



**ASSAM UNIVERSITY: SILCHAR
TRIGUNA SEN SCHOOL OF TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

TENDER PAPER

OPEN TENDER NOTICE NO. AU/TSSOT/ETCE/06 Dated the 7th March, 2017

FOR SUPPLYING AND INSTALLATION OF FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS IN THE DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING.

COST OF TENDER PAPER : RS. 1000/-.

DATE OF ISSUE OF TENDER PAPER : 7TH MARCH 2017.

LAST DATE OF RECEIPT OF BIDS : 29TH MARCH 2017 UPTO 02.00P.M.

DATE OF OPENING OF BIDS : 30TH MARCH 2017 AT 02.00P.M.

ISSUE NO. AU/TSSOT/ETCE/06 Dated the 7th of March 2017

ISSUED TO :

SIGNATURE OF ISSUING AUTHORITY



ASSAM UNIVERSITY: SILCHAR

TENDER NOTICE

Sealed Tenders in two bid system are invited from the interested OEMs/authorised distributors for supplying FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS for the Department of Electronics & Communication Engineering. The Tender should be submitted in two parts, Part – I : Technical Bid; Part – II : Financial Bid in separate envelopes to the Office of the Head, Department of Electronics & Communication Engineering on or before 29TH March'2017 up to 02.00p.m. No Tender shall be received after the specified time. The details of terms and conditions etc. can be downloaded from the website <http://www.aus.ac.in> or collected from the Office of the undersigned.

(**Dr. Debaprasad Das**)

Head

Department of Electronics &
Communication Engineering



**ASSAM UNIVERSITY: SILCHAR
TRIGUNA SEN SCHOOL OF TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

SCOPE OF WORK

1. Supply of material (Hardware and Software) as per tendered specifications.
2. Installation, commissioning, configuration and testing of FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS. The Vendor should include in their offer and supply all necessary accessories, parts & Cables required for installation/commissioning and configuration of all the tendered components.
3. Training on configuration, Administration & Management of the FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS solution to the staffs of the Department at no extra cost.



ASSAM UNIVERSITY: SILCHAR
TRIGUNA SEN SCHOOL OF TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING

TERMS AND CONDITIONS FOR SUPPLYING AND INSTALLATION OF
FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS IN
THE DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Ref: **AU/TSSOT/ETCE/06**

Dated the 7th March, 2017

1. The Bidder should be Original Equipment Manufacturer (OEM) or authorised distributor and also service provider for the systems. Attach documentary proof.
2. The Bidder should have been in operation for a period of at least 5 years as on last date of bid submission, as evidenced by the “Certificate of Incorporation and Certificate of Commencement issued by the Registrar of Companies”.
3. Bidders must have at least 3 years of experience in supply, installation, commissioning and maintenance of respective systems, out of which at least 2 years must be in similar kind of activities for single organization. The Bidder should give details of at least 2 Projects of the same scale in nature executed by him.
4. Sealed Tender should be submitted in prescribed form in two bid system as per the following instructions :
 - i) EMD to sealed in Envelop No. 1
 - ii) Technical Bid is to be sealed in Envelop No. 2
 - iii) Price Bid is to be sealed in Envelop No. 3
 - iv) Envelop No. 1, 2 & 3 to be inserted in single envelop properly sealed and super scribing, name of work, tender no., closing date and name of agency/contractor in the cover of the envelop.
 - v) Sealed means sealing by wax/gum/any type of adhesive tape etc. but not pinned.
 - vi) The envelope containing the tender should be addressed
And should be dropped in the tender box placed in the Office of the
 - vii) Price Bid of only those bidders will be opened who are found qualified after technical bid evaluation.
 - viii) All pages of the tender document is required to be signed by the bidder.
5. The tender should be accompanied with EMD of 2.5% of the final value in the form of **call deposit** to be drawn from any **Nationalized Bank** pledged in favour of the **Finance Officer, Assam University, Silchar**.
6. The rate quoted should be for the items and specifications as mentioned in the list. The party should not quote for other specifications. **If the party wishes to quote for a higher/superior specification, it must be separately stated along with proof that the specification is higher/superior. In no case they**

should quote for lower/inferior specification. In that case the tender will not be considered.

7. Being an Educational Institution, Assam University, Silchar is entitled for Custom and Central Excise Duty exemption for procurement of Scientific Equipments etc. The interested party while quoting rates should indicate the Excise Duty component and Tax component separately.
8. The Bidder should enclose a copy of quality certificate from a recognized institution for their manufacturing/assembly/system integration facilities anywhere located in India or abroad. This certificate should be from any globally recognized institution.
9. The Bidder should be an ISO 9001-2000 certified company.
10. Bidder should submit valid documentary proof of Sales Tax/VAT, Service Tax Registration No. and the details of Income Tax Registration (PAN).
11. The Vendor must fulfil the above criteria. Technical bid of Vendors fulfilling the criteria will only be evaluated by the duly constituted technical evaluation committee. Bid of vendors not fulfilling the criteria given above will be summarily rejected. Undertaking for subsequent submission of any of the above documents will not be entertained under any circumstances.
12. The University may place the whole order with single bidder even if the bidder has not quoted the lowest price for each item but overall his rate is lowest. **Merely quoting the lowest price does not entitle a bidder to get the order for the item.**
13. **The selected bidder after receipt of supply order has to deposit 7.5% of the supply order value in the form of FDR from any Nationalized bank in favour of the Finance Officer, Assam University, Silchar payable at Dargakona, Silchar as security deposit. In addition, the earnest money deposited shall also be retained as security deposit. The security deposit will be released only after completion of Warranty: period.**
14. **The successful bidder shall have to supply the materials strictly as per the configuration, make/brand as stated in the supply order and shall have to complete the supply within 30 days from the date of issue of order/or as per mutual agreement in full set basis and the items are required to be installed in the Laboratory. Otherwise, the order shall automatically stand cancelled and the security deposit of the bidder shall be forfeited. No communication in this regard will be entertained. In such eventuality the University will have the right to place order to the next bidder from the panel. User manuals, Operating System CD, Driver CD etc. are also to be provided along with the items supplied.**
15. **Earnest money of unsuccessful bidders will be released after finalization of the order.**
16. The successful bidder shall have to provide comprehensive onsite Warranty: support as per specifications from the date of successful installation. If any breakdown, non-functioning or malfunctioning of the machine/equipment occurs during the Warranty: period, the supplier shall have to attend to the complain within 24 hours (or in next working day in case of holidays) after receiving verbal/written/e-mail complain and will make the machines functional free of cost. In case the system has to be taken out of the University campus, the bidder should provide a standby support system/peripheral with same or higher/new configuration/specification.

17. If the vendor/supplier/bidder fails to attend to the breakdown calls made within the Warranty: period, a portion or whole of the security deposits as decided by the University shall be forfeited.
18. The ASSAM UNIVERSITY reserves the right to accept any tender(s) or reject any or all of the tenders without assigning any reasons whatsoever. The decision of the University authority in this regard shall be final.
19. A) **RATE:** The rate which should be quoted both in figure and words must be inclusive of packing forwarding freight and all other incidental charges.
B) **SALE TAX/VAT :** Rate inclusive of Sales Tax / VAT will be preferred. However, where quoted separately the rates payable should be clearly cited in accordance with provision of relevant Act and rules.
C) **Form 'C' and 'D' :** Assam University, Silchar is not authorised to issue 'C' & 'D' Form against CST.
21. A) **Consignee :** All stores are required to be consigned to the Head, Department of Electronics & Communication Engineering, TSSOT, Assam University, Silchar – 788 011 (Assam).
B) **Mode of Despatch :** The consignment is required to be despatched by Road Transport or delivered at this University under Supplier's own arrangement free of additional charges. All offers of delivery should be made ex-stock and clear note should be inserted. In case of damage or loss in transit, if any will be recoverable from the suppliers.
C) **Despatch of Documents :** The consignment note along with the quadruplicate copy of relevant bill and two copies of priced challan should be dispatched to the Head, Department of Electronics & Communication Engineering, TSSOT, Assam University, Silchar – 788 011 (Assam) immediately on completion of despatch of consignment. If these documents do not reach the said office in time all wharf age / demurrage incurred, if any will be recoverable from the suppliers.
22. **Quality Specification :** The stores offered should be of the best/standard quality available unless, otherwise specified conforming strictly to the specification cited. The University reserves the right to reject such stores as are found unacceptable on these grounds. Items of only reputed manufacturers will be given preferences.
23. **Liquidated Damages :** If a firm accepts the order and fails to execute the order in full or part as per terms and conditions therein, it will be open to the competent authority to recover liquidated damages from the firm at the rate of 1% per month or the part thereof, subject to a maximum of 5% of the value of the undelivered stores. It will also be open to the Competent Authority, alternatively to arrange procurement of the required stores from any source, at the risk and expenses of the firm that has accepted the order and failed to execute the order according to stipulations agreed upon. This will also entail removal of the defaulters name from the approved/registered list of suppliers.
24. **Special Discount/Rebate :** Special Discount/rebate admissible to Educational Institute of National importance may be specifically indicated in the quotation.
25. **Rejection of Offer :** Tenders not conforming to the terms and conditions and procedure so outlined are liable to be rejected summarily.
26. **Guarantee/Warranty: :** The stores should be covered by comprehensive onsite Warranty: as per specifications from the date of satisfactory installation.

27. **Special Condition** : Special condition, if any, printed on the quotation sheets of the tenders or condition attached with the tender will not be applicable to the contract unless these are expressly accepted in writing by the HOD concerned for technical conditions and commercial conditions.
28. **Discretionary Power** : The Head/Competent Authority, Assam University, Silchar reserves the right to accept or reject any or all tenders without assigning any reason there of and also to modify in exceptional case any of the stipulated terms and conditions on merit on genuine and justifying grounds if it is in the larger interest of the University. The final acceptance of the tender rests entirely with the Vice Chancellor who does not bind himself to accept the lowest tender.
29. The following updated documents should also accompany the tenders :
- * Trade License.
 - * Income Tax Clearance Certificate.
 - * Sale Tax Clearance Certificate.
 - * CST/VAT Clearance certificate if quoted in the tender for CST/VAT.

Those Bidders who accept the above terms and conditions may submit their tenders in the prescribed format along with all documents to the Office of the undersigned on or before the stipulated date. The Bidders must also submit a certificate in their official pad stating that all the above terms and conditions are acceptable to them.

(Dr. Debaprasad Das)
Head
Department of Electronics &
Communication Engineering

TENDER FOR SUPPLY AND INSTALLATION OF FURNITURE, LABORATORY EQUIPMENTS, COMPUTERS AND TRAINER KITS IN THE DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING, TRIGUNA SEN SCHOOL OF TECHNOLOGY, ASSAM UNIVERSITY, SILCHAR – 788 011.

To
 Dr. Debaprasad Das
 Head
 Department of Electronics & Communication Engineering
 Triguna Sen School of Technology
 Assam University
 Silchar – 788 011.

Sir,

With reference to your Tender Notice No.

Dated the, 2017 published in the Newspaper and posted at Assam University Website for supply of Laboratory Equipments, Slide Projector, and Trainer Kits in the Department of Electronics and Communication Engineering, Triguna Sen School of Technology, Assam University, Silchar – 11, I/we hereby submit the bond.

I/we confirm that I/we are the owners/authorised person to offer you the item as per the desired specifications.

FORMAT FOR COMMERCIAL BID

SL. NO.	ITEM DESCRIPTION	QUANTITY	UNIT COST	TAX	RATE	TOTAL AMOUNT
1	Microprocessor & Microcontroller trainer Kits 1. 8085 trainer kit. 2. 8051 trainer kit. 3. General Purpose Board. 4. USART Kit.					
2.	Digital Electronics Trainer kits 1. Multimeter . 2. Wattmeter. 3. Analog Digital IC Tester.					
3	Computer Networking Trainer Kits 1. 24 Port switch. 2. Lan Tester.					
4	VLSI Trainer Kit 1. VLSI Development Platform with wireless communication kit.					
5	Digital & Analog Communication Trainer Kit 1. Amplitude Modulation and Demodulation trainer kit. 2. Frequency modulation and demodulation trainer kit. 3. Delta modulation and demodulation trainer kit. 4. Sampling and					

	Reconstruction trainer kit. 5. Time division multiplexing and demultiplexing trainer kit. 6. PCM modulation and demodulation trainer kit 7. FSK modulation and demodulation trainer kit 8. ASK modulation and demodulation trainer kit 9. PSK Modulation and Demodulation Trainer kit 10. QPSK Modulation and Demodulation Trainer Kit. 11. DPSK Modulation and Demodulation Trainer Kit 12. PAM-PPM-PWM Modulation and Demodulation Trainer Kit 13. DSB/SSB AM Transmitter Trainer Kit 14. DSB/SSB AM Receiver Trainer Kit					
6	DSP Starter Kit 1. TMS320C6713 DSP Starter Kit (DSK)					
7	Microwave Lab Kit 1. Klystron Mount. 2. Klystron Tube 3. Isolator (8.2 to 12.4 GHz) 4. Frequency Meter 5. Variable Attenuator. 6. Slotted Section (8.2-12.4 GHz) 7. Tunable Probe 8. Detector Mount (8.2-12.4 GHz) 9. Movable Short.					
8	Desktop Computer 1. Desktop computer with all accessories					
9	Furniture 1. Scholar desk 2. Executive arm chair					

Date :

(Signature of the Bidder)

SEAL
Address

Ph.
FAX
PAN NO.

Mobile :

(Use extra sheet for additional information, if necessary).

ANNEXURE - I

SCHEDULE 1:- MICROPROCESSOR & MICROCONTROLLER TRAINER KITS

Item	Specification	Qty
1. 8085 Trainer Kit	<ul style="list-style-type: none"> ❖ High performance 8 bit 8085A CPU @ 3 MHz. ❖ Operates on 5V@1A power supply. ❖ 8 K user RAM using 6264 with battery backup for sockets using 3.6V Ni-Cd Battery. ❖ Three 28 pin sockets provided for memory expansion up to a maximum of 56 K. <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	10
2. 8051 Trainer Kit	<ul style="list-style-type: none"> ❖ C8051F340 micro controller operating at 48 Mhz. Max operating speed. ❖ High-speed pipelined 8051-compatible microcontroller core (up to 48 MIPS) ❖ On chip Universal Serial Bus (USB) Function Controller ❖ Input Voltage - 9V DC <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	5
3. General Purpose Board.	<ul style="list-style-type: none"> ❖ 16x2 character LCD ❖ 2 digit 7-segment display ❖ 4 switch interface ❖ 2x2 Matrix keyboard ❖ DC motor interface <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	6
4. USART Kit	<ul style="list-style-type: none"> ❖ Compatible with Dyna-85, ILC-V2*, Star-85* ❖ Selection of I/O addresses through jumper. ❖ 6.144MHz crystal is provided to derive 1.5 MHz Clock. ❖ RST 5.5 , RST 6.5, RST 7.5 are provided onboard for interrupt driven modes. <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	2

SCHEDULE 2:- DIGITAL ELECTRONICS TRAINER KIT

Item	Specification	Qty
1. Multimeter	<ul style="list-style-type: none"> ❖ Transistor hFE ❖ Audible continuity & Diode detection ❖ Low battery and overload indication & protection ❖ Temperature ranging from -40 to 100 C <p>Warranty:- Min 1 year</p>	20

	Comprehensive onsite	
2. Wattmeter	<ul style="list-style-type: none"> ❖ Rated Voltage:- 120/240V (1.2/2.4 VA) ❖ Rated Current:- 1/5A (0.93/0.84VA) ❖ Operating Frequency:- DC, 25~1000 Hz ❖ Scale length:- Approximately 135 mm (Deflection Angle: 85°) <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	2
3. Analog Digital IC tester	<ul style="list-style-type: none"> ❖ Analog Range:- Operational Amplifiers, Comparators, Transistor arrays, octocouplers, analog switches, multiplexers, voltage followers, timers, cross point switches, ADC, DAC, etc ❖ Digital Range:- 74 series of TTL ics, 40 & 45 series of CMOS ICS, Microprocessor ICS, Peripheral ICS, EPROMs and RAM ICS ❖ Package:- 14,16,20,24,28 & 40 pin DIP & Analog/Linear ICS 6, 8, 14, 16 & 20 pin DIP ❖ 230 V, 50 Hz, AC ± 10%. ❖ Sheet metal box with powder coating and engraving. <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	1

SCHEDULE 3:- COMPUTER NETWORKING TRAINER KITS

Item	Specification	Qty
1. 24 Port Switch	<p>1. 100Mbps. These LED indicators are lighted up when there is a secure connection (or link) to 100Mbps Fast Ethernet device at any of the ports.</p> <p>2. POWER This indicator lights green when the Switch is receiving power, otherwise, it is off.</p> <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	3
2. Lan Tester	<p>1. Operates on 9V battery</p> <p>2. Cable Tester for RJ12, RJ11, RJ45, Cat 5e, Cat 5, Cat 6, 10/100 Base-T, AT&T 258 A, TIA-568A/568B etc.</p> <p>3. Capable to judge wrong connection, short circuit and open circuit.</p> <p>Warranty:- Min 1 year</p> <p>Comprehensive onsite</p>	2

SCHEDULE 4:- VLSI TRAINER KIT

Item	Specification	Qty
1. VLSI Development Trainer Board	100K gates FPGA features 18-bit multipliers	4

	72 Kbits of fast dual-port block RAM 500 MHz+ operation 8 LEDs, 4 pushbuttons, 8 slide switches 4-digit seven-segment display PS/2 port 8-bit VGA port USB2 full-speed port for FPGA configuration and data transfers (using Adept 2.0 software available as a free download) Four 6-pin headers for user I/Os WARRANTY: : 2 years comprehensive onsite	
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SCHEDULE 5:- DIGITAL AND ANALOG COMMUNICATION TRAINER KIT

Item	Specification	Qty
1. Amplitude Modulation and Demodulation trainer kit	1.Modulating signal(20Hz to 20KHz) 2.amplitude modulator: using IC 3086 3.amplitude demodulator: using diode detector method 4. Functional blocks indicated on board mimic Input-output and Test Points provided onboard 5. Modulating Signal : 20Hz-20KHz. Sine wave in three steps with variable amplitude & frequency Warranty:: 2 year Comprehensive onsite	1
2. Frequency modulation and demodulation trainer kit	1. With adjustable amplitude and frequency. 2. Power supply 230v +-10%,50/60 Hz 3. Bare board Tested Glass Epoxy SMOBC PCB is used. 4. Modulating Signal : 20Hz-2KHz. Sine wave in three steps with variable amplitude & frequency. Warranty: 2 year Comprehensive onsite	1
3. Delta modulation and demodulation trainer kit	1.Sampling frequency 20Khz using IC555 2.Delta Modulator :Using IC 74193 & DAC 0800 3. Delta Demodulator: Using IC TL084 4. Bare board Tested Glass Epoxy SMOBC PCB is used. 5. Input-output and Test Points provided onboard Warranty: 2 year Comprehensive onsite	1
4. Sampling and Reconstruction trainer kit	1.sampling duty cycle of 0-90%in steps 2.sampling frequencies 2,4,8,16 khz with amplitude 5v. On-board separate Sample and Sample & Hold circuit / output. 3.On-board 2nd & 4th order Low pass filter with cut off frequency of 3.4khz. 4.Functional Diagrams indicated on board	1

	Input-output and Test Points provided onboard Warranty: 2 year Comprehensive onsite	
5. Time division multiplexing and demultiplexing trainer kit	1. TDM -Modulator : Using IC 4066 2. TDM -Demodulator: Using 4066 and LM3243. 3.Power Supply : 230 V \pm 10%, 50/60 Hz 4. Bare board Tested Glass Epoxy SMOBC PCB is used. 5. Low pass filter : 4th order with cut-off frequency of 3.4khz Warranty: 2 year Comprehensive onsite	1
6. PCM modulation and demodulation trainer kit	1. DC Voltage having Amplitude of +/- 5V. 2.8 bit ADC & DAC Data Display on 8 LEDs 3. Filter : Low pass having cut off Frequency 3.4KHz. 4. Power Supply : 230 V \pm 10%, 50/60 Hz 5. Two TDM Clocks generated using 74138 Warranty: 2 year Comprehensive onsite	1
7. FSK modulation and demodulation trainer kit	1.FSK Modulator : Using IC 74163 & 7400 2.FSK Demodulator : Using IC TI084 3.Power Supply : 230 V \pm 10%, 50/60 Hz 4. Bare board Tested Glass Epoxy SMOBC PCB is used. Warranty: 2 year Comprehensive onsite	1
8. ASK modulation and demodulation trainer kit	1.ASK -modulator : using IC 4066 2.ASK -Demodulator : using IC TI084 3.Power Supply : 230 V \pm 10%, 50/60 Hz 4. Bare board Tested Glass Epoxy SMOBC PCB is used. Warranty: 2 year Comprehensive onsite	1
9. PSK Modulation and Demodulation Trainer kit	1.PSK Modulator : Using IC 4051 and IC TL084 2.PSK Demodulator : using IC 7486 3.power Supply : 230 V \pm 10%, 50/60 Hz 4. Bare board Tested Glass Epoxy SMOBC PCB is used. Warranty: 2 year Comprehensive onsite	1
10. QPSK Modulation and Demodulation Trainer Kit	1. 1.QPSK Modulator : using IC 7400 2.QPSK Demodulator : using IC 7474, TL084, 7486 3.Power Supply : \pm 12V/250Ma 7 Different data conditioning formats (NRZ(M) RZ, Biphase (Manchester), Biphase (Mark),AMI, RB, Differentially encoded dibit pair to NRZ data) Warranty: 2 year Comprehensive onsite	1
11. DPSK Modulation and Demodulation Trainer Kit	1.PSK Modulator : Using IC 4051 and IC TL084 2.ine waveform : 10KHz.-20KHz. With Variable Ampiltude of 5V p-p using IC2206 3. Sine waveform : 10KHz.-20KHz 4. Operating Conditions : 0-40oC, 80% RH	1

	Warranty: 2 year Comprehensive onsite	
12. PAM-PPM-PWM Modulation and Demodulation Trainer Kit	1. 1. sampling frequency 8,16,32,64 khz 2. on board generator sine wave and square wave Input-output and Test Points provided onboard 3. Bare board Tested Glass Epoxy SMOBC PCB is used 4. On-board 4th order Butterworth Low pass filter with cut off frequency of 3.4khz 5. PAM/PWM/PPM Techniques using Natural & Flattop sampling Warranty: 2 year Comprehensive onsite	1
13. DSB/SSB AM Transmitter Trainer Kit	1. 1. with adjustable amplitude and frequency(300hz-3.4khz) 2. transmitter amplifier output (gain adjustable)DSB(1MHZ)SSB(1.445MHZ) 3. Receiving media telescopic antenna/cable Warranty: 2 year Comprehensive onsite.	1
14. DSB/SSB AM Receiver Trainer Kit	1. Frequency range 980khz to 2060 khz 2. Audio output is amplifier with speaker 3. Receiving media telescopic antenna/cable Warranty: 2 year Comprehensive onsite	1

SCHEDULE 6:- DSP Starter Kit

Item	Specification	Qty
1. TMS320C6713 DSP Starter Kit (DSK)	<ul style="list-style-type: none"> • Operating frequency 225 Mhz. • Embedded USB JTAG controller with plug and play drivers, USB cable included. • Embedded JTAG support via USB. • High-quality 24-bit stereo codec. • Four 3.5mm audio jacks for microphone, line in, speaker and line out. • 512K words of Flash and 16 MB SDRAM. • Expansion port connector for plug-in modules. • On-board standard IEEE JTAG interface. • +5V universal power supply. • A complete Integrated Development Environment (IDE), an efficient optimizing C/C++ compiler assembler, linker, debugger, an a advanced editor with Code Maestro™ technology for faster code creation, data visualization, a profiler and a flexible project manager. • DSP/BIOS™ real-time kernel. • Target error recovery software. 	2

	<ul style="list-style-type: none"> • DSK diagnostic tool <p>Warranty: 2 year Comprehensive onsite</p>	
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SCHEDULE 7:- Microwave Lab Kit

Item	Specification	Quantity
1. Klystron Mount	Freq. Range: 8.2 to 12.4 GHz; Waveguide: RG-52/U; Flange type : UG-39/U;	01
2. Klystron Tube	X-band	01
3. Isolator (8.2 to 12.4 GHz)	Freq. Range: 8.2 to 12.4 GHz; Waveguide type: WR90; Flange type : UG/U 39; Max VSWR: 1.15; Min Isolation: 25 dB; Min insertion loss: 0.4 dB	01
4. Frequency Meter	Freq. Range: 8.2-12.4 GHz;	01
5. Variable Attenuator	Freq. Range: 8.2 to 12.4 GHz; Waveguide type: WR90; Flange type : UG/U 39;	01
6. Slotted Section (8.2-12.4 GHz)	Freq. Range: 8.2-12.4 GHz; Residual VSWR: 1.01; Slope: ± 0.2 dB; Waveguide: RG-52AJ; Flange: UG-39/U	01
7. Tunable Probe	Freq. Range: 8.2 to 12.4 GHz; Detector: IN-23; Output Connector: BNC(F);	01
8. Detector Mount (8.2-12.4 GHz)	Freq. Range: 8.2-12.4 GHz; Crystal: IN-21; Output Connector: BNC(F); Waveguide: RG-52/U; Flange: UG-39/U	01
9. Movable Short	Freq. Range: 8.2 to 12.4 GHz; Waveguide: RG-52/U; Flange type : UG-39/U; Reflection Coefficient: 0.98;	01
10. Matched Termination (8.2-12.4 GHz)	Freq. Range: 8.2-12.4 GHz; Max VSWR: 1.02; Avg Power: 2W; Type: Fixed; Waveguide: RG-52/U; Flange: UG-39/U	01
11. Slide Screw Tuner	Freq. Range: 8.2 to 12.4 GHz; Waveguide: RG-52/U; Flange type : UG-39/U; Maximum VSWR : 20:1.02;	01

12. Waveguide Stands	X-band	01
13. VSWR Meter	<p>Freq. Range: 8.2 to 12.4 GHz;</p> <p>Sensitivity: 0.2μV at a 200 ohms input for full scale deflection</p> <p>Noise Level: At least 5 dB below full scale at rated sensitivity and maximum band width input terminated in 100 ohms and 500 ohms for crystal low and high respectively.</p> <p>Calibration: Square law, meter indicates SWR, dB</p> <p>Range: 70 dB, input attenuator provides 60 dB in 10 dB steps, accuracy \pm 0.2 dB per 10 dB steps Maximum commutative error \pm 0.5 dB</p> <p>Scale selector: Normal Expand and – 5dB</p> <p>Meter Scale: SWR1-4,SWR 3-10 , expand SWR 1.1.3, dB 0-10, expand dB0.2</p> <p>Gain Control: Adjust the reference level, variable range 0-10 dB approx.</p> <p>Input: “Bolo” bias provided for 4.3 mA low current bolo meters</p> <p>Recorder output: Socket provided for recording having 1 V for full scale deflection, internal resistance of 1000 ohms or less</p> <p>A/C Output: BNC connector for amplified output</p> <p>Input connector: BNC (F)</p> <p>Frequency: 1000Hz \pm 10%</p> <p>Power: 230 volts A.C \pm 50 Hz, mains supply.</p>	01
14. Solid State Klystron Power Supply	<p>Beam Supply</p> <p>Voltage Range: 195-400 V continuously variable</p> <p>Current: 45mA Max.</p> <p>Regulation: Better than 0.5% for \pm variation in Mains Supply Voltage</p> <p>Ripple: Less than 5 mV rms</p> <p>Repeller Supply</p> <p>Voltage Range: -10 V to -300 DC continuously variable with respect to Klystron cathode</p> <p>Regulation: 0-25% for \pm variation in Mains supply voltage</p> <p>Heater Supply</p> <p>6.3V DC (regulated)</p> <p>Modulation</p> <p>Square Wave: Freq. 500 Hz-1.7 KHz Max Amp. +110 Volt peak to peak</p> <p>Amplitude and frequency continuously variable</p> <p>Saw tooth: Freq. 50Hz-196 Hz Amplitude -60 V max peak to peak</p> <p>Amplitude and frequency continuously variable</p> <p>Operating Voltage</p> <p>230V \pm 10%, 50 Hz, A.C</p>	01
15. Cooling Fan with Stand	X-band	01
16. Co-axial Cable (BNC)	X-band	06
17. Co-axial Cable (TNC)	X-band	06

SCHEDULE 8:- Computers

Item	Specification	Quantity
Desktop Computer	Processor: Core i5 RAM: 4 GB DDR3 Hard disk: 1 TB Operating System:- Windows OS Display:- 15.6” Graphics:- Dedicated 512 MB or more. From reputed brand(Hp/Dell/Acer).	20

SCHEDULE 9:- Furniture

Item	Specification	Quantity
Scholar Desk	Steel Table cum bench (2 seat) with sunmica or processed wood top for students' classroom, size (in cm) table: 105(L) x 40(B) x 75(H) and bench: 105(L) x 35(B) x 45(H).	40
Executive Arm Chair	Executive arm chair of reputed brand, soft top fixed arms.	20

Sd/-

HOD, ECE