



## INVITATION LETTER

Package Code: TEQIP-III/2019/nitt/135

Current Date: 05-Dec-2019

Package Name: Microcontroller Based Servo And Stepper

Method: Shopping Goods

Motor Control Trainers kit

To,

Address (Firm)

Sub: INVITATION LETTER FOR **MICROCONTROLLER BASED SERVO AND STEPPER  
MOTOR CONTROL TRAINERS KIT**

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,

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	Microcontroller Based Servo And Stepper Motor Control Trainers kit	5	Department of Production Engineering, NIT Trichy 620015	Yes

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 **60** days after the last date of quotation submission.  
**GST 5%-as per column (4) II under notification no.45/2017 Central Tax- (Rate), Date. 14.11.2017 Notification no.46/2017 integrated Tax – (Rate), Date. 14.11.2017.**
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 and Satisfactory Acceptance	60 Days	100%


Liquidated Damages will be applied as per the below:

10. Liquidated Damages Per Day Min %: N/A
  10. Liquidated Damages Max %: N/A
  11. All supplied items are under warranty of **12** months from the date of successful acceptance of items and AMC/Others is **No**.
  12. You are requested to provide your offer latest by **15:00** hours on **26-Dec-2019**. **Opening time :-26 December 2019 16.00 hours at TEQIP Office, Administrative Building, NIT Trichy.**
  13. Detailed specifications of the items are at Annexure I.
  14. Training Clause (if any) **one Day Training And Demo**
  15. Testing/Installation Clause (if any) **Installation at Department of Production Engineering, NIT Trichy.**
  16. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
  17. Sealed quotation to be submitted/ delivered at the address mentioned below, **Head of the Department, Department of Production Engineering, National Institute of Technology, Tiruchirappalli, Tamil Nadu-620015.**
- Kind Attn: Dr. K. Panneerselvam**
18. We look forward to receiving your quotation and thank you for your interest in this project.

Quotation Reference Number

(2) Quotation for the Supply of \_ \_ \_ \_ \_

(3) Date of opening \_ \_ \_ \_ \_

  
(Dr. P. Sathiya)  
HoD/ Production Engg  
5/12/19

## Annexure I

Sr. No	Item Name	Specifications
1	Microcontroller Based Servo And Stepper Motor Control Trainers kit	<p>1(a) DC MOTOR SPEED CONTROL TRAINER and POSITION CONTROL TRAINER Specifications</p> <p><b>SPEED CONTROL TRAINER</b> - Speed control of a 12V, 4W permanent magnet d.c. motor enclosed in see through Metal cabinet - Speed range: 0 to 3000 rpm (typical) - Opto-interrupter based speed sensing. - 4-digit speed display in rpm. - Electronic tachogenerator for feedback. - Separate unit for motor in a see-through cabinet. - Smooth, non-contact eddy current brake for loading. - Built-in 3 ½ digit DVM for signal measurements.</p> <p><b>POSITION CONTROL TRAINER</b> - Position control of a 12V, 1A d.c. gear motor (50rpm) with calibrated dials coupled with tachogenerator enclosed in see through metal cabinet - Provision for positive and negative tachogenerator feedback. - Tacho constant: 2V/1000 rpm approximately. - Calibrated dials for reference and output position: resolution 1degree - microprocessor based waveform capture card. - Built-in 3 ½ digit DVM for signal measurements. - Servo-potentiometer with full 3600 rotation.</p> <p>1(b) STEPPER MOTOR STUDY TRAINER Specifications - Signal stepping and free running modes of operating with speed variation and direction reversal – internal TTL circuit. - 3600 motion Servo-Potentiometer position-pickup for motor dynamics. -Should supply microcontroller 8952 with on board 12 bit ADC, 8 bit DAC, 20x2LCD, ASCII Keyboard board to Operate motor. - Stepper motor enclosed in see through metal cabinet with Torque :3 Kg-cm, Step angle:1.8 degree,Power:12V,1A/ phase.</p> <p>1(c) AC SERVOMOTOR STUDY TRAINER Specifications - 2-phase a.c. servomotor – 12V/50Hz per phase enclosed in see through metal cabinet. - Small generator for loading. - 4-digit speed display. - 3-digit time constant display. - 3 ½ digit r.m.s. voltmeter. - 3 ½ digit d.c. panel meter.</p> <p>1(d) DC SERVOMOTOR STUDY TRAINER - Speed control of a 30V/2A, permanent magnet d.c. motor coupled With tachogenerator enclosed in see through metal cabinet. - Speed range: 0 to 2000 rpm (typical) - Opto-interrupter based speed sensing. - 4-digit speed display in rpm. - Separate unit for motor in a see-through cabinet. - 2Kg Spring Balance provided for loading. - Built-in 3 ½ digit DVM for signal measurements. - Built-in 3 ½ digit Current Meter.</p> <p>1(e) TEMPERATURE SENSOR TRAINER and CONTROLLER TRAINER Specifications</p> <p><b>TEMPERATURE CONTROLLER TRAINER</b> - temperature controller with facilities for P, I, D and relay control blocks. - Operating temperature: Ambient to 900 C. - Separate controls for P, I, D channel gains. - two settings for relay hysteresis. - Fast 25W oven fitted with IC temperature sensor. - Digital display of set and measured temperature on 3 ½ digit built-in DVM.</p> <p><b>TEMPERATURE SENSOR TRAINER</b> - Study of 4 different temperature transducers - NTC thermistors, RTD Platinum, K(Cr-Al) thermocouples, IC temperature sensors. - Study &amp; comparison of Temperature transducer controlled alarm system - PID control: P, P+I, P+D &amp; P+I+D control action - Instrumentation amplifier, add on amplifier : X1, X100, X235, P-controller, I-controller, D-controller Comparator, Electronic switch, Signal conditioning, Rotary /Slide pots, Heater, Relay, Buzzer, LED - Digital meter: Actual/Set temp/mV</p>

**FORMAT FOR QUOTATION SUBMISSION**

(In letterhead of the supplier with seal)

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

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

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

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

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. \_\_\_\_\_