



Institute of Technology, Gopeshwar, The Director, Institute of
Technology, Gopeshwar, Kothiyalsain, Chamoli-246424, Uttarakhand

INVITATION LETTER

Package Code: TEQIP-III/UK/iotg/121

Current Date: 07-Nov-2019

Package Name: ITG/GOODS/EQUIPMENTS/PHYSICS-LAB/01

Method: Shopping Goods

To,

Sub: INVITATION LETTER FOR ITG/GOODS/EQUIPMENTS/PHYSICS-LAB/01

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	Physics Lab	1	THE DIRECTOR, INSTITUTE OF TECHNOLOGY GOPESHWAR KOTHIYAL SAIN CHAMOLI UTTARAKHAND (246424)	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 **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 Acceptance	30	100

10. Liquidated Damages will be applied as per the below:
 Liquidated Damages Per Day Min %: 0.10
 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 **0**.

12. You are requested to provide your offer latest by **12:30** hours on **25-Nov-2019**.
13. Detailed specifications of the items are at Annexure I.
14. Training Clause (if any) **YES**
15. Testing/Installation Clause (if any) **YES**
16. Performance Security shall be applicable: %
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, **Institute of Technology, Gopeshwar, The Director, Institute of Technology, Gopeshwar, Kothiyalsain, Chamoli-246424, Uttarakhand**

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

(Authorized Signatory)

Name & Designation

Annexure I

PHYSICS LAB SPECIFICATIONS

S.No.	Enq. S.No.	Name of Items
01.	01.	<p>To Measure the Refractive Index and Dispersive Power of the Material of Given Prism Using Mercury Light</p> <p>The experiment consists of:</p> <p>(a) Spectrometer (College model) Comprising of two opposite German Silver/S.S. Scale divided by machine. On heavy cast iron base. The objectives X10 used in telescope and collimator is achromatic with rack and pinion focusing arrangement. The prism table is made of brass plate with three brass leveling screws with concentric circle and line. The telescope & prism table are provided with coarse and fine adjustment. A duco paint cover plate with two transport windows for verniers provided to protect the scale from dust</p> <p>(i) Size: 6 “</p> <p>(ii)L.C.: 1 minute or 30 sec.as required</p> <p>(b) Spectrometer Prism: Size 32x32 mm DF (01), EDF (01) and DEDF (01)</p> <p>(c) Mercury Vapour lamp:125 watts fitted in painted Al. box with stand & slit</p> <p>(d) Choke for Mercury vapor Lamp fitted in well painted ms box with ON/OFF switch indicator.</p> <p>(e) Reading Lens</p> <p>(f) Reading lamp (Torch)</p> <p>Complete in all respect</p>
02.	02.	<p>To Determine the Wavelength of Monochromatic Light by Newton’s Ring Apparatus</p> <p>The apparatus consists of the following</p> <p>(a)Special Newton’s ring microscope with X-Y-Z motion</p> <p>(b)Newton’s ring assembly fixed with microscope with set of glass plate and lens</p> <p><u>Accessories Required:</u></p> <p>(i)Sodium vapour lamp 35 watts with leak-proof transformer and housing with slit and stand</p> <p>(ii)Spherometer double disc type (brass) with one glass plate</p> <p>Complete in all respect.</p>
03.	03.	<p>To Study the Resolving Power of Telescope</p> <p>Complete with telescope fitted with micrometre slit, two Pin hole with stand, Mercury Vapor Lamp with choke fitted in ms box , Black box for mercury Lamp and two optical</p>

04.	04	<p>glass filters (Red and Green) with 1.5 meter long optical bench with suitable carriage to fit telescope, pin hole and source of light for easy alignment</p> <p>Complete in all respect</p> <p>To Study the Diffraction Pattern of Laser Light by Double Slit and Determine the Wavelength of Laser Light (Scanning Method).</p> <p>The experiment consists of</p> <p>(a) Double slit</p> <p>(b) X-Z long translation stage with 75 mm long micrometre in X-direction and thumb wheel in Z direction for fine adjustment suitable to fix on optical or plane table.</p> <p>(c) Slow motion translation stage with thumb wheel in up direction with slit holder suitable to fix on optical bench or plane table</p> <p>(d) Pin hole detector</p> <p>(e) Screen size .6"x 2 ½"</p> <p>(f) Digital Microammeter, Model DMA-02</p> <p>Range : 10µA and 100µA full scale in 2-decade ranges with 100% over ranging. Display: 3 ½ digit, 7-segment LED display with auto-polarity Accuracy: + 0.25% + 1 digit. Power: 220 V + 10%, 50 Hz</p> <p>(g) Laser diode with power supply and holder and stand</p> <p>Wavelength : 650 nm (Red)</p> <p>Output Power : 3 to 5 mw</p> <p>Power Supply : 220V + 10%, 50 Hz.</p> <p>(h) Optical bench 150 cm. long made of SS for easy alignment with suitable upright to mount items at (a) to (g) on bench</p> <p>Complete in all respect with manual</p>
05.	05	<p>Determine the frequency of A.C. Mains with sonometer using non-magnetic wire</p> <p>Complete with Sonometer, Set of Weight (200 gm.) and a.c. source 4V, 3 Amp.</p>
06	06	<p>To Study the Characteristics of PN Junction diodes (1N4007) & Ge Junction diode DR-25</p> <p>The experimental set-up consists of</p> <p>(a) IC Regulated Power Supply 0-15Volt fitted with digit digital Voltmeter and milliammeter to read current and voltage</p> <p>(b) Set of One Junction diodes</p> <p>(c) Patch chords</p> <p>NOTE: DR-25 is the only Junction diode, all other are point contact diodes.</p>
07.	07.	<p>To Study the Diffraction Pattern of Laser Light by Single Slit and Determine the Wavelength of Laser Light. (By scanning method)</p>

08	08	<p>The experiment consists of</p> <ul style="list-style-type: none"> (a) Single slit (b) X-Z long translation stage with 75 mm long micrometre in X-direction and thumb wheel in Z direction for fine adjustment suitable to fix on optical or plane table. (c) Slow motion translation stage with thumb wheel in up direction with slit holder suitable to fix on optical bench or plane table (d) Pin hole detector (e) Screen size .6" x 2 1/2" (f) Digital Microammeter, Model DMA-02 <p>Range : 10μA and 100μA full scale in 2-decade ranges with 100% Over-ranging. Display: 3 1/2 digit, 7-segment LED display with auto-polarity Accuracy: + 0.25% + 1 digit. Power: 20 V + 10%, 50 Hz</p> <ul style="list-style-type: none"> (g) Laser diode with power supply and holder and stand <p>Wavelength : 650 nm (Red) Output Power : 3 to 5 mw Power Supply : 220V + 10%, 50 Hz.</p> <ul style="list-style-type: none"> (h) Optical bench 150 cm. long made of SS for easy alignment with suitable upright to mount items at (a) to (g) on bench <p>Complete in all respect with manual</p> <p>Measurement Value of Planck's Constant 'h' using Photo Electric Effect and Calculate h/e and to verify Inverse Square Law of Radiation using Photo electric cell.</p> <p>The experiment consists of:</p> <ul style="list-style-type: none"> (a) Vacuum Photocell : with housing and mount (b) Set of optical filters : set of 5 No. (400nm to 660 nm) (c) Source : Light source with power supply (d) Optical bench : 50 cm long twin bar made SS. (e) Digital Planck's Constant Set-Up Model PC-02, consist of the following (f) Regulated Power Supply <ul style="list-style-type: none"> Output: 0 – 2 volts continuously Regulation: \pm 0.2% from zero to full load Resolution: 1 mV Display: 3 1/2 digit 7 segment LED (g) Nano ammeter variable <ul style="list-style-type: none"> Range: 0 – 1μA and 10 μA. or as required. Resolution: 100 pA. Display: 3 1/2 digit 7 segment LED Power: 220V \pm 10%, 50Hz <p>Complete in all respect with manual and one set of test results</p>
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09.	09	<p>To Study Hall Effect in Semiconductors Measure Hall Coefficient</p> <p>The experiment consists of</p> <p>(a) (i) Hall Probe (Ge crystal) Material: Ge single crystal (N-type) Zero-Field Potential: < 1 mV. Resistivity: 10-12 Ω-Cm. Contacts: Spring type contact Hall Voltage: 25-40 mV/10mA/KG.</p> <p>(ii) Hall Probe (Ge crystal) Material: Ge single crystal (P-type) Resistivity: 08-10 Ω-Cm. Hall Voltage: 15-30 mV/10mA/KG.</p> <p>Other Specifications are same as above (i)</p> <p>(b) Digital Hall Effect Set-up, Model DHE-20, consisting of the following.</p> <p>(i) Digital Millivoltmeter Range : 0-200 mV Resolution : 100 μV. Input Impedance : 1 M ohm. Accuracy: + 0.1% of the reading\pm1 digit. Special Feature: Auto zero and polarity indicator.</p> <p>(ii) Constant Current Source Current Range: 0-20 mA or as required Display: 3 ½ digit, 7-segment LED display. Accuracy: \pm 0.5% of the reading\pm1 digit. Load Regulation: \pm 0.05% for no to full load. Line Regulation: \pm 0.05% for 10% mains variation. Power: 220V \pm 10%, 50 Hz</p> <p>(c) Electromagnet, Model EM-07 Pole pieces: 50-mm dia flat. Field: 7.5 K.gauss at 10mm air-gap. Gap is continuously variable upto 50 mm with two knobbed wheel screw system. Coils: Two, each coil wound on nonmagnetic Al. former Power: 0-36-volt, 4.0 Amp. (max)</p> <p>(d) Constant Current Source, Model CS-07 Current: 0-3.5 Amp. Or as required. Line Regulation: \pm 0.2% for no to full load Load Regulation: \pm 0.2% for 10% mains variation. Display: 3 ½ digit, 7-segment LED display. Power: 220V \pm 10%, 50 Hz. Protection: Protected against over load and short circuits.</p> <p>(e) Digital Gaussmeter, Model DGM-20 Range: 0-2 K gauss and 0-20 K gauss Accuracy: \pm 1% of the reading +1 digit.</p>
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10	10	<p>Measurement of Energy band-gap of PN Junction of semiconductor using Ge diode. Complete with built-in fixed power supply (2V), Oven up to 110⁰C, Germanium diode Digital Microammeter (0-100 uA.), Oven Supply. Complete with manual and test results.</p>
11	11	<p>Determine the Wavelength of Sodium Light using Diffraction Grating. The experiment consists of (a) Spectrometer (College model) Comprising of two opposite German Silver/S.S. Scale divided by machine on heavy cast iron base. The objectives X10 used in telescope and collimator is achromatic with rack and pinion focusing arrangement. The prism table is made of brass plate with three brass leveling screws with concentric circle and line. The telescope & prism table are provided with coarse and fine adjustment. A duco paint cover plate with two support windows for verniers provided to protect the scale from dust. (i) size 6” (ii) LC 1 minute (b) Sodium Vapor Lamp: 35-watt (Imported) model SOX 35 with leak-proof transformer fitted in well painted ms with ON/OFF switch (c)Black Box for Sodium Vapor Lamp made of Aluminium with one slit and Stand (d) Diffraction Grating 15000 LPI (Imported) (e) Reading lens (f) Reading lamp (chargeable torch) Complete in all respect</p>
12	12	<p>To Measure the Wavelength of Spectral Line of Mercury using Diffraction Grating. The experiment consists of (a) Spectrometer (College model) Same as quoted above (b) Mercury Vapor lamp with metal housing and stand (c) Choke for Mercury Vapor Lamp fitted in well painted ms box. (d) Diffraction Grating 15000 LPI (Imported) (02) and 2500 LPI (02) (e) Reading lens (f) Reading lamp (chargeable torch) Complete in all respect</p>

13	13	<p>To Determine the Numerical Aperture of Highly Multimode Fiber Using Far Field Technique,</p> <p>The experiment consists of</p> <ul style="list-style-type: none"> (a) Highly Multimode Plastic Fiber 1.2 meter (b) X-Y-Z Translation Stage with X-Y motion by micrometre & Z by thumb wheel (c) X-Z Translation Stage with X-by screw & Z by thumb wheel (d) Post mount base with post 2 ½ (e) V grooves with fiber clamp to hold fiber (f) Microscope Objectives (MO) with holder (g) (d)Screen (h) Laser diode (3mW to 5mW) with holder and power supply (i) Pin hole detector (j) Digital Microammeter, Model DMA-02 Range 20 μA and 200 μA. Specifications are same as quoted above <p>Complete in all respect with manual.</p>
14	14	<p>To Measure the Wavelength of Laser Light using Diffraction Grating including laser diode</p> <p>The set-up consists of</p> <ul style="list-style-type: none"> (a) Optical Bench: 60 cm long with marking on one rod with 03 uprights (b) Laser Grating : 15000 LPI (c) Screen (d) Laser diode with power supply, holder and clamp. <p>Complete in all respect with manual</p>
15	15	<p>To Determine the Variation of Magnetic Field Along the Axis of a Current Carrying Coil and Then to Estimate the Radius of the Coil</p> <p>The Experiment consists of the following</p> <ul style="list-style-type: none"> (i) Stewart and Gee's Apparatus with metal frame fitted on a wooden stand and large radius coils with 50,250 and 500 turn, 30 to 30 cm long non-magnetic bench (ii) Sensitive compass (iii) Four-way key (iv) Constant current Source Model CSS-04 (used in place of 12 V Exide Battery) Current: 0 - 200 mA Resolution: 100 μA Display: 3 ½ digit, 7-segment LED display Accuracy: \pm 0.2% of the reading \pm 1 digit Open circuit voltage: 18 volts Load regulation: 0.02% for no to full load Line Regulation: \pm 0.05% for 10% in main's voltage <p>Complete in all respect</p>

16	16	<p>Determination of Resistivity of Semiconductors by Four Probe Method at Different Temperatures and Determination of the Band-Gap. (Basic Model)</p> <p>The experiment consists of:</p> <ul style="list-style-type: none"> (a) Four Probe Arrangement (Spring Type) (b) Oven: up to 200 °C (c) Sample: Ge Crystal N or P type (d) Thermometer : (0-200 °C) (e) Digital Four Probe Set-up Model DFR-02 <p>The set up consists of the following three units.</p> <ul style="list-style-type: none"> (i) Multirange Electronic Millivoltmeter Range: X1 (0-200mV) and X10 (0-2V) Resolution: 100 μV at x 1 range Input Impedance: 1 M ohm Accuracy: + 0.2% of the reading +1digit Display: 3 ½ digit, 7 segments LED Special Feature: with auto polarity and decimal indication. (ii) Constant Current Source Current: 0-20 mA or as required Open circuit voltage: 18 V Load Regulation: 0.03% for no load to full load Line Regulation: 0.05% for 10% main variation Accuracy: + 0.25% of the reading+1digit Power : 220 V + 10%, 50 Hz (iii) Oven power Supply: To provide suitable voltage for the oven with provision for L & H rates of heating. <p>Complete in all respect with manual and test results</p>
17	17	<p>To Determine the Specific Rotation of Cane Sugar Solution Using Half Shade Polarimeter.</p> <p>The apparatus consists of the following</p> <ul style="list-style-type: none"> (a)Polarimeter Half shade with adjustable height. (b)One polarimeter tube (200 mm). (c)Beaker and Measuring cylinder <p><u>Accessories required:</u></p> <ul style="list-style-type: none"> (i) Sodium vapour lamp: 35 watts fitted in well painted Aluminium box with stand and slit with Leak-proof transformer (for Sodium Lamp) fitted in well painted ms box with ON/OFF switch and indicator. <p>Complete in all respect except balance</p>
18	18	<p>To Calculate the Dielectric Constant of a Given Dielectric Material (Solids and Liquids)</p> <p>The experiment consists of</p>

		<p>(i) Probes Arrangement for Solids</p> <p>(ii) Probes Arrangement for Liquids</p> <p>(iii) Samples</p> <p>(a) Solid: Glass Plate, Bakelite Sheet, Barium Titanate, Lead Zirconate Titanate</p> <p>(b) Carbon Tetrachloride (CCl₄) – supplied with the set-up Other non-conducting liquids such as acetone, ethyl alcohol, methanol, glycerol etc can also be used or the measurements.</p> <p>(iv) Digital Capacitance Meter</p> <p>This is compact direct reading microcontroller based high resolution instrument for the measurement of capacitance of the sample having facility for zero adjustment.</p> <p>SPECIFICATIONS:</p> <p>Range : 0pf – 50 f</p> <p>Resolution : 0.01pf</p> <p>Display : 16 x 2 LCD display with back light</p> <p>Accuracy : Better than 1%</p> <p>Zero Setting : Push button zero setting</p> <p>Complete in all respect with manual and test results</p>
19	19	<p>Measurement of length, diameter and inner and outer dia meter given rod using Vernier calliper, Screw gauge and Trsveling microscope.</p> <p>Complete with Vernier calliper IME type size 6” with sand balst for clear numbering, Screw guage 1/20 mm and Traveling microscope.</p>
20	20(a)	<p>To study the Compound Pendulum (Bar Pendulum) and calculate g,</p> <p>Complete with Bar Pendulum, Sharp knife edge, (Iron)</p> <p><u>Other items required</u></p> <p>(a) Digital Stop Clock LC 1/100 sec. (Table model)</p>
20	20(b)	<p>To determine the acceleration due to gravity at a place by means of Kater’s Reversible Pendulum (Iron) with sharp knife edges.</p> <p><u>Other items required</u></p> <p>(a) Digital Stop Clock LC 1/100 sec. (Table model)</p>
2`1	21	<p>To determine ‘g’ and velocity for a free-falling body using digital timing technique</p> <p>Complete with Falling ball set-up with coil and balls with built-in supply and Centisecond Timer.</p>
22	22	<p>Determination of Spring Constant using Hook’s Law</p> <p>Complete with 1-meter long metal stand having marking on one rod, Set of weight o6 weight of 50 gm each.</p> <p>(a)Sextant (Brass) To Measure Height of a Building or Object</p> <p>(b) Stand for Sextant (If required)</p>

23	23	Measurement of e/m by Thomson Method (Bar magnet method)-Digital Version) Complete with CRT and its power supply fitted with digital meter, magnetometer with permanent magnetic needle, Bar magnet, two wooden stands fitted with scale & manual with one set of test results.
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QUALIFICATION CRITERION

Sr. No	General Specifications
1.	The product should be certified by standard certification bodies ISO/ISI/CE/IEEE and IEC.
2.	GST Registration Certificate Photocopy
3.	Income Tax Clearance Certificate Last Three Year
4.	PAN Card Photocopy

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)
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. _____