



**Government College of Engineering**  
Station Road, Osmanpura, Aurangabad - 431 005  
"In Pursuit of Global Competitiveness"

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**INVITATION FOR QUOTATION**

GECA/E&TC/Purchase/2016-17/ 783

Date : 03/03/2017

To,

GECA Website & notice Board

**Sub: Invitation for Quotations for supply of following Goods**

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 | Brief Description                                | Quantity | Delivery Period(In days) | Place of Delivery  | Installation Requirement (if any) |
|--------|--|----------|--------------------------|--|-----------------------------------|
| 1      | Sampling & Reconstruction Technique              | 2        | 07 Days                  | E&TC Department<br>Govt. College of Engineering,<br>Aurangabad | YES                               |
| 2      | TDM - PAM Transmitter Receiver                   | 2        |                          |  |                                   |
| 3      | TDM Pulse Code Modulation & Transmitter          | 1        |                          |  |                                   |
| 4      | TDM Pulse Code Demodulator and Receiver          | 2        |                          |  |                                   |
| 5      | Delta Modulation & Demodulation Techniques       | 2        |                          |  |                                   |
| 6      | PAM-PPM-PWM Modulation- De-modulation Techniques | 2        |                          |  |                                   |
| 7.     | Differential Pulse Code Modulation& Demodulation | 2        |                          |  |                                   |

2. Quotation,

- a. The contract shall be for the full quantity as described above.
  - b. Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
  - c. All duties and other levies payable by the supplier under the contract shall be included in the unit price.
  - d. Applicable taxes shall be quoted separately for all items.
  - e. 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.
  - f. The Prices should be quoted in Indian Rupees only.
  - g. Rates Quoted should be FOR Aurangabad or free delivery at the institution
3. Each bidder shall submit only one quotation.



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| 4      | TDM Pulse Code Demodulator and Receiver          | 2        |                          |   |                                   |
| 5      | Delta Modulation & Demodulation Techniques       | 2        |                          |   |                                   |
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| 7.     | Differential Pulse Code Modulation& Demodulation | 2        |                          |   |                                   |

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3. Each bidder shall submit only one quotation.

4. Quotation shall remain valid for a period not less than **06 months** after the last date of quotation submission.
5. Evaluation of Quotations,  
The Purchaser will evaluate and compare the quotations determined to be substantially responsive i.e. which
  - a. are properly signed ; and
  - b. confirm to the terms and conditions, and specifications.
6. 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.
  - a. 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.
  - b. 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.
7. Payment shall be made in Indian Rupees as follows:  
**Delivery and Installation And Training - 100%**
8. All supplied items are under warranty of **12 months** from the date of successful acceptance of items.
9. You are requested to provide your offer latest by **16:00** hours on 10/03/2017
10. Detailed specifications of the items are at Annexure I.
11. Training Clause (if any) **1 Days Training for Faculty members and related student**
12. Testing/Installation Clause (if any) **Asper Satisfaction of Expert Faculty member**
13. **Information brochures/ Product catalogue should be enclosed with the quotations clearly indicating the model quoted for.**
14. Sealed quotation to be submitted/ delivered at the address mentioned below,  
The Principal Government College Of Engineering, Railway Station Road, Osmanpura Aurangabad.  
Aurangabad Maharashtra, India 431005 .Subscribed as Quotation for E&TC. Dept.  
**GECA/E&TC/Purchase/2016-17/ 783**      Date: 10/03/2017 Due 21/10/03/17
15. We look forward to receiving your quotation and thank you for your interest in this project.

03/03/2017

Principal  
Govt. College of Engineering,  
Aurangabad

**Annexure I**

| Sr. No | Item Name                                  | Specifications  |
|--------|--|---|
| 1      | Sampling & Reconstruction Technique        | <ul style="list-style-type: none"> <li>• Crystal Frequency: 8 MHz</li> <li>• Sampling Frequency: 20, 50, 80,100, 200 &amp;400 KHz (switch selectable)</li> <li>• On-board Generator: Synchronized 1 KHz sine wave</li> <li>• Duty cycle: 0-90% in Decade steps(SwitchSelectable)</li> <li>• Low -Pass Filters: Butterworth 2 &amp; 4 order</li> <li>• Cut-off frequency: 3.4 KHz each</li> </ul>  |
| 02     | TDM - PAM Transmitter Receiver             | <ul style="list-style-type: none"> <li>• Crystal Frequency: 8 MHz</li> <li>• Analog Input Channels: 4 channels</li> <li>• Multiplexing: Time Division Multiplexing</li> <li>• Modulation: Pulse Amplitude Modulation</li> <li>• On Board Analog Signal: 500 Hz, 1 KHz, 2 KHz and 4 KHz (Sine wave synchronized to sampling pulse) Adjustable amplitude and separate variable DC level)</li> <li>• Sampling Rate: Four sampling signals 500Hz / 1KHz / 2KHz / 4KHz per channel (switch selectable)</li> <li>• Sampling Pulse: With duty cycle variable from 0-90% in decade steps.</li> <li>• Clock Regeneration at Receiver: Using PLL</li> </ul> |
| 03     | TDM Pulse Code Modulation & Transmitter    | <ul style="list-style-type: none"> <li>• Crystal Frequency: 16 MHz</li> <li>• On Board Analog Signal: 2 KHz, 4 KHz (Sine wave synchronized to sampling pulse Adjustable amplitude and separate variable DC level)</li> <li>• Input Channels: 2 nos.</li> <li>• Multiplexing: Time Division Multiplexing</li> <li>• Modulation: Pulse Code Modulation</li> <li>• Sync Signal: Pseudo random sync code generator</li> <li>• Error Check Code: Off - Odd - Even - Hamming</li> <li>• Operating Mode: Fast : 320 KHz / channel approximately</li> <li>• Slow: 1.9 Hz / channel approximately</li> </ul>   |
| 04     | TDM Pulse Code Demodulator and Receiver    | <ul style="list-style-type: none"> <li>• Time Division Multiplexed Serial Input channel.</li> <li>• Demodulation: Pulse code Demodulation</li> <li>• Clock Regeneration: By phase Locked loop</li> <li>• Operating Speeds: Fast - 320 KHz/Channel,Slow 1.9 Hz / Channel</li> <li>• Error Detection (Single bit): Off-Odd- Even parity &amp; Hamming code</li> <li>• Error Correction: Hamming code</li> </ul>   |
| 05     | Delta Modulation & Demodulation Techniques | <ul style="list-style-type: none"> <li>• Input Channel: Time Division Multiplexed</li> <li>• Crystal Frequency: 6.400MHz</li> <li>• Sampling Clock Frequency : 50, 100, 200 &amp; 400 KHz (Switchselectable)</li> <li>• On board Generator: Synchronized &amp; Adjustable</li> <li>• Amplitude Sine Wave Generator of 1 KHz, 2 KHz, 3 KHz, 4 KHz SeparateVariable DC level</li> <li>• Integrator: Four integrator gain settings Normal,X 2, X 4, X 8</li> <li>• Low Pass Filter: Fourth order Butterworth (Cut OffFrequency 4.8 KHz)</li> </ul>   |

|    |   |   |
|----|---|---|
| 06 | PAM-PPM-<br>PWM<br>Modulation-<br>De-modulation<br>Techniques | <ul style="list-style-type: none"> <li>• Pulse Modulation Techniques :             <ol style="list-style-type: none"> <li>1) Pulse Amplitude Modulation</li> <li>2) Pulse Width Modulation</li> <li>3) Pulse Position Modulation</li> </ol> </li> <li>• On-board Sampling: 8 KHz, 16 KHz, Frequencies (Pulse) 32 KHz, 64 KHz</li> <li>• On-board Generator: Sine wave: 1 KHz &amp; 2 KHz (Gain adjustable)<br/>Squarewave: 1KHz &amp; 2 KHz</li> <li>• Low Pass Filter: 4 order BW filter</li> <li>• Voice communication: Voice link using dynamicmic &amp; speaker</li> <li>• AC Amplifier: With adjustable Gain Control</li> <li>• DC Output: 0-4 V (variable)</li> </ul> |
| 7  | Differential<br>Pulse Code<br>Modulation &<br>Demodulation    | <ul style="list-style-type: none"> <li>• Signal generator block Functions: Sine and Square</li> <li>• O/P frequency range: 300 Hz to 3.4 KHz</li> <li>• Audio blocks: Audio I/P and O/P processing circuits</li> <li>• Control signals: R/W for ADC, reset, Latchenables, OEs</li> <li>• Sampling frequency: 8 KHz</li> <li>• Bits per sample: 5 bits including sign bit.</li> </ul>  |