

**193196-INTRODUCTION OF 02 TECHNOLOGIES (CIVIL & ELECTRICAL) AT GOVT.  
TECHNICAL INSTITUTE SADDA KURRAM AGENCY**

**SOR FOR (ELECTRICAL TECHNOLOGY)**

**Location: Sadda Kurram**

**\*PLEASE ORGANIZE YOUR BID AS FOLLOWS;**

- 1) Bidder can bid for items as per Schedule of requirement published on KPTEVTA Website and having specialty /experience as described in BSD.
- 2) The Items/Equipment must have Minimum Specification acceptable to the Technical Committee of KP-TEVTA; however the higher specification may be accepted if within the financial limit.
- 3) All bidders must submit the relevant details of bid/proposals duly labelled by a permanent marker with the name of bidder and also to provide documents in soft copies (MS WORD format) on USB drive
- 4) The Supplier shall write in bold & legible letters "Name of the Project" on the envelope.
- 5) The supplier will submit the tender documents properly Computer Typed and each page shall be endorsed and numbered along with terms and condition issued by the KP-TEVTA dully signed by the authorized personnel with company seal; otherwise the bid will not be accepted.
- 6) The bidder will be responsible for standard local warranty given by the manufacturer where applicable.

Sr. No.	Name of Items	QTY
1	SQUIRREL CAGE MOTOR. Three phase synchronous motor with squirrel cage motor, Dalhandar circuit, pole changeable Ratings: Power 0.7/0.95 KW, Voltage:380 VA Y-Y, current 2.0/2.75 A, Frequency:50Hz Power Factor:0.74/0.77 Design:4/2 pole, speed 1405/2826 min-1	1
2	UNIVERSAL MOTOR. Operation with 220 V AC or DC Rating for connection to AC: Power 0.9W, Voltage 220V, current 8.3A, frequency 50 Hz, power factor:0.78, speed 300 min.1, rating for connection to DC: Power:1.0KW, Voltage 220V, current 6.5A, speed 3100 min-1.	1
3	Induction motor split phase. BIFILAR WOUND MOTOR. Single phase AC motor with starting relay and bifilar starter winding, Ratings: Power 0.75 KW, voltage: 220V, current:5.8 A, frequency:50Hz, Power factor, 0.81, Design"2 pole, sped:2870 min:	1
4	REPULSION MOTOR, with adjustable brushes for change of speed and direction. Setting range:2800.....0.....2800x min-1, Ratings:Power 1.0KW, Voltage:220 V, Current 8.8.A, Frequency:50Hz, Power factor:0.84, sped 2800 min-1,	1

5	MULTI-FUNCTION MACHINE. Three phase multifunction machine, can be used as slip ring motor or as synchronous machine for motor and generator operation. Ratings for operation as slip ring motor: Power:1.0KW, Voltage 220/380V, A/Y, Current:4.32/2.5A, Frequency 50Hz, Power factor:0.82, Design: 4 pole, speed 1385 min <sup>-1</sup> , Rating for operation as synchronous motor: Power 0.8 KW, Voltage:220/380V, A/Y, Current 2./42/1.4 A, Excitation voltage:7.8V, Excitation current:8.8A, Frequency:50Hz, Power factor:1, Design 4 pole, speed 1500 min <sup>-1</sup>	1
6	Sectioned synchronous motor CUT AWAY MODEL SYNCHRONOUS MACHINE, 1.0 standard commercial three phase synchronous machine with salient pole rotor. The starter is cut away by ¼ over the entire lengthly to enable an optimum view of the internal construction of the machine. The cutaway surfaces are protected against corrosion.	1
7	MAGNETIC POWER BRAKE 1.0 Basic Set, Consisting of: Serves in connection with the control unit to record the torque in 1.0 K.W electrical machines. The current supply is provided the control unit via a connecting cable with a multi pin plug. The brake is protected from over loading bny separate vent6ilation and a thermoswit5.ch. Braking torque max.20 Nm, speed max. 6000 min <sup>-1</sup> , mains connection for ventilator: 220V, 50Hz.	1
8	Sectioned slipring induction motor, CUTAWAY MODEL SLIP RING MOTOR, Standard commercial three phase synchronous motor with slipring rotor. The starter is cut away by ¼ over the entire lengthly to enable an optimum view of the internal construction of the machine. The cutaway surfaces are protected against corrosion.	1
9	DYNAMOMETER 100 N. Scale divisions: 1 N without zero adjuster; measurement inaccuracy:=/- 0.5 of fsd.	1
10	CONTROL UNIT 1.0, For supply, control and regulation of the magnetic power brake. The recording of characteristics (speed/torque) is possible in automatic or manual operation. Equipped with; III uminated mains switch, operating mode switch, start and reset push button, 10 turn potentiometer for brake control, 2 potention meters to set M and N in automatic mode, overamperature indicator of the brake, mains cable, Indicators: 2 moving coil circular scale instruments with measurement range switch for:- speed: 1500/3000/6000 min <sup>-1</sup> , Torque: 10/30 Nm, connections via 4mm safety sockets for tacho generator, pen lift for XY-recorder External control; 0.....10 V DC, output (or mains voltage: 200V/50Hz.	1
11	COUPLING 1.0 Rubber coupling sleeve for mechanical connection of two electrical machine of the 1.0 KW series.	1
12	COUPLING GUARD 1.0, Attachable guard for protection against contact with electrical machine rotating parts of the 1.0 KW series.	1
13	SHAFT EXD GUARD 1.0,Attachable guard for protection against contact with electrical machine rotating parts of the 1.0 KW series	1

14	TACHO GENERATOR 1.0, For registering the speed of electrical machine of the 1.0 kw series, out put voltage +/- V/100 min-l	1
15	PANEL FRAME-T 150, TWO LEVEL. 2 level frame for training panels in DIN A4 equivalent height, free standing design:3 aluminum profile rails with 2 brush strip, 2-T-base of rectangular steel buging, width 1450 mm, Height: 730mm, depth:300mm.	1
16	THREE PHASE SUPPLY UNIT WITH FCCB. Cam switch 4 pole, Fault current circuit breaker 30 mA motor protection switch 6-10A phase control maps L1, L2, L3 mains cable with Cekon plug.	1
17	RMS METER, Demonstration meter for measuring the true RMS voltage and current types of measurement:RMS-AC+DC total true RMS, RMS-AC Alternating true RMS, AV-AC+DC arithmetic average value switchover is possible for all ranges and types of measurement at any time measurement ranges for all types of measurements: Voltage:3/10/.30/100/300/1000 V, R=10 mohm, Current:0.1/0.3/1/3/10/30A, AV-Polarity indicators:2 LEDS, instrument: moving coil, class 1.5, 192x96mm(WxH), Scale division;0.....10 A and 0.....3, scale length" 119mm, continuous overload protection in all measurement ranges up to 1000 V and 30 A, mains supply:110/130/220/.210V, 50Hz.	1
18	ZERO VOLTMETER, for measurement differences of mains and generator voltage in a synchronizing circuit full scale deflection at double operating voltage. The initial range of the scale is largely expanded. Measurement range:0.....400/800 V, Instrument: Moving iron meter class: 1.5 front frame 144xz 144mm	1
19	ON/OFF SWITCH THREE POLE, Switch load 20 A/500V AC, switch position:0-1	1
20	10 SAFETY BRIDGING PLUGS BLK., Tan4, mm safety ,bridging plugs with 119 mm spacing colour black, max. Current rating 32A.	1
21	SET 32 SAFETY CONN. LEADS. 4mm safety connecting leads with 2.5 mm cable, current rating 32A.m consisting of: 2 each safety connecting lead red 100cm, 2 each safety connecting lead, Blue 100 cm, 2each safety connecting lead red 50 cm,2each safety connecting lead blue 50 cm, 2each safety connecting lead red 25 cm,2each safety connecting lead blue 25 cm,4each safety connecting lead black 100 cm, 6each safety connecting lead black 50cm, 6each safety connecting lead black 25 cm,6each safety connecting lead black 15cm.	1
22	MOTOR STARTER. Three resistors, synchronously adjustable in 65 steps, for slip ring motor and multifunction machine 1.0 KW, Resistance values of switch steps; 10/.5/2.75/1.25/0.5/9 ohm, Additional fixed taps at: 5/1.25 ohm.	1

23	DOUBLE FREQUENCY METER,"Two independent meter movements for frequency comparison of two voltages measurement rang: 2x47...50.....53 Hz, Rated voltage: 380V, Instruments: vibration meter with tuned steel rod class 1.5 front frame 1'44x 144mm.	1
24	SYNCHRONOSCOPE,With rotational indicator for phase comparison in synchronizing circuits with three phase of single phase AC Rated voltage: 380V, Instruments: air zero, electro dynamic quotient movement from frame: 144x144mm.	1
25	SHUNT 0.1 OHM,Plug-in element for current measurement in conjunction with the isolation amplifier and no 735 26. Resister:0.1 ohm, 8A, 1%	1
26	PAIR CABLES 50 CM, RED/BLUE,Plug: 2= 4mm, with axial sockets: continuous current:10 A max; conductor cross section: 1.0 max.	1
27	POWER FACTOR METER.Demonstration meter for power factor (cos phi) and phase- angle measurement rang: Power factor:0....1....0, phase angle: -90° (cap.) –0- +90°(ind), Voltage range:3.....1000 V , Ri=1mohm,Frequency ranges: 20 Hz....2KHz, No voltage ranges/current range switching instrument: moving coil, class 1.5 192x96 mm (WxH), Scale length :119 MM, continuous overload protection in all measurement ranges up to 1000 V and 50 A mains supply 110/130/220/240 V, 80 Hz.	1
28	3-PHASE IOSOLATING TRANSFORMER, suitable for all circuit configurations. Al connections via 4mm safety sockets Power:300VA, Primary: 3x280/220V, 80Hz, Secondary 3x2x100 V.	1
29	1-PHASE ISOLATING TRANSFORMER, All connections via 4mm safety sockets Power: 300 VA, Primary 220V, 80Hz, Secondary: 2 x 110V.	1
30	1-PHASE AUTO TRANSFORMER 0.3,All connections via 4mm safety sockets. Power 300 VA, Primary 220 V, 50 Hz, Secondary: 110/220/244 V.	1
31	SCOT TRANSFORMER,For transforming from a 2 phase to a three phase mains and vice versa using a Scot circuit. It can also be used a three phase isolating transformer for transformation of 3x 110/220/380 V into 3x110/220 V and vice oversea. All connections via 4mm safety sockets. Power:2x150 VA Primary:2x110/190-/230/380V,50hz, Secondary:2x110/220V.	1
32	RESISTIVE LOADS, Three synchronously adjustable circular rheostats (step winding) with scale 100-0% each with a series resister and fuse in the sliding contact connection, suitable for parallel, series, star and delta circuits, Resistance:3x47—ohm, Series Resistance: 3x220 ohm, 3x 0.6 A.	1
33	CAPACITIVE LOAD, Three groups of MP capacitors each consisting of three capacitors, suitable for parallel series, star and delta circuits" capacitance:3x1/2/4pF, 450V.	1

34	INDUCTIVE LOEAD, Three inductances with taps at 0.2/0.4/0.6 H(0.65A), 0.3/1.0/1.2 H (0.5 A) and 2.4/4.8/6.0H(0.25A) suitable for parallel, series, star and delta circuits.	1
35	6 HU 3 PHASE VOLTAGE 380, 3N, Power supply unit for variable 3 phase voltage: 19" plug-in unit, equipped with: Mains switch: 4-pole cam switch - Mains voltage: 3x380 V +/- 10%, 50-60 Hz, - Outputs: 3x0-380 V/7A, Short-term 10A. - Output protection: 3 thermal circuit breakers, 6.5A. - Output through five 4mm safety sockets, one CEE socket 16 A. - Display: 3 flush-fitted moving coil meters for current indication. 1 flush-fitted moving coil meter for voltage indication, switchable outer conductor/neutral conductor, outer conductor/outer conductor. - Phase control lamps. 6 pin mains supply connector system with pre-mating ground contact pre-wired and ready for connection.	1
36	CASSYPACK Extremely versatile measurements system for computer based experimenting in natural sciences and technical instructions consisting of Cassy-P. Interface for use in measurement and process control technology as well as in applied information science for recording physical and technical measured values. MSDOS connector, half length plugged in card for MSDOS computer quick base component for the Cassy interface family for connecting Cassy-E or Cassy-P to Computer. Along with 4-analogue input with 12 bit voltage resolution. 2-analogue output +/- 10V, 3mA, short circuit proof 12 bit. 2-center box connector 2-Timer input 1-digital TTL hand shake input TTL input over voltage proof 42V. 8-TTL output with power transistor 1-protective voltage input 2-pin connectors. Including test Programme on 3.5 "and 5.25" disk and manual.	1
37	AUTOMATIC COIL WINDING MACHINE. Equipped with Electric Motor For winding electric starter coils. Equipped with 11 pairs of type H arbors for both concentric and lap windings. For motors of up to about 50 KW (Imported)	1
38	HAND OPERATED COIL WINDING MACHINE, For coils up to about 30 cm dia. Electric motor coil winding fixtures and other accessories available. Suitable for training purpose (Imported).	1
39	BEARING PULLER 3,4,6" CAPACITY three jaws	6
40	OIL CIRCUIT BREAKER for demonstration purpose, 220/240 (volt, 10-15 amp. 50 hz).	2

41	AIR CIRCUIT BREAKER: FOR DEMONSTRATION PURPOSE, 220/240 VOLT, 10-15 AMP 50HZ.	2
42	ARMATURE TEST GROWLER.	2
43	INDUCTION RELAY, demonstration type.	1
44	OVER CURRENT/OVER VOLTAGE RELAY.	1
45	CELL TESTER 1.5V	5
46	BEARING PULLER, 4,8,12"	2 Set
47	STAR DELTA STARTER, 30A, 400V	2
48	DIRECT ON LINE STARTER, 220V, 50A, 50 CYCLE	2
49	BATTERY CHARGER, input 230 V, 50 cycle, AC output 3,6,12,V DC	2
50	TELEPHONE EXCHANGE, Telephone exchange incoming lines 2 Nos., outgoing lines, 10Nos. along with telephone sets 10 Nos.	1
51	AUTO TRANSFORMER STARTER , power 2HP, voltage 220 single phase.	1
52	CURRENT TRANSFORMER, Primary 100 amp. Secondary 5 amp, maximum 600 volt.	2
53	POTENTIAL TRANSFORMER, Primary 110 volt, secondary 11 KV	2
54	AMPERE METER WITH MOVING COIL, range 15 • to 6A, 3 version, Demonstration type.	2
55	VOLTMETER(AC)BENCH TYPE FOR DEMONSTRATION, range 0 to 300 V, 0 to 500V,	2
56	INSULATOR, Disc type 15 KV, Pin type: 15 KV, Post type 15 KV, Low voltage capacitance 750 V	2 Each
57	12 LINE INTERCOM: With Digital Dialing and Provision for Secrecy Analog-with Connecting Accessories.	1 Set
58	INDUCTION MOTOR. Capacitor type 5HP AC 3 phase	1
59	INDUCTION MOTOR, Capacitor 2 HP, AC Single phase.	2
60	COIL WINDING MACHINE: Hand operated, with counter, small size, mounted type. (PAK).	5
61	DEMONSTRATION BOARD SERVO CONTROL MOTOR: training system SERVO TECHNOLOGY Demonstration Board Servo Control Motor • 5262, servo control unit, INCL. Software & description with experiment example, one motor connecting cable 1 null modem line and 1 RS-232 connecting Cable • 5263, AC servo motor	1 Pc Each

62	<p>TRAINER MODULATION TECHNIQUE  Training Modulation and demodulation Technology  4280, Modulation Baord.  •4281, Demodulation Board  •4280.1, Set of connections for modulation and demodulation boards, 2 connecting leads, 2mm 7.5 cm, 4 connecting leads, 2mm,20cm, 2 connecting leads 2mm, 30cm, 2 connecting leads, 2mm, 50cm, 5 connecting plugs, 2mm  •VO130-GB, Experiment manual "Modulation Techniques – Modulators" English 1st Edition.  • VO131-GB, Experiment manual "Modulation Techniques – Modulators" English 1st Edition  For connecting the experiments described in manuals VO130 and V)131 we recommend the following measuring instruments.</p>	1
63	<p>ANTENNA AND TRANSMISSION LINES, TRAINER: EXPERIMENTAL TOPICS  1. The Basic Dipole Antenna.  2. Vertical and Folded Dipoles  3. Driven (Yagi) Antennas  4. Directional Lines  5. Transmission Lines  6. Propagation of RF Energy in the Atmosphere  EQUIPMENT (included)  SIP360A-IP Antennas and Transmission Lines Panel:SIP 360AM  Laboratory Manual S360-2 :Transmitting Dipole Antenna. S360-3 Ground plan and Reflector. S360-4:Yagi Antenna S360-5 :Reflector Rod. S360-6 :Field-Strength Meter.  S360-8: Components Kit (Resistors)  S360-10: Cloth Tape, Complete with Master builder for operation 220V, 50Hz AC.</p>	1
72	<p>PROGRAMMABLE LOGIC CONTROLLER  This should cover the following topics:  - Relay vs. programmable logic monitor.  - How a PLC functions.  - Ladder diagrams.  - Ladder logic applications  - Program basics.  - Programming the PLC  - Editing program mistakes.  - Series and parallel logic.  - Timer Circuits  - Counters.  - Sequencer Circuits.  - Master control start/reset.  - Shift registers.  - Special Scan timer logic circuits.  - High-speed counters.</p>	1

	<p>- Audio Cassette program 0loading &amp; down loading</p> <p>TECHNICAL SPECIFICATIONS:  POWER:115 V/60 HZ &amp; 230 V /50 HZ, Approx. 35W, DC supplies :+5V, 0.8A, 10mV ripple, 03.5% regulation, with no loan on +/- 15V supply +/- 15V, 0.8A each, 10mV ripple, 20% regulation, with 0.8A load on +5 supply(1A each at +/-10V), LED power supply indicators(3), 5 V AC, 0.1A(2), Primary, 115/220 V AC, 50/60 HZ, power supplies or short circuits protected power supply terminals doe measuring voltages 15-pin Winchester socket provided for connection to, accessory panel base, Speaker 8 Ω 0.2W.</p> <p>Circuit board sockets: 36 pin audio power implifier:16HZ to 100 K HZ, 0.125w, PLC SPECIFICATIONS: Operating temperature:0--60°C (32° -- 140°F) Available user power(DC):24DC @0.1 A max. Battery life:2 ---5 years, MEMORY SIZE: 16-BIT WORDS. 700 WORDS CMOS EPROM. Scan rate:12 ms. For 250 words. 40ms. For 700 words.</p> <p>I/O points: 24  Internal coils: 160  Retentive latches. 59  Non-Retentive latches. 96  Special Coils. 5  Timers/counters. 20  Shift registers. 155 steps.  Sequencers. (1,000 steps)20  Counter speed 2 KHz  Range: 0—9999</p>	
74	RHEOSTAT different ohms.	4 Each
75	<p>TRAINER FIBER OPTICS SYSTEM.</p> <p>This system should accompany the following Fiber optic transmitter and receiver, Glass fiber or wave guide (differing in length and material) to set up the transmission path, transmit and receive modules, Storage board, Optical bench (for extending experiments), Optical couplings for connecting optic fibers and additional accessories with Manual cover the following experiments</p> <ul style="list-style-type: none"> <li>-Experiments with a plastic optic fiber</li> <li>-Characteristics of transmit diodes</li> <li>-Attenuation of transmit diodes, plastic fibers and connectors.</li> <li>-Transmission of TTL signals</li> <li>-Insensitivity to interference of the optic fiber</li> <li>-Experiments with glass optic fibers.</li> <li>-Frequency response of transmit diodes</li> <li>-Experiments in fiber optic technology with a laser diode</li> </ul>	1
76	<p>DEMONSTRATION BOARD SERVO CONTROL MOTOR:</p> <p>This system should cover the following</p> <ul style="list-style-type: none"> <li>-basic function, structure and dynamic behavior of the servo motor</li> </ul>	1

	<p>-driving of servo motors by pulsed direct DC converters, electrical principles of the RL circuit.</p> <p>Principle of the pulsed transistor actor.</p> <p>-The dynamic behavior of the servo motor as a speed control circuit with cascaded current control circuit Protective measures in servo motor drive systems. The dynamic behavior of the servo motor as a speed control circuit with cascaded current control circuit</p> <p>-Protective measures in servo motor drive systems.</p>	
77	D.C Generator Motor set Coupled Together (Pak Made) I.H.P.	1
78	#Point D.C. Starter (Pak)	1
79	Oscilloscope (Imported)	2
80	Digital trainer (Electronic)	2
81	<p>Electronic Devices</p> <p>Diode Qty: 120,</p> <p>SCR Qty 120,</p> <p>Transistors Qty 120,</p> <p>Tyristors Qty 120,</p> <p>amplifiers Qty 120</p> <p>Logic gates 74&amp; HT series ICs Qty 120 each)</p>	As indicated

**ASSISTANT DIRECTOR (PROCUREMENT)**