



MSME Technology Centre, Visakhapatnam
(A Government of India Society)
Ministry of Micro, Small and Medium Enterprises



SI NO	Description	QTY	UOM
1.	Supply, Installation and Commissioning of Mechatronics Lab at MSME TC Visakhapatnam.	As per scope of Work (Refer Price Bid)	

2. Technical Details:

2.1. Scope of Work. Supply, Installation and Commissioning of Mechatronics Lab at MSME TC Visakhapatnam. (Transportation, Transit Insurance, Packaging & Forwarding, Loading & Un Loading , Deployment of Manpower for Installation & Commissioning considering Lodging and Boarding, Functional Testing, Training to MSME TC(V) staff, Warranty/Guarantee are the part of Scope of work.

Bidder has to offer for Stage wise/Pre dispatch inspection of Items/ Systems at factory location and Cost incurred for Inspection to be part of Basic Cost.

Hardware Requirement for Mechatronics Lab

S.No.	Item Name	Specifications	Qty Required
1	PIC Development Board Kits	Experiments- Study of PIC Microcontroller PIC16F877A Pin to pin study of MCU To study of initialization of internal fix PWM 1,500.00 To study of Initialization of internal PWM with variable duty cycle using Internal ADC Setup Includes :- >Experiment Trainer Board that Contains:- Bread board for Design fabrication DC Power supply : +12,-12,+5,-5 V DC Programmer unit Interconnection for modules : 20pin FRC cables Various test point USB cable Software CD Connecting Patch Cords	5 No's
2.	8051 Microcontroller Universal Development Platform	Core 8051 MCU clocked at 11.0592 MHz. User can enter op code using on board 20 Hex keypad For large program user can use on board PC based USB Programmer. On board LCD for both programming mode and run mode Every pin is marked in order to make work easier Interconnection for modules : 20pin FRC cables USB cable Software CD Connecting Patch Cords	10 No's



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3.	ARM 7 Development Platform	<p>ARM7 Controller based on LPC 2148 Expansion connectors for plug in modules and prototyping area On board Flash download utility (programmer) USB interface given for programming USB 2.0 Full-speed compliant device controller with 2 kB of endpoint RAM Master Reset/Restart Key for hardware reset RTOS supported (RTX, mC/OS-II) On board USB (UART0) and UART1 Interface Temperature Sensor on board</p>	10 No's
4.	ADC/DAC Module	<p>Experiments- 1-To study interfacing 8 input 8 channel ADC Interface 2-To study interfacing DAC Interface 3-To study timing and control signals of ADC and DAC pin to pin study of MCU >Experiment Trainer board that Contains:- 1.PC based programming 2.Expansion connectors for plug in with Microcontroller unit and prototyping area 3.Various test point >20 pin FRC cable >Connecting Patch Cords</p>	05 No's
5.	Computer Interface Module	<p>Experiments- 1-To study basics of serial communication and MCU connections to serial port 2-To study MCU connections to parallel port 3-To study of synchronous and asynchronous serial communication. >Experiment Trainer board that Contains:- 1.RS 232 interface using Rx/Tx of MCU for Uploading / Downloading 2.USB interface 3.PC based Programming 4.Expansion connectors for plug in with microcontroller unit and prototyping area 5.Various test point >20 pin FRC cable >RS-232 Serial cable >USB cable >20 pin FRC cable</p>	03 No's
6.	Real Time clock Module	<p>Experiments- 1-16x2 characters LCD Interface 2-DS1307-RTC interface. 3-Latch switch interface 4-Buzzer and LED Interface</p>	03 No's



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		<p>>Experiment Trainer board that Contains:-</p> <ol style="list-style-type: none"> 1.Display : 16x2 LCD 2.RTC : DS1307 3.RTC Interface type : I2C 4.Buzzer : +5 V dc 5.LED : +5 V DC , Battery : 3Vdc CMOS 4.Various test point <p>>20 pin FRC cable</p>	
7.	Motor Drive Module	<p>Experiments-</p> <ol style="list-style-type: none"> 1-To study implementation analysis and interfacing of Stepper motor 2-To study direction and angle controlling of stepper motor 3-To Study DC motor interfacing, PWM Servo motor <p>>Experiment Trainer board that Contains:-</p> <ol style="list-style-type: none"> 1.Stepper motor : +12 V 2.DC motor : +12 V 3.Servo motor : +5 V 4.Various test point <p>>20 pin FRC cable</p>	05 No's
8.	Display & switch Module	<p>Experiments-</p> <ol style="list-style-type: none"> 1-4x4 Matrix keypad interface 2-Eight input sensing switch interface 3-16x2 characters LCD Interface 4-Seven segment display interface <p>>Experiment Trainer board that Contains:-</p> <ol style="list-style-type: none"> 1.Switches : DIP Switch 2.Display : 16x2 LCD 3-Seven segment display : 4 No's 4.Keypad : 4x4 Matrix keypad 5.Buzzer, Relay : +5 V DC 6.PC based programming <p>>20 pin FRC cable</p>	10 No's
9.	<p>Universal Development Platform with Spartan3 daughter card and Xilinx USB J-Tag Cable</p> <p>Xilinx's Spartan3 FPGA Daughter card</p> <p>Xilinx's CPLD Daughter Card</p>	<p>Universal Development Platform with Xilinx FPGA, CPLD daughter board, 16 bit logic I/Os ADC, DAC, SRAM interface, 4 digit 7 segment display, telephone keypad interface, 16X2 LCD Interface, push buttons, USB interface, serial communication interface, VGA, PS2 interface, external I/Os for user interface applications, Xilinx USB J-Tag Cable</p> <p>Device density : 400k gates, On board : 8 MHz crystal</p> <p>Master reset Key : For hardware reset On board : EPROM socket for FPGA boot.</p> <p>Configuration Method : JTAG interface : Slave</p>	05 No's



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		serial interface : PROM interface Device density : 2400 gates, 108 macro cells On board : 8 MHz crystal Configuration Method : JTAG interface (boundary scan)	
10.	8085 Microprocessor trainer kit with peripheral interface modules (stepper motor, LCD, 7 segment LED, ADC, DAC, memory chips, 8255 etc)		10 No's
11.	PCB Prototype Machine	Setup should Include : 1. Working area : 220x200 mm 2. Min. drill hole size : 0.3 mm 3. Min. Cutting trace/space : 0.2 mm 4. Spindle speed (Max. rpm) : 25000 rpm spindle 5. Motor : BLDC Motor 6. Milling depth sensing : Automatic 7. Tool change : Manual 8. Tool Holder : 1/8 inch 9. X/Y/Z driver : Stepping 10. Software CD of Machine 11. TINA 12 PCB Simulation software compatible with machine for making Printed Circuit Board licensed 12. Extra drill bit set	01 No's
12	Arduino UNO kit	2560 UNO R3, ATmega 328p	20 No's
13.	Arduino compatible sensors	– Ultrasonic sensor, Gas sensor, Mic sensor, Temperature & Humidity sensor, compass, magnetometer, IR sensor, Touch sensor, Heart rate sensor, Rain detection, Fire sensor, PIR sensor	4 each
14	Raspberry pi kits along with sensor bank and power supply	Raspberry pi 4 model B	20 No's
15	Component Tray	Metal make	10 No's
16	LoRa IoT kit		01 No's
17	ESP8266 NodeMCU wifi module		05 No's
18	SIM7600CE-T 4G(LTE) Arduino Shield	GPS Antenna and 4G LTF antenna	02 No's
19	MPU-6050 3-Axis Accelerometer and Gyroscope Sensor		05 No's
20	Sense HAT for Raspberry Pi		02 No's
21	Infrared obstacle Avoidance sensor module for Arduino		05 No's
22	Air quality detector sensor module for arduino		05 No's
23	LM393 Sound Detection Sensor Module – Black		05 No's
24	Current and Voltage Detection Module Arduino		05 No's



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25	GY-80 Multi sensor Board		02 No's
26	Water Level Depth Detection Sensor for Arduino		05 No's
27	Stepper Motor Drive Controller Motherboard compatible with Arduino		02 No's
28	16-Channel 12-bit PWM/Servo Driver I2C interface PCA9685 for Arduino Raspberry Pi		02 No's
29	XBee Shield V03 Module Wireless Control		05 No's
30	Raspberry Pi Camera V2		02 No's
31	Study of GSM Application Module with GSM trainer	PC Interface facility using RS232 and USB Expansion socket for Micro controller interfacing, Onboard relay with NO, NC connections, Analog audio interface, SIM card socket, Headphone facility available	01 No's

2.2 Technical Details with technical parameters and Scope of Work

- All bidders must be submitted Technical Brochures/Manuals of Make and Model being supplied.
- All items to be IS Standard ,Reputed Make and CE certified
- Any other accessories/parts not mentioned in the scope of supply for successful installation and operation of Mechatronics lab.
- Any other consumables / Spares required for fixing of Mechatronics Lab Equipment including Electrical Wiring (between Work Benches) and Providing of Junction boxes if required.
- All materials has to be supplied as per IEC & IS Codes & standards / Industry specifications.
- Loading / Unloading, Shifting of goods and Transport at the supplier's scope.
- Experienced / Highly competent manpower to be deployed at site for undertaking the contract including training to the staff of MSME TC(V) as per satisfaction level.
- **2 Year Guarantee** applicable for any damage and defective parts and the supplier is responsible for replacement of all damage and defective parts within 7 days during guarantee period.
- One set of Operating manual to be provided against each item/System.
- Contractor should submit certificate of conformity, Inspection report form OEM (In original) and NABL Accredited Calibration Certificates (As applicable) (In original) for Supply of Items mentioned in the scope of work.
- **Bidder must give the concurrence on letter head for supply of spares and maintenance support for next five years on post warranty. (Cost will be decided on case to case basis by both parties as on when required).**