INVITATION LETTER

Package Code: TEQIP-III/2019/ntst/102 **Current Date: 10.06.2019**

Package Name: NITS/TEQIP-III/ECE/04_R **Method: Shopping Goods**

Sub: INVITATION LETTER FOR NITS/TEQIP-III/ECE/04_R

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:

S. No.	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)	EMD
1	Equipment for Optical Communication Laboratory	As per Annexure -I	NIT Sikkim	YES	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. **Qualification Criteria**:

   The bidder/supplier should have:

   3.1. **The bid should be accompanied with an EMD (Earnest Money Deposit) of Rs.1,20,000/- (Rupees One Lakh Twenty Thousand Only) in favour of The Director NIT Sikkim in the form of Demand Draft (DD) drawn on any commercial bank payable at Ravangla/Gangtok**.

   3.2. A minimum of 3 years experience of supplying similar items.

   3.3. An average turnover of Rs.50 Lakh in the last three years. Audited annual accounts for the last three financial year should be enclosed with the bid

   3.4. Not been blacklisted by any Govt. Institution/Organization.

4. **Quotation:**

   4.1. The contract shall be for the full quantity as described above.

   4.2. The vendors are required to quote rates for all the items given in the tender in the prescribed "**Format for Quotation Submission",** otherwise the bid shall be summarily rejected.

4.3. Corrections, if any, shall be made by crossing out, initialling, dating and re-writing.

4.4. All duties and other levies payable by the supplier under the contract shall be included in the unit Price.

4.5. Applicable taxes shall be quoted separately for all items. **The Institute has DSIR certificate (applicable GST would be 5%).**

4.6. 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.

4.7. The Prices should be quoted in Indian Rupees only.

4.8. The vendor should submit trade licence/certificate of Registration (as applicable), GST registration number with type of registration and photocopy of the certificate, the PAN of proprietor/firm/company with photocopy of the PAN card. Please attach a certificate that the quoted price is not more than that of any govt. organization/Intuition in India. This has to be mention in the offer letter clearly.

5. Each bidder shall submit only one quotation.

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

7. The quotation should include the following information:

7.1. Authorization certificate from the OEM/Principal assuring full guarantee and warrantee obligations during the liability period, for the goods offered.

7.2. The list of clients (IITs, NITs/Central Universities and other reputed Institution) duly supported by copies of purchase order.

7.3. Details of service/supports centres located in India.

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

8.1. are properly signed; and

8.2. Confirm to the terms and conditions, and specifications.

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

10. **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.

10.1. 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.

10.2. 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.

11. **Performance Bank Guarantee:** Performance Security has to be submitted by the successful bidder. A Bank guarantee issued by a Nationalized Bank in India towards PBG for an amount equal to 5% of total order value of purchase order and valid till the period of beyond the 2 months of completion of warrantee period should be

submitted in favour of "**The Director NIT Sikkim"**. In case, the vendor fails to provide satisfactory service, the PBG is liable to be forfeited.

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

    Satisfactory Delivery & Installation - 70% of Total Cost
    Satisfactory Acceptance - 30% of Total Cost

13. Liquidated Damages will be applied as per the below:

    Liquidated Damages Per Day Min %: 0
    Liquidated Damages Max %: 10

14. All supplied items are under warranty of **24 Months** from the date of successful acceptance of items and AMC/Others are **NA.**

15. You are required to submit your bid/offer latest by **17:30** hours on **24th June 2019.**

16. Detailed specifications of the items are at **Annexure-I**.

17. Training Clause (if any) **YES**

18. Testing/Installation Clause (if any) **YES**

19. Performance Security shall be applicable**: 5%**

20. **The quantity of the items/equipments can be increased or decreased.**

21. Information brochures/ Product catalogue with actual specification and images must be accompanied with the quotation clearly indicating the model quoted for. If the supply is found to be different or not as per specification/quality the whole bid will be consider as rejected and the EMD shall be forfeited. The NIT Sikkim shall not be responsible for any cost incurred in delivery or return of rejected goods/equipments.

22. Sealed quotation to be submitted/ delivered at the address mentioned below:

    The Nodal Office (Procurement),
    TEQIP-III,
    National Institute of Technology Sikkim,
    Barfung Block, Ravangla, South Sikkim
    Pin Code-737139.

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

Dr. Achintesh N. Biswas
Nodal Officer (Procurement)

ANNEXURE-I

S.No	Item	Quantity	Technical Specifications
1.	**Fiber Optic Network Lab Trainer Kit: Dual Wavelength Fiber Optic Laser Source and Detector, Fiber Optic Passive Component, Single Mode Fiber Optic Cable, Chromatic Dispersion, Fiber Optic Power Meter**	**01**	Building Block of an OTDR/WDM/Chromatic Dispersion and Optical Network should consist of the following 4 Modules and an Optical Power Meter. a. Dual Wavelength (1310nm & 1550nm) LASER Source and Detector Module with inbuilt Pulse generator and Driver for Analog and Digital Transmission. LASER - 2 Nos Central wavelength: 1310nm and 1550nm Output power: 1mW Detectors – 2 Nos Type : PIN photodiode & PIN TIA Spectral Bandwidth : 1250nm to 1600nm Pulse Generator: Pulse width: 30ns &100ns with amplitude approx.. 4Vpeak Display : 3½ Digit seven segment display indication for forward voltage and current Input Selectable from : CW, Pulse, Analog, TTL and RS-232 b. Passive Component Module in a casing consisting of Coupler, Isolator, Attenuator and 2 X WDM -- 02 nos COUPLER: Coupling ratio:50:50 - 1 No WDM 1&2: Operating wavelength 1310nm & 1550nm - 1 each ISOLATORS I & II: Isolator I at 1310nm & Isolator II at 1550nm – 1 each ATTENUATOR I & II: Attenuation of attenuator 5dB & 10dB - 1 each c. Single Mode Optical Glass Fiber Module in a casing of Length 100 Mts, 500 Mts& 1000 Mts. – 02 Nos This Module should be provided in a rugged casing so as to prevent the damage to the Fiber . Type of fiber : Single mode, 9/125 micron (100mts , 500Mts and 1 Km) d. Optical Power Meter: should be provided to measure the power of different sources Wavelength (nm) : 800 ~ 1650, Detector : InGaAs Optical connector : FC /SC /ST Universal 2.5mm adaptor Measurement range (dBm) : -70 ~ +10 Standard wavelength (nm) : 850/ 980/ 1310/ 1490 / 1550/ 1625 e. Chromatic Dispersion Module • Specially designed to perform chromatic dispersion experiment • A special purpose fiber is provided for laboratory use to make study more perfect and easy • Length of fiber : 25Kilometer • Type of fiber : Single mode

			• Attenuation : ≤0.05dB/km @ 1285 ~ 1330nm and 1525nm ~ 1575nm • Cable cut off wave length : ≤1260nm • Chromatic dispersion : ≤3.5ps/(nm.km) @ 1285 nm ~ 1330nm) • Zero dispersion : 1300 nm ~ 1320nm wavelength • Multimedia based interactive e-manual
2.	**Erbium Doped Fiber Amplifier Trainer Kit**	**01**	EDFA training system should be a bench-top integrated module designed to understand the principles of Optical Amplification and provide hands-on experience in building Erbium Doped Amplifier. This system enables the student to measure the optical amplifier characteristics under forward and backward pumping schemes. This system should operate in PC control mode with USB Interface and have facility for Internal and external Modulation SPECIFICATIONS The Bench-top Integrated EDFA Training System should consist of all the Optical Devices and Components integrated in sturdy Aluminium Casing for protection. 1. LASER DIODE@1550 nm : 1.25 Gbps Laser Diode Module at 1550nm, In built Isolator Threshold Current Ith: 10 mA Typical, Output optical power 1mW. 2. PUMP LASER@ 980 nm: Up to 100mW 980nm Pump Module, Minimum Kink-Free Power Pmax(mW) – 120. Uncooled. 3. PUMP LASER DRIVER: Max sink current – 3A. Multi-channel. Voltage controlled current sink. 4. OPTICAL DETECTOR: 1.5 GHz InGaAs PIN Photodiode Module. Responsivity: Typical 0.9 A/W in 9/125 µm Fiber, Spectral Range: 1250nm to 1600nm. 5. WAVELENGTH DIVISION MULTIPLEXER: Operating Wavelength(nm): 980/1550, Isolation > 20 dB Directivity > 60 dB 6. ERBIUM DOPED FIBER: C – Band Single Mode Fiber with 20 metres length 7. OPTICAL FILTER MODULE: Center Wavelength : 1550nm @ 2nm BW 8. VARIABLE ATTENUATOR: Attenuation Range:0.8 to 60 dB SOFTWARE • User friendly GUI for monitoring and controlling of EDFA system • Operating modes like CW mode, VI characteristics mode, Internal & External Modulation. • Internal Modulation frequencies – 100Hz, 200Hz, 500Hz, 1KHz. • LASER controls like Supply ON/OFF, wavelength selection & driving current selection. • Real time output signal monitoring of Photo-detector. EXPERIMENTS

			• Measuring Small-Signal Gain • Measuring Gain Saturation • Measuring Saturation Output Power • Measuring Pump Saturation • Measurements under Modulation. • Implementation of Forward Pumping and Backward Pumping.
3.	**WDM and BRAGG Grating Module**	**01**	Coarse Wavelength Division Multiplexing system should be a bench-top integrated module to cover practical aspect of implementing the design by study of optical component parameters and verifying their performance. De multiplexing of wavelengths should be demonstrated along with the recovery of the transmitted signal. Channel addition and deletion (dropping) should be implemented using Bragg grating and three port optical circulator. This system should operate in PC control mode with USB Interface and have facility for Internal and external Modulation SPECIFICATIONS The Bench-Top Integrated CWDM System should consist of all the Optical Devices and Components integrated in sturdy Aluminium Casing for protection. Lasers – 4 Nos • 1.25Gbps CWDM Laser Diode Modules at wavelengths of 1510nm,1530nm,1550nm,1570nm • In built Isolator • Channel spacing : 20 nm • Modulation : Digital modulation with maximum external modulation frequency 5MHz Internal Modulation frequencies – 100Hz, 200Hz, 500Hz, 1KHz. • Output optical power : 1mW. Detectors – 4 Nos •1.5 GHz InGaAs PIN Photo diode Module •Spectral Range : 1250nm to 1600nm •Responsivity : Typical 0.9 A/W in 9/125 μm Fiber. CWDM multiplexer and demultiplexer (4 channels) •Center Wavelength 1510nm,1530nm,1550nm,1570nm • Channel spacing : 20nm • Max Optical Power : 300 mW Three Port Circulator • Polarization Independent Optical Circulator • Band : C+L Fiber Bragg Grating : Central Wavelength : 1550 ± 0.5nm Software • User friendly GUI for monitoring, controlling of CWDM system • Operating modes like CW mode, VI characteristics mode, Internal & External Modulation • LASER control like Supply ON/OFF, wavelength

			selection and driving current • Real time signal level monitoring of Photo-detector. • Graphical representation : XY plot of VI characteristics and Internal Modulation EXPERIMENTS Component characteristics • Diode laser characterization • MUX & DEMUX characterization • Optical circulator characterization • Bragg Grating characterization Optical communication system • 4 Channel CWDM by internal & external modulation • Add/Drop using Circulator & Bragg Grating
4.	**Advance Fiber Optic Communication Lab Trainer Kit: Fiber optic analog transmitter and receiver kit, Fiber optic analog and digital modulation/ demodulation kit, Fiber optic advanced digital communication kit, Function Generator**	**01**	FIBER OPTIC COMMUNICATION LAB TRAINERS SHOULD CONSIST OF 4 Trainers with 2 FG as a Set consisting of a.Fiber optic analog transmitter kit Transmitter: 2 Nos. Peak wavelength of emission 660nm visible Red (SFH 756V), Peak wavelength of emission 950nm infrared (SFH 450V). Pulse amplitude modulation, Amplitude modulation, 4 channel analog Time division multiplexer blocks b. Fiber optic analog receiver kit Receiver: 2 Nos. Photo Diode with responsivity of 0.3 uA /uW (SFH 250V), Photo Transistor with responsivityof 80 uA/uW (SFH350V). Evelop detector, 4 channel analog Time division demultiplexer, signal strength indicator blocks c.Fiber optic analog and digital modulation demodulation kit Transmitter: Peak wavelength of emission 660nm visible Red (SFH 756V) Receiver: 2 Nos. Photo Diode with responsivity of 0.3 uA /uW (SFH 250V), Photo detector with TTL logic output (SFH551V). Pulse width modulation, pulse position modulation, 2 Channel FDM d. Fiber optic digital communication kit Transmitter: Peak wavelength of emission 660nm visible Red (SFH 756V) Receiver: Photo detector with TTL logic output (SFH551V). 8 Channel digital TDM, Bit error rate measurement, PRBS generation, 2 nos. 8-bit switch selectable markers PCM voice coding using MC145502 CODEC chip. Voice communication using telephone handsets. FUNCTION GENERATOR TWO UNITS:
5.	**Fiber Optic For Glass And Plastic Trainer Kit**	**2**	Single Board System having LASER Diode and LED with corresponding Detectors. Source 1 • Type: Laser • Central wavelength: 1310nm

			• Output power : 1.5mW Source 2 • Type: Visible LED • Central wavelength: 660nm • Receptacle housing: "Connector-less" style package Detector 1 • Type: InGaAs PIN photo diode • Spectral Bandwidth : 1250nm ~ 1600nm • Responsivity : 0.9 A/W @ 10 µW of 1310 nm • Bandwidth : 1.5 GHz Detector 2 • Type : Silicon PIN photo transistor • Spectral Bandwidth : 400 nm ~ 1100nm • Max. Photosensitivity Lambda : 850 nm. Fiber cable cable Type : Glass fiber single & multimode
6.	**Physics of Fiber Optic Lab Trainer Kit**	**1**	Physics of Fiber Optic System laboratory should have the following components required to complete a series of experiments. The below mentioned System should be quoted as SET as we need compatibility. This System should consist of the following He-Ne laser source with 2mW output power at 633.5 nm wavelength along with LASER Holder Laser to fiber coupler with Lens adjustment facility to adjust beam into core of fiber, Coupling Efficiency of >70% for SM fibers and > 90% for MM fibers, Wavelength of operation 180 to 2000 nm, Power Handling capacity more than 1 watt. Laser to Fiber Coupler for Bare Fiber with X-Y-Z Positioners. Laser power meter with separate Sensor unit with stand and separate display unit, Power measurement range upto 40mW, Wavelength of operation 400 to 1100 nm and calibrated to 633nm Optical Breadboard with Dimension of 60cm X 60cm. X-Y-Z Fiber Positioners and Rotary stage with angle rotation of isteps better than 1/2 degree Optical Fiber Cable of length 1 Km , 500 Mts and 100 Mts . Optical patchchords and accessories required for experimentation purpose: 9 /125 micron single mode glass fiberpatchchord 62.5 /125 micron multimode glass fiberpatchchord 100/140 micron multimode glass fiberpatchchord Display screen List of Experiments that should be possible with the above set up 1. Mode Observation 2. Coupling of Laser to Fiber and measuring the coupling

			efficiency 3. Attenuation Measurement using Cut Back Method 4. Calculation and Measurement of far field pattern of optical fiber as a function of angle 5. Numerical Aperture Measurement of Optical Glass Fiber
7.	**Fiber Connector and Splicing Tool Kit**	**1**	Connectorisation Cum Splicing Kit with multimedia interactive e-Manual DELIVERABLES ST fiber polishing disc : 01 no. Fiber polishing sheets : Quantity 10 Fiber polishing pad : 01 no. Fiber optic zoom microscope : 01 no. Fiber optic diamond scribe : 01 no. Jacket stripper : 01 no. Buffer stripper : 01 no. Universal crimp tool : 01 no. Tweezer : 01 no. Optic prep : 01 pack Cotton swabs : 01 pack Disposable syringe with needle : Quantity 02 ST connector : Quantity 10 Epoxy : 10 packs Ultra splice : Quantity 05 Measurement scale : 01 no. Optical Multimode Fiber: 100 mtrs * 2 sets Optical Power Source : 1 No Optical Power Meter: 1 No Carrying case : 01 no. Instruction manual : 01 no.

FORMAT FOR QUOTATION SUBMISSION

(In letterhead of the supplier with seal)

Date: .....

To,

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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)
Total Cost							

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.: .....