



**NATIONAL INSTITUTE OF TECHNOLOGY MIZORAM**  
**CHALTLANG, AIZAWL, MIZORAM-796012**

**INVITATION LETTER**

**Package Code: TEQIP-III/2019/nitz/79**

**Current Date: 20-Dec-2019**

**Package Name: NITMZ/ECE1C**

**Method: Shopping Goods**

To,  
**Supplier**

**Sub: INVITATION LETTER FOR QUOTATION OF ECE LAB EQUIPMENT**

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

| <b>Sr. No</b> | <b>Item Name</b>                         | <b>Quantity</b> | <b>Place of Delivery</b>                                    | <b>Installation Requirement (if any)</b> |
|---------------|------------------------------------------|-----------------|-------------------------------------------------------------|------------------------------------------|
| 1             | 8085 Microprocessor Trainer Kit with LCD | 15              | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required                 |
| 2             | 8086 Microprocessor Trainer Kit LCD      | 10              | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required                 |
| 3             | Traffic Light Controller Module          | 4               | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required                 |
| 4             | ADC 0809 Interfacing Module              | 4               | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required                 |
| 5             | DAC-0800 Interfacing Module              | 4               | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required                 |

|    |                                                                           |    |                                                             |                          |
|----|---------------------------------------------------------------------------|----|-------------------------------------------------------------|--------------------------|
| 6  | Stepper Motor Controller Card with Motor                                  | 4  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 7  | Four Digit Seven Segment Display Module.                                  | 4  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 8  | 16x1 LCD Display Module.                                                  | 4  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 9  | Universal IC Programmer                                                   | 1  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 10 | Mixed Signal Oscilloscope (MSO)                                           | 2  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 11 | Amplitude Modulation Trainer Kit                                          | 5  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 12 | Amplitude Demodulation Trainer Kit                                        | 5  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 13 | Frequency Modulation Trainer Kit                                          | 5  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 14 | Frequency Demodulation Trainer Kit                                        | 5  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 15 | Fourier Synthesis trainer Kit                                             | 3  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 16 | FDM Transmitter & Receiver Kit                                            | 3  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 17 | Principles of Communication Engineering System(SDR) (RS Transceiver Kit). | 5  | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 18 | Digital Circuits Development Board                                        | 15 | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |



|    |                                   |   |                                                             |                          |
|----|-----------------------------------|---|-------------------------------------------------------------|--------------------------|
| 19 | Programmable Output Power Supply. | 5 | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |
| 20 | Benchtop Digital Multimeter.      | 6 | National Institute of Technology Mizoram, Chaltlang, Aizawl | Installation is required |

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

3. **Quotation**

- 3.1 The contract shall be for the full quantity as described above.
- 3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.
- 3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.
- 3.4 Applicable taxes shall be quoted separately for all items.
- 3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- 3.6 The Prices should be quoted in Indian Rupees only.

4. Each bidder shall submit only one quotation.

5. Quotation shall remain valid for a period not less than **45**days after the last date of quotation submission.

6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which

6.1 are properly signed; and

6.2 Confirm to the terms and conditions, and specifications.

7. The Quotations would be evaluated for all items together.

8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.

8.2 *The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be Incorporated in the purchase order.*

9. Payment shall be made in Indian Rupees as follows:

| Payment Description                              | Expected Delivery Period (in Days) | Payment Percentage |
|--------------------------------------------------|------------------------------------|--------------------|
| Satisfactory Delivery, Installation & Acceptance | 30                                 | 100                |

10. Liquidated Damages will be applied as per the below:  
Liquidated Damages Per Day Min %: 0.005  
Liquidated Damages Max %: 10
11. All supplied items are under warranty of **12** months from the date of successful acceptance of items and AMC/Others is **Yes**.
12. You are requested to provide your offer latest by **16:00** hours on **20-Jan-2020**.
13. Detailed specifications of the items are at Annexure I.
14. Training Clause (if any) **Training is required**
15. Testing/Installation Clause (if any) **Testing & Installation required**
16. Performance Security shall be applicable: **5%**
17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
18. Sealed quotation to be submitted/ delivered at the address mentioned below,  
**REGISTRAR**  
**NATIONAL INSTITUTE OF TECHNOLOGY MIZORAM**  
**CHALTLANG, AIZAWL, MIZORAM-796012**

19. We look forward to receiving your quotation and thank you for your interest in this project.



(Dr. Lalthanchami Sailo)

Registrar

NIT Mizoram

कुलसचिव/Registrar

रा. प्रौ. सं. मिजोरम

NIT Mizoram



**Annexure I**

| <b>Microprocessor &amp; Microcontrollers Laboratory</b> |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sr. No</b>                                           | <b>Item Name</b>                         | <b>Specifications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1                                                       | 8085 Microprocessor Trainer Kit with LCD | 16K Bytes of EPROM with 8K bytes of Battery Backup RAM, 48 I/O Lines, Three Channel Timer/Counter, PC Serial Interface, 20x2 LCD Display with 101 ASCII Keyboard, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/ Register, Uploading & Downloading to and from PC in Windows98/XP/NT                                                                                                                                    |
| 2                                                       | 8086 Microprocessor Trainer Kit LCD      | 16K Bytes of EPROM with 16K bytes of Battery Backup RAM, 72 I/O Lines, Three Channel Timer/Counter, PC Serial Interface using USART, Interrupt Controller, 20x2 LCD Display with 101 ASCII Keyboard, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/Register, Uploading & Downloading to and from PC in Windows98/XP/NT, In-Built Power Supply! 8086/8088 CPU operating at 2.5/5MHz Altium Designer -1 user License      |
| 3                                                       | Traffic Light Controller Module          | Traffic Light Controller Module peripheral device                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4                                                       | ADC 0809 Interfacing Module              | ADC 0809 Interfacing Module peripheral device                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5                                                       | DAC-0800 Interfacing Module              | DAC-0800 Interfacing Module                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6                                                       | Stepper Motor Controller Card with Motor | Stepper Motor Controller Card with Motor peripheral device                                                                                                                                                                                                                                                                                                                                                                                                           |
| 7                                                       | Four Digit Seven Segment Display Module. | Four Digit Seven Segment Display Module peripheral device                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8                                                       | 16x1 LCD Display Module.                 | 16x1 LCD Display Module peripheral device                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 9                                                       | Universal IC Programmer                  | 1. 5V and 3.3V low voltage devices, 1.8V chip support through low voltage Adapter 2. 48-pin DIL/ ZIF socket with receptacle for 8- pin to 48-pin devices, USB interface with auto-switch power. 3. Memory: PROM, EPROM, EEPROM, Flash, Serial PROM, NVRAM. 4. Logic: PAL, GAL, CEPAL, PEEL, CDLD, EPLD, Others: OTP/ Flash Micro-controllers. 5. Read, blank check, device insertion/ contact check, verify, checksum, EPROM ID check, compare, erase chip, function |

|                                 |                                    | test, program, memory protect, device configuration setting, device search, edit buffer, mass production mode, modify vector, serialization, H/L byte buffer swap, buffer search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Communication Laboratory</b> |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Sr. No</b>                   | <b>Item Name</b>                   | <b>Specifications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 10                              | Mixed Signal Oscilloscope (MSO)    | 100MHz, 2 Analog + 16 Digital Channels, Max. sampling 1.25 Gsample/s, 2.5 interleaved, Max. memory depth 10 Msample/channel, 20 interleaved; 160 Msample, Timebase accuracy 2.5 ppm, 10 Vertical bits (ADC), Min. input sensitivity: 1 mV/div, Update rate: 300000 waveforms/s in fast segmented memory mode, MSO: 16 channels, 2.5 Gsample/s, Math: +, -, *, /, FFT(128k points), RF capability: FFT.                                                                                                                                                                                                                                                                                        |
| 11                              | Amplitude Modulation Trainer Kit   | Audio Oscillator : Frequency 100Hz to 10 KHz Sine wave generator: Amplitude 0 to 2 Vpp Audio Input: Audio preamplifier with microphone input. Voltage Controlled Oscillator (VCO) Output Signal: Sine wave, Frequency Range: 1. 400 KHz to 500KHz, 2) 400 KHz -1.5 MHz AM/DSB/SSB/Modulator Modulation: Amplitude Modulation, Double Side band, Single side band, Carrier input 1-1000 KHz, Ceramic Filter, Center Frequency: 455KHz, Output Amplifier: Gain adjustable connected to cable or antenna, Antenna: MW Coil, Switch Faults : 4 Switch Faults should be provided                                                                                                                   |
| 12                              | Amplitude Demodulation Trainer Kit | Superheterodyne Receiver: Frequency Range: 400KHz-1.5MHz, Intermediate Frequency: 455KHz, Output IF Frequency: 455KHz adjustable, RF amplifier with variable gain, Mixer (Frequency Converter). Voltage Controlled Oscillator: Output Signal: Sine wave for local oscillator input. Frequency: 400KHz to 1500KHz, Amplitude: Adjustable 0 to 2Vp-p, Output Impedance: 50 Ohm, 1st IF and 2nd IF Amplifier: Central Frequency: 455KHz, Diode Envelope Detector, Product Detector: Operating Frequency: Adjustable from 400KHz to 500KHz SSB, Receiving Media: MW Coil Antenna and via cable. Switch Faults: 4 Switch Faults should be provided on board to study different effects on circuit. |
| 13                              | Frequency Modulation Trainer Kit   | Synchronous Function Generator: Waveforms: Sine, Triangular, Square, Frequency Range: 1) 100Hz to 1KHz, 2) 1 KHz to 10 KHz, FM Modulators : 2 Nos. Varactor Modulator with carrier frequency adjustment Mixer (Frequency Converter): Dual gate MOSFET Inputs: Local oscillator and RF Signal, Output Frequency: 455 KHz adjustable, Switch Faults: 4 Switch Faults should be provided on board                                                                                                                                                                                                                                                                                                |
| 14                              | Frequency Demodulation Trainer Kit | Foster-Seely Detector: Operating frequency: Adjustable 400KHz to 500KHz, Ratio Discriminator Detector: Operating frequency: Adjustable 400KHz to 500KHz, Phase Lock Loop Detector: Operating frequency: Adjustable 400KHz - 500KHz, Phase Detector and FM Quadrature Detector: Operating frequency: Adjustable from                                                                                                                                                                                                                                                                                                                                                                           |



|    |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                           | 400KHz to 500KHz. Amplitude Limiter: Operating frequency: 455KHz, Low Pass Filter: 4TH Order Butterworth Filter. Switch Faults:4 Switch Faults should be provided on board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 15 | Fourier Synthesis trainer Kit                                             | Signal synthesis by summing 10 harmonics, Each harmonic selectable with +sin, -sin, +cos, -cos value, Square, triangle, ramp, pulse, rectified sine, AM and other waves should be available, It should perform Spectrum analysis of the signal using ACT- 01 and ACT -02 for Wave-form generation, Frequency of the fundamentals 10 KHz with quartz control is to be included, Frequency of the harmonics is 20KHz, 30KHz, 40KHz, 50KHz, 60KHz, 70KHz, 80KHz, 90KHz, 100KHz, should be included, It should carry Selectable Phase of each sine wave 0° (sin) 90° (cos), 180° (-sin), 270° (-cos), Adjustable amplitude of each sine-wave on 2 ranges from 0Vpp to 1Vpp or from 0Vpp to 10Vpp should be provided, Indication of the presence of each harmonic via LED should be provided, It should provide Adjustable Amplitude of the DC component from -10V to +10V, Adder stage with 11 inputs should be included, Fixed Power supply of, +5V and GND should be provided, Fixed Power supply of +12V, -12V should be provided. |
| 16 | FDM Transmitter & Receiver Kit                                            | It should provide On-board clock generator, Carrier generator range should be 1KHz ~ 20KHz and 1KHz ~ 30KHz with adjustable amplitude of 0Vpp ~ 2Vpp and Pilot carrier with 256KHz frequency, High frequency transmission using DSB with Frequency division multiplexing, 2 channel FDM communication system, DSB AM modulation and demodulation should be supported, Amplitude demodulation of DSB at Receiver, It should consist of Pass band Filter 1 and 3 frequency range 8 ~12KHz with fC10KHz filter 2 and 4 frequency range 18KHz ~ 22KHz with fC 20KHz, It should have 4th order Butterworth low pass filters, 8 switch faults are provided on-board to study different effects on circuit, 2mm banana socket should be provided for Interconnection, 25 test points are provided to observe various intermediate signals, It should have a Fixed Power supply of, +5V and GND and a Fixed Power supply of +12V, -12V.                                                                                                   |
| 17 | Principles of Communication Engineering System(SDR) (RS Transceiver Kit). | This system should allow to make Telecommunication system using the various Functional Block available in the Software, RF Transceiver: One Transmit, One Receive Channel (with separate Tuning Frequencies), Tuning Range: 350 MHz - 3.5 GHz, LO step size: 2.4 Hz, Tunable Channel Bandwidth: 200 KHz - 20 MHz, Integrated DACs (Tx) : 12-bit, Integrated ADCs (Rx) : 12-bit, Received Signal Strength: 100 dB (±2 dB), Antenna Frequency Range: 824-894 MHz and 1710- 2170MHz; FPGA Logic Cells: 28k, Block RAM: 2.1Mb, DSP Slices: 80; Single-core ARM® Cortex™-A9 MPCore™ @ 667 MHz, Streams up to 4MSPS with no dropped samples, Quad-core 64-bit @ 1.4GHz, Memory DDR3L, 1066 Mbps (16-bit Interface), 512 Mbytes, Serial Flash 32 Mbyte, Quad I/O provides throughput up to 54 Mbps, RAM : 4 GB LPDDR2 SDRAM, 2.0 USB Ports: 3 No, HDMI Port: 1 No.                                                                                                                                                                       |



### Analog Circuit and Digital Logic Design

| Sr. No | Item Name                          | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18     | Digital Circuits Development Board | Size of Breadboard: 172.5 mm X 128.35 mm, Tie Points on Breadboard: 1685 nos (Solderless), DC Power supplies: +5V, 1A; 5V, 500mA (Fixed); +3V - +15V, 500mA (Variable), Included Accessories: I. Breadboard (Solderless), II. Connecting Wires: 20 nos, III. 2mm – 1mm patch cords: 16 nos, IV. 2mm – 2mm patch cords                                                                                                                                              |
| 19     | Programmable Output Power Supply.  | 3 independent controlled and isolated output: 32V/3.2A×2, 2.5V/3.3V/5V/3.2A×1, total 220W; 5 digits Voltage, 4 digits Current Display, Minimum Resolution: 10mV/10mA, panel timing output functions, 3 types of output modes: independent, series, parallel, Short circuit and overload protection, with the waveform display function                                                                                                                             |
| 20     | Benchtop Digital Multimeter.       | 5 1/2 digits reading resolution, Up to 150 rdgs/s measurement speed, True-RMS AC Voltage and AC Current measurement, 1GB Nand flash size, DC Voltage : 200 mV- 1000 V, DC Current : 200 $\mu$ A -10 A, AC Voltage (True - RMS) : 200 mV -750 V, AC Current (True-RMS) : 20 mA -10 A, 2/4 - Wire Resistance : 200 - 100 Mohm, Capacitance : 2 nF -10000 $\mu$ F, Continuity Test : Range is fixed at 2 kW, Frequency Measurement : 20 Hz- 1 MHz, Period Measurement |

**FORMAT FOR QUOTATION SUBMISSION**  
(In letterhead of the supplier with seal)

Quotation No. \_\_\_\_\_

Date: \_\_\_\_\_

To: \_\_\_\_\_  
\_\_\_\_\_

| Sl. No.           | Description of goods \ (with full Specifications) | Qty. | Unit | Quoted Unit rate in Rs.<br>(Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments) | Total Price<br>(A) | Sales tax and other taxes payable |                |
|-------------------|---------------------------------------------------|------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------|----------------|
|                   |                                                   |      |      |                                                                                                                                                                                                      |                    | In %                              | In figures (B) |
|                   |                                                   |      |      |                                                                                                                                                                                                      |                    |                                   |                |
| <b>Total Cost</b> |                                                   |      |      |                                                                                                                                                                                                      |                    |                                   |                |

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. \_\_\_\_\_ (Amount in figures) (Rupees \_\_\_\_\_ amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of \_\_\_\_\_ months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact No. \_\_\_\_\_

Gross Total Cost (A+B): Rs. \_\_\_\_\_