

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY, LONGOWAL

NAME OF FIRM/AGENCY

Technical Bid		E-Tender No. : PUR/29/2020-21	
Category: "A"		Department: Chemical Engineering (OH-35)	
S.No.	Name of Item/ Equipment	Detailed Specifications (Generic)	Quantity
1	Hydrocyclone	MOC SS, Size dia 100mm Slurry feed pump, Capacity 1HP with bypass arrangement Pressure gauge= Dia 65mm to measure inlet pressure ,With data Logger	1
2	Hammer Mill	Material= Stainless Steel , Dia= 145mm,Depth=75mm ,Feed Size 6mm Approx Product Size 60-150 mesh approx	1
3	Trommel Variable speed	Trommel Dia = 200mm , Length 1000mm (Approx),Feed hopper Compatible Capacity, Collecting bins 4Nos. of suitable capacity	1
4	Jaw Crusher	Jaw = Size 100X150mm Feed Hopper- Suitable Capacity, Feed Size – 50mm(Approx) Drive= Electric Motor, 3HP S.Phase, Starter= 3HP	1
5		Test Section = Material Acrylic, Pressure Gauge = 0-4kg/cm ² , Vacuum Gauge = 0-760mmHg, Sump Tank = 60 ltrs	1
6	Pitot tube for Air Flow Measurement	Material Copper/SS of compatible size fitted with vernies scale. Measuring Tank with Piezometer (Capacity 25 Ltrs.) Sump Tank Capacity 50 Ltrs Overall dimensions : (L x B x H) 1200 x 420 x 1200 mm	1
7	V Notch	Channel Test Section Size 1200 x 300 x 300 mm. Notches Material Brass Rectangular Notch 45 Degree V Notch, 60 Degree V Notch Sump Tank Capacity 50 Ltrs., Flow Measurement Using Measuring Tank with Piezometer, Capacity 25 Ltrs.	1

8	Vibration Screen	VibrationScreen 3nos Width 15", Length 24", Size – ½", ¾", ¼" (Approx) Collection Bins = PVC 4Nos	1
9	Roll Crusher	Material Chilled Steel, Dia 200mm, Width 100mm, 3 HP Crompton motor coupled with 2.5" Centre Height nReduction Gear Box to give 50-70 RPM Size = 1-2 mm Max Feed Size = 6-8mm	1
10	Rod Mill	Rod Mill Material MS Dia 275mm, Length 350mm. Thickness 5 mm Drive suitable motor coupled to Reduction Gearbox & 3 step pulley to get 40, 50 and 60 RPM (Approx.)	1
11	Water Purification System	Total Organic Carbon (TOC), ppb: < 50, Resistivity (@ 25 °C): > 5-15 MΩ•cm Product water delivery: 3-5 L/hr; Conductivity (@ 25 °C): < 1 μS/cm Feed water nature: Tap water, Microorganisms: < 1 cfu/ml With other system requirements (like Prefilter, Pre-treatment cartridge, Reverse Osmosis, Electro Deionization)	1
12	Nitrogen Cylinder	Technical Specifications: High Pressure Nitrogen gas cylinder of 47 liter capacity, complete with neck ring & valve. Cylinder opening key included. Fitted with nut for external tubing connection. Painted as specified under gas cylinder act 2004. Supplied along with manufacturer test certificate and certificate of approval from Chief Controller of Explosive, Nagpur	1
13	Fluoride Ion Selective Electrode	FIS Electrode Compatible with Dual Star Ion Meter Thermo Orion, Fluoride Ion Selective Electrodes Ionplus /sureflow self cleaning Epoxybody, Combined Solid State, Combined Fluoride Electrode suitable for range of 0.02 ppm to saturation, along with 60-100 ml Reference Fill Sol and other standard solutions applicable about 500 ml. each)	1

**SANT LONGOWAL INSTITUTE OF ENGINEERING &
TECHNOLOGY, LONGOWAL**

NAME OF FIRM/AGENCY

Technical Bid		E-Tender NO. : PUR/29/2020-21	
Category:"B"		Department: Electronics & Communication Engineering (OH-35)	
S.No.	Name of Item/ Equipment	Detailed Specifications (Generic)	Quantity
1	FPGA Evaluation kit		1
		FPGA Evaluation kit	
		Quad-core Arm Cortex-A53 applications processor	
		Dual-core Cortex-R5 real-time processor,	
		4KP60 capable H.264/H.265 video codec	
		16nm FinFET+ programmable logic.	
		Ultra Scale+ MPSoC	
		HDMI video input and output	
		PCI Endpoint Gen3x4, USB3	
		Display Port & SATA	
		DDR4 SODIMM – 72-bit	
		DDR4 Component – 64-bit	
		2x SFP+ cages	
		2x FPGA mezzanine card (FMC) interfaces for I/O expansion	

504K System Logic Cells	
38Mb Memory	
Onboard JTAG circuitry to enable configuration over USB	
Dual quad-SPI flash memory	
Boot from SD card	
Quad-SPI flash	
SD card slot	
PMBUS & System Controller MSP430 for power, clocks, and I2C bus switching	
USB2/3	
2x FMC-HPC connectors	
2 PMod headers	
SDI (x1 GTH)	
AES3 audio connector	
SFP+ cage (2x 2GTH)	
SMA (x1 GTH)	
UART to USB bridge	
RJ-45 Ethernet connector	
SATA (1x GTR)	

		PCIe Gen3 Endpoint (x4 GTH)	
		HDMI video input and output (x3 GTH)	
		Display Port (2x GTR)	
2	IoT Platform	IoT Platform	1
		Training Platform Should have :	
		Wireless Sensor Node (End/Router Device): at least 2 nos in IP 65 Housing	
		Should Operate on Linux	
		6 types of sensors should be supplied with each node	
		4 Channel ADC for Voltage Input ; 1 Channel For Resistance Input	
		1 Channel For 4-20mA Input	
		I2C , SPI & RS 485 Interface	
		Serial to USB Converter	
		WiFi & Ethernet Connectivity for IoT Gateway	
		Bluetooth Connectivity	
		On board Zigbee Coordinator	
		Motor Driver Circuit with DC Motor & Stepper Motor	
		Main board	
		Processor : 64bit cortex A53 ARMv8 Quad Core Processor 1.4GHz	

Connectivity : 802.11 b/g/n Wireless LAN Bluetooth 4.1, Zigbee, USB & Ethernet	
RAM : 1GB LPDDR2 ; Memory : 32GB ; OS : Linux	
Interface: Ethernet: 10/100 BaseT Ethernet socket ; USB : 4 nos.	
Video Output : HDMI and Composite RCA	
Audio Output : Audio Output 3.5mm jack	
Camera : 15-pin MIPI Camera Serial Interface ,	
Memory Card : Push/pull Micro LCD ; Color TFT LCD ; 8 nos LED	
Motor Driver : Stepper and DC Motor	
Analog input : 8 nos.; Relay Output : 4 nos.	
Zigbee Frequency : 2.4GHz	
Buzzer Output : 1 no.; Power : 5V, 2A	
Wireless Sensor Node in IP 65 Housing : 2 Nos	
Analog Inputs : 6 nos for each node	
Digital I/Os : 4 nos. each node	
I2C channel : 1 no each node	
Communication : Zigbee 2.4 GHz	
PC Interface : USB	
Charging : USB and Solar Panel	

		Battery : 3.7V/4400mAH	
		Solar Panel : 6W 1 no should be supplied with each node	
		Sensors included : at least 1 Nos with each node	
		Temperature and Humidity , Air Quality Sensor ,Soil Moistures., Ambient Light Sensor	
		Soil/Water temperature, PIR Sensor	
3	IoT Platform		1
		IoT Platform	
		<ul style="list-style-type: none"> • Raspberry Pi 3, ADK-2560 based IoT Sensor Test 	
		<ul style="list-style-type: none"> • Interworked on Smart Phone or Tablet PC 	
		<ul style="list-style-type: none"> • Arduino programming by BLE Module 	
		<ul style="list-style-type: none"> • Communications of Zigbee, Bluetooth and Wi-Fi service 	
		<ul style="list-style-type: none"> • BLE based Sensor Module Service 	
		<ul style="list-style-type: none"> • BEACON service 	
		<ul style="list-style-type: none"> • Various Projects Supports 	
		<ul style="list-style-type: none"> • Provides Cloud Service based on AWS 	
		Android, Linux based Open API service	
		Sensor data collection is implemented around Open Hardware platform, so anyone can easily experience IoT service.	
		Wearable devices can be implemented using the ARM Cortex MO-based BLE Module.	
		Provides 10 basic sensor data bases and application examples.	

Support various projects such as sensor collection and indoor map service using BEACON.	
Supports Wi-Fi, Zigbee, and Bluetooth communication for inter-object communication, which is an early stage of IoT service.	
It provides module training function using firmware and it is possible to collect sensor information and practice actuator control to acquire IoT basic skills by module.	
By building a gateway, it is possible to carry out various projects through sensor information monitoring and remote access control function.	
Hardware Specification	
Raspberry Pi 3	
Processor : Broadcom BCM2837 900MHz Cortex-A53 quad-core	
RAM : 1GB LPDDR2 SDRAM	
Storage : MicroSD 8GB	
USB 2.0 :USB A Type x 4 Ports	
Power: 600mA up to 1.8A @ 5V	
Audio :3.5mm A/V Jack	
Digital Video :HDMI 1.4 Video out	
Ethernet 10/100	
Expansion I/O : 40EA GPIO(2x20 2.54mm Pitch Header)	
Size : 87 x 58mm	
HBE-ADK-2560	
Micro Controller: ATmega2560 16MHz	

Flash Memory: 256KByte (8KB used by bootloader)	
Clock Speed : 16MHz	
USB Controller : ATmega8U2 16MHz	
USB Host Controller : MAX3421E USB 2.0	
GPIO Socket: 2x18 Socket(1EA), 1x10 Socket(1EA), 1x8 Socket(5EA)	
Operating Voltage: 7~12V	
Dimension: 122 x 76(mm)	
B-RC Board	
Processor m:16MHz ARM Cortex-M0	
RF : Bluetooth LE, 2.4GHz	
Data rate :250 ~ 2000kbps	
Operating Voltage : AC90 ~ 240V, 50/60Hz	
AC IN :AC, 3.5mm Terminal Block 2EA	
Relay: 2CH, 250V/2A	
Motor In :3.5mm Terminal Block 1EA	
Size: 76 x 93.5mm	
Z-MC Board	
Processor : ATmega 128L	

RF part: CC2420 2.4GHz (IEEE 802.15.4 PHY)	
Transfer Rate : Maximum 250Kbps	
Base Sensor :Temperature/Humidity, Intensity of illumination	
Operating Voltage :AC90 ~ 240V, 50/60Hz	
AC IN :AC 2구 8자, 3.5mm Terminal Block 2EA	
Relay :2CH, 250V/2A	
Motor Driver : L298, up to 46V/4A	
Motor In : 3.5mm Terminal Block 2EA	
Size: 76 x 93.5mm	
BLE Module	
Processor : 16MHz ARM Cortex-M0	
RF : Bluetooth LE, 2.4GHz	
Data rate: 250 ~ 2000kbps	
Operating Voltage: 2.2V ~ 5V	
Battery: Lithium Cell 3V (240mAh@to 2.0V)	
I/O : GPIO 7EA(I2 C, SPI, PWM), 2.54mm Socket	
Size: 36 x 48mm	
Sink Node	

Processor : ATmega 128L	
RF part : CC2420 2.4GHz (IEEE 802.15.4 PHY)	
Transfer Rate : Maximum 250Kbps	
Operating Voltage :5V	
Size : 31 x 55m	
Software Specifications-	
Gateway	
O/S : Raspbian Linux 3.xx	
Camera Program :Pi Camera Driver, Camera Streaming Server	
Server Program : Z-RC/Z-MC Board Control S/W for Gas Detector, Gas Circuit Breaker, FAN etc Z-MC Board	
O/S : TinyOS 2.x	
Function : Motor Control, Temperature / humidity / illumination measurement	
B-RC Board	
F/W IDE : Arduino 1.6.x	
Function :Relay Control	
BLE Module	
F/W IDE : Arduino 1.6.x	
Communication : Bluetooth Communication S/W	

		Function Sensor Control S/W	
		ADK-2560 Module	
		F/W IDE : Arduino 1.6.x	
		Communication : Bluetooth Communication S/W	
		Function : Sensor Control S/W	
		Sink Node	
		O/S :TinyOS 2.x	
		Function : Communication with Z-RC/Z-MC Board	
		Smart Device	
		O/S : Android 4.3 or later	
		BLE : Door Lock Control, AC LED Control	
		Wi-Fi :Gas Detector, Fan Control, Power Monitor	
		Camera : CCTV Program	
		Sensors included Ultrasonic Sensor, Gyro Sensor ,Dust Sensor, Rain/Steam Sensor, Soil Moisture Sensor ,Tilt Sensor, HT/CdS Module, Infrared Sensor, Pulse Sensor, sound sensor, gas sensor	
4	Diode as clipper & clamper Trainer	Trainer should be compact & can be used to study	2
		Study of Series & Shunt Positive & Negative Clipper .	
		Study of Biased Series & shunt Positive & Negative Clipper .	

		Study of Combination Clipper Circuit.	
		Study of Positive and Negative Clamper Circuits.	
		Study of Biased Clamper Circuits.	
		Should have in built power supply.	
		Circuit diagram should be printed on the top of the board.	
		2 mm Test points & sockets provided on board to measure voltage, current & resistance at various points.	
		Technical Specifications	
		Sine Wave Generator : 1 KHz, 15V Vpp (approx.)	
		DC Power Supply : 0 - 5V (vary through (2No.) rotary switch for specific voltage level)	
		Mains power : 230V AC $\pm 10\%$ (Detachable mains chord to be provided)	
		Manual: Extensive e manual should be provided	
		Trainer should be on Legend PCB .Housed in a Molded case	
5	Filter Trainer	Study of Active Low Pass, High Pass, Band Pass, Band Stop Filter	2
		Technical Specifications- Function generator Frequency range of Function Generator : Selectable : 1Hz to 10Hz : 10Hz to 100Hz : 100Hz to 1kHz : 1kHz to 10 kHz : 10kHz to 100kHz Amplitude controlled output Active Filter : Accurate frequency response : Variable Cutoff Frequencies : Adjustable Gain of output : Manual creation of Band Pass Filter using High Pass and Low Pass Filter Power Supply : 230V $\pm 10\%$, 50Hz Fuse : 350mA Package contains : 2mm Patch Cord 8"-15 nos. 2. Mains Cord -1 no.	
		Manual: Extensive e manual should be provided	

6	Characteristics of MOSFET, FET & UJT	<p>To study and plot the Drain Characteristics of n channel MOSFET, Transfer Characteristics of n channel MOSFET, V-I characteristics of JFET, VI characteristics of UJT, Intrinsic Stand- off Ratio, Inter base resistance, JFET DC Drain resistance, JFET Trans conductance, JFET Amplification factor</p> <p>Technical Specifications-</p> <p>Mains Supply : 90-230V, 50Hz DC Fixed Power Supply : -5V, +15V, +35V DC Variable Power Supply :1.5V to 14 V,1.5V to 34V</p> <p>Voltmeter : 0-200V, Ammeter : 0-200mA</p> <p>Resistor Bank : M.F.R. 100E 1W (3 Nos.) M.F.R. 470E 1W (3 Nos.) M.F.R. 1K 1W(3 Nos.)</p> <p>Variable Resistances : 5 KΩ Ten turn Potentiometer (1 No.)</p> <p>10 KΩ Ten turn Potentiometer (1 No.)</p> <p>5 KΩ Single turn Potentiometer (1 No)</p>	2
7	UVC SolarMeter with Remote Probe	<p>Irradiation Range 0-1999 μW/cm² UVC, Response 254 \pm 8 nm, Bandwidth 246-262 nm, Resolution 1 μW/cm², Conversion Rate 3.0 Readings/Sec. Display 3.5 Digit LCD, Digit Size 0.4 (in) / 10.2 (mm) high Operational Temperature 32°F to100°F / 0°C to 37.8°C Operational Humidity 5% to 90% RH, Accuracy \pm10% REF.NIST Remote Probe Dimensions 0.8H x 1.6D (in) / 20.3H x 40.6D (mm), Power Source 9-Volt DC Battery Lens UV Glass.</p>	1
8	FDTD Solutions – 1 User License	3-Dimensional FDTD Solutions – 1 User License(3 year)	1

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY, LONGOWAL

NAME OF FIRM/AGENCY

Technical Bid		E-Tender No. PUR/29/2020-21	
Category:"C"		Department: Mechanical Engineering	
S.No.	Name of Item/ Equipment	Detailed Specifications (Generic)	Quantity
1	Automatic Hot Mounting Hydraulic Press	30-40mm mold Diameter, Hydraulic Base and compatible Heater. list of equipment Supplied to Institute/industry.	1
2	Redwood Viscometer	Red Wood Viscometer No. 01 for 20 to 2000 sec redwood flow and No. 02 for above 2000 sec redwood flow . Provision of digital display showing the value of temperature. Provision for setting and maintaining constant temperature by using suitable PID electronic controller. Motorised stirrer with speed control provision on control panel. corrosion resistance body. Suitable stand with levelling screws. Supply of accessory required. Manual for performing the experiment & demonstration At institute laboratory.	1
3	Separating And Throttling Calorimeter	Temperature Indicator 8 Channel with Thermocouple Input. The Separating & Throttling calorimeter should capable for determination of Dryness Fraction of steam. The setup consists of a drum type electrical boiler, Separating Calorimeter, Throttling calorimeter & steam condenser. A temperature controller must be provided to control the steam temperature in a boiler. The steam generated in the boiler first pass through the separating calorimeter & then flows through a throttling device into the throttling calorimeter. Finally, the steam should be condensed in the condenser. Amount of water separated in separating calorimeter & the condensate must measure by measuring jars. Instruments must be provided to measure temperature & pressure of steam at different points. A low water level device & pressure relief valve should be provided to safeguard the boiler from Low water level& high steam pressure.	1
4	Double Disc Polishing Machine	Double Disc Polishing Machine:- Variable Speed, 0.5 HP Combine Motor, Disc diameter 200 mm, RPM: 50 to 1500, Power Transmission: By V Belt and Pulley Control Panel, Input Power: 230 V AC 50 Hz Single Phase. All standard accessories. list of equipment Supplied to Institute/industry.	1
5	Motorized Broaching Machine	Motorized Broaching Machine:- Specimen preparation size - Izod - 10 x 10 x 75mm and Charpy - 10 x 10 x 55 mm, "V" Notch preparation degree - 45° , 1 Phase ,All standard accessories. list of equipment Supplied to Institute/industry.	1
6	Abrasive Cutting Machine	Abrasive Cutting Machine:- Cutting capacity -100 mm, Display-LCD, Cutting Method-Automatic and Manual. The machine with well-equipped cooling system which clear up the heat produce during sample cutting and avoid deformation of metal structure . list of equipment Supplied to Institute/industry.	1

7	Fully Automatic Digital Impact Testing Machine	Maximum Capacity - 300J, Maximum scale graduation - 0.1J, The auto pendulum Impact Tester for conducting Izod and Charpy test. The test method compatible with BS:131:PART4-1972(Amended15Aug.1993) BSEN:10045-2:1993. Once specimen breaks, result will display on digital panel in Joules, and auto brakes will apply immediately. The pendulum is mounted on antifriction bearings. Full safety guard required for operator safety. All standard accessories. list of equipment Supplied to Institute/industry. NABL Accredited .	1
8	Muffle furnace	With a rating of 5kW, Size 150 mm x150 mm x300 mm approximately, Max. temperature of 1500 0C, Working temperature of 1400 0C, Should have a display temperature controlled by digital temperature controller, Should have temperature accuracy of approximately $\pm 10C$ or better, Temperature should be adjustable by good quality PID Controller in increments of 1 to 50C/min., Should have a (variable) load capacity of 1 to 3 kg, Should operate with power rating of 220 V, 50 Hz, AC Supply.	1

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY, LONGOWAL

		NAME OF FIRM/AGENCY	
Technical Bid		E-Tender NO. PUR/29/2020-21	
Category: "D"		Department: Electrical & Instrumentation Engineering(OH-35)	
S.No.	Name of Item/ Equipment	Detailed Specifications (Generic)	Quantity
1	V-I Characteristics of SCR, TRIAC, MOSFET, IGBT	The training kit must contain at least a SCR, TRIAC, MOSFET, IGBT with a heat sink, a variable dc supply of 0-30 V, min 1 Amp for device input, a variable dc supply of 0-30 V, min 1 Amp for gate input, Fixed R-Load and multimeter for performing the experiment. All the components are mounted on a good quality cabinet with mimic diagram.	5
2	UJT, R & RC Firing circuit for SCR	The kit must contain at least a UJT, R & RC Firing circuit provided with a potentiometer, pulse transformer, one SCR with a heat sink and snubber circuit and multimeter for performing the experiment. All the components are mounted on a good quality cabinet with mimic diagram.	3
3	AC Voltage controller Using SCR/TRIAC	The trainer kit must contain at least a SCR with a proper heat sink, TRIAC, firing circuits, one potentiometer, a fixed R-Load. All the components are mounted on a good quality cabinet with mimic diagram.	3
4	DC CHOPPER	The trainer must consist of at least two SCR with heat sink, power diode, inductor, firing circuit, one potentiometer for duty cycle ratio adjustment, one potentiometer for frequency adjustment, R-Load. All the components are mounted on a good quality cabinet with mimic diagram.	2
5	MOSFET based Buck-Boost converter	The set up must consist of at least a PWM Controller, MOSFET Power circuit, Fixed R-Load, High Frequency inductor, filter, DC Power supply. All the components are mounted on a good quality cabinet with mimic diagram.	3
6	IGBT based Single & Three phase PWM inverter	It must consist of at least a suitable IGBT PWM Controller (Single phase & 3 Phase PWM generation) & 3 Phase IGBT Power Circuit (Voltage source Inverter), RL Load & DC Power supply. All the components are mounted on a good quality cabinet with mimic diagram.	2
7	Cyclo converter kit with firing module	The setup must consist of at least a Single phase cyclo-converter firing circuit, SCR power circuit (With necessary Heat sink & Snubber circuit). Pulse transformer & Transistor based Pulse amplifier must be provided for all SCR's, Fixed R-Load. All the components are mounted on a good quality cabinet with mimic diagram.	2
8	Forced Commutation Circuits (Class A, B, C, D & E Commutation)- Chopper	The trainer kit must contain firing circuit, a SCR power circuit, load, potentiometer, pulse transformer (for gate pulse isolation), minimum 10V DC, 1AMP for SCR power circuit input and min 8V AC for SCR line commutation circuit input. All the components are mounted on a good quality cabinet with mimic diagram.	2
9	Step down and step up MOSFET based choppers	The trainer kit must contain at least a Chopper PWM Controller, MOSFET Power Circuit, DC Source & Load, Potentiometer for PWM duty cycle variation, OPTO for PWM isolation, Fixed R-Load.	2

10	DC –DC Fly back Converter	The set up must have PWM Controller provided with a potentiometer. MOSFET Power circuit with a proper heat sink, high frequency transformer, filter and fixed R-Load. Minimum 20V, 1 Amp DC Power supply	2
11	Parallel operation of Synchronous Generator	3 Phase Synchronous Generator (3 KW, 1500 r.p.m. 415 V coupled with DC Shunt motor (5KW) set with speed regulator and digital speed measurement arrangement and control panel with lamp method and synchronoscope arrangement for parallel operation.	1
12	High Volatage Power Electronics Lab Workbench	Each table consist of on board (mains) ac power supplies single phase power supply, 3 phase power supply, on board step down ac power supplies,single phase power supplies,3 phase power supplies,MCB protected single and 3 phase ac supply,3 phase indicater(R-Y-B) at front panel, on board oscilloscope wtih power scope, on board DC/AC voltmeter and DC/AC ammeter, on board firing circuit,single phase firing circuit,3 phase firing circuit,cycloconverter firing circuit,test poin are provided to observe waveform at different blocks in firing circuit,on board power devices assambly,diode assembly,SCR assembly,IGBT assembly,internal snubber circuit in power circuit module, 2mm and 4mm socket provided to make differnt connection easily replaceable firing circuit and power circuit module,four 200 W bulb as lamp load ,universal motor 1/8 hp as motor load, short circuit protection.	2