COMPARATIVE STATEMENT FOR 1085(100336)PROVISION OF INFRASTRUCTURE FACILITIES & EQUIPMENT TO THE UPGRADED GPIS AT TIMERGARA, TAKHTBHAI, SWABI, ABBOTTABAD, KOHAT, NOWSHERA TO THE LEVEL OF COLLEGE OF TECHNOLOGY

DATE OF TENDER OPENING 09-06-2021

(Electrical Technology)

Item No.	Name of Items	Electrical Engineering Services, Lahore.								Al-Waqas Associate, Lahore								Anmol Scientific Company, Lahore								JIP Enterprises Mardan								Muslim Scientific Lahore								ESOLS Multan							
		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		25.3	27.3	29.4	31.4	33.4	35.5	37.5	
1	**ELECTRICITY TRAINER** along with base unit and modules to perform the following topics: • DC Voltage Measurement Using an Ohmmeter • Resistor Characteristics • Resistor measurement • Ohm's law • AC voltage/current measurement • Series/parallel circuit • Wheatstone bridge • Kirchoff's law • Thevenin's theorem • Norton's theorem • Maximum power transfer theorem and others • DC RC and RL transient phenomena • AC current/voltage experiment • AC RLC series/parallel circuit • Resonant circuit • Power in AC circuit • DC Current Measurement • Series-Parallel Network and Kirchoff's Law • DC RC Circuit and Transient Phenomena • AC Voltage Measurement • AC Current Measurement • AC, RC Circuit • AC, RL Circuit • AC, RLC Circuit • Power in AC Circuit • Series-Resonant Circuit • Parallel-Resonant Circuit • LC Filter • Magnetic Devices • Magnetic Field • Drawing Magnetic Curves • Magnetic Field Strength • Lenz's and Faraday's Laws • Ampere's Rule • Fleming's Rule	40	0	5	0	4	4	53	IT-1999 EES,PAK	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	4	4	43	ASC-1200 PAK	40	0	5	2	4	4	55	EFT-EL-2 LAB TECH	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	Base Unit SMT-100 Modules SMT-101 SMT-102 SMT-103 SMT-104 PAK
2	**Electronics Trainer** along with base unit and modules to perform the following topics: • Wheat stone Bridge • Dimmer Circuit • Multistage Cascading Amplifier • Relay Characteristics • Touch-Controlled Switch • Silicon Diode • Germanium Diode • Zener Diode • Light Emitting Diode • Optical Diode • Clipping and Clamping Circuits with Diodes • Clipping Circuit • Clamping Circuit • Rectifier Circuits • Half Wave Rectifier Circuit • Full Wave Rectifier Circuit • Bridge Rectifier Circuit • Filter circuits (All types) • Dual Power Supply Rectifier Circuit • Voltage Magnified Rectifier Circuit • Transistors • PNP Transistor • NPN Transistor • Transistor Amplification Circuits • Common Emitter Transistor Amplification Circuit • Common Base Transistor Amplification Circuit • Common Collector Transistor Amplification Circuit • Switching Type Transistor Circuit • Darlington's Circuit • Field Effect Transistors (FET) • Junction Type FET (JFET) • Metal-Oxide-Semiconductor FET (MOSFET) • DE & E-MOSFET • OP Amplifiers • Transistor Differential Amplification Circuit • Characteristics of OP Amplifiers • Input Impedance Measurement • Output Impedance Measurement • Bandwidth Measurement • Slew Rate Measurement • Offset Voltage Measurement • Basic Characteristics of OP Amplifier • Inverse Amplification • Non-Inverse Amplification • Voltage-Follower Circuit • Different Amplification	40	0	5	0	4	4	53	IT-2999 EES,PAK	0	0	0	0	0	0	0	NOT QUOTED	25	0	5	0	4	4	38	AN-700 PAK	40	0	5	2	4	4	55	EFT-ETX-2 LAB TECH	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	Base Unit SMT-200 Modules SMT-202 SMT-203 SMT-204 SMT-205 SMT-206 SMT-207 PAK

3	**Power electronics trainer** along with base unit and modules to perform the following topics • UJT Experiments • UJT Characteristic • UJT Equivalent Circuit • PUT Experiments • PUT Characteristic & Equivalent Circuit • PUT Characteristic • PUT Equivalent Circuit • PUT & SCR Experiments • PUT Staircase Generator & Voltage Control Ramp Circuit • PUT Staircase Generator Circuit • PUT Voltage Control Ramp Circuit SCR Characteristic & RC Shift Control Circuit SCR Characteristic Curve SCR RC Phase Control Circuit • SCS Experiment • SCS Characteristic Experiment • SCS Schmitt Circuit • SCS Simulate PUT Circuit • SCS Trigger Circuit Experiment • UJT & PUT Trigger SCR Experiments • UJT Trigger SCR Phase Control Circuit • Phase Control Basic Circuit • AC Phase Control Circuit • SCR Control DC Motor & DIAC, TRIAC • Characteristic Experiments SCR Control DC Motor Forward/Reverse Experiment • SCR Cut-Off Principal • SCR Control DC Motor Forward/Reverse Control Experiment • DIAC, TRIAC Characteristic Experiment • DIAC Characteristic • DIAC Operation Mode and Measurement • TRIAC Characteristic • TRIAC Trigger Mode • TRIAC Static Measurement • Automatic Control Lamp, TRIAC Control Speed Experiments • Automatic Control Lamp Experiment • TRIAC Shift Control • TRIAC Automatic Control Lamp Experiment • TRIAC Control Motor Speed Experiment • TRIAC Control Motor Speed • Photo-Couple & Touch Control Experiment • Photo-Couple Control Circuit • Semi and Full converters circuits • AC to AC converters as AC Motor speed controller • DC to DC converters • PWM technique of frequency control • Working as Cyclo-converter • Inverters related experiments • SCR Rectifier Circuit Experiment • Single-Phase Half-Wave Rectifier • Single-Phase Full-Wave Rectifier • Single-Phase Bridge's Rectifier • Single-Phase half-wave & Full-wave controlled rectifier with Resistive & Inductive load • Three-Phase half-wave and Full-wave controlled rectifier with Resistive and Inductive load • Three-Phase Half-Wave Rectifier	40	0	5	0	4	4	53	IT-999 EES,PAK	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	4	4	43	AN-800	40	0	5	2	4	4	55	EFT-PED-1 LABTECH	40	0	5	0	4	4	53	Yildirim Elektronik Turkey Y-0017, Y-0017M Y-0017-001, Y-0017-002, Y-0017-003,Y-0017-004,Y-0017-005,Y-0017-006,Y-0017-007,Y-0017-008	40	0	5	0	4	4	53	Base Unit SMT-500 Modules SMT-501 SMT-502 SMT-503 SMT-504 SMT-506 SMT-507 PAK
4	**Digital logic trainer** along with base unit and modules to perform the following topics • Threshold Voltage Measurement • TTL Threshold Voltage Measurement • CMOS Threshold Voltage Measurement • Voltage/Circuit Measurement • TTL/IO Voltage/Current Measurement • CMOS Voltage/Current Measurement • Measurement of Basic Logic Gates Characteristics • AND Gate Characteristics Measurement • OR Gate Characteristics Measurement • INVERTER Gate Characteristics Measurement • NAND Gate Characteristics Measurement • NOR Gate Characteristics Measurement • XOR Gate Characteristics • Measurement Interface Between Logic Gates • TTL to COMS interface • CMOS TTL interface • NOR Gate Circuit NAND Gate Circuit XOR Gate Circuit • Constructing XOR Gate with NAND Gate • Constructing XOR Gate with Basic Gate AND-OR-INVERT (AOI) Gate Circuit • Comparator Circuit • Comparator Constructed with Basic Logic Gates • Comparator Constructed with TTL IC chmitt Gate Circuit	40	0	5	0	4	4	53	IT-3999 EES,PAK	0	0	0	0	0	0	0	NOT QUOTED	25	0	5	0	4	4	38	AN-200	40	0	5	12	4	4	55	EFT-DTL,EFT-DTA,EFT-DTX LABTECH	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	Base Unit SMT-8000 Modules SMT-8001 SMT-8002 SMT-8003 SMT-8004 SMT-8005 SMT-8006 SMT-8007 SMT-8008 SMT-8009 SMT-8010 PAK

	Open-Collector Gate Circuits a. High Voltage/ CIRCUITS b. Constructing an AND Gate with Open-Collector Gate c. Bidirectional Transmission Circuit Half-Adder and Full-Adder Circuits a. Constructing HA with Basic Logic Gates b. Full Adder Circuit c. High-Speed Adder Carry Generator Circuit d. BCD Code Adder Circuit Half-Subtractor and Full-Subtractor Circuit a. Subtractor Circuit Constructed with Basic Logic Gates b. Full Adder and Inverter Circuit Arithmetic Logic Unit (ALU) Circuit Bit Parity Generator Circuit a. Bit Parity Generator Constructed with XOR Gates b. Bit Parity Generator IC Encoder Circuit a. Constructing a 4-to-2 Encoder with Basic Gates b. Constructing a 10-to-4 Encoder with TTL IC Decoder Circuit a. Constructing a 2-to-4 Decoder with Basic Gates b. Constructing a 4-to-10 Decoder with TTL IC Multiplexer Circuit a. Constructing a 2-to-1 Multiplexer b. Using Multiplexers to Create Functions c. Constructing a 8-to-1 Multiplexer with TTL IC Demultiplexer Circuit a. Constructing a 2-output Demultiplexer b. Constructing a 8-output Demultiplexer Digitally Controlled Analog Multiplexer/Demultiplexer Circuit a. analog Switch Characteristics b. Bidirectional Transmission with CMOS IC Analog Switches Constructing Oscillator Circuit with Basic Logic Gates Constructing Oscillator Circuit with Schmitt Gate Voltage Controlled Oscillator (VCO) Circuit 555 IC Oscillator Circuit a. 555 Oscillator Circuit b. VCO Circuit MonstableMultivibrator Circuits a. Low-Speed MonostableMultivibrator Circuits b. High-Speed MonostableMultivibrator Circuits c. Constructing MonostableMultivibrator Circuits d. Constructing Non-Retriggerable Circuit with TTL-IC e. Constructing Retriggerable Circuit with TTL-IC f. Variable Duty Cycle Oscillator Circuit with Sequential Logic Circuit Experiments Flip-Flop Circuits a. Constructing a R-S Flip-Flop with a Basic Logic Gates b. Constructing a D Flip-Flop with a R-S Flip-Flop c. Constructing a T Flip-Flop with a D Flip-Flop d. Constructing a J-K Flip-Flop with a R-S Flip-Flop e. Constructing a Shift Register with a d Flip-Flop f. Preset Left/Right Shift Register g. Constructing a Noise Elimination Circuit with R-S Flip-Flop J-K Flip-Flop Circuits a. Asynchronous Binary Up-Counter b. Asynchronous Decade Up-Counter c. Asynchronous divide-by-N Up-Counter d. Asynchronous Binary Down-Counter e. Synchronous Binary Up-Counter f. Synchronous Binary Up/Down Counter g. Preset-able Synchronous Decimal Up/Down Counter h. Preset-able Synchronous Decimal Up/Down Counter Memory Circuit Experiments																																																
5	**Microprocessor 8086/8088 Trainer** with computer interface along with computer • Read and Write Cycles • CPU Initialization • Memory Control Signals, Address Decoding, Data Transfers • Ports: DAC and ADC Ports, PPI and Keypad Interface, Display and Serial Ports • Non-maskable and Maskable Interrupts, Exceptions • Immediate, Register and Memory Addressing Modes • Instruction Formats and Using the 8086 CPU Instructions • Stepper Motor Control and Temperature Control application • Computer specification must be provided (Along with all standard accessories mention in the brochure and	40	0	5	0	4	4	53	IT-4680 EES,PAK	0	0	0	0	0	0	0	NOT QUOTED	29	0	5	0	4	4	42	AN-1201		0	5	2	4	4	55	CMM-8088	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	Base Unit M-530 Modules MM-531 MM-532 PAK
6	**DIGITAL IC TESTER** Features & Device Supports • Tests a wide range of Digital IC's such as 74 Series, 40/45 Series of CMOS IC's. • It has Auto search facility of IC's. • ZIF: 40 pin DIP ZIF sockets. Supply Input Voltage: 230V AC. Dual oscilloscope analog (40mhz) 40MHz Bandwidth, Dual Channel High sensitivity 1mV/div ALT Triggering Function TV synchronization Z Axis input	40	0	5	0	4	4	53	YBD-868 MCH CE CERTIFIED CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	YBD-868	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED

7	**Dual oscilloscope analog (40mhz)** 40MHz Bandwidth, Dual Channel High sensitivity 1mV/div ALT Triggering Function TV synchronization Z Axis input with all standard accessories	39	0	5	0	4	4	52	MOS-640CF CHINA	40	0	5	0	4	4	53	UTD 2052 CHINA	40	0	5	0	4	4	53	CQ5640 MCP	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
8	**Digital storage oscilloscope** 100 MHz Bandwidth with 2 Input Channels with color display. (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UTD2102EX CHINA	40	0	5	0	4	4	53	UTD2102	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCP Lab DQ6102E China	0	0	0	0	0	0	0	NOT QUOTED
9	**Digital Function Generator** 20MHz, Sine, Square, Ramp, Noise waveform Amplitude, DC Offset and other key setting information shown on the 5~8 digit display (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MFG 1020 CHINA	40	0	5	0	4	4	53	UTG-2025A	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCP lab SG325A China	0	0	0	0	0	0	0	NOT QUOTED
10	**Digital Multimeter** with dual measurement displays (Bench Type) 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 (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MT 8045 CHINA	39	0	5	0	4	4	52	UT-801 UNI-T	0	0	0	0	0	0	0	NOT QUOTED	39	0	5	0	4	4	52	MCP Lab MT3804 China	0	0	0	0	0	0	0	NOT QUOTED
11	**Digital Multimeter (Hand Held)** DC Voltage : 0~1000 V DC Current: 0~10A Resistance : 0~20 MΩ AC Voltage: 0~600 V AC Current: 0~10 A (With all accessories mention in the brochure and instructional manual)	40	0	5	0	4	4	53	UT51 UNI-T CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UT51 UNI-T CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCP Lab MU61A China	0	0	0	0	0	0	0	NOT QUOTED
12	**Intelligent / frequency counter** Frequency and Period Measurement High Resolution at Both High and Low Frequency 0.01Hz~2.7GHz Frequency Range With all standard accessories	39	0	5	0	4	4	52	SP3020B CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
13	**Techometer (optical type)** With all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	DT 2234 CHINA	35	0	5	0	4	4	48	UT-371	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCP LabDT-6236B China	0	0	0	0	0	0	0	NOT QUOTED
14	**Current transformers 10VA** Demonstration type • Input: 30amp • Out-put 5amp (MULTI-TURNS MULTI-RATIO)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	30	0	5	0	4	4	43	P2 LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
15	**Potential transformers10va** Demonstration type • Input: 500Vac • Out-put 100Vac (MULTI-TURNS MULTI-RATIO)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	35	0	5	0	4	4	48	P1	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
16	**Frequency meter** Demonstration type 0-50, 0-100, 0-200, 0-500 Hz	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	P3	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
17	**Wheat stone bridge, kelvin double bridge,** Schering bridge Can measure a lot range of Resistances from milli Ohms to Mega Ohms Capacitances from nano farad to Farads Inductances from millihenries to henries Built in power supply, mains 230V AC (that can measure Resistance, Inductance & Capacitance)	40	0	5	0	4	53		IT-789,IT-788,IT-785 EES PAK	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	AN-IM 01,02,03	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-EE-17 PAK
18	**Maximum demand indicator** Burden 5amp, 500vac. Calibrated at 50 or 60 Hz	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QOUTED	40	0	5	0	4	4	53	AN-05 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
19	**Watt meters** Demonstration type Multi range up to 3 KW or above in 3 or more equal ranges	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-07 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
20	**Volt meters** Demonstration type Multi range up to 1 KV or more in 3 or more equal range	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-08 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
21	**Ampere meter** Demonstration type Multi range up to 10amp or more in 3 or more equal range	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
22	**Power factor meter (analog)** Demonstration type Capable of measuring Power Factor of Single and Three Phase	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
23	**Power factor meter (Digital)** Capable of measuring Power Factor of Single and Three Phase	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
24	**Flux meter**	40	0	5	0	4	4	53	TM-191	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	REJECTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
25	**Lux meter** Multi range up to 20000 LUX	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	MS6610 China	40	0	5	0	4	4	53	UTR38	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	Peaktech OEM P-5165 China	0	0	0	0	0	0	0	NOT QUOTED
26	**Capacitance decade box** (1000 pF to 1000 μF and above)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	CM-5 CHINA	35	0	5	0	0	4	44	AN-978	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-EE-19 PAK
27	**INDUCTANCE decadebox** (0.01 mH to 1 H and above)	40	0	5	0	4	4	53	IM-4 MUC CHINA	40	0	5	0	4	4	53	BXL-07 CHINA	35	0	5	0	0	4	44	AN-976	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-EE-20 PAK
28	**Resistancedecadebox** (100 Ω to 100 k Ω and above)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	BXX-05 CHINA	35	0	5	0	0	4	44	AN-96	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-EE-21 PAK

29	**Switching DC power supply** Three independent, isolated output CH3 adjustable output : 5V/3A 0-30V x 2, 0-3A x 2 * 2 Independent Isolated Output * Four "3 Digits" LED Displays * 0.01% Load and Line Regulation * Low Ripple and Noise * Tracking Operation and Auto Series/Parallel Operation * Output ON/OFF Switch Over Load and Reverse Polarity Protection (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	37	0	5	0	4	4	50	MCH-303D MCH CHINA	40	0	5	0	4	4	53	UTP3305C UNI-T CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
30	**High Precision LCR Meter** 12Hz~100kHz 0.05~0.1% Measurement Accuracy R/Q,C/D, C/R,L/Q test modes for all models Z/Ø, L/R Absolute Value, Δ value, and Δ % Measurement Display LCD Display Computer Interface: with all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	AT3817A CHINA	40	0	5	0	4	4	53	UC2856 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
31	**HAND HELD LCR METER** Dual display Test Frequency: 100Hz ~ 10kHz Measurement Parameters: L,C,R,(AC/DC) D,Q,θ Data Hold and Zero Mode Supported Auto Range, Auto Backlit Low Battery Indication Auto Power off	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UC-612	40	0	5	0	4	4	53	UYIGA0 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
32	**AC milli-Volt Meter analog and digital** **(100uV~1V)** With all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
33	**DC milli-Volt Meter analog and digital** **(100uV~1V)** With all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
34	**AC milli-Amp Meter analog and digital** **(100uA~1A)** With all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
35	**DC milli-Amp Meter analog and digital** **(100uA~1A)** With all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
36	**Semiconductor curve tracer** Collector Drain Sweep Voltage • Frequency 120Hz or 100Hz • Voltage,5, 10, 20, 30, 40, 50, 60, 80, 100,150 and 200V accuracy ±10% (or continuously variable) • Sweep waveform Full wave rectified • Current 500mA maximum Step Generator • Current per step 10, 20, 50μA; 0.1, 0.2, 0.5, 1.0, 2.0 mA; accuracy ±5% • Voltage per step 0.1, 0.2, 0.5V; accuracy ±5% • External bias one curve display Polarity Switch• Three modes of operation - NPN, PNP, DIODE	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	CTW-222 PAK	30	0	5	0	0	4	39	AN-50	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
37	**Moving iron (attraction & repulsion type)** Demonstration type Volt meter	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QOUTED	40	0	5	0	4	4	53	AN-251	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
38	**Moving iron (attraction & repulsion type)** Demonstration type Ampere meter	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-256	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
39	**Permanent magnet instrument** **Demonstration type** Both, Volt-meter and Ammeter	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-099	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
40	**Megger: 1000V/1000M.ohm** Hand operated	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-230	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
41	**Analog and Digital Earth tester (complete set)**	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	40	0	5	0	4	4	53	AN-5(ANALOG), ET200 YOKOGAWA(DIGITAL)	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
42	**Clamp on meter** **600A AC /DC Clamp On Meter** Display: Function keys: Max/Min Hold Test Range: ACV, ACA, DCV, DCA, Ω, Frequency, Watt, reactive power, Power factor with all standard accessories	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UT-231 UNI-T CHINA	40	0	5	0	4	4	53	UT-231 UNI-T CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	Peaktech OEM P-1640 China	0	0	0	0	0	0	0	NOT QUOTED
43	**A.V.O/ multi meters** Analog & Digital Type (2 in 1) AC (V)= 0.005V~ 600 V, DC (V) = 0.005V~ 1000 V, R= 1 – 20 MΩ or Above AC =0.01A ~ 10A DC =0.01A ~ 10ª	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SM-7030 CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
44	**Multimedia projector** 3000 or above Lumens	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	503SP VIEW SONIC	40	0	5	0	4	4	53	PA503S VIEW SONIC	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED
45	**Digital light meter** (lux meter) •LCD Display • Low battery indication. FUNCTIONS • Testing range: 0~200, 2000, 20000 LUX. • Function Keys: Data hold. ACCESSORIES • User's manual • Carrying case	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MS-6610CHINA	40	0	5	0	4	4	53	LX1330B CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED

ENGR. FAZAL-E-ELAHI, **Assistant Professor (Electrical** **GCT, Peshawar**	**Engr. Zia-Ud-Din,** **Assistant Professor (Electrical)** **GCT, Peshawar**

COMPARATIVE STATEMENT FOR 1085(100336)PROVISION OF INFRASTRUCTURE FACILITIES & EQUIPMENT TO THE UPGRADED GPIS AT TIMERGARA, TAKHTBHAI, SWABI, ABBOTTABAD, KOHAT, NOWSHERA TO THE LEVEL OF COLLEGE OF TECHNOLOGY

DATE OF TENDER OPENING 09-06-2021

(Electrical Machine)

Item No.	Name of Items	Al-Waqas Associate, Lahore								Anmol Scientific Company, Lahore								JIP Enterprises Mardan								ESOLS Multan							
		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60	
2	**DISSECTABLE MACHINES** **TOPIC COVERAGE** Equipment Familiarization • Assembly of the following machines: » Direct Current Machine » Split-Phase Capacitor-Start Motor » Capacitor-Run Motor » Universal Motor » Three-Phase Wound-Rotor Induction Motor » Three-Phase Squirrel Cage Induction Motor » Synchronous Machine » Synchronous Reluctance Motor » Two-Speed Variable-Torque Motor » Two-Speed Constant-Torque Motor	40	0	5	0	4	4	53	DMW 666-1 ,666-2,666-4,666-5,666-6,666-7,666-8,666-9,666-12,666-13	37	0	5	0	4	4	50	IT-MWK-05	40	0	5	2	4	4	55	LEM-ADK SERIES	0	0	0	0	0	0	0	NOT QUOTED
4	**DIGITAL SERVO TRAINING SYSTEM** **PRACTICAL COVERAGE** • Digital Servo » Equipment and Software Familiarization » Open-Loop Servo Motor Static Characteristics » Open-Loop Servo Motor Transient Characteristics » Servo Motor Closed-Loop Speed Control – Steady State Characteristics » Servo Motor Closed-Loop Speed Control – Transient Characteristics and Disturbances » Linear Position Sensing » Linear Position Control » Following Error in Linear Position Contro	0	0	0	0	0	0	0	NOT QUOTED	37	0	5	0	0	4	46	IT-05 PAK	40	0	5	0	4	4	53	LDA-SRT Series	40	0	5	0	4	4	53	SMT-EM-74 PAK

ENGR. FAZAL-E-ELAHI,
Assistant Professor (Electrical
GCT, Peshawar

Engr. Zia-Ud-Din,
Assistant Professor (Electrical)
GCT, Peshawar

COMPARATIVE STATEMENT FOR 1085(100336)PROVISION OF INFRASTRUCTURE FACILITIES & EQUIPMENT TO THE UPGRADED GPIS AT TIMERGARA, TAKHTBHAI, SWABI, ABBOTTABAD, KOHAT, NOWSHERA TO THE I
COLLEGE OF TECHNOLOGY
DATE OF TENDER OPENING 09-06-202
(ELECTRICAL COMMUNICATION)

Item No.	Name of Items	Electrical Engineering Services, Lahore.								Al-Waqas Associate, Lahore								Inter Mark (Pvt) LTD, Islamabad								Anmol Scientific Company, Lahore								JIP Enterprises Mardan								ESOLS Multan								Muslim scientific Corporation, I						
		C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T	Model	C.S		P.C		P.L.P		T
		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60		40	5	5	2	4	4	60
1	**ANALOG COMMUNICATION SYSTEM TRAINER** Should perform following Experiments: (TOPIC COVERAGE • Analog Communications Concepts • Circuit Board Familiarization • Amplitude Modulation (AM) • RF Power Amplifier • Balanced Modulator • RF Stage • Mixer, IF Filter, and Envelope Detector • Balanced Modulator and LSB Filter • Mixer and RF Power Amplifier • RF Stage, Mixer, and IF Filter • Product Detector and Automatic Gain Control • Frequency Modulation (FM) and Phase Modulation (PM) • Demodulation (Quadrature Detector) • PLL (Phased-Locked Loop) Circuit and Operation	40	0	5	0	4	4	53	IT-4891,4892,4898,4899	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	0	4	39	AN-9001 AN-9002 PAK	40	0	5	2	0	4	51	LAB TECH	0	0	0	0	0	0	0	Not Quoted	0	0	0	0	0	0	0
2	**Digital Communications Trainer** • Pulse Modulation and Sampling (PAM / PWM / PPM) - Pulse Amplitude Modulation (PAM) - Pulse-Time Modulation (PWM / PPM) • Digital Modulation (PCM / DPCM / Delta) - Analog-to-Digital and Digital-to-Analog Conversion - Distortion and Quantization Noise - Pulse Code Modulation (PCM) - Differential Pulse Code Modulation (DPCM) - Delta Modulation (DM) • Basic Modems and Data Transmission (ASK / FSK / BPSK) - Base band Data Transmission - Amplitude-Shift Keying (ASK) - Frequency-Shift Keying (FSK) - Binary Phase-Shift Keying (BPSK) Quadrature Phase Shift Keying (QPSK / DQPSK) - QPSK Modulation - QPSK Demodulation - Differential QPSK (DQPSK) - Data Scrambling and Descrambling Quadrature Amplitude Modulation (QAM / DQAM) - QAM Modulation - QAM Demodulation - Encoding and Decoding - Data Scrambling and Descrambling • Concepts of Digital Communications, Circuit Board Familiarization • PAM Signal Generation, Demodulation, PAM TDM Transmission and Reception • PTM Signal Demodulation and Generation • PCM Signal Generation and Demodulation, Signal Time-Division Multiplexing	40	0	5	0	4	4	53	IT-4792,4795,4798,IT-4597,4598,4796,4797,4783,4896,4784,4785,4799,4786,2802,2808	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	0	4	39	AN-7001 PAK	40	0	5	2	0	4	51	BRUSHER NOT AVAILABLE	0	0	0	0	0	0	0	Not Quoted	0	0	0	0	0	0	0
4	**SATELLITE COMMUNICATIONS TRAINING SYSTEM** Should perform following Experiments: • Satellite Communication Fundamentals • Analog Transmission • Digital Transmission • Link Characteristics and Performance • Satellite Orbits, Coverage, and Antenna Alignment With All Standard Accessories	40	0	5	0	4	4	53	IT-793	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	0	4	39	AN-90 PAK	0	0	0	0	0	0	0	(REJECTED) NOT ACCORDING TO SPEC	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
6	**AM/FM TRANSMITTER & RECEIVER** SYSTEM TRAINER Should perform following experiments AM transmitter & Receiver related FM transmitter & Receiver related Modules have switched fault DIP switches for fault-finding experiments Should consists of following modules • AM Transmitter • AM Receiver • FM Transmitter • FM Receiver • Power Supply	40	0	5	0	4	4	53	IT-4891,4892,4898,4899	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	4	4	43	AN-901A AN-9002B PAK	40	0	5	2	4	4	55	CLP-FBC LAB TECH	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
7	**FIBER-OPTIC TRANSMISSION TRAINING SYSTEM** Should perform following Experiments • Characteristic of fiber optics experiment • Applications of fiber optics experiment • Light sources of fiber optics • Light and fiber optics interaction experiment • Fiber optic transmitters experiment • Receivers for fiber optic system experiment • Fiber optic expand and network experiment • Fiber optic connectors and lose-polishing experiment • Fiber optical data-transmission-self-transceiver experiment • Fiber optical data-transmission-double-transceiver experiment • Fiber optical data-transmission - PC to PC experiment With All Standard Accessorie	40	0	5	0	4	4	53	IT-4580 EES PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	4	4	43	AN-902 PAK	40	0	5	2	0	4	51	BRUSHER NOT AVAILABLE	40	0	5	0	4	4	53	SMT-EC-97 PAK	0	0	0	0	0	0	0

8	**MICROWAVE TRAINER** Gunn Oscillator base system Director Coupler & Horn Antenna Frequency: (X Band) Microwave output: Should perform following Experiments: The Gunn Oscillator Square law characteristics of Microwave Crystal Detector Frequency Wavelength and Phase Velocity Measurement Q and Bandwidth Measurement in Cavity Resonator Power measurement and Associated Errors Measurement of Impedance Measurement of Standing Wave Ratio (SWR) Attenuation Measurements Directional Coupler's Basic Properties Study of a waveguide Hybrid-T Should include: Power meter SWR Meter	40	0	5	0	4	4	53	IT-8994	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	30	0	5	0	4	4	43	AN-903 PAK	40	0	5	2	4	4	55	ERT-MWT-B	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
9	**COMPUTER-ASSISTED MICROWAVE** TECHNOLOGY TRAINING SYSTEM TOPIC COVERAGE • Microwave Fundamentals: principles of microwave signals and their propagation; the construction and operation of microwave components; the techniques used to measure power attenuation, SWR, and impedance. • Microwave Tees, PIN Diodes and Applications: construction and operation of PIN diodes and hybrid tees, and how they are used in microwave applications. Wireless video transmission demonstration. • Microwave Variable-Frequency Measurements and Applications. Construction and operation of variable-frequency oscillators (VCO's). Demonstration of three methods of measuring the frequency of microwave signals. Frequency modulation and demodulation of microwave signals.	40	0	5	0	4	4	53	IT-8999	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	35	0	5	0	4	4	48	AN-905 PAK	40	0	5	2	4	4	55	ERT-MWT-G	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
10	**POWER TRANSMISSION SMART GRID** TECHNOLOGIES TRAINING SYSTEM Topic Coverage for Experiments • Voltage Regulation Characteristics • Voltage Compensation • Power Transmission Capacity • Voltage Compensation in Long AC Transmission Lines • Control of Active and Reactive Power Flow • Voltage Regulation and Displacement Power Factor (DPF) in Thyristor Three-Phase Bridges • Basic Operation of HVDC Transmission Systems • DC Current Regulation and Power Flow Control in HVDC Transmission Systems • Commutation Failure at the Inverter Bridge • Harmonic Reduction using Thyristor Pulse Converters • Main Components of a Static Var Compensator (SVC) • Voltage Compensation of AC Transmission Lines using an SVC • Dynamic Power Factor Correction Using an SVC • Voltage compensation of AC transmission lines	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	25	0	5	0	4	4	38	AN-PE-5 PAK	40	0	5	2	4	4	55	LFT-PTL	40	0	5	0	4	4	53	SMT-EC-100 PAK	40	0	5	0	4	4	53
11	**UNIVERSAL IC PROGRAMMER** Can program the various IC's including latest & Micro controller etc.	40	0	5	0	4	4	53	CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	38	0	5	0	0	4	47	G540 CHINA	0	0	0	0	0	0	0	REJECTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
12	**Sensor and Transducer Trainer** Introduction to Transducers and the Circuit Board • Temperature Measurement, Control, RTD, Thermocouple • Capacitance Sensor, Touch and Position Sensing • Strain Gauge Characteristics • Bending Beam Load Cell (Strain Gauge) • Ultrasonic Principles, Distance Measurement • Infrared Transmission/Reception, IR Remote Control • Force Measurement • Computerized Temperature Control and Measurement • Control Panels • Plunger Switches • Magnetic Proximity Sensors • Shock/Vibration Sensors • Electronic Active Sensors • Electronic Passive Sensors **(Along with all standard accessories mention in the brochure and**	40	0	5	0	4	4	53	IT- 5077,5064,5077W	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	38	0	5	0	4	4	51	AN-9021 PAK	40	0	5	2	4	4	55	EFT-STJ SERIES LAB TECH								SMT-3215 PAK	0	0	0	0	0	0	0
13	**PLC Trainer** DC output: Voltage: 0 – 24V 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	40	0	5	0	4	4	53	IT- 1240S,MODULES IT-5890,91,93,95 EES PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	38	0	5	0	4	4	51	ASC-P801 PAK	40	0	5	2	4	4	55	LDA-PLC	40	0	5	0	4	4	53	SMT-1300 1301 1302 1303 1304 1305 PAK	0	0	0	0	0	0	0

	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: • Traffic Lights • Electro-Pneumatics • Electro-Mechanical – DC Motor • Electro-Mechanical – Stepper Motor																																																							
14	**Digital spectrum analyzer** Frequency Range: 9kHz ~3GHz (With all Accessories mentioned in the brochure and instructional manual)	40	0	5	0	4	4	53	XSA1032TG CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCP SA2000	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
15	**Digital RF Signal Generator** Frequency Range: 1 GHz (With all Accessories mentioned in the brochure and instructional manual)	40	0	5	0	4	4	53	AT8010D CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	38	0	5	0	4	4	51	AT 8010A	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
16	**Digital Function Generator** 20MHz, Sine, Square, Ramp, Noise waveform Amplitude, DC Offset and other key setting information shown on the 5~8 digit display (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MFG 1020	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UTG-2025A	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53
17	**FM/AM STANDARD SIGNAL GENERATOR** Frequency Range 100kHz ~ 110MHz	40	0	5	0	4	4	53	HG1503	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UTG-2122B	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
18	**Switching DC power supply** Three independent, isolated output CH3 adjustable output : 5V/3A 0-30V x 2, 0-3A x 2 * 2 Independent Isolated Output * Four "3 Digits" LED Displays * 0.01% Load and Line Regulation * Low Ripple and Noise * Tracking Operation and Auto Series/Parallel Operation * Output ON/OFF Switch Over Load and Reverse Polarity Protection (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MCH 30311	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UTP3305C	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
19	**Digital Multimeter** with dual measurement displays (Bench Type) 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 (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	MT 8045 CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UNI-T UT-801	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0		NOT QUOTED	40	0	5	0	4	4	53
20	**Digital Clamp on Meter** AC Amp: 0~200A AC Vtg: 600V DC Vtg: 600V Ohms: 20MΩ (With all accessories mention in the brochure and instructional manual)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UT-201 UNI-T CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	UT-201 UNI-T	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0		NOT QUOTED	40	0	5	0	4	4	53
21	**Single and 3-phase Transformer Trainer:** · Input single phase: 220~260vac, 2amp · Input 3 phase: Phase ~ phase 380 ~ 440vac, 2amp (phase ~ neutral) · Output single phase: 80%, 90%, 100%, and 110% · Output 3 phase: 80%, 90%, 100%, and 110%. • Distribution Transformer • Single-Phase Transformers Supplying Single-Phase Loads • Single-Phase Paralleling • 3-Phase Paralleling • Efficiency calculation of each transformer • Open/no load test • Load/Short circuit • Polarity test Three-Phase Banking of Single-Phase Transformers	40	0	5	0	4	4	53	IT-4002	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	39	0	5	0	4	4	52	ASC-EM-1201	40	0	5	2	4	4	55	LFT-TET-P, LFT-TET-P3	40	0	5	0	4	4	53	SMT-EE-39 PAK	0	0	0	0	0	0	0
22	**Motor and Transformer Winding Trainer:** • Equipment Familiarization • Split-Phase Capacitor-Start Motor • Three-Phase Squirrel Cage Induction Motor • DC compound motor • Motor Winding machine with counter • Coil winding range up-to 8 inch • All motors should be without winding (With complete accessories and instruction manual)	40	0	5	0	4	4	53	IT-MWK 05	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	IT-EM-05	40	0	5	2	4	4	55	LEM-MTK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
23	**DES TESTER OR TRANSFORMER OIL TESTER** Up to 40 KV or more with its operating manual & should be of digital type.	40	0	5	0	4	4	53	GDYJ 501	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	ZC-210B CHINA	38	0	5	0	4	4	51	ASC-987	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-DT-40 PAK	0	0	0	0	0	0	0
24	**D.C. & A.C.** HI-POT FOR INSULATOR & TRANSFORMER OIL TESTING 80 KV (AC & DC) with its operating manual & should be of digital type.	40	0	5	0	4	4	53	GDJ 5/100	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	ASC-97	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-HP-200 PAK	0	0	0	0	0	0	0
25	**CAPACITANCE & DISSIPATION FACTOR TESTER** For checking Transformer oil Purity & for Insulation Power Factor.	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	2	51	2C-800A CHINA	39	0	5	0	4	4	52	ASC-RLS-H CHINA	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
26	**INSULATION TESTER (MEGGER)** Up to 10 KV (Digital Type)	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	2804 CHINA	0	0	0	0	0	0	0	NOT QUOTED	25	0	5	0	0	4	34	AN-231 PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
27	**RELAY TESTING SET** For all type of latest relay testing along With laptop	40	0	5	0	4	4	53	ZCAR-702 CHINA		0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	2	51	ZCAR-702	30	0	5	0	4	4	43	HT-802 CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-RT-100 PAK	0	0	0	0	0	0	0
28	**WATT OUR METER** Single & Three Phase, also Analog & Digital	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	AN-P-1 ,AN-P-2 PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
29	**KVAR METER** Single & Three Phase, also Analog and Digital	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	0	4	49	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	35	0	5	0	4	4	48	AN-P-3 ,AN-P-4 PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0

30	**SCHERING BRIDGES** Capable of measuring wide range of Capacitance & Inductance use in Daily as well as Small Industry.	40	0	5	0	4	4	53	LOCAL	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	AN-401 PAK	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-2905 PAK	0	0	0	0	0	0	0
31	**PROFESSIONAL ELECTRICAL / ELECTRONIC TOOLKIT FOR ENGINEERS** Consist of all types of necessary tools for Trouble shooting etc, such as; Pliers, Soldering gun, Screwdriver set, Multimeter, wire stripper, de-soldering pump, twizersetc	40	0	5	0	4	4	53	IPK616B PROSKITTAIWAN	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	AN-40 PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
32	**11.5 KV TROLLY WITH V.C.B.** For controlling 11.5 KV (use to control whole feeder at Primary Distribution side)	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	1	50	ZC-630A-TRH	35	0	5	0	4	4	48	AN-409 PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
33	**EHV CIRCUIT BREAKER MODEL (HYDRAULIC TYPE)** This model should shows each and every part of EHV C.B.	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	1	50	ZC630A	30	0	5	0	4	4	48	CB-AN PAK	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0	NOT QUOTED	0	0	0	0	0	0	0
34	**CIRCUIT BREAKER RESISTANCE TESTER** For checking contact resistance of Circuit Breaker	40	0	5	0	4	4	53	ZC 302A CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	1	50	ZC 302A	38	0	5	0	4	4	51	CB-R-AN PAK	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-RT-10 PAK	0	0	0	0	0	0	0
35	**CIRCUIT BREAKER (OPEN & CLOSED) TIMING TESTING SET** For measuring Opening & Closing time of Circuit breaker contacts	40	0	5	0	4	4	53	ZC-300A CHINA	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	1	50	ZC300A CHINA	39	0	5	0	4	4	52	CBS-AN PAK	0	0	0	0	0	0	0	NOT QUOTED	40	0	5	0	4	4	53	SMT-TT-11 PAK	0	0	0	0	0	0	0

ENGR. FAZAL-E-ELAHI,
Assistant Professor (Electrical
GCT, Peshawar

Engr. Zia-Ud-Din,
Assistant Professor (Electrical)
GCT, Peshawar

LEVEL OF

Lahore
Model
NOT QUOTED
NOT QUOTED
NOT QUOTED
NOT QUOTED
NOT QUOTED

NOT QUOTED
NOT QUOTED
Yildirim Elektronik Y-0059 Turkey
NOT QUOTED
NOT QUOTED
NOT QUOTED

NOT QUOTED
NOT QUOTED
MCP lab SG-325A China
NOT QUOTED
NOT QUOTED
MCP lab MT-3804 China
MCP lab MC-200 China
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