10.	D.E. pedestal Grinding machine with 178mm wheel rough and smooth	Pedestal Grinder, Double Ended : -Two wheels one rough and one smooth - Grinding Wheel Diameter : 178 mm each - No load Speed : Minimum 1500 RPM - Motor Capacity: Minimum 0.5 HP - Adjustable spark detectors for safety - Adjustable shatter-proof eye shields - Thick wheel guards with built in dust chutes - Suitable capacity electric cable of minimum 5 meter length	- Sealed and pre-lubrication Ball Bearings - Balance Motor for smooth operation	- Standard	- Suitable one set of rough & smooth grinding wheels	- User/operating manual - Installation, Maintenance and Spare part manual. - Warranty certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

11.	Transformer welding set - continuous welding current, with all accessories and electrode holder 60% Duty Cycle with Standard Accessories	Transformer welding set: <ul style="list-style-type: none"> - Operating Voltage: 415-440V, 3 Phase - Open circuit voltage range: 60-100 V - Welding Current Range : 60 – 400A - Current @ 60% duty cycle 300A - Display of Current & Voltage Digital - Step less and smooth variable current regulation. - Swivel front wheel and rear wheel arrangement. - Forced Air Cooling. - Suitable and safe On/Off switch control and Current control with indicators 	- Standard -	<ul style="list-style-type: none"> - Copper Welding Cable with Tough Rubber Size: 50 SQ MM (50 Mtrs) - Suitable Welding Lugs for 50 SQ mm - Welding Holder - Earth Clamp - Welder Face Shield - Welder Apron - Leather Gloves - All Other Standard Accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year
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12.	Welder cable	Welder cable : - Size: 50 sq. mm - Material: copper with Tough Rubber - Length : 50 meter - Max Current carrying capacity: Not less than 400 Amps	- Standard -	- Storage Case -	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
13.	Earth clamps	Heavy duty earth clamp for welding : - Jaw opening up to 60 mm. - Zinc coated steel with copper plated jaws and copper mesh.	- Standard	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year

14.	Oxy - acetylene gas welding set equipment with hoses, Oxygen & Acetylene cylinders, regulator and other accessories.	Oxy - acetylene gas welding set equipment consisting of : <ul style="list-style-type: none"> - Oxygen cylinder of standard industrial Capacity - Acetylene cylinder of standard Industrial Capacity - Double stage oxygen regulator - Double stage acetylene regulator - Oxygen & Acetylene Flashback arrestor for Cylinder and Torch - Twin hoses(Acetylene & Oxygen)10m Each - Welding torch with Nozzles - Twin Cylinders Trolley 	- Standard	<ul style="list-style-type: none"> - Spark lighter - Tip cleaner - Cylinder key - Welding goggle - Suitable spanners - All Other Standard Accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year
15.	Gas welding table with positioner with Fire Bricks 900 X 600 X 750 mm	Gas welding table with positioner with Fire Bricks <ul style="list-style-type: none"> - Size : 900 X 600 X 750 mm made with 40 x 40 x 4 mm angle iron and top tray covered with 5mm MS sheet, with positioner suitable for all weld positions. - Top tray covered with refractory bricks - Refer Specification as per Drawing No DWG-MM-01 Attached - Gas Welding Table Spray Painted 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year

16.	Gas Welding Table with fire bricks top and stand	Gas welding table with positioner : - With Fire Bricks - Size : 1220 X760 mm made with 40 x 40 x 4 mm angle iron and top tray covered with 5mm MS sheet with positioner suitable for all weld positions. - Top tray covered with refractory bricks - Refer Specification as per Drawing No DWG-MM-03 Attached. - Gas Welding Table Spray Painted	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year
17.	Welding torch tips of different sizes for Oxy-acetylene gas welding	Welding torch tips: - Welding torch tips of different sizes for Oxy- acetylene gas welding To fit nozzle no. 1, 2, & 3	- Standard	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year

18.	Spark lighter for Gas Welding	Spark Lighter for Gas Welding - Spark Lighter used for Gas Welding & Cutting - Made of Stainless steel	- Standard	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year
19.	Trolley for Twin gas cylinders.	-Trolley for Twin gas cylinders - To carry Two Cylinders of standard Industrial Capacity. - Movable trolley with solid tyre wheels. - refer Specification as per Drawing No DWG-MM-02 Attached	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year

20.	Welding torches.	Welding Torch for Oxy-Acetylene with Nozzles no. 1, 2, & 3 - Material of Torch : Brass	- Standard -	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year
21.	Anvil 50 Kgs with Stand	Anvil with Stand: - Made up of Solid cast steel hardened and tempered. - Single Horn Anvil With Curved Base Size/Working Area at least 12 Sq. Inches - Weight: 50 KGs - 45-60 Rockwell Hardness is required - Fine finish and corrosion free - Suitable and sturdy Anvil Stand	- Standard	- Standard	- Standard	- Hardness Test Certificate - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year

22.	Arbor press hand operated 2 ton capacity	Arbor Press : <ul style="list-style-type: none"> - Mechanical Type hand operated with attachments. - Precision cut steel rams and pinions for accurate operation - Tables and slotted table-plates should be flat and parallel to provide accurate support - Pressure Capacity: 2 tons - Rust Proof 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate - Training as required at the institute. 	To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one year
23.	Bench lever shears 250mm Blade x 3mm Capacity	Bench lever shears : <ul style="list-style-type: none"> - Blade Length: 250mm - Capacity : 3mm - Rust Proof 	-Standard	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one year

24.	Pipe bending machine - Hydraulic type - 12 to 30mm	Pipe Bending Machine : - Type : Hydraulic - Size : 12 to 30 mm - Capacity: 14 to 24 gauge aluminium, copper and steel pipes with formers of 5/8", 3/4" and 1" or any three formers up to 1".	- Rugged Construction - Easy to Operate	- Standard	- One Set of Spare Seals and O-Rings	- User/Operating Manual - List of Service Centres in India - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
25.	Pneumatic rivet gun	Pneumatic rivet gun : - Blows Per Minute (BPM) : 500-1800 - Air Consumption : 5-15 CFM - Stroke Length : 3-5 inch	- Rugged Construction - Easy to Operate	- Suitable Adaptors & Couplers for Connection with Hose - Suitable High Pressure Hose for Operation - All other Standard Accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year

26.	Chain Pulley Block of 3 ton capacity with tripod stand	Chain Pulley Block with compatible tripod stand: <ul style="list-style-type: none"> - Capacity :3 Ton Tripod Stand Specifications : <ul style="list-style-type: none"> - Capacity to lift minimum 3 Ton of load - Minimum Height to Eye : 3000 mm - Minimum Leg Length : 3400 mm - Legs should be Adjustable for uneven level ground, shallow slopes and slight inclines. - Feet Should be suitable for hard and soft ground. 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual -Test Certificate from Competent Authority for Rated Load Capacity for Chain Pulley Block & tripod Stand. - List of Service Centres in India - Warranty Certificates 	<ul style="list-style-type: none"> - To be delivered at the designated Industrial Training Institute in Himachal Pradesh - Training as required by staff of ITI 	One Year
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27.	Tin smiths bench folder	Tin smiths bench folder - Size 600 x 1.6mm	- Rugged Construction - Easy to Operate	Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	one year
28.	Drilling Machine with hammer action -13 mm capacity	Hand Held Portable Drilling Machine with hammer action : - Drilling Capacity :13mm max - Chuck Capacity 1.5–13mm - No Load Speed 0-2800 rpm - Impact Rate 0 - 45000 bpm -Two way Hammering/drilling mode selector switch - Auxiliary handle with depth stop - Operating Voltage 240V, 50Hz	- Ergonomic design for easy handling - Double insulation for high safety	- Keyed chuck - chuck Key - Other standard accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh -Training as required by staff of ITI	one year

29.	Air impact wrench with standard accessories	Air impact wrench with standard accessories: <ul style="list-style-type: none"> - Impacts Per Minute: 800-1200 - Air Inlet : 1/4 Inch (NPTF) - Air Consumption : 3- 6 CFM - Working Torque Range (fwd) : 30-500 N-m - Working Torque Range (Reverse) : 30-500 N-m - Square Drive (Inch) : 1/2 Inch - Min. hose size : 10 mm 	<ul style="list-style-type: none"> -Twin Hammer impact mechanism . - Rubber handle grip - 5 position power regulator and forward/reverse control. 	- To be supplied with hose and suitable connectors for operation	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year
30.	Air ratchet with standard accessories	Air ratchet with standard accessories: <ul style="list-style-type: none"> - Free Speed : 150-200 RPM - Torque : 50-90 Nm - Air Inlet : 1/4 Inch (NPTF) - Avg. Air Consumption : 3- 6 CFM - Air Hose Size: 3/8" 	Standard	- To be supplied with hose and suitable connectors for operation	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year

31.	Belt Tensioner gauge	Belt Tensioner gauge : - To work with all belt drive models with a 10 lb. specification	- Smooth rolling screw action - Readable from front and back of tool	-Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh -Training as required by staff of ITI	One year
32.	Twist Drill set 1.5-15 mm	Twist Drill Set : - Set of Sizes : 1.5 mm to 15 mm by 0.5mm - Material : High Speed Steel(HSS) - straight shank spiral flute - Hard care for safe storage	- Standard -	-Standard	- Standard	- User/Operating Manual	- To be supplied at designated ITI's in Himachal Pradesh	One year
33.	Flow meter 0-400 ltr/min	Flow meter : - Range : 0-400 ltr/min - Material : Brass - Dial Type : Analog - Size : 1/2" to 1 " - Operating Pressure : 5 to 10 bar	-Standard	-Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh	one year
34.	Forks clips 02 tonnes	Forks clips : - Capacity : 2 Tonnes - Safety Lock spring.	- Standard Features of Rugged Fork Clips	-Complete set of Accessories required for functioning of fork clips	- Standard	- User/Operating Manual -Test Certificate from Competen	- To be supplied at designated ITI's in Himachal Pradesh	one year

						t Authority for Rated Load Capacity for Forks clips. - Warranty Certificate s		
35.	Forks clips 05 tonnes	Forks clips : - Capacity : 5 Tonnes - Safety Lock spring.	- Standard Features of Rugged Fork Clips	-Complete set of Accessorie s required for functioning of fork clips	- Standard	- User/Oper ating Manual -Test Certificate from Competen t Authority for Rated Load Capacity for Forks clips should be Provided - Warranty Certificate s	- To be supplied at designated ITI's in Himachal Pradesh	one year
36.	Foundation bolts	Foundation bolts: - Type : Eye - Diameter : 12MM,16MM & 20 MM(One Each) - Material : Mild Steel - Specification as per Drawing No DWG-	- Standard -	-Standard	- Standard	- Warrenty certificate.	- To be supplied at designated ITI's in Himachal Pradesh	one year

		MM-04 Attached - Nut & Washers of suitable size for each.						
37.	Hydraulic wheel and bearing puller	Hydraulic wheel and bearing puller: - Spread : 150-300 MM - Capacity : Minimum 4 Ton - Stroke : 50-90 mm	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year
38.	Pneumatic scraper with adjustable stroke	Pneumatic scraper with adjustable stroke: - Strokes Per Minute : 2500-3500 SPM - Working Air Pressure : 5-7 KG/CM2 - Avg. Air Consumption : 4 CFM @ 6.3 KG/CM2 - Air Hose Size : 3/8" - Piston Stroke Length : 10-20 mm adjustable	- Standard	- Suitable Adaptors & Couplers for Connection with Hose - Suitable High Pressure Hose for Operation	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year
39.	Pressure gauge 0 -5 Kg/cm2	Pressure gauge : - Type : Analog - Dial Size : 150 MM - Measuring Range : 0-5 Kg/cm2 - Connection : 3/8" BSP	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	One Year
40.	Rollers (steel tubes) from 40 to 65 mm dia.	Rollers (steel tubes) : - Nominal Bore : 40mm,50mm and 65 mm (One Each) - Length : Minimum 360 mm - Heavy Duty (Class C) Tubes	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal	One Year

							Pradesh	
41.	Self-alignment roller ball bearing	Self-alignment roller ball bearing : - BEARING (1306E) - Bore Dia : 30mm - Out Side Dia : 72mm - Width : 19mm	- Un-used ball bearings in sealed packet	- Standard	- Standard	Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year
42.	SRDG ball bearing, DRDG ball bearing, self-aligning ball bearing	Single row deep groove bearing (6020-2 Z) - Inside dia.: 100 mm, - Outside dia. : 150 mm - Width : 24mm, Double row deep groove bearing (4211ATN9) - Inside dia.: 55 mm, - Outside dia. : 100 mm - Width : 25 mm Self aligning ball bearing: (1306E) - Bore Dia : 30mm - Out Side Dia : 72mm - Width : 19mm	- Un-used ball bearings in sealed packet	- Standard	- Standard	Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year
43.	Thermostat	Thermostat: - Working temperature : 65-80 deg. C	- Item should be Un-used in sealed packet	- Standard	- Standard	- Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
44.	Thimbles of different sizes	Thimbles of different sizes : - Material: Copper - Size (mm ²) : 0.5 – 0.75, 1.0 – 1.5 , 2.5, 4,6	- Standard	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal	One Year

							Pradesh	
45.	Threaded fastener type B	Threaded fastener type B : - Material: Steel - Size : 0.0860 to 0.1250	- Standard	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	One Year
46.	Threaded fastener type C	Threaded fastener type C: - Material: Steel - Thread forming screw, size: 8x35	- Standard	- Standard	Standard	Standard	- To be supplied at designated ITI's in Himachal Pradesh	One Year
47.	Threaded fastener type F	Threaded fastener type F - Material: Steel - Thread Cutting Screws screw, size : 8x35	- Standard	- Standard	- Standard	Standard	- To be supplied at designated ITI's in Himachal Pradesh	One Year
48.	Travelling and gantry cranes	Travelling and gantry cranes : - Capacity : Minimum 2 T - Span Length: 3-6 M - Lifting Height: 2.5 to 6 m - Wheel Dia : Minimum 150 mm - Lifting Speed : 0.8-8 m/min.	- The height and span of the crane can be adjustable. - Compact structure, easy-operation, durable, flexible and light dead weight. - Steel Structure and legs of	- Standard	- Standard	- User/Operating Manual -Test Certificate from Competent Authority for Rated Load Capacity for Travelling and gantry	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

			the crane are connected by high-strength bol			cranes. - Warranty Certificate s		
49.	Tube expander up to 62 mm	Tube expander : - Tube Size : Up to 62 mm(OD) - Tube Gauge : 2 to 3 mm	Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
50.	Universal puller for removing pulleys, bearings	Universal puller for Removing Pulleys and Bearings : - Size Range : 1" to 8 " - Universal Puller Material : Steel	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
51.	V' Block 75 x 38 mm pair with Clamps	V Block Pair with Clamps - Length : 75 MM - Width : Minimum 38 MM - Width of Vee : Minimum 25 MM - Width of U shaped Slot : Minimum 15 MM - Material : Tool Steel 50 to 60 HRC - One pair of Clamp	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
52.	Vacuum gauge to read 0 to 760 mm of Hg.	Vacuum Gauge - 0 to 760 mm Hg : - Type : Analog - Range : 0 to 760 mm of Hg - Rugged blow moulded hard case with	- Suitable for checking the engine vacuum of	- Adaptors and standard accessorie	- Standard	- User/Operating Manual	- To be delivered at the designated	One Year

		removable lid for storing	Two Wheeler/Four Wheeler Vehicles of different Models & Manufacturers	s		- Warranty Certificate	Industrial Training Institute in Himachal Pradesh	
53.	Vibrometer	Vibro Meter : - Measurement Range : 1 to 55 mm/s(RMS) - Frequency Range : 10 Hz to 1000 Hz - Display : LCD - Battery Operated - Temp Range : 0 to 50 deg C	- Standard	- Batteries and standard accessories	- Standard	- User/Operating Manual - Warranty Certificate s	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year
54.	Wall hoists	Wall hoists : - Capacity : Minimum 1 Ton - I- Beam Height: 1500-2500 mm - Boom Length: 2000-3000 mm - Operating Voltage: 220 v,50 HZ	- Standard	- Standard	- Standard	- User/Operating Manual -Test Certificate from Competent Authority for Rated Load Capacity for Wall hoists - Warranty	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

						Certificate s		
55.	Water pump for dismantling and assembling	Water pump Set for dismantling and assembling : - Head (Mtrs):18 - 27 Mtrs - Suc x Del (mm): 50 x 40 mm - Power (HP) : 2 HP minimum	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
56.	Back pull out type centrifugal pump	Back pull out type centrifugal pump : - Power rating: 1 HP minimum - Suc x Del (mm): Minimum 25 x 25 mm - Head : Minimum 15 m	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
57.	Horizontal split casing pump	Horizontal split casing pump : - Power rating: 2 HP Minimum - Suc x Del (mm): Minimum 50 x 50 mm - Head : Minimum 13 m	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
58.	Hydraulic jack HI-LIFT type -3 ton capacity	Hydraulic Jack : - Hydraulic Jack HI-LIFT type -Capacity : 3 Ton	- Standard	- Standard	- Standard	- Test Certificate from Competent Authority for Rated Load	- To be delivered at the designated Industrial Training Institute in	One year

						Capacity for Hydraulic Jack. - Warranty Certificate	Himachal Pradesh	
59.	Liquid penetrant Inspection kit	Liquid penetrant Inspection kit Consisting of : - Cleaner - Penetrant - Developer	- Standard	- Standard	- Standard	- Material Safety Data Sheet (MSDS). - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
60.	Overhead tank, pump, minimum 5000 litres with level indicators piping layout	Overhead tank with 3 layers with level indicators and pipe arrangement : - Tank Capacity: 5000 Liters - Suitable robust stand for the tank made of MS Angle to bear the full load weight of the tank. - All exposed metal parts painted for corrosion resistance. - Suitable size thick Piping and fittings for Connection to & from the Pump. - Suitable Float Level control fitted in the tank Centrifugal pump : - Power rating: 1 HP minimum - Suc x Del (mm): Minimum 25 x 25 mm - Head : Minimum 15 m	- Standard	- Standard	- Standard	- User/Operating Manual - Warranty Certificate - Pressure Testing Certificate of Tank from Competent Authority	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

61.	Dital Spring tension tester	Digital Motorised Coil Spring Tension Tester: - Measuring Capacity:2500 N - Measuring Range :0-2500 N - Least Count :0.1 N - Accuracy of measurement % : $\pm 1\%$ from 2% to 100 % of machine capacity - Maximum clearance between crosshead :250 mm - Operating voltage: 220 V 50 Hz	- Standard	- Hooks for Tension Mode - Over travel safety and all standard accessories	- Standard	- User/Operating Manual - Warranty Certificate - List of Service Centres in India	To be delivered at the designated Industrial Training Institute in Himachal Pradesh - Training as required by staff of ITI	One year
62.	Wash Basin (16"X14"X10") Equivalent metric	Wall Hung Wash Basin with full pedestal - Material : Ceramic - Size: (16"x14"x10") Equivalent metric - Suitable CP Waste pipe - Suitable angles & bolts for fixing	- Color : White/Ivory	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	- Standard
63.	Water closet (European, type p) complete with over head cistern	Water closet (European, type p) complete with over head cistern - Closet Material : Ceramic - Minimum Size : 480x350x380 mm Cistern : - Capacity : Minimum 10 Ltrs - Cistern Material : PVC - Complete fittings of Cistern(Float Valve and Connection Hoses) - Suitable angles & bolts for fixing	- Colour : White/Ivory	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	- Standard
64.	Flash back arrester (torch mounted)	Pair of Flash back arrester (Torch mounted) for Oxygen and Acetylene : - Material: Brass	- Should be designed to arrest the flame and avoid the reverse flow of gases	- Standard	- Standard	- Standard	- Standard	One year

65.	Flash back arrester (cylinder mounted)	Pair of Flash back arrester (cylinder mounted) for Oxygen and Acetylene Cylinder : - Working Pressure : 15 bar(Oxygen) & 1.5 bar(Acetylene) - Material: Brass	- Flame arrestor - Non Return Valve - Temperature Sensitive Cut off Valve - Pressure Sensitive Cut off Valve - Gas flow direction to be indicated on each Flash back arrester	- Standard	- Standard	- Standard	- Standard	One year
66.	Transformer welding set - continuous welding current, with all accessories and electrode holder with Standard Accessories	Welding Transformer with all accessories - Three Phase ,415V - Open circuit voltage range : 60-100 V - Welding Current Range 80– 500 A - Current @ 60% duty cycle: 400 A - Display of Current & Voltage Digital - Electrode holder	- Forced air cooling type - Display of Current & Voltage Digital - Step less, smooth and infinitely variable current regulation. - One swivel front wheel and two rear wheel arrangement for easy manoeuvrabi	- Copper Welding Cable with Tough Rubber Size: 50 SQ MM (50 Mtrs) - Suitable Welding Lugs for 50 SQ mm Copper Welding Cable - Welding Holder - Earth Clamp	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

			lity. - On/Off switch control, current control and current indicator provided on the front panel.	- Welder Face Shield - Welder Apron - Leather Gloves - All Other Standard Accessories				
67.	D.C Arc welding rectifiers set with all accessories	D.C Arc welding rectifiers set with all accessories - Open circuit voltage range : 60-100 V - Welding Current Range 50– 400 A - Current @ 60% duty cycle: 400 A - Display of Current & Voltage : Digital	- Forced air cooling type - Display of Current & Voltage Digital - Step less, smooth and infinitely variable current regulation. - One swivel front wheel and two rear wheel arrangement for easy manoeuvrability. - On/Off switch control, current control and	- Copper Welding Cable with Tough Rubber Size: 50 SQ MM (50 Mtrs) - Suitable Welding Lugs for 50 SQ mm Copper Welding Cable - Welding Holder - Earth Clamp - Welder Face Shield - Welder Apron - Leather	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

			current indicator provided on the front panel. - Single knob current control from the front panel or remote control unit. -Welding current adjustment and regulation through electromagnetic transducer possible for high current gouging applications.	Gloves - All Other Standard Accessories				
68.	Gas Metal Arc Welding 400 A Capacity with air cooled torch, Regulator, Gas pre-heater, Gas hose and Standard accessories	Gas Metal Arc Welding (GMAW) Machine : - Input Voltage : 415, 3 Phase Output - Open Circuit Voltage : 65 Volts +/-5% - Welding Current Range : 50-400 A - Welding Current (40°C 10 minutes cycle) @ 60% duty cycle : 400 A - Welding Voltage Range :16-39 V - Crater Current Range : 50-400 A	- Digital Panel for adjusting the welding parameters - Crater voltage and Crater current adjustment through	- Copper Welding Cable with Tough Rubber Size: 50 SQ MM (50 Mtrs) - Double Stage Regulator	- Standard	- User/Operating Manual - Warranty Certificates	- To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

		<ul style="list-style-type: none"> - Crater Voltage Range : 16-39 V - Mode of operation :2 track, 4 track, Gas check, OCV check facility - Efficiency : 87% @ 100% duty cycle - Wire feed speed : 1.5-18 m/min - Suitable Welding Wire Diameter : Aluminium 1.2 – 1.6 ,Steel 0.8,1.0,1.2 & 1.6 - Cooling : Forced Air 	digital panel - Under Voltage and Over Voltage Protection - Over Temperature Protection - Single Phasing Protection - Auto "Weld Stop" when welding torch is taken away from weld job - Electronic choke adjustment for better arc control	-Suitable Air Cooled Torch - Gas Preheater - Shielding Gas Cylinder with trolley and chain compatible with the machine - Cylinder Key - Gas Hose - Clamps for Hose -Suitable Welding Lugs for 50 SQ mm Copper Welding Cable - Welder Face Shield - Welder Apron - Leather Gloves - All other standard accessorie				
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69.	Gas Tungsten Arc Welding 400 A Capacity with water cooled torch, Regulator, Gas pre-heater, Gas hose and Standard accessories	GTAW welding machine Input : - Input Voltage : 415, 3 Phase Rating - Welding Current DC @ 60% duty cycle : 300 A - Welding Current AC @ 60% duty cycle : 250 A - Gas Preflow Time :0.1-5 sec - Gas Postflow Time : 1-30 sec - Water Tank Capacity : Minimum 8 Litre - Torch : Water Cooled - Torch Length : Minimum 4 Mtr - Torch Electrode Capacity :1.6, 2.4, 3.2 & 4.0	- Built in high frequency unit for easy arc striking in AC/DC TIG welding process - HF on/off switch to prevent high frequency interference - Gas flow through solenoid valve for Economical consumption of gas - Auto HF cut off if arc does not strike within 10 seconds - Built in gas pre-flow / post-flow facility -In built water cooling unit	- Copper Welding Cable with Tough Rubber Size: 50 SQ MM (20 Mtrs) - Designate d Coolant for operation of Machine(1 Ltrs) - Double Stage Regulator -Suitable Water Cooled Torch - Shielding Gas Cylinder with trolley and chain compatible with the machine - Cylinder Key	- Standard	- User/Operating Manual - Warranty Certificates	- To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

				<ul style="list-style-type: none"> - Gas Hose for torch - Clamps for Hose - Suitable Welding Lugs for 50 SQ mm Copper Welding Cable - Welder Face Shield - Welder Apron - Leather Gloves - All other standard accessories 				
70.	Air Plasma cutting equipment	Air Plasma Cutting Machine : <ul style="list-style-type: none"> - Voltage : 230, 50 Hz - Technology : IGBT Inverter Based - Input Current : 30- 100 A - Cutting Thickness: 1-12 mm - Output Current Range: 30-100 A - Minimum Operating Air Pressure: 4.5 Bar 	<ul style="list-style-type: none"> - Air plasma cutting outfit with Rugged, Robust design and well established diode based power source - Provided with special "Safety - Interlock" for operator 	<ul style="list-style-type: none"> - Plasma Cutting Torch with Minimum 4 mtr Cable - Compatible Nozzle for Cutting Torch - Face shield - Air filtration 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One Year

			protection -Three phase inverter based, soft switching technology high efficiency and high cutting capacity Plasma Cutting Machine - High Frequency arc striking for ease of operation - Digital display for precise setting of cutting current - Time delay function provides effective protection to cutting torch	kit - System dust covers				
71.	Spot welding machine	Spot welding machine: - Rocker Arm Diameter : 38 - 60 mm - Foot Operated - Throat Clearance : 160-300mm - Types of Transformer Cooling : Air /	- Heavy Machine Bracket should be provided on	- Standard	- Spare Arms and Electrode Holder	- User/Operating Manual -	- To be installed at designated ITI's in Himachal	One Year

		Water - Output: 15 KVA - Spot Size : up to 6 mm - Rocker Arm Diameter : 30-55 mm - Electrode Holder Diameter : 18-25 MM - Length of Upper Electrode Holder : Minimum 200 MM - Length of Lower Electrode : Minimum 200 MM - Arms & Electrode Cooling : Water	top of the frame for Rockering the upper arm Holder -Should be provided with T-Slotted Face Plate for both vertical and Horizontal Adjustment of lower arm		Compatible with the Machine	Warranty Certificates	Pradesh - Training as required by staff of ITI	
72.	Portable gas cutting machine	Portable gas cutting machine with track : - capable of cutting straight and circular - Cutting Speed 190-800 mm/min - Gas Hose Connection: ¼ Inch BSP RH & LH - Bevel Cutting : Upto 50 mm Thick MS - Circular Cutting : 75-1140 mm Dia	- Made of Pressed Steel with wrap/round . - Acetylene or LPG can be used by selecting the appropriate nozzles. - Power should be fed through a Forward-Reverse toggle Switch - Three position switch for start, stop,	- Circle Cutting Attachments - Minimum 1.8 M Long Aluminium Track - Nozzle of different Sizes for Acetylene/ LPG for torch. - Minimum 15 M Hose - Hose Clamps - All other Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year

			and reverse - Clutch levers at both ends of carriage for greater accessibility	Accessories				
73.	AG 4 Grinder	AG 4 Grinder : - Rated input power: Minimum 750 W - No-load speed : Minimum 11.000 rpm - Grinding spindle thread : M 10 - Disc diameter : 100 mm	- Two position side handle all- metal gearbox fan- cooled motor spindle lock - lock on switch - replaceable carbon brushes	- Spanner Wrench - Grinding Wheel Guard - Auxiliary Handle	- Standard	- User/Oper ating Manual - Warranty Certificate s	- To be supplied at designated ITI's in Himachal Pradesh	One Year
74.	Hand shearing lever type hand operated	Hand shearing machine Lever type : - Operation Mode : Manual - Minimum Capacity: to cut 6mm sheets & Flats - Blade Size : Minimum 300mm	- Rugged Construction	Standard	Standard	- User/Oper ating Manual - Warranty Certificate s	- To be supplied at designated ITI's in Himachal Pradesh	One year
75.	Power saw machine 14" Blade Size	Power Saw Machine : - Cutting Capacity (Round) : Min. Upto 175 mm - Cutting Capacity (Square) : Min. Upto 125 mm - Blade Size : 14 inch	- Machine Driven by V- Pulleys with provision to adjust fully the tension	- Standard Accessories	- Standard	- User/Oper ating Manual - Warranty	- To be supplied at designated ITI's in Himachal Pradesh	One year

		<ul style="list-style-type: none"> - Electric Motor : Minimum 1 HP - Strokes per min. (approx) : 100-120 	<ul style="list-style-type: none"> of the V-Belts. - Shafts fitted with taper and ball bearings - The coolant tank totally enclosed in the machine base with a constant speed pump which continuously supplies coolant to the saw blade. - Push button starter fitted with an adjustable trip mechanism which stops the machine soon after the blade is clear. 			Certificates		
76.	Portable drilling machine(Cap. 6 mm)	Hand held Portable drilling machine : <ul style="list-style-type: none"> - Operating Voltage 220V-240V - No Load Speed : 2000-4000 rpm - Chuck Capacity 1.5–6 mm 	<ul style="list-style-type: none"> - Ergonomic design for easy handling - Double 	<ul style="list-style-type: none"> - Keyed chuck - Chuck Key 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - 	- To be supplied at designated ITI's in Himachal	one year

		<ul style="list-style-type: none"> - Drilling Capacity :6-7 mm in steel - Auxiliary handle with depth stop 	insulation for high safety			Warranty Certificate s	Pradesh	
77.	Oxy Acetylene Gas cutting blow pipe	Oxy Acetylene Gas cutting blow pipe : <ul style="list-style-type: none"> - Cutting Capacity: Upto 300mm Thickness MS Plate - Type: Blow Pipe Mixing Cutting - Fuel Gas Used: Acetylene - Length of Cutter: Minimum 400 mm - Head Angle: 90° - Torch Connection: 3/8 BSP RH for Oxygen 3/8 BSP LH Fuel Gas (Acetylene) - Body: forged brass material - Head: forged brass material 	<ul style="list-style-type: none"> - Control knob: brass extruded spindle - Oxygen & Acetylene tube: two pipe extruded brass tube 	Standard	Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	- To be supplied at designated ITI's in Himachal Pradesh	one year
78.	Oxygen, Acetylene Cylinders (Filled)	Oxygen Cylinder (Filled): <ul style="list-style-type: none"> - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Working Pressure @ 150deg C : Min. 16 Kg/Cm2 - Colour : Black Acetylene Cylinder(Filled) : <ul style="list-style-type: none"> - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Working Pressure @ 150deg C : Min. 16 Kg/Cm2 - Colour : Maroon 	- Standard	<ul style="list-style-type: none"> - Cylinder Cap - Cylinder Key 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s - Test Certificate for Pressure Testing 	- To be supplied at designated ITI's in Himachal Pradesh	one year

79.	CO2 cylinder (Filled)	CO2 cylinder(Filled):- Capacity : 6-8.5 Cub. m- Type : Seamless- Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2- Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2- Body Colour : Black- Neck Colour : White	- Standard	- Cylinder Cap- Cylinder Key	- Standard	- User/Operating Manual- Warranty Certificate s - Test Certificate for Pressure Testing	- To be supplied at designated ITI's in Himachal Pradesh	one year
80.	Argon gas cylinder (Filled)	Argon gas cylinder(Filled) : - Capacity : 6-8.5 Cub. m - Type : Seamless - Pneumatic Leakage Test Pressure : Min. 120 Kg/Cm2 - Max Woking Pressure @ 150deg C : Min. 16 Kg/Cm2 - Colour : Sky Blue	- Standard	- Cylinder Cap - Cylinder Key	- Standard	- User/Operating Manual - Warranty Certificate s - Test Certificate for Pressure Testing	- To be supplied at designated ITI's in Himachal Pradesh	one year
81.	Swage block	Swage block with stand - Specification as per Drawing No DWG-MM-05 Attached - Material : Cast Iron	-Stand Castings free from Blow Holes	Standard	Standard	Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year
82.	Magnetic particle testing Kit	Magnetic particle testing Kit : - Minimum Cord length of Yoke: 6 Ft - Operating Voltage of Yoke : 230V AC, 50 HZ - Output Current of MPI : 1000 Amp	- Standard	- Standard	- Standard	- User/Operating Manual -	- To be supplied at designated ITI's in Himachal	one year

		minn - Minimum Lifting Capacity of yoke: 0-5 Kg in AC - Leg Spacing : 0-30 cms across poles - Lifting Capacity in DC of yoke: 0-30 Kg				Warranty Certificate s	Pradesh	
83.	Portable abrasive cut-off machine	Portable abrasive cut-off machine : - Rating Input : Minimum 2,000W - Wheel dia. : 355mm (14") - No load speed : Minimum 3,800rpm - Rated Voltage : 220-240v - Frequency : 50Hz	- D-shape handle for easy gripping. - Spark diversion guard for operator's safety. - Quick release vice for secure stock retention and fast repeated cut-offs. - Adjustable depth stop for precise, repeatable cutting depth.	- Abrasive Cut-off Wheel - Socket Wrench	- Standard	- User/Operating Manual - Warranty Certificate s	- To be supplied at designated ITI's in Himachal Pradesh	one year
84.	Gas cutting table	Gas Cutting table - Size : 1020 X 600 X 700 mm - Made using 40 x 40 x 4 mm angle iron - angles and metal parts of Cutting table suitably painted - Refer Specification as per Drawing No	- Standard -	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year

		DWG-MM-06 Attached						
85.	S.S. & S.C. Centre Lathe(All Geared)	<p>S.S. & S.C. Centre Lathe(All Geared):</p> <ul style="list-style-type: none"> - Bed Type: Flat Bed - Height of Centre: 150 mm and above - Distance between centres: 1000 mm and above - Swing Over bed: 450 mm and above - Swing over cross slide: 225 mm and above - Movement of cross slide: 225 mm and above - Movement of compound slide: 100 mm and above - Bed Width: 275 mm and above <p>Main & Spindle:</p> <ul style="list-style-type: none"> - Spindle nose: Threaded type, Dia 70 mm and above - Spindle Bore: Dia 50 mm and above <p>Tail Stock:</p> <ul style="list-style-type: none"> - Tail Stock Spindle/Quill Dia: 50 mm and above - Spindle Travel/Quill Travel: 140 mm and above <p>Speed:</p> <ul style="list-style-type: none"> - No. of spindle speeds: 8 Minimum - RPM/ Range: 80 - 1000 Minimum <p>Feed:</p> <ul style="list-style-type: none"> - Longitudinal Feeds & Range: 24/0.045 -0.63 mm/rev - Transverse feeds and Range: 24/0.015 -0.21mm/rev <p>Threads:</p> <ul style="list-style-type: none"> - Metric : Minimum 20, 0.5 - 7 mm - Inch: Minimum 24, 56-4 TPI 	<ul style="list-style-type: none"> - Lighting arrangement - Auto Feed System - High quality metal under counter anodized or Powder coated - Bed made of 25 grade Cast iron with hardness of 400 BHN. - Headstock fitted with induction hardened and grounded spindle made from alloy steel. - Apron is totally enclosed with oil bath system with lever type arrangement for automatic 	<ul style="list-style-type: none"> - Three Jaw self-centring chuck 150 mm min -Four jaw Independent chuck 150 mm min - Face Plate, Driving Plate - 4-way tool post, - Safety Guards - quick change gear box for Metric or British threads - live and dead centres fixed and revolving type - Taper turning attachment 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	<ul style="list-style-type: none"> - Two years from Date of Installation

		Electrical : - Motor capacity: Minimum 5.5 KW - Power Supply: Three Phase, 415 - 440 V, 50 Hz	feeds. - Emergency brake system - Tail stock hardened and ground, tail stock spindle made from alloy steel. - One piece complete stand. - Induction hardened bed way - Metallic covers and telescopic covers for guideways protection. - Servo gear system - Quick change gear mechanism - Over load protection system in Motors - A Generous Coolant Supply should be	- Dog carriers - Steady rest, Follow rest - Gear cutting attachment. - Square Quick changing tool post - Multi position Quick changing tool post - Mandrals, Cat heads, Chuck key, Tool post key, Spiders, Drill chuck with sleeve and socket, Tool Holders, Cutting off Tool holders, Boring bars and					
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			<p>Provided with an Electric Coolant Pump Fitted on a Tank Through a Piping and a Nozzle</p>	<p>holders, Tool Post grinders, Thread chasing dial</p> <p>Cutting Tools:</p> <ul style="list-style-type: none"> - HSS Single Point cutting tools - HSS Knurling tool, Threading tools - Right hand and left hand Turning tools, Diamond Point cutting tool, Parting off tool, Tool holder with set/Range of ceramic inserts of different shapes 				
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				and sizes for turning, facing, Forming tools, Cutting tool shanks, Set of taper mandrals/ arbors, Taper pins				
86.	Compression testing gauge suitable for diesel Engine with standard accessories	Compression testing gauge: <ul style="list-style-type: none"> - Suitable for Diesel Engines - Analog Type - 2-1/2 inch gauge - Dual scale gauge reads 0-300 psi (0-2100 kPa) - Rugged blow moulded hard case 	<ul style="list-style-type: none"> - Corrosion resistant nickel plated finish - Adapters work on both flat and tapered seat plugs - Extra-long 25 inch flex hose gauge assembly with quick coupler 	<ul style="list-style-type: none"> - 12 inch flex-14 millimeter standard reach - 12 inch flex-14 millimeter long reach - 10, 12, and 18 millimeter thread adapters 	- Standard	<ul style="list-style-type: none"> - Calibration certificate - User/Operating Manual - Warranty Certificates 	-To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
87.	Cylinder bore gauge capacity 20 to 160 mm	Cylinder Bore Gauge : <ul style="list-style-type: none"> - Display Type: Analog - Accuracy: 0.01mm - Measuring Range:20 to 160 mm - Rugged blow moulded hard case 	- Standard	<ul style="list-style-type: none"> - Measuring head - Extension rods 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be delivered at the designated Industrial Training Institute in	One Year

							Himachal Pradesh	
88.	Depth micrometer 0-25 mm	Depth micrometer : <ul style="list-style-type: none"> - Measuring range : 0 to 25mm - Resolution : 0.01 mm - Accuracy: 0.01mm - Measuring rod clamp. - Carbide-tipped measuring rod - Ratchet stop for constant force - Rugged blow moulded hard case 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - Calibration certificate - User/Operating Manual - Warranty Certificate 	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
89.	Dial gauge type 1 Gr. A (complete with clamping devices and with magnetic stand)	Dial gauge with clamping devices and Magnetic Stand : <ul style="list-style-type: none"> - Type 1 Gr. A - Maximum Reach : 145 mm - Indicator Range : 10 mm - Resolution : 0.01 mm - Accuracy: 0.013 mm - Clamping Force (N) : Minimum 600 N 	<ul style="list-style-type: none"> - Permanent magnet operation with ON/OFF control. - V-grooved base for secure mounting on cylindrical surfaces. - carbide contact point - The stem spindle should be made of high-strength quenched stainless steel 	- Standard	- Standard	<ul style="list-style-type: none"> - Calibration certificate - User/Operating Manual - Warranty Certificate 	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year

			<ul style="list-style-type: none"> - The arm should be mechanically locked in any position using the knob on the uprights - Magnetic Stand that uses a switchable permanent magnet for convenient mounting onto flat iron or steel 					
90.	Engineers stethoscope	Engineers stethoscope: <ul style="list-style-type: none"> - Type : Electronic stethoscope - Frequency range :30 Hz-15kHz - Operating temperature : - 10 to + 45 °C (14-113 °F) - Output volume :Adjustable in 32 levels - Maximum recorder output :250 mV - Headset :48 Ohm (with ear defender) or Equivalent - Probe length :70 and 300 mm (2.8 and 11.8 in.) - Suitable type and rated Batteries 	Led indicator for : <ul style="list-style-type: none"> - Power on - Sound volume - Battery low 	- All Standard Accessories	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
91.	Granite surface plate with stand and cover Size : 1600 x	Granite surface plate with stand and cover: Adjuster: <ul style="list-style-type: none"> -Size : 1600 x 1000 X 200 MM - GRADE : 0 - Six level adjustable 	<ul style="list-style-type: none"> - Uniformity In Hardness - Precision Lapped Surface 	- Standard	- Standard	<ul style="list-style-type: none"> - Calibration certificate - User/Oper 	- To be delivered at the designated Industrial	One Year

	1000mm	- Dust proof Cover	Finish - Vibration Absorbent. - Rust-Proof, Non-Corrosive. - Thermal Stability. - Wrap Resistant. - Low Porosity. - Non-Abrasive, Non-Magnetic			ating Manual - Warranty Certificate s	Training Institute in Himachal Pradesh	
92.	Hand Operated Grease Gun heavy duty trolley type 10 kg capacity	Hand Operated Grease Gun heavy duty trolley type : - Minimum Out put per stroke (gm): 3 - Minimum Delivery hose length: 2000mm - Minimum Blocked pressure (bar): 140 - Minimum ID of hose : 6mm - Minimum Drum capacity: 10 Kg - Wire Braided, Oil resistant, High pressure Hose - Portable with wheels.	- Dispensing of grease at optimum pressure	- Standard	- Standard	- User/Operating Manual - Warranty Certificate s	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
93.	Lifting jack screw type 3 ton	Lifting Jack Screw Type: -Capacity: 3 Ton	-Operational by inserting the bar in the hole at the top of turning	- Bar for operating the Jack	- Standard	- Test Certificate from Competent Authority for Rated Load	- To be delivered at the designated Industrial Training Institute in	One year

						Capacity for Jack should be Provided - Warranty Certificate	Himachal Pradesh	
94.	Lifting jack screw type 5 Ton capacity	Lifting Jack Screw Type: -Capacity: 5 Ton	-Operational by inserting the bar in the hole at the top of turning	- Bar for operating the Jack	- Standard	- Test Certificate from Competent Authority for Rated Load Capacity for Jack should be Provided - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
95.	Lifting jack screw type 20 Ton capacity	Lifting Jack Screw Type: -Capacity: 20 Ton	-Operational by inserting the bar in the hole at the top of turning	- Bar for operating the Jack	- Standard	- Test Certificate from Competent Authority for Rated Load Capacity for Jack should be Provided - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

96.	Oil pump for dismantling and assembling.	Oil pump for dismantling and assembling : - Type : Gear - Min Working Pressure : 7 Bar	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
97.	Outside micrometer 0-25mm	Outside micrometer : - Range : 0 to 25 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage	- Equipped with Ratchet Stop for Constant measuring force - Carbide measuring faces High accuracy Interchangeable anvils.	- Standard	- Standard	- User/operating manual - Warranty Certificates - Calibration certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
98.	Outside micrometer 25-50 mm	Outside micrometer : - Range : 25 to 50 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage	- Equipped with Ratchet Stop for Constant measuring force - Carbide measuring faces High accuracy Interchangeable anvils.	- Standard	- Standard	- User/operating manual - Warranty Certificates - Calibration certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

99.	Outside micrometer 50-75mm	Outside micrometer : <ul style="list-style-type: none"> - Range : 50 to 75 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage 	<ul style="list-style-type: none"> - Equipped with Ratchet Stop for Constant measuring force -Carbide measuring faces High accuracy Interchangeable anvils. 	- Standard	- Standard	<ul style="list-style-type: none"> - User/operating manual - Warranty Certificates - Calibration certificate 	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
100.	Outside micrometer 75-100mm	Outside micrometer: <ul style="list-style-type: none"> - Range : 75 to 100 mm - Resolution : 0.001 mm - Material : Stainless steel, chrome plated with carbide Tips - Suitable case for storage 	<ul style="list-style-type: none"> - Equipped with Ratchet Stop for Constant measuring force -Carbide measuring faces High accuracy Interchangeable anvils. - Should be provided in Rugged blow molded hard case 	- Standard	- Standard	<ul style="list-style-type: none"> - User/operating manual - Warranty Certificates - Calibration certificate 	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
101.	Pipe cutting tool	Pipe cutting tool : <ul style="list-style-type: none"> - Pipe or Tube Diameter Capacity : 1/8-inch to 1-1/8-inch - Contact rollers ; Minimum 3 Nos. for stable cutting & reduced spiralling 	<ul style="list-style-type: none"> - Cuts copper, brass and aluminium tubing and thin-wall conduit 	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be delivered at the designated Industrial Training Institute in	One year

			- Grooved rollers for dose-to-flare cuts - Enclosed feed screw				Himachal Pradesh	
102.	Pipe flaring tool	Pipe flaring tool : - Diameter range of pipe expansion:5-16mm - Material: Alloy Steel	-Flares rolled out above die bar by super-smooth faceted cone	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
103.	Rivet sets Snap and Dolly combined	Rivet sets Snap and Dolly combined: - Size : 3mm, 4mm, 6mm	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
104.	Thread pitch gauge Metric	Thread pitch gauge : - Measurement System : Metric - Range (mm) 0.4-7 mm	- Each leaf is marked with thread	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One Year
105.	Torque wrenches 5-35 Nm	Torque wrench: - Torque Range : 5-35 Nm - Type : Ratchet Type	- Made of high graded steel.	- Standard	- Standard	- User/Operating	- To be delivered at the	One Year

		- Drive Size : 3/8" Sq.	- Push through movable square permits use on both left and right hand direction. - Clear accurate scales marked. - Positive setting without need of any calibration rigs. -Calculated leverages to reduce labour fatigue. -No violent kick back and automatic resetting after it clicks.			Manual - Warranty Certificate	designated Industrial Training Institute in Himachal Pradesh	
106.	Torque wrenches 12-68 Nm	Torque wrench: - Torque Range : 12-68 Nm - Type : Ratchet Type - Drive Size : 1/2"Sq.	- Made of high graded steel. - Push through	- Standard	- Standard	- User/Operating Manual -	- To be delivered at the designated Industrial	One Year

			movable square permits use on both left and right hand direction. - Clear accurate scales marked. - Positive setting without need of any calibration rigs. -Calculated leverages to reduce labour fatigue. -No violent kick back and automatic resetting after it clicks.			Warranty Certificate	Training Institute in Himachal Pradesh	
107.	Torque wrenches 50-225 Nm	Torque wrench: - Torque Range : 5-35 Nm - Type : Ratchet Type - Drive Size : 1/2"Sq.	- Made of high graded steel. - Push through movable square	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in	One Year

			permits use on both left and right hand direction. - Clear accurate scales marked. - Positive setting without need of any calibration rigs. - Calculated leverages to reduce labour fatigue. - No violent kick back and automatic resetting after it clicks.				Himachal Pradesh	
108.	Trammel	Trammel : Range 30cm Material - Stainless Steel	- The top of the beam is flattened so that when the trammels are clamped in position, they should not turn	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			<p>from pressure on the points</p> <ul style="list-style-type: none"> - One trammel should have fine-adjusting screw for the points - Held in place by spring friction, which prevents them from sliding when the nuts are loosened for setting - Trammel should have knurled swivel grip at the top that turns freely, making it very convenient to swing the tool when scribing circles 					
109.	Hydraulic jack HI-LIFT type -	Hydraulic Jack : - Hydraulic Jack HI-LIFT type:	- Standard	- Standard	- Standard	- Test Certificate	- To be delivered at	One year

	5 Ton capacity	-Capacity : 5 Ton				from Competent Authority for Rated Load Capacity for Hydraulic Jack should be Provided - Warranty Certificate	the designated Industrial Training Institute in Himachal Pradesh	
110.	Side and face milling cutter mm Φ 100 x 10 X 27 mm	Side and face milling cutter: - Diameter : 100 mm - Bore : 27 mm -Width : 10 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on peripheral Surface and both sides	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
111.	Side and face cutter Φ 80 x 10 X 27mm	Side and face cutter : - Diameter : 80 mm - Bore : 27 mm -Width : 10 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on peripheral Surface and both sides	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

112.	Cylindrical milling cutter Φ63 x 70 X 27 mm	Cylindrical milling cutter : - Diameter : 63 mm - Bore : 27 mm -Length : 70 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on peripheral Surface	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
113.	Slitting Saw cutter Φ 75 x 4 X 27mm	Slitting Saw cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 4 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on peripheral Surface and both sides - Dished Sides to provide clearance and prevent binding	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
114.	Slitting Saw cutter Φ 100 x 6 X 27 mm	Slitting Saw cutter : - Diameter : 100 mm - Bore : 27 mm -Width : 6 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on peripheral	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			Surface and both sides - Dished Sides to provide clearance and prevent binding					
115.	Single angle cutter Φ 75 x 16 x 27mm	Slitting Saw cutter : - Diameter : 75 mm min - Bore : 27 mm -Width : 16 mm -Angle : 60 deg -Measured between Flat Side and Conical Side ,measured in a radial Plane - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on conical surface and large flat side - Suitable for cutting dovetails and angular slots	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
116.	Dovetail cutter	Dovetail cutter: - Diameter : 20 mm - Shank Diameter : 8 mm - Included Angle : 60 deg - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on conical surface and large flat side	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			- Suitable for cutting dovetails					
117.	Single angle cutter	Slitting Saw cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 20 mm -Angle : 45 deg - Measured between Flat Side and Conical Side ,measured in a radial Plane - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on conical surface and large flat side - Suitable for cutting dovetails, serrationa and angular slots	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
118.	Equal angle cutter	Equal angle cutter : - Diameter : 75 mm - Bore : 27 mm -Width : 30 mm -Included Angle : 90 deg (Measured between Two Conical sides, measured in a radial Plane) - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on conical surface -Equal Angles between the conical faces and plane of	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			intersection of two cones - Suitable for milling 'V'-Grooves					
119.	Shell End Mill	Shell End Mill : - Type : Inserted Tip - Diameter : 75 mm - Bore : 22 mm -Width : 50 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and one end - Suitable for face and end milling operations	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
120.	Parallel shank end mills Φ 6 - double fluted	Parallel shank end mills : - Diameter : 6 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and ends - Suitable for Milling Flat, Horizontal, Vertical, Bevel, Chamfer and Slant	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			Surfaces					
121.	Parallel shank end mills Φ 10 double fluted	Parallel shank end mills : - Diameter : 10 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and ends - Suitable for Milling Flat, Horizontal, Vertical, Bevel, Chamfer and Slant Surfaces	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
122.	Parallel shank end mills Φ 16 double fluted	Parallel shank end mills : - Diameter : 16 mm - Type : Double Fluted - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and ends - Suitable for Milling Flat, Horizontal, Vertical, Bevel, Chamfer and	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			Slant Surfaces					
123.	Parallel shank end mills Φ 20 four fluted	Parallel shank end mills : - Diameter : 20 mm - Type : Four Fluted - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and ends - Suitable for Milling Flat, Horizontal, Vertical, Bevel, Chamfer and Slant Surfaces	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
124.	Parallel shank end mills Φ 25 four fluted	Parallel shank end mills : - Diameter : 25 mm - Type : Four Fluted - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and ends - Suitable for Milling Flat, Horizontal, Vertical, Bevel, Chamfer and	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			Slant Surfaces					
125.	Concave Milling cutter Φ 63 x 6 radius/10 radius x 27 mm	Concave Milling cutter : <ul style="list-style-type: none"> - Diameter : 63 mm - Bore : 27 mm - Radius : 6/10 mm - Material: High Speed Steel (HSS) 	<ul style="list-style-type: none"> - High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and one end - Suitable for milling concave surfaces of circular contour equal to half circle or less 	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
126.	Convex Milling cutter Φ 63 x 6 radius/ 10 radius x Φ 27 mm	Convex Milling cutter : <ul style="list-style-type: none"> - Diameter : 63 mm - Bore : 27 mm - Width :Minimum 10mm - Radius : 6/10 mm - Material: High Speed Steel (HSS) 	<ul style="list-style-type: none"> - High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and one end - Suitable for milling concave surfaces of circular contour 	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

			equal to half circle or less					
127.	Disc type form milling cutter for gear cutting (involute form -2 module, 20° pressure angle).	Disc type form milling cutter for Gear cutting: - Module: 2 mm - Pressure Angle : 20 deg - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Teeth on periphery and one end - Suitable for Involute Gear Cutting	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
128.	Tool holder straight to suit 6, 8 mm sq. bit size	Tool holder straight - to hold 6, 8 mm sq. bit size - Holder hardness:48-55HRC	- Standard	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
129.	Parting tool holders to suit	Parting tool holder - to hold 3 and 4 mm thick tool blade	- Case-hardened and ground - Positive locking for longer blade life - Firm and positive clamping force	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year

130.	Boring bars with holders	Boring bars with holders: <ul style="list-style-type: none"> - To accommodate 4, 6 and 8 mm HSS tool bits 	- Standard	- Standard	- Screws and Allen key	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
131.	Radial Drill machine	Radial Drill machine: <ul style="list-style-type: none"> - Drilling Capacity in steel :32 mm - Diameter of column : Minimum 160 mm - Arm rotation angle : 360 deg - Spindle taper : MT-3/MT-4 - Distance from center line of spindle to the bus of column 220-1000 mm - Distance from spindle end to base surface :500-1220mm - Spindle Travel : Minimum 200 mm - Spindle Speed : Minimum 6 Steps - Drill Head Motor: Minimum 1.5 HP - Elevating Motor: Minimum 0.5 HP - Feed range of spindle: 0.10-0.25 mm/rev - Work Table : Minimum 300x300x385 mm 	<ul style="list-style-type: none"> - The robust and streamlined construction to withstand and absorb heavy cutting forces. - Drilling head should be mounted over a sturdy arm attached to the pillar. - Both the arm and the drilling head can be swivelled and clamped to any desired position. - The arm can be raised by means of 	<ul style="list-style-type: none"> - Drill Chuck - Machine Vice - Coolant Pump - D.O.L Starter - Machine Lamp - Drill chuck with key - Drill Arbour 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	Two Years

			<p>rack and pinion mechanism actuated by a hand lever, to any height with in its capacity.</p> <ul style="list-style-type: none"> - Reduction gear unit mounted at the top of the machine head provides wide range of spindle speeds. -Circular table at the base mounted over an arm which can be swivelled around to any desired position and can be fixed in anyone of the T-slots or can be removed so that the whole base can be used. 					
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			<ul style="list-style-type: none"> - All they safety devices are incorporated in all movements to avoid accidents or damage to assemblies. - The coolant tank should totally enclosed in the machine base with a constant speed pump which continuously supplies coolant to the saw blade. 					
132.	Power saw machine 21" or more length blade	Power saw machine : <ul style="list-style-type: none"> - Cutting Capacity (Round) : Min. Upto 175 mm - Cutting Capacity (Square) : Min. Upto 125 mm - Blade Size : Minimum 21 inch - Electric Motor : Minimum 2 HP - Strokes per min. (approx) : 85-100 	<ul style="list-style-type: none"> - Machine Driven by V-Pulleys with provision to adjust fully the tension of the V-Belts. The shafts are fitted with taper and ball bearings 	<ul style="list-style-type: none"> - Vice - Standard Accessories 	<ul style="list-style-type: none"> - Standard 	<ul style="list-style-type: none"> - User/ operating manual - Warranty certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

			which eliminate friction - The coolant tank should totally enclosed in the machine base with a constant speed pump which continuously supplies coolant to the saw blade. - Push button starter is fitted with an adjustable trip mechanism which stops the machine soon after the blade is clear					
133.	Arc welding table with all metal top and with positioner.	Arc welding table with positioner - Size : 1200X1200 X 750 mm - Made with 40 x 40 x 4 mm angle iron with positioner suitable for all weld positions. - All Metal Top - Refer Specification as per Drawing No	- Standard	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	one year

		DWG-MM-07 Attached - - The Arc welding table should be suitably painted						
134.	Universal Milling Machine	Universal Milling Machine : Table Size (mm) : Minimum 1350x310 mm Longitudinal traverse: 700 - 800 mm Cross traverse : 250 - 400 mm Vertical traverse : 200 - 350 mm Speed range rpm : 30 to 1800 Swivel of table on either side : 45 Degree Spindle Motor Power : Minimum 2 HP	- Streamlined construction, rugged and vibration free. - All moving surface and rotating parts should be continuously lubricated by auto lubrication system. - All safety devices are incorporated in all movements to avoid accidents or damage to assemblies - All moving surface and rotating parts should be continuously lubricated by	- Universal dividing head, - Circular table - Long arbor - Slab arbor, - Slotting attachment, - Vertical indexing head - All other Standard Accessories	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation

			auto lubrication system.					
135.	Vertical milling machine	Vertical milling machine - Table Size (mm) : Minimum 1350x310 mm - Longitudinal traverse: 700 - 800 mm - Cross traverse : 200 - 265 mm - Vertical traverse : 300 - 400 mm - Speed range rpm : 20 to 1800 - Spindle Motor Power : Minimum 2 HP	- Streamlined construction, rugged and vibration free. - All moving surface and rotating parts should be continuously lubricated by auto lubrication system. - All they safety devices are incorporated in all movements to avoid accidents or damage to assemblies - All moving surface and rotating parts should be continuously lubricated by	- Machine vice - Collets adaptor - Collets - All other Standard Accessories	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation

			auto lubrication system.					
136.	Horizontal milling machine	Horizontal milling machine - Table Size (mm) : Minimum 1350x310 mm - Longitudinal traverse: 700 - 800 mm - Cross traverse : 200 - 265 mm - Vertical traverse : 300 - 400 mm - Speed range rpm : 20 to 1800 - Spindle Motor Power : Minimum 2 HP	- Streamlined construction, rugged and vibration free. - All moving surface and rotating parts should be continuously lubricated by auto lubrication system. - All they safety devices are incorporated in all movements to avoid accidents or damage to assemblies - All moving surface and rotating parts should be continuously lubricated by	- Machine vice - Collets adaptor - Collets - All other Standard Accessories	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation

			auto lubrication system.					
137.	Hydraulic Surface Grinding Machine	Hydraulic Surface Grinding Machine - Table-Clamping area:- Minimum 600 x178 mm - Max. longitudinal travel:- 400mm - Max. cross traverse : 200 mm - Max. spindle centre height above table - 400 - 500 mm, - Table speed- 1-25 m/min - Least Count of vertical feed head wheel : Minimum 0.01 mm - Least count of micro feed : Minimum 0.002 mm - Spindle motor : Minimum 2 HP - Speed of grinding spindle :1400-2800 RPM - Hydraulic System :Working Pressure : Min. 10 Kg/Cm2 - Hydraulic System Motor : Minimum 2 HP - Hydraulic System Tank capacity : Minimum 40 Ltrs	- The base of the machine should be Built of Heavy duty cast iron with high-Grade cast iron base - The Grinding Wheel spindle should be hardened & Grounded. - All moving surface and rotating parts should be continuously lubricated by auto lubrication system. - All they safety devices are incorporated in all movements to avoid	- Extractor with water separator -Grinder Wheel -Grinder Wheel Flange Unit -Table Guard - Balancing device - Table-mounted radius-tangent wheel dresser - Set Of Wrenches - All other standard Accessories	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation

			accidents or damage to assemblies					
138.	Universal cylindrical Grinding Machine	Universal cylindrical Grinding Machine : <ul style="list-style-type: none"> - Height of centre : Minimum 130 mm - Max. dia ground (effective) :250 mm - Max. grinding length :300 mm - Max. distance between centres :340 mm - Wheel Head Swivel : + / - 60 deg - Work Head Electrical Motor : Minimum 0.5 HP - Electric motor for table drive : Minimum 1 HP 	<ul style="list-style-type: none"> - The Bed should be of Rugged Design and Provided With Strong Ribs - The table composed of two parts. (Lower slide have we & flat way) Upper part swivel can be swivelled on either slide by means of screw and a scale. - The wheel head should be designed to raise the efficiency level fir operation, decrease overhang and eliminate vibrations. 	<ul style="list-style-type: none"> - Face plate - Steady, radius and face dressers - Fine hand feed attachmen t and all other - standard accessorie s 	- Standard	<ul style="list-style-type: none"> - User/Oper ating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	- Two years from Date of Installati on

			<ul style="list-style-type: none"> - The tail stock centre carrying spindle should travels in perfectly honed bore. It is protected form dust. The tail spindle should be spring loaded. - The drive of work head is built for stationary and live spindle grinding. The work head can be swivelled for angular grindings. - A Generous Coolant Supply should be Provided with an Electric 					
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			<p>Coolant Pump Fitted on a Tank Through a Piping and a Nozzle</p> <ul style="list-style-type: none"> - All moving surface and rotating parts should be continuously lubricated by auto lubrication system. - All the safety devices are incorporated in all movements to avoid accidents or damage to assemblies 					
139.	Spark erosion EDM with standard accessories	<p>Spark erosion EDM :</p> <ul style="list-style-type: none"> - Working(LXW): : Minimum 500X300mm - Work Tank Minimum :800x500x320 mm - Longitudinal Travel(X) : Minimum 300mm - Transverse Travel (Y): Minimum 200mm - Quill Travel (Z) : Minimum 200mm 	<ul style="list-style-type: none"> - Fixed Work Table with X, Y, Z Movement for Electrode - Hardened Ground Quill - All the safety devices are 	<ul style="list-style-type: none"> - Flush aid - Flushing plot - Collets holder for electrode clamping - Machine Lamp - Axis 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required 	<ul style="list-style-type: none"> - Two years from Date of Installation

		<ul style="list-style-type: none"> - Max Electrode Weight: 50kg. - Oil Tank Capacity : Min 250 L - Max Work piece Weight : 200 KG Pulse Generator <ul style="list-style-type: none"> - Max. Working Current ; 40 Amp - Max MRR (mm'/min):200 	incorporated in all movements to avoid accidents or damage to assemblies- - All moving surface and rotating parts should be continuously lubricated by auto lubrication system.	Corrector - Mounting/ Levelling Pads			by staff of ITI	
140.	Polishing kit	Polishing kit consisting of : <ul style="list-style-type: none"> - Polishing or grinding machine - 1/4" , 1/2" & 3/4 " felt wheels and holders - polishing brushes 1/8" diameters shank mould - polishing and lapping compounds 	- Standard	- Standard	- Standard	- Standard	- To be supplied at designated ITI's in Himachal Pradesh	-one year on Machine
141.	Welding torches.	Welding Torch for Oxy-Acetylene with Nozzles 5 to 10 number: <ul style="list-style-type: none"> - Material of Torch : Brass 	-Should be able to withstand high pressure and temperature	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh	one year
142.	Welding helmets with coloured glass	Welding Helmet : <ul style="list-style-type: none"> - Black Glasses, - both side plane glass with side shield 	- Suitable for all position MMA, MIG/MAG &	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - 	- To be supplied at designated ITI's in Himachal	one year

			TIG welding.			Warranty Certificate	Pradesh	
143.	Hydraulic Leak Testing equipment	Hydraulic Leak Testing equipment: <ul style="list-style-type: none"> - Minimum Capacity: 60 Kg/Cm2 - Minimum Tank Capacity: 5 Ltr - Minimum Suction Capacity: 13 ml/Stroke 	- Standard	- High Pressure Hose And Connectors	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year
144.	Welding Simulators for SMAW/GTAW/GMAW	Welding Simulators for Shielded metal arc welding/Gas Tungsten Arc Welding /Gas Metal Arc Welding: <ul style="list-style-type: none"> - Enables learning of all position welding (1G-6G and 1 F-4F) - Supports 3 different processes of welding (GMAW, GTAW and SMAW) - Learn from pre-defined-programs like but-joint, V-groove joint, etc - Feel of the real arc - Training session can be repeated 'N' number of times Adjustable Parameters : <ul style="list-style-type: none"> - Arc Length - Welding Speed - Angle Of Electrode Inclination - Parameters such as specified angle of electrode inclination, weave pattern, arc striking and maintenance Welding speed and heat input can be monitored	<ul style="list-style-type: none"> - Negligible fumes - Highly accurate results - Makes the trainee perform on own set program -Very less power consumption (works on 1-phase) - No material and consumable wastage (plate, pipe, etc) -Safe 	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	Two years

			(accident-free) environment for training - Simulator Should be able to generate following Reports : Arc Length Time Graph Welding Speed Time Graph Time Indicator Error Indicator On Longitudinal Angle Of Welding Tool Error Indicator On Transversal Angle Of Welding Tool					
145.	Bearing and gear tester	Bearing and gear tester : - Accuracy: +/-3 dBsv - Display: Graphical Monochrome LCD - Frequency Range (Hz):Upto 32 K - Temp. Range (C): -10 to 185 deg C - Data Hold: Minimum 10 Reading - Shock Pulse Measurement : -9 to 90 dBsv	- Automatic power off The Tester should be able to perform following Measurements	- Measuring Cables and Connectors - Case for Instruments	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied and installed at designated ITI's in Himachal Pradesh	- Two years from Date of Installation

			ts & Functions: - Shock Pulse: Measures shock pulse vibration level in decibels & provides Green - Yellow - Red status indication showing stage & extent of bearing & gear damage - Temperature : Infrared technology to measure surface temperature of bearings and gears - Sound :Should Have built-in Stethoscope function for listening to machinery sounds	- Suitable Batteries - All other Standard Accessorie s			- Training as required by staff of ITI	
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146.	T slot cutter with parallel shank	T slot cutter with parallel shank - Diameter of Cutter: 17.5 mm - Diameter of Shank :8 mm - Width : 8 mm - Material: High Speed Steel (HSS)	- High cutting ability and high metal cutting rate. - Profile Sharpened - Suitable for Milling T - Slots	- Standard	- Standard	- Standard	- To be delivered at the designated Industrial Training Institute in Himachal Pradesh	One year
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Lot 2: Tool & Die and PPO related machinery

Item No.	Name of Goods or Related Services	Technical Specifications of Item and/or Bureau of Indian Standards (BIS) (if applicable) reference	Features	Accessories	Spare parts	Documents	Installation & Training	Warranty of Equipment/parts
1.	Test Equipment for plastic -MFI	Test Equipment for plastic -MFI - Range: 40 – 400°C - Resolution:0.1°C - Accuracy :0.2°C - Power 120V/230V; 50Hz/60Hz Temperature Probe Specifications Measurement 3 x PT 100 Sensors - Range : 0 – 500°C - Accuracy: 0.1°C	- Must be able to check the Melt Flow Index of all Thermoplastic material	- Temperature probe - Die - Piston, - Barrel core - Die cleaning tool - Die Retainer Cleaning probe - Filling funnel - Test Weights - Cleaning patches - Heat resistant gloves	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One Year
2.	Digitally controlled Universal Testing machine of 100 KN capacity	Digitally controlled Universal Testing machine : - Maximum Capacity: 100 KN - 1st Measuring Range : 0-20 KN - Load Resolution : 0.005 KN - 2nd Measuring Range : 0-40 KN - Load Resolution: 0.01 KN - 3rd Measuring Range: 0-100 KN - Load Resolution: 0.025 KN	- Standard	For tension test: - Clamping for round: 10-20 mm - Specimens diameters : 20-30 mm - Clamping	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of	One Year

		<ul style="list-style-type: none"> - Resolution of Piston Movement (Displacement): 0.1 mm - Clearance for tensile test at fully descended working piston : 50-700 mm - Clearance for compression test at fully descended working piston : 0-700 mm - Clearance between columns: 500 mm - Straining / Piston speeds (at no load): 0-150 mm - Voltage: 440 V, 3 Phase 		jaws for flat: 0-10 mm - Specimens thickness: 10-20 mm - Width : 50 mm For compression test: - Pair of compression plates of diameter: 120 mm For transverse test: - Table with adjustable rollers width of rollers: 160 mm - Diameter of Rollers: 30 mm -Maximum clearance between Supports: 500 mm			ITI	
3.	Impact tester	Impact tester : <ul style="list-style-type: none"> - Maximum capacity : 300 J - Minimum scale graduation :2 J - Pendulum drop angle : 140° - Pendulum effective Wt. : 21.819 	- Suitable for Charpy and Izod Impact Test	- Standard	- Standard	- User/Operating Manual - List of Service	- To be supplied at designated ITI's in Himachal	One Year

		kg. - Striking velocity of pendulum: 5.182 m/sec				Centres in India - Warranty Certificate	Pradesh - Training as required by staff of ITI	
4.	Hand operated Injection Moulding machine of 15 gm capacity	Hand operated Injection Moulding machine : - Minimum Capacity : 15gm - Temperature controller unit : 0-200°C - Weight of piece : Minimum 15 gm	- Solid Frame made up of Heavy channel with a heavy base	- Die - Ceramic Band Heater - Other standard Accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one Year
5.	Hand operated Injection Moulding machine of 30gm capacity	Hand operated Injection Moulding machine : - Minimum Capacity : 30 gm - Temperature controller unit : 0-200°C - Weight of piece : Minimum 30 gm	- Solid Frame made up of Heavy channel with a heavy base	- Die - 02 Nos Ceramic Band Heater - One No. suitable mould - Other standard Accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one Year
6.	Microprocessor/ PLC controller Automatic screw type Injection Moulding Machine of 80-85 tons capacity	Screw Type Injection Moulding Machine : - Capacity 80 to 85 T with the following minimum specifications: - Screw diameter (mm) :36 mm - Injection Pressure (bar) : 1,815 - Stroke Volume : 163 cm ³ - Screw Stroke : 160 mm - Max Injected Weight(GPPS) gm :155	- Five-point double clamping system of steel casting with steel link and steel bushes. - Mould opening & closing with	- One No. suitable mould - Other standard Accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation

		<ul style="list-style-type: none"> - Injection Rate cc/s :141 - Plasticising rate(GPPS)@ speed g/s :17 - Screw Speed : 350 rpm - L/D Ratio :21.2 - Heating Capacity :8.9 KW - No of Heating Zones :5 - Nozzle Protrusion :45 MM - Nozzle Contact Force : 60 kN - Oil Tank capacity : 200 Ltr. - Hopper Capacity : 60 Ltr. <p>CLOSING UNIT</p> <ul style="list-style-type: none"> - Closing Force : 1000 KN - Mould Open Stroke : 350 mm - Mould Height :180-410 mm - Distance between Platens : 760 mm - Distance between Tie-Bars(hxv):410X410 mm - Clamping Platens(hxv):610X610 mm - Ejector Force :51 KN - Ejector Stroke :130 mm 	<ul style="list-style-type: none"> - programmable and independent strokes and speed. - Automatic lubrication system is toggle side clamping and injection strokes are monitored by linear transducers. - Single stroke hydraulic ejector. - Square tie bar distance with large mould height. - High tensile, hard chrome plated tie bar. - Electrical inter lock in front and rear safety guard. - Ceramic band heaters. - High torque hydraulic motor for screw drive. 					
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			<ul style="list-style-type: none"> - Automatic suck back system. - Two stage injection speed. - Gas nitrided screw barrel with standard L/D ratio. - Injection movement is actuated by two hydraulic cylinder. - Stainless steel hopper with magnetic grill with swivelling system to permit easy change of material. - Limit switches controlled operation, for stroke control. - MCB control for each heating zone separately. - Star delta starter for 					
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			<p>pump motor.</p> <ul style="list-style-type: none"> - Overload protection for pump motor. - Centralized automatic lubrication system. - Air injector with timer. 					
7.	Hand operated Compression Moulding Machine of 60 ton capacity	<p>Hand operated Compression Moulding Machine of 30-60 tons capacity :</p> <ul style="list-style-type: none"> - Suitable for processing Acrylonitrile Butadiene Styrene(ABS)- - Maximum working pressure = 25 kN - Pressure gauge : Analog Type - Heated Platen area = 200x 200 mm - Maximum travel distance of platen = 150 mm max - Maximum working temp = 200 degree C - Digital Temperature control with an accuracy of $\pm 2^{\circ}\text{C}$ 	<ul style="list-style-type: none"> - A Sturdy & heavy body made up of cast steel, hardened & chrome plated with a heavy base enough to withstand impact & load. 	<ul style="list-style-type: none"> - One No. Suitable mould - Other standard Accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one Year
8.	Hand operated Blow Moulding Machine of 250 ml capacity	<p>Hand operated Blow Moulding Machine of 250 ml capacity :</p> <ul style="list-style-type: none"> - Minimum Manufacturing capacity: 8 inches - Plasticising capacity : 1.5kg/hr - Minimum Shots per hour : 100 	<ul style="list-style-type: none"> - A Sturdy & heavy body made up of cast steel ,hardened & chrome plated 	<ul style="list-style-type: none"> - One No. Suitable mould - Other standard Accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh 	one Year

		<ul style="list-style-type: none"> - Screw Dia - 38mm - Max article weight - 50gm - Max mould size : 120x130 - Max mould open stroke : 125mm - Max Volume : 250ml 	with a heavy base enough to withstand impact & load and having temperature controller with graduations.			India - Warranty Certificate	- Training as required by staff of ITI	
9.	Hand Injection Moulding Machine	Hand operated Injection Moulding machine : <ul style="list-style-type: none"> - Minimum Capacity : 50 gm - Temperature controller unit : 0-200°C - Weight of piece : Minimum 50 gm 	- Solid Frame made up of Heavy channel with a heavy base	<ul style="list-style-type: none"> - Die - 02 Nos Ceramic Band Heater - One No. suitable mould - Other standard Accessories 	Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one Year
10.	Microprocessor/ PLC controller based Automatic compression moulding machine of 100 tons capacity	Microprocessor / PLC controller based Automatic compression moulding machine : <ul style="list-style-type: none"> - Capacity Minimum : 100 Tons; 4 pillars type up stroking ram movement. - Minimum Stroke Length : 510 mm - Minimum Shut Height : 190 mm - Minimum Platen size : 600 x 600 mm - Electrical heating load of the platens: 6 KW / Platen - Operation: PLC based touch type screen. 	- Standard	<ul style="list-style-type: none"> - one no. suitable mould - Other standard Accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	- Two years from Date of Installation
11.	Microprocessor/ PLC controller based	Automatic Extrusion Blow Moulding Machine <ul style="list-style-type: none"> - Capacity: 1 to 2 litre 	- A Sturdy & heavy body made up of	- One No. Suitable mould	- Standard	- User/Operating Manual	- To be supplied and	- Two years from

	Automatic Extrusion Blow moulding machine of 2 litres capacity	<ul style="list-style-type: none"> - Screw Dia. (mm): 32-50 - Screw Speed: 1-60 m/sec - Platen Length Size: 200-610 mm - Platen Width Size: 200-610 mm 	cast steel, hardened & chrome plated with a heavy base enough to withstand impact & load and having digital temperature controller	- Other standard Accessories		<ul style="list-style-type: none"> - List of Service Centres in India - Warranty Certificate 	installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	Date of Installation
12.	Extruder of 40kg/hr Plasticizing capacity with re-processing die and granulator/cutter for PE & PP.	Extruder of 40 kg/hr Plasticizing capacity with re-processing die and granulator/cutter for PE & PP. with the following minimum specifications: <ul style="list-style-type: none"> - Output: 40Kg /hr - Screw dia x L/D : 40 x 24mm - Control : Through Variable Frequency AC Drive - Speed reducer type : Helical gear box with inbuilt thrust bearing, - Feed section : Grooved sleeve - Thrust capacity (Dynamic) : 397KN - Lubrication : Sump type - Power transmission :Through pulley and V-belts - Hopper Capacity : 35 litre. , Stainless Steel - Material for screw and barrel : Nitralloy steel - Barrel heating load : with ceramic heaters) - Barrel cooling : 1 No. cooling 	Controls are housed in the cabinet including :- <ul style="list-style-type: none"> - PID temperature controllers, each with a built in indication to specify the deviation of any zone from the set temperature. - Ammeter for indicating heating load of any individual zones. - Screw speed indicator. - Main isolator (On/Off) 	<ul style="list-style-type: none"> - Pair of compression plates of diameter: 120 mm - 'Two no Ceramic Band Heater for barrel - Other standard accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	<ul style="list-style-type: none"> - Two years from Date of Installation

		blower - Screen Pack : Cylindrical screen pack with strainer - Heating load : with ceramic heaters) - Temperature controllers : Digital PID controllers, Range 0- 400°C. - A motorized cutter with motor for PE & PP	switch. - Other necessary electrical components like MCBs, Contactors, Relays, Push Buttons (On/Off), etc. - "PID" thermo controller with "SCR" output temperature systems to minimize power consumption and maintain temperature levels - High efficiency driving motor and gears.					
13.	Pipe extruder of Minimum 40 kg/hr. Plasticizing capacity with pipe die 0.5 inch and 1 inch	Pipe extruder of Minimum 40 kg/hr. Plasticizing capacity with pipe die 0.5 inch and 1 inch: with the following minimum specifications; - Maximum output: 40Kg/hr - Screw dia x L/D Ratio : 65mm, 28:1 - Screw Speed Range : 14 - 140rpm - Barrel Heating : Ceramic Band Heaters - Heating load: 10.5Kw, No. of zones :	- Screw & Barrel material Nitride hardened, ground and polished. - Barrel Single piece, cylindrical type with central feed	- 20 meter high pressure pipe - Other standard accessories	- Standard	- User/Operating Manual - List of Service Centres in India - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required	- Two years from Date of Installation

		<p>5</p> <ul style="list-style-type: none"> - Barrel Cooling : Provided in 5 zones each by means of 0.18 Kw, having auto on-off arrangement. - Feed system : Hopper of 125 liter capacity. - Main motor rating : AC Motor, - Drive : AC variable frequency drive <p>DIE HEAD Pipe dia range : 20 to 50 mm No. of heating zones : 5</p> <p>VACUUM SIZING TANK Cross Section of Tank Profile Octagonal</p> <ul style="list-style-type: none"> - Standard Pipe dia range : 20 – 110mm; - Length of cooling section : 6000mm - Through Size: 325 x 350mm; - Vacuum Pump, Spray Pump - Centre height of work: 1150mm <p>TUBE TRACTION UNIT.</p> <ul style="list-style-type: none"> - Pipe size : 20- 110 mm; No. of Tracks : 2; Length of contact: 800 mm - Operating distance of grips Min. 0 mm, Max. 250 mm <p>TUBE CUTTING UNIT.</p> <ul style="list-style-type: none"> - Pipe dia range : 20 - 110 mm ; Blade dia : 350 mm ; Trolley stroke : 1100 mm - No. of cuts : 12; Cutter, Trolley Retraction Pneumatic cylinder 50x1200mm <p>UTILITIES REQUIRED</p> <ul style="list-style-type: none"> - Compressed Air : 2.5 m³/hr. at 7 Bar; - Cooling Water : 6.6 lps (22m head) 15 °C - Chilling Plant : 25 TR; - Electrical Power Supply : 415V, 3 	<p>opening</p> <ul style="list-style-type: none"> - Feed section should have jacket type construction for water cooling. - Glass windows for visual inspection and chute arrangement provided. - Transmission system By V belts from main motor to helical gear box. - Safety guards should be provided. - CONTROL SYSTEM Control Cabinet fabricated from steel sheets mounted on a sturdy fabricated frame. - Controls are housed in the cabinet including :- - PID temperature controllers, each with a built in 				by staff of ITI	
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		<p>Phase, 50 Hz</p> <ul style="list-style-type: none"> - Voltage Stabilizer of suitable capacity. 	<p>indication to specify the deviation of any zone from the set temperature.</p> <ul style="list-style-type: none"> - Ammeter for indicating heating load of any individual zones. - Screw speed indicator. - Main isolator (On/Off) switch. - Other necessary electrical components like MCBs, Contactors, Relays, Push Buttons (On/Off), etc. - "PID" thermo controller with "SCR" output temperature systems to minimize power consumption and maintain temperature levels - High efficiency driving motor and gears. 					
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14.	Extruder of 40 kg/hr. Plasticizing capacity	<p>Extruder of 40 kg/hr. Plasticizing capacity with Die -18inch LFW & Accessories :</p> <ul style="list-style-type: none"> - Maximum output: 40Kg/Hr. - Film : Single Layer Flattened Tubular - Film Layout Width (LFW) : 300 - 650 mm for HDPE ; Thickness : 6-70 micron ; Output : 40-45Kg/Hr EXTRUDER : -Screw dia x L/D : 40 x 24mm - Control Through Variable Frequency AC Drive - Speed reducer type : Helical gear box with inbuilt thrust bearing , Lubrication : Sump type - Hopper Capacity : 35 litre; - No. of heating zones : 2 ; Barrel cooling : 1 No. cooling blower - Screen Pack : Cylindrical screen pack with strainer DIE : - Die size : 100 mm ; Design : Spiral Mandrel type; Working direction : Upwards - Material & surface Treatment : High strength steel with - Electro-less Nickel plating on full melt path. - Die gap adjustment : By moving die ring with the adjusting bolts - No of heating zones : 05 COOLING SYSTEM AIR COOLING RING : Type : Single lip COOLING BLOWER : Type : Centrifugal Drive type/load , 2.2KW , AC Induction motor TAKE OFF UNIT NIP ROLLER UNIT : Roll width : 750mm ; Roll material : One rubber roller & one steel roller; - Nip actuation : Pneumatic; 	<ul style="list-style-type: none"> - Power transmission Through pulley and V – belts - Material for screw and barrel : Nitralloy steel , gas nitrided Controls are housed in the cabinet including :- - PID temperature controllers - Ammeter for indicating heating load of any individual zones. - Screw speed indicator. - Main isolator (On/Off) switch. - Other necessary electrical components like MCBs, Contactors, Relays, Push Buttons 	-Standard	- Stand ard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	<ul style="list-style-type: none"> - Two years from Date of Installation
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		<ul style="list-style-type: none"> - Power Transmission : Through Chain & Sprocket ; Haul-off speed rang : 8-80 m/min COLLAPSING BOARD: Type :Fix type, mounted on MS frame ;Contact Material: Velvet on Wooden Slat SINGLE STATION WINDER : Type : Surface winder ; Roller width : 750mm; Roller Material : Neoprene Rubber, Application: Winding of flattened film ; No of stations :One - Winder drive : AC; Torque, Expander roller: Base Standard roller - Core Tube Details: 75 (ID) x 95 (OD) x 750 (L) ELECTRICALS :Temperature controllers : Standard make Digital PID - controllers Range 0 - 400° C (± 1° C) with necessary circuitry Drive ;Variable frequency AC Drive with necessary circuitry - Switch Gears : Reputed make and of adequate capacity; Panels : Powder coated Panels with exhaust fan CONNECTED LOAD : Drive Load : 15 KW ; Heating Load : 15KW 	(On/Off), etc. - "PID" thermo controller with "SCR" output temperature systems to minimize power consumption and maintain temperature levels - High efficiency driving motor and gears.					
15.	Automatic Thermo/Vacuum forming Machine with Mould	Thermo/Vacuum forming Machine with Mould : <ul style="list-style-type: none"> - Connecting Load :22 kw - Cycle time :4 to 5 min - Vacuum Power: 50 mm Hg - Minimum Thickness of Foil :0.35 mm - Maximum Thickness of Foil : 0.40 mm 	Standard	<ul style="list-style-type: none"> - Table with adjustable rollers width of rollers: 160 mm - one no. suitable mould - Other 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training 	<ul style="list-style-type: none"> - Two years from Date of Installation

		<ul style="list-style-type: none"> - Heat Producer System Tubes - Motor: 1440 RPM 		standard accessories			as required by staff of ITI	
16.	Automatic Rotational moulding Machine with Moulds	<p>Automatic Rotational Moulding Machine with two moulds :</p> <ul style="list-style-type: none"> - Spindles: 1 - Maximum Weight on Straight Arm: 600 Kg - Spider Diameter: 1500 mm - Major Axis R.P.M. (x-axis): 0-4 - Minor Axis R.P.M. (y-axis): 0-6 <p>Furnace / Oven :</p> <ul style="list-style-type: none"> - Maximum Kcal / Hr : 200,000 - Usage Normal (Kcal/cycle) : 50,000 - Maximum Temperature °C : 250 - Circulating Blower C.F.M : 9,000 - Oven Circulating Blower - Major Axis Drive AC Motor - Minor Axis Drive AC Motor - Burner - Operating Voltage: 415 V, 50 Hz ,3Ph 	- Standard	<ul style="list-style-type: none"> - Two suitable moulds - Other standard accessories 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	<ul style="list-style-type: none"> - Two years from Date of Installation
17.	Stretch Blow Moulding Machine of 1 Litre capacity with mould	<p>Stretch Blow Moulding Machine- 1 Litre with mould :</p> <ul style="list-style-type: none"> - Capacity - 50 ml to 1000 ml minimum - Production Capacity - 1100~1200 BPH - Max. Mould thickness - 150 MM - Min. Mould thickness - 140 MM - Clamping force - 8 Ton <p>Oven:</p> <ul style="list-style-type: none"> - Number of Preform Holders - 74 	<ul style="list-style-type: none"> - Infrared pre-heating system - Indexing conveyor - Steady perform rotating in pre-heater - Total Mercury 	<ul style="list-style-type: none"> - one no. suitable mould - Compressor: 20 HP High pressure , 2 nos. of cylinders, 3 piston, Displacement, 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of 	<ul style="list-style-type: none"> - Two years from Date of Installation

		<ul style="list-style-type: none"> - Number of Heating modules - 1 - Number of Heating zones - 6 - Lamp Power - 2000 W - Number of stretch Rods - 2 - Stretching stroke Max. - 400 MM 	pneumatic system & water cooling system (push & pull type) - Hydro-pneumatic locking systems with tools - 24 mould memory in PLC - 1 no. Neck Mandrel	CFM – 49.50, - Tank Capacity – 500 ltr. - 2 TR Chiller, Capacity : 9075 Kcal/hr., Compressor - Temperature: 16 to 18c - Air Dryer , 40 CFM / 40 BAR - Other standard accessories			ITI	
18.	Air blow gun with standard accessories	Air blow gun with standard accessories : <ul style="list-style-type: none"> - Material : Stainless Steel - Working Pressure: 4-8 Bar - Avg. Air Consumption: 10 to 15 CFM - Air Hose Size: 3/8" 	<ul style="list-style-type: none"> - Rugged Construction - Easy to Operate 	-Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	Two years from the date of Installation.

Lot 3: Refrigeration & Air- Conditioning, pneumatic & Hydraulic components

Item No.	Name of Goods or Related Services	Technical Specifications of Item and/or Bureau of Indian Standards (BIS) (if applicable) reference	Features	Accessories	Spare parts	Documents	Installation & Training	Warranty of Equipment/parts
1.	Compressor Unit of 8 Bar capacity	Compressor Unit (Horizontal): <ul style="list-style-type: none"> - Type : Reciprocating - Suitable for Pressure: Min 8 bar, - Delivery: 50 lpm (or more), - Reservoir capacity: 24 Litres (or more), - With Pressure regulator and water separator - protective enclosed belt guard - Overload motor protection - Accessible drain valve and - Automatic start/stop pressure switch control - Cast Iron Cylinder and frame - Operating Voltage: 230V, 50 Hz, 	- Heavy duty ergonomic handle and tyres for easy handling.	- Standard	-One Set of Filter Elements & V-Belts	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate - Test certificate from Competent Authority of Reservoir 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year
2.	Cut section model for pneumatic components	Cut section model for pneumatic components: <ul style="list-style-type: none"> - Compressor - Filter - Oil/Water Separator - Ball Valve - Unloader Valve, - Solenoid Valve, - Relay Valve, - Air Drier 	- Standard -	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> -To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year

		<ul style="list-style-type: none"> - Filter/Regular/Lubricator(FRL) - Other essential components of pneumatic - The sectioned parts to be complete in itself to demonstrate the internal construction details. - The Cut section model components should be mounted on a suitable frame. - The model shall have a detachable transparent fabric sheet all around for protection against dust and moisture. 						
3.	Cut-section models for hydraulic components	<p>Cut section model for Hydraulic components:</p> <ul style="list-style-type: none"> - Hydraulic pump - Accumulator - Solenoid Valve - Filter - Pressure Relief Valve - Directional Valve - Flow Control Valve - Check Valve - Hydraulic Cylinder - Other essential components of Hydraulic. - The sectioned parts to be complete in itself to demonstrate the internal construction details. - The Cut section model components should be mounted on a suitable frame. - The model shall have a detachable transparent fabric sheet all around for protection against dust and moisture. 	- Standard -	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> -To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year

4.	Trolley type portable air compressor single cylinder with 45 litres capacity Air tank, along with accessories with working pressure 6.5 kg/sq cm	Trolley type portable air compressor : <ul style="list-style-type: none"> - Cylinder : Single - Working Pressure: Min 6.5 Kg/sq cm - Reservoir capacity: Min. 45 Litres - Operating Voltage: 230V, 50 Hz, - With pressure regulator and water separator - Protective enclosed belt guard - Overload motor protection - Accessible drain valve - Automatic start/stop pressure switch control 	- Heavy duty ergonomic handle and tires for easy handling.	- Standard	- Spare One Set of Filter Elements & V-Belts	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate - Test Certificate from Competent Authority for Reservoir 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	one year
5.	Air compressor with Air treatment - capacity 5HP	Air compressor with air treatment accessories <ul style="list-style-type: none"> - Discharge: 14.8 - 46 CFM - Type: Reciprocating or Single Stage Rotary Screw - Minimum Normal Working Pressure: 7 Bar - Sound Level in dB (A) : Maximum 62dB(A) - Electrical Motor: Minimum 5 HP - Tank capacity: Vertical Air receiver, 500 Litres @ 12.5 Bar working pressure 	<ul style="list-style-type: none"> - Air & Oil separator tank consisting of Single glass for Oil level Indication and Oil Filling Arrangement. - Integrated minimum pressure valve, Safety valve and Oil draining arrangement 	<ul style="list-style-type: none"> - Moisture Separator - Other standard accessories 	Standard	<ul style="list-style-type: none"> - User/Operating Manual - List of Service Centres in India - Warranty Certificate - Test certificate from Competent Authority 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	Two years from the date of Installation.

						for the Reservoir		
6.	Solar water heater system	Solar water heater system : - Type of Collector : Evacuated Tube Collectors (ETC) - Tube Dimensions : 47 – 1800 mm or 58 – 1800 mm or suitable - Inner Tank Materials : High-grade Stainless Steel - Outer Tank Materials : Stainless Steel / Powder Coated - Working Temperature : 65 degree C to 85 degree C - Tank Insulation : High-quality PUF - Tank Volume : Min. 200 Ltr - Stand Frame : Galvanized Powder Coated - Type of Circulation : Thermo Siphon -Type of Grommets : Silicon Rubbers	- Suitable for bore well water and hard water usage. - Withstands high pressure of cold water also minimize mixing of Hot and Cold water. - High transmissivity triple layered clog and choke free collector tubes.	-Standard	- Standard	- User/ operating manual - Warranty certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
7.	Refrigerant cylinder	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	- Painted with refrigerant colour code. R-22(Light Green)	- Standard	- Cylinder valve key	- Inspection and Test Certificate by Competent Authority - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	One year
8.	Cylinder 134 a	Empty Refrigerant Gas Cylinders fitted with valve, guard : - Type: Two piece welded	- Painted with refrigerant colour code. R-134a (Light	- Standard	- Cylinder valve	- Inspection and Test Certificate	- To be supplied at designated ITI's in	One year

		<ul style="list-style-type: none"> - Capacity: Minimum 5 Kg , - Working pressure: 25-30 KG/CM2 -Minimum Pneumatic leakage test pressure: Min. 10 Kgf/cm2 - Wall Thickness : Minimum 3 MM 	Blue)		key,	by Competent Authority	Himachal Pradesh	
9.	Four way reversible valve	Four way reversible valve for 1.5 to 2.0 Ton Air Conditioner: <ul style="list-style-type: none"> - 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} 	<ul style="list-style-type: none"> - Shall be Composed of three components: a pilot valve , a valve body and a solenoid coil assembly. 	- Standard	- Standard	- User/Operating Manual	- To be supplied at designated ITI's in Himachal Pradesh	One year
10.	Gas leak detector for halogen gas	Gas leak detector for halogen gas: <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Suitable Batteries - Should be provided in Rugged blow moulded hard case with removable lid 	- Standard	- User/Operating Manual	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

			sensitivity sensor, speedy response(about 3 seconds) - Quality sensor that can detect finely-leaked halogen gases.					
11.	Electronic leak detector	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	- 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	- Suitable Batteries - Should be provided in Rugged blow moulded hard case with removable lid	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year

			can detect finely-leaked halogen gases.					
12.	Sling psychro meter mounted on aluminium back	Sling psychro meter mounted on aluminium back : <ul style="list-style-type: none"> - Response time: 2 minutes - Display: thermometers - Power: hand operated - Humidity Range :10 to 100% - Humidity Resolution: 2%, - Humidity Accuracy: $\pm 5\%$ - Temperature Range: -5°C to 50°C - Temperature Resolution: 0.1°C - Temperature Accuracy: $\pm 0.5^{\circ}\text{C}$ 	-Red spirit mercury-free thermometer	<ul style="list-style-type: none"> - Psychometric chart - Rugged blow moulded hard case with removable lid 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
13.	Micron vacuum gauge	Micron vacuum gauge <ul style="list-style-type: none"> - Type : Digital - Operating Range:(Minimum): Atmosphere to 20 Microns - Resolution(Minimum): 1 Micron - Accuracy: $\pm 10\%$ - Over pressure: Minimum 20 Bar 	-Standard	<ul style="list-style-type: none"> - Rugged blow moulded hard case with removable lid 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
14.	Fin straightened/fin comb.	Fin Comb Straightener, Cleaner, Condenser Evaporator Cleaning Tool : <ul style="list-style-type: none"> - Material: Stainless steel - Minimum Size: 14cm x 3cm 	<ul style="list-style-type: none"> - Suitable to straighten and repair damaged fins in most radiators, coolers, and air conditioning condensers 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

15.	Anemometer	Anemometer : <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Suitable to check Air Conditioning, Heating Systems, Measure air Velocity and Temperature - Shall have Metal Vane probe, Heavy Duty-Wide Range Measurement 	- All standard accessories	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
16.	Hermetic compressor Tester	Hermetic compressor Tester: <ul style="list-style-type: none"> - operation Voltage: 120/240 V AC - PWR Breaker: combination of 25A circuit breaker and a POWER ON switch. - Rugged blow moulded hard case with removable lid 	<ul style="list-style-type: none"> - 3 Ranges of 250 V AC starting capacitors between 88-301 MFD - Dual voltage operation of 120/240 V AC - Indicates continuity & ground faults in motor windings with LED lights - Free locked 	- Suitable Probe for Measurement and all standard accessories	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

			rotors by reversing motor action - Convenient breakout jacks for measuring voltage and resistance					
17.	Temperature & Humidity recorder - 24 Hr Capacity	Temperature & Humidity recorder - 24 Hr Capacity - Display: Multi-function LCD - Measurement ranges: 0 to 100% RH -40 to 158°F, -40 to 70°C - Resolution : 0.1°, 0.1RH - Humidity values Sample rate: 1s to 24h - Operating Temperature : -40 to 158°F, -40 to 70°C - Operating Humidity: 0 to 100% RH - Accuracy Humidity : ± 3% - Accuracy Temperature: ± 2 deg C - Capacity to record: 24 Hrs - Rugged blow moulded hard case with removable lid	- Standard	- standard accessories	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
18.	Portable air – LPG brazing kit - 2Kg Capacity	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	- Torch designed To use with LPG gas.	- Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year

19.	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	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	- High pressure Alarms - Acoustic and visual Automatic leak check.	- Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
20.	Evacuating and refrigerant charging station fitted with weighing	Evacuating and refrigerant charging station : - Gas tank Capacity: 12 Litres. - Charging Accuracy: +/- 1 gm - Power Supply: 220 V, 50 Hz,	- High pressure Alarms - Acoustic and visual	- Standard	- Standard	- User/Operating Manual	- To be supplied at designated ITI's in Himachal	One year

	<p>scale, consist of</p> <p>a) Rotary two stage vacuum pump and motor (with gas ballast and anti-suck back)</p> <p>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</p> <p>b) Graduated charging cylinder with provision for temperature correction and all necessary isolating valves</p>	<p>- Working Temp.: +10°C to +50°C</p> <p>- manifold with gauges and valves for pulling vacuum up to 50 microns of Hg</p> <p>- Provision of connecting to a microns level vacuum gauge</p> <p>- Graduated charging cylinder with provision for temperature correction</p> <p>- All isolating valves</p> <p>- Fitted with Weighing scale</p> <p>Rotary Two Stage Vacuum Pump:-</p> <p>- Gas Ballast and anti-suck back</p> <p>- Power Supply: 220 V / 50 Hz</p> <p>- Ultimate Vacuum / displacement : up to 50 Microns / 40 L/min</p>	Automatic leak check.			Warranty Certificate	Pradesh - Training as required by staff of ITI	
21.	Two stage rotary vacuum pump	<p>Two Stage Rotary Vacuum Pump:</p> <p>- Capacity: 60 - 10 rpm</p> <p>- Capable of evacuating to 50 microns of Hg</p> <p>- Fitted with gas ballast, anti-suck back valve</p> <p>- Single Phase Motor, 240V, 50 Hz</p>	- Standard -	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	One year

22.	Two Stage regular / Commercial Dry N2 in cylinder with drier unit	Two Stage regular / Commercial Dry N2 in cylinder with drier unit: Nitrogen:- Formula : N2 - Molecular Weight: 28.01 - Specific Volume : 0.861 m3/Kg - Purity: 99.995% Cylinder - Diameter / Capacity : 210-240 mm / 20L - 25L - Manifold: Two way with Gauges and valves Dryer:- - Process rate : Minimum 7 Kg / Hr - Capacity: Minimum 25 Kg - Power: 220 V / 50 Hz / 1 Phase - Regulator: Max. Inlet Pressure(in bar)=100, - Max. Outlet Pressure (in bar)=10, - Flow Rate(LPM)=566.67, - Inlet Connection Type=G-5/8"A-14 BSP, RH - Outlet Connection Type=G-3/8"-19 BSP, RH	- Painted by electrostatic spray painting with nitrogen colour code.	- 7 meter hose with female connectors - Power Extension of up to 5 Mtr for Dryer	- Stand ard	- User/Oper ating Manual - Warranty Certificate s	- To be supplied at designated ITI's in Himachal Pradesh	One year
23.	Duct able split A.C 1.5 ton	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	- Wide Operation Range up to 53°C - E.S.P. (External Standard Static Pressure) Control - Precise	- Remote Control - Voltage stabilizer of suitable rating - Complete Installation Material	- Stand ard	- User/Oper ating Manual - Warranty Certificate s	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	10 year warranty on the compressor & 1 year basic warranty.

		<ul style="list-style-type: none"> - Pipe Connections-Gas (Flare) - 1/2 inch - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz 	Temperature Control - Standby Mode					
24.	Recovery unit with cylinders	Recovery unit with cylinders: <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	- Refrigerant hoses, Recovery cylinders, filter, Extension cord	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	- To be supplied and installed at designated ITI's in Himachal Pradesh	One year
25.	Decibel meter	Decibel meter: <ul style="list-style-type: none"> -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	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	- To be supplied and installed at designated ITI's in Himachal Pradesh	One year
26.	Cassette Air conditioner	Cassette Air conditioner - 4500 kcal/hr: <ul style="list-style-type: none"> - Tonnage / BTU: 1.5 Ton / 18000 BTU/hr. - Power Supply (Volt/Phase/Hz.) : 230/ Single / 50 Hz 	<ul style="list-style-type: none"> - Fresh Air Intake - Self-Diagnostic - Sleep and Timer Control 	- Remote Control - Voltage Stabilizer suitable rating	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty 	- To be supplied and installed at designated ITI's in Himachal	10 year warranty on the compressor &

		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	- Flexi Air Control			Certificates	Pradesh - Training as required by staff of ITI	1 year basic warranty.
27.	De scaling pump set	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	- Arrangement for flow reversing system. - Corrosion resistance.	- Flow and Return Hoses: 2 x 3 meter - Hose and Fittings: 1/2 inch BSP	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
28.	Fan coil unit	Fan coil unit with 2 & 3 way water valves : - Air Volume m ³ /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	- Standard	- Remote Controller	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year

29.	Shell and tube, DX chillers (small), 5 Ton with Cu tubing only	Shell and tube, DX chillers with Cu tubing : <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Safety valve - Service valve 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
30.	Circulating water pump (small), 0.5 H.P with stainless steel tank capacity 20 litres with inlet/ outlet provision.	Circulating water pump 0.5 Hp with stainless steel tank : <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Corrosion resistance. - Built-in flapper/check valve permits self-priming. - Arrangement for flow reversing system. 	<ul style="list-style-type: none"> - Electrical Wires / Sockets: as required 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI - Training as required by staff of ITI 	One year
31.	Refrigerant cylinder	Empty Refrigerant Gas Cylinders fitted with valve, guard : <ul style="list-style-type: none"> - Type: Two piece welded 	<ul style="list-style-type: none"> - Painted with refrigerant colour code. R-134a (Light 	- Standard	- Cylinder valve	<ul style="list-style-type: none"> - Inspection and Test Certificate 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in 	One year

		<ul style="list-style-type: none"> - Capacity: Minimum 10 Kg - Working pressure: 25-30 KG/CM2 - Minimum Pneumatic leakage test pressure: Min. 10 Kgf/cm2 - Wall Thickness : Minimum 3 MM 	Blue)		key,	by Competent Authority	Himachal Pradesh - Training as required by staff of ITI	
32.	Gauge Manifold with Gauges with different sizes of hoses for R 134a, R22 and R410	Gauge manifold with gauges <ul style="list-style-type: none"> - 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) 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	- To be supplied at designated ITI's in Himachal Pradesh	One year
33.	Shell and tube type condenser	Shell and tube type condenser <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Special design finned type of Copper (Cu) tubes. - Should be easily opened 	<ul style="list-style-type: none"> - Safety valve, - Service valve 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh	One year

		<ul style="list-style-type: none"> - End Cover: Detachable, to allow mechanical cleaning - No. of Passes: 4 - Inlet: 1/2" - Outlet: 1/2" 	for Inspection & Maintenance.			s		
34.	Rotary hermetic compressor	Rotary hermetic compressor <ul style="list-style-type: none"> - Power supply: 220-240V/50Hz - COP : 3.10. - Capacity: Minimum 2 Ton. - Power consumption: 1645W - Refrigerant: R22 - Capacitor: 35/370µF or equivalent 	- Standard	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh	One year
35.	Bottle cooler visible, 200 L carrying with HFC-134a & reciprocating compressor	Bottle cooler visible with HFC-134a & reciprocating compressor: <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Uniform cooling by forced air circulation. - Clear visibility with dual glass - Self-closing door . - Provision for Locking - Light 	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	- To be supplied at designated ITI's in Himachal Pradesh	One year
36.	Display cabinet 2 ton capacity	Display cabinet:- Dimension (Approximate): <ul style="list-style-type: none"> - Length : 2370mm - Depth : 640mm - Height: 1240mm. - Shelf Area (m²): 3.8 - Capacity: 2 ton Construction: <ul style="list-style-type: none"> - Exterior : Stainless steel or powder coated zinc steel . - Interior : Stainless Steel 	- Low E Shelves: Adjustable height 3 shelves & base	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

		<ul style="list-style-type: none"> - Lighting: LED under-shelf lighting - Glass : Curved double glazed front - Insulation: S-grade Polyfoam - Doors: Sliding, toughened double glazed, - Refrigerant: R-134a - Volts: 230 – 240 Volts a.c. 50 Hz, single phase 						
37.	Water cooler storage type, 200 L carrying with HFC- 134a & reciprocating compressor	Water cooler storage type with HFC- 134a : <ul style="list-style-type: none"> - Storage capacity: Minimum 200 L - No. of faucet: 4 nos. - Supply Power: 240 AC/50HZ, single phase. - Compressor Type: reciprocating compressor 	<ul style="list-style-type: none"> - Faster cooling - Silent operation - PUF insulation - Stainless steel body - Stainless steel tank - Easy controls - Speedy drainage 	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
38.	Water dispenser bubble type (Hot and Cold), 2.5 to 3ltr Delivery capacity per Hours	Water dispenser bubble type : <ul style="list-style-type: none"> - Dispenser Type: Floor mounted, Hot & Cold Water . - Cooling Capacity: 2.5 litre/hr (minimum) - Storage tank: 2.5 litre minimum - Material: Stainless Steel - Heating Capacity: 5ltr/hr at (85°C) - Refrigerant: R-134a. 	<ul style="list-style-type: none"> - High-quality ABS plastic - High Capacity Puff Insulated Cooling Tank 	- Standard	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
39.	Ice candy plant 2 ton with	Ice candy plant :- <ul style="list-style-type: none"> - Capacity: 2 ton 	<ul style="list-style-type: none"> - Capacity to make 32 ice 	- S.S. Tray For Roll Cut	- Stand	<ul style="list-style-type: none"> - User/Oper 	<ul style="list-style-type: none"> - To be supplied and 	One year

	capacity to make 32 ice candy at a time with Forma tray, stainless steel tank on trolley	<ul style="list-style-type: none"> - 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 	candy at a time with Forma tray <ul style="list-style-type: none"> - Easy to clean and maintain. - Should be mounted on Trolley for shifting - Environmental friendly cooling system - Digital temperature indication with microprocessor based controller - Energy Efficient - Corrosion resistant exterior and interior 	Type Candy Mould	ard	ating Manual - Warranty Certificate s	installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	
40.	Air-conditioning, direct System Complete with all controls including humidity control capacity	Air-conditioning, direct System with all controls including humidity control <ul style="list-style-type: none"> - System capacity: 15000Kcal/hr - System type: split - Blower: 18 inch Evaporator : <ul style="list-style-type: none"> - cooling capacity: 15000Kcal/hr 	- Fresh Air Intake	<ul style="list-style-type: none"> - Suitable platform for the complete equipment - Electrical Wires / Sockets: as required 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as 	One year

	15000Kcal/hr	<ul style="list-style-type: none"> - Coil material: Cu / Al Compressor: <ul style="list-style-type: none"> - Type: reciprocating or rotary - Minimum capacity: 5 ton Condenser: <ul style="list-style-type: none"> - Type: Air cooled - Coil: Cu / Al <ul style="list-style-type: none"> - Thermostatic Expansion valve - Air filter - Thermostat - High pressure low pressure control switch 					required by staff of ITI	
41.	Air-conditioning, indirect System(water cooled)	Air-conditioning, indirect System with all controls including humidity control. System capacity: 15000Kcal/hr <ul style="list-style-type: none"> - System type: split - Blower: 18 inch approximate -Motor: 1 HP or more Chiller: <ul style="list-style-type: none"> -Type: shell and tube type -cooling capacity: 15000Kcal/hr Water circulating pump <ul style="list-style-type: none"> -Type: centrifugal -Minimum hp: 2 Compressor: <ul style="list-style-type: none"> -Type: reciprocating or rotary -Minimum capacity: 5 ton Condenser <ul style="list-style-type: none"> -Type: Air cooled -Coil: Cu / Al Thermostatic Expansion valve Air filter Thermostat High pressure low pressure control	- Fresh Air Intake	<ul style="list-style-type: none"> - Suitable platform for the complete equipment - Electrical Wires / Sockets: as required 	- Standard	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificates 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year

		switch Power Supply: 380/420V, 3 PH, 50 HZ.						
42.	Package A/C	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. - Controller: Microprocessor with LCD display. - Condenser Type: Air cooled.	- Low noise	- Electrical Wires / Sockets: as required	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
43.	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 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	- Un-used items in sealed packs	- Standard	- Standard	- User/Operating Manual - Warranty Certificates	- To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
44.	Automatic Ice cube m/c	Automatic Ice cube Machine : - Production capacity:43-50Kg/24 Hrs. - Storage capacity: 25Kg.	- Fully insulated ice bin. - Fully	- Electrical Wires / Sockets: as required	- Standard	- User/Operating Manual	- To be supplied at designated ITI's in	One year

		<ul style="list-style-type: none"> - Cooling System: Air cooled. - Usable bin: Built in. 	foamed, <ul style="list-style-type: none"> - Self standing housing. - Ideal ice and water ratio. - Low noise 			<ul style="list-style-type: none"> - Warranty Certificate s 	Himachal Pradesh <ul style="list-style-type: none"> - Training as required by staff of ITI 	
45.	Storage type water cooler(Hot and Cold), 40 Ltr	Storage type water cooler (Hot and Cold) : <ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Standard - 	<ul style="list-style-type: none"> - Electrical Wires / Sockets: as required 	<ul style="list-style-type: none"> - Stand ard 	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
46.	Visi Cooler, 185 L	Visi Cooler <ul style="list-style-type: none"> - Power Supply: 230 V / 50 Hz / 1 Phase - Type: Visible - Capacity: Minimum 185 L - Inner Temperature: 2°C to 8°C 	<ul style="list-style-type: none"> - Microprocesso r controller for precision temperature . - Rust free ABS plastic. 	<ul style="list-style-type: none"> - Standard 	<ul style="list-style-type: none"> - Stand ard 	User's guide, Warranty card. Maintenance and service manual.	<ul style="list-style-type: none"> - To be supplied at designated ITI's in Himachal Pradesh - Training as required by staff of ITI 	One year
47.	Variable Refrigerant Volume(VRV)/ Variable Refrigerant Flow(VRF)unit with two indoor unit 2.5 TR	Variable Refrigerant Volume(VRV)/ Variable Refrigerant Flow(VRF)unit Indoor Unit: <ul style="list-style-type: none"> - Type: Wall mounted. - Cooling capacity: 9.0KW min - Heating capacity: 10 Kw. min - Power Supply: 230 V / 50 Hz / 1 	<ul style="list-style-type: none"> - High efficiency full DC inverter compressor - High efficiency oil balance and oil return 	<ul style="list-style-type: none"> - Central remote controller. 	<ul style="list-style-type: none"> - Stand ard 	<ul style="list-style-type: none"> - User/Operating Manual - Warranty Certificate s 	<ul style="list-style-type: none"> - To be supplied and installed at designated ITI's in Himachal Pradesh - Training as 	One year

	each and 5TR Capacity outdoor Unit Complete with air cooled condenser. Accessories and controls	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	technology - Automatic heating and cooling. - Air cooled condenser - Two indoor unit s				required by staff of ITI	
48.	Walk in cooler PUF insulated for cold room 6x4.5x8 cft.,temperature 0 degree -5 degree c	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	- Modular construction - Digital temperature indicator - Stainless steel body.	- Electrical Wires / Sockets: as required	- Stand ard	- User/Operating Manual - Warranty Certificate s	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	One year
49.	Absorption system	Vapour Absorption System - small size.	- The System should be	- Standard	- Stand	- User/Oper	- To be supplied at	One year

		<ul style="list-style-type: none"> - 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 	mounted on iron frame painted		ard	ating Manual - Warranty Certificate s	designated ITI's in Himachal Pradesh - Training as required by staff of ITI	
50.	Workstation with 40 square mm aluminium profile legs, wooden work surface, and one pedestal drawer unit having 5 drawers, each with handles and individual locks, on metallic full panel drawer slide	Hydraulic / Pneumatic Workstation <ul style="list-style-type: none"> - Workstation with 40 square mm aluminium profile legs, wooden work surface, and one pedestal drawer unit having 5 drawers, each with handles and individual locks, on metallic full panel drawer slide: - Work Table : Size(Approx.) L1200mmXW900mmXH900mm, with four castor wheels including two lockable wheels at the front side, (2) - Drawer : Size (Approx.) – L460mmxW495mm xH158mm each, and - Overall size of Drawer unit (Approx.) - L470mmxW495mmxH825mm - Drawer slide height (Approx.) :85mm. 	- Standard	- Standard	- Standard	- Warranty Certificate	- To be supplied at designated ITI's in Himachal Pradesh	one year
51.	Hydraulic trainer kit	Hydraulic Trainer Consisting of : <ul style="list-style-type: none"> - Equipment trays : 2 Nos. - Pressure gauge: 2 Nos. - Hydraulic Motor :1 No. 	- Accessories & Components mounted on	- Standard	- Standard	- User/Operating Manual	- To be supplied and installed at designated	one year

		<ul style="list-style-type: none"> - 4/2- way hand lever valve : 3 Nos - 4/3-way hand lever valve with relieving mid-position : 3 Nos. - 4/3-way hand lever valve with closed mid-position : 3 Nos. - 4/3-way hand lever valve with recirculating mid-position:3 Nos. - Pressure sequence valve : 1 No. - Pressure relief valve : 3 Nos. - 3-way pressure reducing valve : 2 Nos. - 2-way flow control valve : 2 Nos. - One way flow control valve: 4 Nos. - Non-return valves: 4 Nos. - Shut-off valve : 4 Nos. - Diaphragm accumulator with shut-off block : 1 No. - Weight up to 10 kg :1 No. - 2/2 way Plunger / stem actuated :2 Nos. - Standard hoses with quick connectors - Flow dividing valve : 1 No. - 5-way distributor with pressure gauge : 1 No. - All other items necessary for working of the hydraulic trainer for all experiments. 	M.S. fabricated frame.			- Warranty Certificate	ITI's in Himachal Pradesh - Training as required by staff of ITI	
52.	Pneumatic trainer kit	Pneumatic trainer consists of : <ul style="list-style-type: none"> - Pressure Gauge - Pneumatic Motor - Double Acting Cylinder - Air Regulator Lubricator with Pressure Gauge - Hand Lever Operated Valves , 	- All pneumatic components mounted on a aluminium profile plate.	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh	one year

		5/2 way & 3/2-way : 2 Nos. - Solenoid Valve: 5/2 way & 3/2 way : 2 Nos. - Pilot Operated Valve: 5/3 Spring centered : 1 No. - Pilot Operated Valve: 5/2 Spring Returned : 1 No. - Pilot Operated Valve: 3/2 -way : 1 No. - Palm Operated Valve: 3/2-way Valve : 1 No. - Roller Lever Valve : 5/2 way : 1 No. - Roller Lever Valve : 3/2 way : 1 No. - Shuttle Valve: OR Valve, AND Valve: Dual Pressure Valve - Flow Control Valve : 1 No. - Non-Return Valve : 1 No. - Block Manifold: 6 ways, - Plastic Tubing as per required - Quick Push-Pull connectors - Air Compressor - All other items necessary for working of the Pneumatic trainer for all experiments.					- Training as required by staff of ITI	
53.	Hydraulic Trainer Kit with components and Accessories	Hydraulic Trainer Kit, each consisting of the following matching components and accessories: - One No. Hydraulic Power pack : with (1) external gear pump having a delivery rate of 2.5 lpm, (approx.) @ 1400 rpm operating pressure 60 bar, coupled to a single-phase AC motor (230 V AC) having start capacitor and ON/OFF switch and overload protection, (2)	- Standard	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one year

	<p>pressure relief valve adjustable from 0 – 60 bar, (3) oil reservoir, ≥5 litres capacity having sight glass, drain screw, air filter, and P and T ports.</p> <ul style="list-style-type: none"> - Pressure relief valve, pilot-operated : 1 No. - Drip tray, steel: size 1160 mm x 760 mm: 1 No. - Pressure Gauge, Glycerine-damped, Indication range of 0 – 100 bar : 1 No. - Four-Way distributor with five ports, equipped with a pressure gauge : 1 No. - Double acting hydraulic cylinder with a control cam, Piston diameter 16 mm, Piston rod diameter 10 mm, Stroke Length 200 mm : 1 No. - Suitable Weight for vertical loading of hydraulic cylinder : 1 No. - Mounting kit for weight for realizing pulling and pushing load : 1 No. - 3/2-way directional control valve with hand lever actuation : 1 No. - 4/2-way directional control valve with hand lever actuation : 1 No. - 4/3-way directional control valve closed-centre position, with hand lever actuation : 1 No. - Non-return valve : 1 No. - Pilot-operated check valve pilot to open : 1 No. - One-way flow control valve with integrated check valve : 1 No. - T-Connector with self-sealing coupling nipples (2 Nos.) and quick coupling socket (1 No.) : 2 Nos. - Quick coupling socket (1 No.) : 1 No. - One Set of Profile plate, Anodised Aluminium, 1100x700 mm, with carriers, 						
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		mounting frames and mounting accessories (To be fitted onto the Hydraulic workstation) - All other items necessary for working of the hydraulic trainer for all experiments.						
54.	Pneumatic Trainer Kit with components and accessories	Pneumatic Trainer Kit, each consisting of the following matching components and accessories:: - Single acting cylinder, Max. stroke length 50 mm, Bore dia 20 mm : 1 No. - Double acting cylinder, Max. stroke length 100 mm, Bore dia 20 mm, magnetic type : 1 No. - 3/2-way valve, manually-actuated, Normally Closed : 2 Nos. - 3/2-way valve, pneumatically-actuated, spring return : 1 No. - One-way flow control valve : 2 Nos - 5/2-way valve, with manually-operated switch : 1 No. - 5/2-way valve, pneumatically-actuated, spring return : 1 No. - 5/2-way pneumatic actuated valve, double pilot : 1 No. - 3/2-way roller lever valve, direct actuation Normally Closed : 2 Nos - Shuttle valve (OR) : 1 No. - Two-pressure valve (AND) : 1 No. - Non-return valve : 1 No.. - Pressure gauge, 0-16 bar : 1 No. - Manifold with self-closing, NRV, 6-way : 1 No. - Pushbutton station for electrical signal input with 3 illuminated momentary-contact switches (1 NO + 1 NC) and 1 illuminated maintained-contact switch (1 NO + 1 NC), Contact load 2A : 1 No. - Relay station with 3 relays each with 4	- Standard	- Standard	- Standard	- User/Operating Manual - Warranty Certificate	- To be supplied and installed at designated ITI's in Himachal Pradesh - Training as required by staff of ITI	one year

		<p>contact sets (3NO+1NC or Change-over type), 5 A : 1 No.</p> <ul style="list-style-type: none"> - 5/2-way single solenoid valve with manual override and LED : 1 No. - 5/2-way double solenoid valve with manual override and LED : 1 No. - Power supply unit, Input voltage 85 – 265 V AC, Output voltage: 24 V DC, Output current: max. 4.5 A, short-circuit-proof : 1 No. - One Set of Profile plate, Anodised Aluminium 1100x700 mm, with carriers, mounting frames and mounting accessories (To be fitted onto the pneumatic workstation) - All other items necessary for working of the Pneumatic trainer for all experiments. 						
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4. Drawings

Not Applicable