



<b>Project Name</b>	<b>Name of Package</b>	<b>Locations</b>
Project: 193198- Introduction of new Technologies in existing Technical Institutes of Tribal Districts	1. Civil Technology	1. GPI Jalaka Mela Orakzai, 2. GPI Bara Khyber and 3. GPI, Chaghmalai Sw
	2. Electrical Technology	GPI Jalaka Mela Orakzai
	3. Physics and Chemistry Labs	



**LIST OF EQUIPMENT'S FOR CIVIL TECHNOLOGY**  
**(GTI JALAKAMELA, BARA AND CHAGHMALAI SW 3 Institutes)**

**DAE CIVIL**  
**CONCRETETECHNOLOGY**

S.NO	Name of Items/Specification:	Qty.x3
1	<p><b>VICAT APPARATUS, ASTM-C187</b> (for initial and final setting time of cement ) Hand operated Vicat apparatus, formed of a metal frame. Ø 10 mm sliding plunger weighing 300 gm and a graduated scale. Complete with needle Ø 1.13 mm. for initial setting time, final setting time needle, glass plate Ø 120 mm</p> <p><b>Accessories:</b></p> <ol style="list-style-type: none"><li>1. Needle Ø 1 mm for initial setting time.</li><li>2. Needle Ø 1.13 mm for final setting time.</li><li>3. Glass plate Ø 120mm.</li><li>4. Vicat Mould ASTM.</li></ol>	01
2	<p><b>LE- CHATLIER'S APPARATUS: BS 4550</b> (For soundness of cement) <b>LE CHATELIER WATER BATH,</b> Made of stainless steel and incorporates a 1000 W heater enabling the water to reach boiling point within 25 minutes. Regulation of temperature through hydraulic thermostat from +5 to 100°C. Complete with resistance-tray, cover and thermometer. Allow to realize different tests simultaneously. Power supply: 220 V. 50 Hz. <b>LE CHATELIER MOULD, Ø 30 x 300 mm. Long.</b> <b>LE CHATELIER GLASS PLATES (2), 50 x 50 mm.</b> <b>LE CHATELIER CLIP</b> to hold the glass plates</p>	1
3	<p><b>LE CHATELIER FLASK, ASTM C188; BS 4550</b> (Relative density of hydraulic cement). Graduated from Ø to 1 ml. and from 18 to 24cm<sup>3</sup> Capacity: 250 ± 0.05 cm<sup>3</sup></p>	03
4	<p><b>FLEXURAL/COMPRESSION TESTING MACHINE,</b> <b>300 KN. Capacity, ASTM C 190</b> With motorized hydraulic power pack fitted with adjustment of the load gradient, rapid approach device and relive valve. The frame is assembled seamless, with electronic display of load. Accuracy: ± 1%. Power supply: 220-240 V. 50 Hz.</p>	01
5	<p><b>SAND EQUIVALENT APPARATUS ASTM D 2419</b> <b>Set includes :-</b></p> <ol style="list-style-type: none"><li>1. Plastic measuring cylinders. 4 nos.</li><li>2. Weighted foot assembly 1no.</li><li>3. Irrigator tube. 1 no.</li><li>4. Rubber tubing (1 m) complete with pinch clip. 1no</li><li>5. Syphon assembly, with 5 liter polythene bottle 1no.</li><li>6. Funnel 1 no.</li><li>7. Carrying case. 1 no.</li><li>8. Measuring can, 85 cm<sup>3</sup> capacity, and 1 no.</li></ol> <p><b>Accessories:</b></p> <ol style="list-style-type: none"><li>1. Calcium chloride. 2.5 kg</li><li>2. Form aldehyde. 40 % solution, 2.5 liters</li><li>3. Glycerol analar. 2.5 liter</li><li>4. Mechanical sand equivalent shaker, ASTM METHOD 220-240V AC, 50Hz, single phase</li></ol>	01



<b>6</b>	<p><b>ELECTROMAGNETIC SIEVE SHAKER, with Standard sieves set ,ASTM C 33-13</b> Activated by electromagnetic impulses. It is particularly recommended to carry out sieving test where high precision and performance are important. This electromagnetic shaker is of simple and sturdy construction, it is also suitable for wet sieving tests along electronic control panel. The vibrating intensity and the pauses between one vibration and the following one (this is especially indicated for fine material sieving). The sieve shaker can hold up to 10 sieves. <b>Standard sieves set ,ASTM C 33-13 (for fine and Coarse aggregates):</b> Of Ø 200 mm x 50 mm with hole With compatible electromagnetic sieve shaker.</p>	01
<b>7</b>	<p><b>CYLINDRICAL METAL MEASURES PROVIDED WITH HANDLES ,ASTM C29</b> ( Forbulk density of aggregate) <b>BULK DENSITY 30 dm<sup>3</sup></b>, complete with carrying handles <b>BULK DENSITY 15 dm<sup>3</sup></b>, complete with carrying handles <b>BULK DENSITY 10 dm<sup>3</sup></b>, complete with carrying handles <b>BULK DENSITY 3 dm<sup>3</sup></b>, complete with carrying handles <b>BULK DENSITY 1 dm<sup>3</sup></b>, complete with carrying handles <b>STEEL ROD</b>, Ø 16 x 600 mm.</p>	01
<b>8</b>	<p><b>FLAKINESS GAUGE, BS 812 (complete set).</b> To measure the flakiness index of aggregates. Made in galvanized sheet with Set of seven square flakiness sieves made of painted sheet.</p>	01
<b>9</b>	<p><b>LENGTH GAUGE, BS 812</b> For measuring the length index of aggregates</p>	01
<b>10</b>	<p><b>PYKNOMETER, ASTM C 128</b> (For the determination of specific gravity ofsands and fine aggregates.) <b>SET OF CONE MOULD, FUNNEL AND TAMPER, ASTM C 128</b> (To determine the absorption of fine aggregate.)</p>	03
<b>11</b>	<p><b>SLUMP CONE APPARATUS, ASTM C 143</b></p> <ol style="list-style-type: none"> <li>1. <b>SLUMP CONE</b>, made from galvanized plate, Suitable for measuring cohesive of concrete.</li> <li>2. <b>TAMPING ROD</b>, made from steel. Dimensions: Ø 16 x 600 mm.</li> <li>3. <b>HOPPER</b>, used for filling the slump cone. Made from aluminum.</li> <li>4. <b>BASE PLATE</b>, made from galvanized sheet iron with handle. Dimensions: 60 x 40 cm.</li> <li>5. <b>GRADUATED RULE</b> made from stainless steel. Length: 300 mm.</li> </ol>	03
<b>12</b>	<p><b>COMPACTING FACTOR APPARATUS. BS 1881 part 103, 5075</b> This equipment is used for the determination of the compacting factor of concretes with low, medium, and high workability. The apparatus is made from painted steel sheet, and is composed of two hoppers with trap doors, mounted vertically above a cylindrical mould. Tamping rod 16mm in dia. and 600mm length.</p>	01
<b>13</b>	<p><b>CONCRETE TEST HAMMER SCHMIDT:</b> For the measurement of compressive strength of concrete in ordinary building and bridge construction. Fitted with a built-in automatic recorder device. Impact energy: 2.207 Nm. (0.225 kg m) Compressive strength: 10 to 70 N/mm<sup>2</sup> <b>Or Equivalent</b></p>	01
<b>15</b>	<p><b>Determine clay percentage in aggregate. ASTM C 117</b></p> <ol style="list-style-type: none"> <li>1. This is a gravimetric method for determining the clay, silt, and dust content of that portion of the material finer than 75 µm. <ul style="list-style-type: none"> <li>• <b>BOTTLE ROLLER</b>, with rotation speed 80 rpm.</li> <li>• <b>BOTTLE 1 L.</b>, capacity with lid.</li> </ul> </li> </ol>	01



	<p><b>2. BLUE METHYLENE TEST</b> Set for determination of Blue Methylene composed by:</p> <ul style="list-style-type: none"> <li>• <b>ELECTRONIC STIRRER</b>, with digital display. It is supplied complete with stirring rod, support and fixing nut. Reliable speed between 400-700 rpm.</li> <li>• <b>BURETTE</b>, with glass key, 100 ml. capacity.</li> <li>• <b>FILTER PAPER</b>, Ø 125 mm.</li> <li>• <b>GLASS ROD</b>, length 300 mm.</li> <li>• <b>BEAKER</b>, capacity 600 ml.</li> <li>• <b>BLUE METHYLENE</b>, (25 gr).</li> </ul> <p><b>Or Equivalent</b></p>	
<b>16</b>	<p><b>SINGLE CUBE MOULDS</b> ASTM C 31 For preparation of concrete cube tests. Made in non-deforming steel, easily disassembled. Dimensions 10 x 10 x 10 cm. Dimensions 15 x 15 x 15 cm. Dimensions 20 x 20 x 20 cm. Dimensions 30 x 30 x 30 cm. Dimensions 6" x 6" x 6".</p>	01
<b>17</b>	<p><b>HINGED CYLINDER MOULDS, ASTM C31</b> Made of steel. Suitable for the preparation of test cylinders. Dimensions Ø 100 x 200 mm. Dimensions Ø 150 x 150 mm. Dimensions Ø 150 x 300 mm. Dimensions Ø 6" x 12".</p> <p><b>Accessories:</b> <b>HOPPER</b> for Ø 150 x 300 mm. cylindrical mould. <b>COMPACTIGN ROD</b>. Long. 50 cm.</p>	01

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**SURVEYING**

S.NO	Name of Items/Specification	Qty x 3
<b>1</b>	Ranging rods,	5
<b>2</b>	Engineer's chain	5
<b>3</b>	Gunter's chain	5
<b>4</b>	Metric chain	4
<b>5</b>	Cross staff,	5
<b>6</b>	line ranger,	5
<b>7</b>	Optical square,	5
<b>8</b>	Measuring tapes	5
<b>9</b>	Prismatic compass with stand.	5
<b>10</b>	Surveyor's compass	5
<b>11</b>	Plane table with all accessories	5
<b>12</b>	<p><b>AUTOMATIC LEVEL</b> SEPCIFICATION: I)Magnification.....32 x ii)Aperture.....45 mm iii)Compensator range.....+12' ACCESSORIES: a) Instrument b) Instructional manual c) Plumb Bob d) Lens cap e) Heavy Duty Aluminum Tripod Stand</p>	1



	f) Double sided Aluminum Staff pole.	
<b>13</b>	<b>LEVELING STAFF.</b> Aluminum folding type.	10
<b>14</b>	<b>LASER LEVEL.</b>	01
<b>15</b>	<b>ELECTRONIC THEODOLITE WITH ALL ACCESSORIES.</b> <ul style="list-style-type: none"> <li>• Accuracy 5 sec</li> <li>• Aperture 45 mm</li> <li>• Angle measuring mode Absolute encoder</li> <li>• Tilt sensor Automatic vertical compensation</li> <li>• Display 5 sec/ 2 sec</li> <li>• Magnification 30x</li> <li>• Measurements 175mmxL170xH334mm</li> </ul> <b>ACCESSORIES.</b> <ul style="list-style-type: none"> <li>• Lens cap</li> <li>• Lens brush</li> <li>• Battery case</li> <li>• Instructional Manual</li> <li>• Carrying case</li> <li>• Aluminum tripod.</li> </ul>	01
<b>16</b>	<b>TOTAL STATION WITH ALL ACCESSORIES</b> Electronic total station which combines in one compact unit a 5-second digital read out with an electronic distance meter, with the following specification:- Angle Accuracy..... 5 Seconds Plummet..... Laser Guide light..... In Built On Board software..... Power Tope light installed Distance with Single Prism. 7 KM Distance with ripple Prism. 9 KM In Built Internal Memory: 10,000 Points Auto: Atmospheric Correction: In built. Key Board ..... Alpha Numeric Reflector- less range... 500 M and above TS shield. (Telecommunicated) SD Card.....Built in USB Slot.....Built in <b>ACCESSORIES:</b> a)Battery Pack b)Battery Adopter c)Plumb Bob d)A set of Tools. e)Rain Cover f)Carrying Case g)Operational Manual h)Heavy Duty Aluminum Tripod i)Single Prism j)Prism Holder k)Coaxial Target Plate l)Prism Pole Or <b>Equivalent</b>	01
<b>17</b>	<b>GPS (Garmin).</b>	02



**(GTI JALAKAMELA, BARA AND CHAGHMALAI SW 3 Institutes)**  
**BUILDING'S CONSTRUCTION AND P.H.E**

S. No	Name of Items/Specification	Qty x 3
1	Trowel,	05
2	Spirit Level,	05
3	Plumb Bob,	05
4	Shovel	05
5	concrete mixer	05 set
6	Pipe wrench, pipe grip, pipe rammer,	05
7	pipe vice,	05
8	pipe thread set,	05
9	pipe tapes,	10
10	pipe cutter,	05
11	cutter wheel,	01
12	pliers adjustable,	5
13	Level Aluminum,	5
14	Square Steel,	10
15	Steel Drill,	02
16	Mason's Drills,	02
17	Hacksaw,	5
18	hammer Ball,	12
19	Files (flats, Round, Triangular).	10 set
20	Safety equipments(work gloves, boots, glasses, overall, dust mask/ respirator)	01 set
21	Screw driver set	05 set
22	Wheel barrow	01
23	Sealing tapes/ sealants	10

**(GTI JALAKAMELA, BARA AND CHAGHMALAI SW 3 Institutes)**  
**HYDRAULICS AND IRRIGATION**

S.no	Name of Items/Specification	Qtyx3
1	<b>HYDRAULIC BENCH</b> <ul style="list-style-type: none"> <li>✓ Mobile and floor standing service unit for fluid mechanics apparatus with a working height of 1 meter above the floor level.</li> <li>✓ Base constructed from robust, corrosion resistant plastic molding.</li> <li>✓ Top constructed from glass reinforced plastic</li> <li>✓ Volumetric flow measurement via remote sight gauge</li> <li>✓ Stepped tank for low and high flow rates</li> <li>✓ Open channel in bench top with quick release outlet fitting</li> <li>✓ Self-priming centrifugal pump with maximum head 21 m water with a maximum flow of 1.35 liter per second</li> <li>✓ Motor rating = 0.37 Kw</li> <li>✓ Sump tank capacity = 250 liters</li> </ul>	01
2	<b>(STABILITY OF A FLOATING BODY).</b> Water tank moulded plastic nominally 600x 400x 120mm total weight of floating assembly nominally (3.2kg) working height of mast nominally 240mm Floating pantoon 360x203x76mm Two magnetized trim weights= 35g.Angular tilt of pantoon 8degree each side Adjustable sail weight 525g.	02



3	<b>ORIFICES, NOTCHES (Rectangular and triangular).</b>	01
4	<b>PITOT-STATIC TUBE APPARATUS.</b>	01
5	<b>VENTURIMETER</b> Venturitube aluminum inlet inside diameter 26mm. Throat inside diameter 16mm outlet inside diameter is 26mm manometer tubes transparent plastic range: 290mm max: flow rate 26 lit nominally 27 L/min.	01
6	<b>CURRENT METER.</b> Cup type with current meter using cable with sinking weight or wading rod and measures stream flow velocities from 0.3 to 3.5 m/ s with cups. Calibration charts.	01



**EQUIPMENTS ELECTRICAL TECHNOLOGY FOR GTI JALAKA MELA ORAKZAI AGENCY**  
**Electrical Technology DAE**

S.No	Module/Trainer/Description	Qty
01	<p><b>DC Fundamental trainer along with module and base unit to perform following topics :</b></p> <ul style="list-style-type: none"> <li>• Circuit Voltage, Current, Resistance</li> <li>• DC Power Sources in Series and in Parallel Series</li> <li>• Opposing DC Sources</li> <li>• Switches Identification and Switching Concepts</li> <li>• Ohm's Law: Circuit Resistance, Current, &amp; Voltage</li> <li>• Resistance, Voltage and Current in a Series Resistive Circuit</li> <li>• Resistance, Voltage and Current in a Parallel Resistive Circuit</li> <li>• Resistance, Voltage and Current in a Series-Parallel Resistive Circuit</li> <li>• Power in a Series and/or Parallel Resistive Circuit</li> <li>• Rheostat and Potentiometer</li> <li>• Voltage and/or Current Dividers</li> <li>• Measuring: DC Ammeter, DC Ohmmeter, DC Voltmeter</li> <li>• Currents and Node Currents in a Two-Element Branch Circuit</li> <li>• Voltages in a Three-Element Series Circuit</li> <li>• Algebraic Sum of Voltages in a Series Circuit</li> <li>• Generating Loop Equations and Node Equations</li> <li>• Kirchoff's Voltage and Current Laws with a Two-Source Circuit</li> <li>• Mesh Solutions, Superposition Solution and Millman's Theorem Solution of a Two-Source Circuit</li> <li>• Thevenizing a Single-Source Network and a Dual-Source Network</li> <li>• Thevenin Resistance (RTH) and Voltage (VTH) of a Bridge Circuit</li> <li>• Thevenin-to-Norton Conversion</li> <li>• Norton-to-Thevenin Conversion</li> <li>• Tee and Wye or Pi and Delta Networks</li> <li>• Transformation of Delta and Wye Networks</li> <li>• Troubleshooting Basics and DC Networks</li> </ul> <p><b>(With complete accessories and instruction manual)</b></p>	01
02	<p><b>AC Fundamentals Trainer along with module and base unit to perform following topics :</b></p> <ul style="list-style-type: none"> <li>• Measuring AC Voltage, Current and Impedance</li> <li>• Measuring and Setting Frequency</li> <li>• Inductors, Phase Angle, Series vs Parallel, Inductive Reactance and Impedance</li> <li>• Series and Parallel RL Circuits</li> <li>• Electromagnets, Solenoid, Relay</li> <li>• Transformer Windings, Mutual Inductance, Turns and Voltage Ratios, Secondary Loading</li> <li>• Capacitors, Series vs Parallel, Capacitive Reactance</li> <li>• Series and Parallel RC Circuits</li> <li>• RC Time Constants</li> <li>• RC/RL Wave shapes</li> <li>• Series and Parallel RLC Circuits</li> <li>• Series Resonant Circuits</li> <li>• Q and Bandwidth of a Series/Parallel RLC Circuit</li> <li>• Resonant Frequency in a Parallel RLC Circuit</li> <li>• Power Division and Power Factor</li> </ul>	01





	<ul style="list-style-type: none"> <li>Filters: Low-Pass, High Pass, Band-Pass and Band-Stop</li> </ul> <p><b>With complete accessories and instruction manual)</b></p>	
03	<p><b>Solid state Semiconductor Trainer along with module and base unit to perform following topics:</b></p> <ul style="list-style-type: none"> <li>Semiconductor Component Identification and Control of a Semiconductor Switch</li> <li>Diode: DC Characteristics, Diode Waveshaping</li> <li>Rectifiers: Half-Wave, Full-Wave Diode Bridge, Power Supply Filtering, Voltage Doubler</li> <li>Zener Diode and Voltage Regulation</li> <li>Transistor: Testing the Junctions, PNP Transistor Current Control Circuit, Emitter-Base Bias Potentials, Collector Current vs Base Bias, DC Circuit Voltages, Load Lines</li> <li>Semiconductor Devices Circuit Board</li> <li>Multistage Amplifier Introduction</li> <li>Common Base, Common Elmitter and Common Collector Circuits AC/DC Operation</li> <li>Temperature Effect on Fixed Bias Circuit and Voltage Divider Bias Circuit</li> <li>Transistor Parameters Familiarization and Understanding the Specification Sheet</li> <li>RC Coupled Amplifier DC Operation, AC Voltage Gain and Phase Relationship, Frequency Response</li> <li>Transformer Coupled Amplifier AC/DC Operation, Frequency Response</li> <li>Direct Coupled Amplifier AC/DC Operation , Frequency Response</li> <li>Amplifier Circuits</li> <li>Single-Ended Power Amplifiers: Introduction, DC Operation, AC Operation, Voltage Gain, Power Gain</li> <li>Phase Splitter DC Operation</li> <li>Voltage Gain and Input/Output Signal Phase Relationship</li> <li>Push-Pull Power Amplifiers: DC Operation, AC Operation, Voltage and Power Gain</li> <li>Complementary Power Amplifiers: DC Operation, AC Operation, Voltage Gain and Power Gain</li> <li>Darlington Pair Current Gain Characteristics, Input and Output Impedance</li> <li>Oscillators Operation: Unijunction, Hartley, Colpitts</li> <li>JFET: Operating Characteristics, Effect fo Gate Bias on Pinch-Off, Dynamic Characteristics, DC Amplifier Operation, Voltage Gain, DC Current Source Operation and Power/Load Voltage Variation</li> <li>MOSFET: Zero Bias Characteristic, Modes of Operation, Voltage Amplifier, Dual Gate MOSFET Mixer</li> <li>UJT: Operating Characteristics, Waveform Generation</li> <li>Thermistor and Photoresistor Operation</li> <li>Fiber Optic Light Transfer</li> </ul> <p><b>(With complete accessories and instruction manual)</b></p>	01
04	<p><b>Thyristors And Power Control Trainer along with module and base unit to perform following topics:</b></p> <ul style="list-style-type: none"> <li>Thyristor: Component Familiarization, Circuit Fundamentals</li> <li>Silicon Controlled Rectifier (SCR): Testing, DC Operation, Gate Trigger Voltage and Holding Current</li> <li>Rectifiers: Half-Wave Rectifier, SCR Controlled Half-Wave Rectifier, Full-Wave Rectifier, Phase Control</li> <li>UJT: Characteristics, Half and Fuill-Wave Phase Control</li> <li>Bidirectional Conduction, Triggering Modes (4)</li> </ul> <p><b>With complete accessories and instruction manual)</b></p>	01



05	<p><b>Digital Logic Fundamentals Trainer along with module and base unit to perform following topics :</b></p> <ul style="list-style-type: none"> <li>• Component Location and Identification</li> <li>• Operation of General Circuits and IC Package Fundamentals</li> <li>• Logic Functions:AND, NAND, OR, NOR, Exclusive OR, NOR Gates</li> <li>• Dynamic Response of XOR/XNOR Logic Gates</li> <li>• DC Operation of a NOT and an OR-TIE</li> <li>• Transfer Characteristics of a Schmitt and a Standard LS TTL Gate</li> <li>• Flip-Flops: Set/Reset, D-Type, Statik JK, Dynamic Operation</li> <li>• Tri-State Gate: Output Enable Control, Sink and Source Control</li> <li>• TTL and CMOS: Static Trigger Levels, Dynamic Transfer Characteristics</li> <li>• Static and Dynamic Control of a Data Bus</li> <li>• Component Location and Identification</li> <li>• Operation of General Circuits and IC Package Fundamentals</li> <li>• Basic Counter Control Functions, Ripple Counter Waveforms, Synchronous Counter Circuit Waveforms and Glue Logic</li> <li>• Basic Operating Modes of the Shift Register</li> <li>• Shift Register Circuit Waveforms</li> <li>• Fundamental Binary Addition, Addition with Input and Output Carry</li> <li>• Fundamental Binary Comparisons</li> <li>• Comparators and Counter Modulus Control</li> <li>• Circuits</li> <li>• Component Location and Identification</li> <li>• Operation of General Circuits and IC Package Fundamentals</li> <li>• Fundamentals: BCD Decoder Operation, Priority Encoder Operation, ADC Operation, DAC Operation</li> <li>• Data Selector, Multiplexer, 1-Line-to-8-Line Demultiplexer</li> <li>• 1-Line-to-8-Line Demultiplexer</li> <li>• LED Decoder/Driver, 7-Segment LED Display, ODD and EVEN Parity</li> <li>• ODD and EVEN Parity</li> <li>• Parity Generator/Checker Glue Logic</li> <li>• Circuits and Digital Circuits</li> </ul> <p><b>With complete accessories and instruction manual)</b></p>	01
06	<p><b>Digital logic trainer Breadboard based</b></p> <ul style="list-style-type: none"> <li>• Input Logic switches</li> <li>• Output LED's</li> <li>• Power supplies</li> <li>• Seven segment displays</li> <li>• TTL and CMOS provision</li> <li>• Clock Signals</li> <li>• Connecting wires</li> <li>• Breadboard size: 2400 tie points or above</li> </ul> <p><b>( Along with all standard accessories mention in the brochure and instructional manual and Student manual)</b></p>	2
07	<p><b>Analog Trainer Breadboard Based</b></p> <ul style="list-style-type: none"> <li>• Breadboard size: 2400 tie points or above</li> <li>• Function generator (sine , square, Triangle, and Ramp</li> <li>• Fixed and variable power supplies <math>\pm 0\sim 25V</math>, <math>\pm 12V</math>, <math>+5V</math></li> </ul> <p><b>( Along with all standard accessories mention in the brochure and instructional manual and Student manual)</b></p>	02
8	<p><b>PLC Trainer</b>          DC output:          Voltage: 0 – 24V</p>	01



	<p>Current: 0 – 2A Ac Output: Voltage: 220V Current: 1 Amp Input/output terminals is 32 or above Memory: 32K or above Internal memory: 2K Timer/counter: 128/64 Base Module: Din Rail Power supply module: input:120/230 V (AC) Output: 24 V DC/5 A PC interface: USB or Ethernet With software supported (LAD, FBD, and STL). Accessories: Connection cords, PC cable, ac power cord, Program CD, Manual. PLC Application Modules:</p> <ul style="list-style-type: none"> <li>• Traffic Lights</li> <li>• Electro-Pneumatics</li> <li>• Electro-Mechanical – DC Motor</li> <li>• Electro-Mechanical – Stepper Motor</li> <li>• Level Process Control</li> </ul>	
9	<p><b>Analog Dual Trace Oscilloscope, 40 MHz:</b> The module should include CH 1, CH 2, CHOP, and ALT display modes, an operating instruction manual, one line cord, and two low-capacitance probes. <b>(With complete accessories and instruction manual)</b></p>	02
10	<p><b>Laboratory Instruments demonstration type:</b> The Laboratory Instruments module should consist of the following devices.</p> <ul style="list-style-type: none"> <li>• DC meter</li> <li>• Sine/square wave generator</li> <li>• Electronic volt-ohm-millimeter (VOM)</li> <li>• AC/DC power supply</li> </ul> <p><b>(With complete accessories and instruction manual)</b></p>	01
11	<p><b>Digital Function Generator</b> 20MHz, Sine, Square, Ramp, Noise waveform Amplitude, DC Offset and other key setting information shown on the 5~8 digit display <b>(With all accessories mention in the brochure and instructional manual)</b></p>	02
12	<p><b>Digital storage oscilloscope</b> 100 MHz Bandwidth with 2 Input Channels with color display. <b>(With all accessories mention in the brochure and instructional manual)</b></p>	02
13	<p><b>Digital Multimeter with dual measurement displays (Bench Type)</b> DC Voltage :100 mV ~ 1000V DC Current: 100μA ~ 10A Resistance : 100Ω ~ 100 MΩ AC Voltage: 100mV ~ 750V AC Current: 100mA ~ 10A Power Source: 230 V <b>(With all accessories mention in the brochure and instructional manual)</b></p>	03
14	<p><b>Digital Clamp on meter:</b> AC Amp: 200A AC Vtg: 600V DC Vtg: 600V Ohms: 20MΩ <b>(With complete accessories and instruction manual)</b></p>	5



15	<p><b>Digital Multimeter (Hand Held):</b> DC Voltage : 1000 V DC Current: 10A Resistance : 20 MΩ AC Voltage: 600 V AC Current: 10 A <b>(With complete accessories and instruction manual)</b></p>	5
16	<p><b>Digital LCR Meter bench type</b> Resistance : 0.00001Ω ~ 99999kΩ Capacitance: 0.00001pF ~ 99999uF Inductance : 0.00001mH ~ 99999H Quality Factor : 0.0001 ~ 9999 Impedance : 0.00001Ω ~ 99999kΩ <b>(With all accessories mention in the brochure and instructional manual)</b></p>	04
17	<p><b>Multiple output Dual range DC power supply:</b> 0 ~ 30V x 2, 0~5amp x 2  <b>(With complete accessories and instruction manual)</b></p>	01
18	<p><b>Single and 3-phase Transformer Trainer:</b></p> <ul style="list-style-type: none"> <li>➤ Input single phase: 220~260vac, 2amp</li> <li>➤ Input 3 phase: Phase ~ phase 380 ~ 440vac, 2amp (phase ~ neutral)</li> <li>➤ Output single phase: 80%, 90%, 100%, and 110%</li> <li>➤ Output 3 phase: 80%, 90%, 100%, and 110%.</li> </ul> <ul style="list-style-type: none"> <li>• Distribution Transformer</li> <li>• Single-Phase Transformers Supplying Single-Phase Loads</li> <li>• Single-Phase Paralleling</li> <li>• 3-Phase Paralleling</li> <li>• Efficiency calculation of each transformer</li> <li>• Open/no load test</li> <li>• Load/Short circuit</li> <li>• Polarity test</li> <li>• Three-Phase Banking of Single-Phase Transformers</li> </ul>	01
19	<p><b>Motor Winding Kit:</b></p> <ul style="list-style-type: none"> <li>• Equipment Familiarization</li> <li>• Split-Phase Capacitor-Start Motor</li> <li>• Three-Phase Squirrel Cage Induction Motor</li> <li>• DC compound motor</li> <li>• Motor Winding machine with counter</li> <li>• Coil winding range up-to 8 inch</li> <li>• All motors should be without winding</li> </ul> <p><b>(With complete accessories and instruction manual)</b></p>	02
20	<p><b>Electricians Tool belt Tool Kit 13Pcs:(One kit for each student)</b></p> <p>5m/16" ST tape measure, 125-250V AC mains tester, junior hacksaw, 210mm pocket level, electricians knife, 160mm combicutter, 170mm snipe nose pliers and 185mm combination pliers; 5 x screwdrivers (PZD 2 x 100mm, SLP 2.5 x 75mm, SLP 5.5 x 125mm, SLP 6.5 x 150mm).</p> <p><b>(With complete accessories and instruction manual)</b></p>	30 set



**LIST OF EQUIPMENT FOR  
PHYSICS/ APPLIED MECHANICS LABORATORY (GTI Jalaka Mela)**

S.No	Description	Qty
1	Vernier Caliper 12 cm UK, Germany, Japan or Equivalent	3 Dozen
2	Solid Cylinders different size.	3 Dozen
3	Screw Guage, 100 cm UK, Germany, Japan or Equivalent.	3 Dozen
4	Copper Wire, China, Local or Equivalent	20Meter
5	Weight Box from 1 gm to 100 gm.	1 Dozen
6	Spring balance 1 to 100 gm, 11 to 500 gm	1 Dozen
7	Meter Rod, one full meter rod and 1 ½ meter rod.	2 Dozen
8	Wooden wedge different sizes.	2 Dozen
9	Stand Metallic	1 Dozen
10	Grave sand apparatus with pully.	1 Dozen
11	Set Square,	1 Dozen
12	Drawing Board 15"x20"	1 Dozen
13	Drawing Board Pin	6Pkts.
14	Stop Watch, Swiss Made.	1 Dozen
15	Thermometer Centigrade.	1 Dozen
16	Thermometer Fahrenheit.	1 Dozen
17	Serial apparatus with slated weight.	1 Dozen
18	Fly wheel with slated weight and thin shing.	4 Nos.
19	Resonance tube apparatus length 1 meter.	2 Dozen
20	Tuning Fork, UK, Germany, Japan or Equivalent.	1 Dozen
21	Rubber Pad	2 Dozen
22	Senemeter with slated weight and two wedge.	1 Dozen
23	Lineor expansion apparatus with metal rod.	1 Dozen
24	Voltmeter 0-3 volt.	6 Nos.
25	Voltmeter 0-300 volt.	6 Nos.
26	Connecting Wire copper with insulation cotton.	50 meter
27	Magnet high power.	6 Nos.
28	Graduated Cylinder	12 Nos.
29	Wooden Block 10x12x2"	1 Dozen
30	Inclined Plan with scaller and pully.	2 Dozen
31	Scale Pan.	1 Dozen
32	Wooden Cube	1 Dozen
33	Hock law apparatus with helical sprint pointer and scale.	2 Dozen
34	Physical balance.	4 Nos.
35	Clori meter with wooden box strirrer.	1 Dozen
36	Electric Heater 1000 Watt	2 Nos.
37	Ampere meter 0-10 amp.	2 Dozen
38	Resistance box	6 Nos.
39	Convex lenses 45 cm	2 Dozen
40	Concave lenses 10 cm	2 Dozen
41	Concave mirror 10 cm	2 Dozen
42	Fletcher trolley complete.	2 Nos.
43	Acceleration apparatus completed.	4 Nos.
44	Simple screw jack complete.	2 Nos.
45	Wheel 7 Axle apparatus complete.	2 Nos.
46	Glass Slab4x8x1 cm	1 Dozen
47	Steam generator.	1 Dozen



48	Specific Gravity bottle 25 cc	1 Dozen
49	Specific Gravity bottle 50 cc	2 Dozen
50	Fly Whee	6 Nos.
51	Screw Driver, 6"	6 Nos.
52	Plier 6"	8 Nos.
53	Rubber nylon tube 6" dia	10 meter

**LIST OF EQUIPMENT FOR  
Chemistry LABORATORY (GTI Jalaka Mela)**

S.No	Description	Qty
1	Breaker 100ml. China.	3 doz
2	Breaker 250ml. China.	3 dozen
3	China Dish, Dia 8 cm China.	3 dozen
4	Electrolyzer 220V,50HS with platinum electrode and DC power suply Unit , Poland/China .	half dozen
5	File Triangular length: 15cm, Pak	12 pkts
6	Filter paper (whatman No.1)imp.	3 dozen
7	Glass funnel dia: 7.5 cm China.	3 dozen
8	Glass tube: Soda lime length: 150cm Ex-dia:3-4 mm Pak.	2 kg
9	Glass rods (Stirring) Length: 20 cm, dia: 6-7 mm Pak	1 gross
10	Pipette Graduated: 10m, China.	2 dozen.
11	Pipette 15ml, China.	2 doz.
12	Reagent bottles 250ml narrow neck, white China.	3 doz.
13	Stand Tripped ( cast iron ) Height:20cm, with circular top, Pak.	3 doz.
14	Spirit lamp. Metallic medium size.	3 doz.
15	Test Tubs: Dimension : 150x12mm,Pyroz.	2 gross.
16	Test tube stand (wooden ) Pak.	3 doz.
17	Tongs (Black ended steel ) with Bow length: 20 cms, China/ Pak.	3 doz.
18	Wash Bottle (Polytene) 0.250ml,Pak.	3 doz.
19	Wire gauge, Pak.	3 doz.
20	Volumetric flask,100ml, China.	1 doz.
21	Volumetric flask 250ml, China.	1 doz.
22	Reagent bottle shelves(wooden) specimen sketch attached, Pak. Sheesham wood: Length:70 cm, Width:23 cm,Height:44 cm.	16 Nos.
23	Distillation plant: Stainless steel, 220V,330V,capacity:1 gallon,Pak.	2 Nos.
24	Ferridic chart, Cenco:USA.	2 Nos.
25	Copper sulphate(anayirons).	1 kg.
26	Potassium Nitrate.	1 kg.
27	Ferrous sulphate.	1kg.
28	Calcium sulphate.	1kg.
29	Soda Ash.	1kg.
30	Sodium Bicarbonate.	1 kg.
31	Spirit Methylated.	12 litre.
32	Iron Stand clamp, Pak.	3 doz.
33	Wooden Stand, Pak.	3 doz.