

**GOVERNMENT OF TRIPURA  
EDUCATION (HIGHER) DEPARTMENT  
TRIPURA INSTITUTE OF TECHNOLOGY, NARSINGARH, TRIPURA (WEST)  
NOTICE INVITING TENDER**

Dated:- 27/01/2016.

**DNIT NO. 04/TIT/PSL/2016-2017**

Sealed item rate tender is hereby invited on behalf of the Governor of Tripura from the manufacturers/ authorized dealers/ distributors/reputed firms having experience for supplying the followings up to 27/02/2016 upto 3:00 PM. The tenders will be opened on the same day, if possible.

Sl. No.	Name of Work	Estimated Cost	Earnest money	Cost of Tender From	Date of Selling of Tender Form	Last Date of Receiving Tender	Time for Completion
1.	Supplying , testing & Demonstration of Laboratory Equipments for Power System Laboratory, Department of Electrical Engineering of Tripura Institute of Technology, Narsingarh, Tripura (West).	Rs.12,00,000/- (Rupees Twelve LaKhs only)	Rs. 12,000/- (Rupees Twelve Thousand only)	Rs. 500.00	w.e.f 01/02/2016 to 12:00 Noon to 26/02/2016 at 3:00 PM	27/02/2016 upto 3:00 PM	90 (Ninety) days

**TERMS AND CONDITIONS:-**

Earnest money should be deposited in the form of **Deposit at call/Deposit receipt/Bank Demand Draft** of any schedule by Reserve Bank of India. Tender forms including terms and conditions can be had from the office of the Principal, Tripura Institute of Technology, Narsingarh, Tripura (West) w.e.f. 01/02/2016 from 12:00 Noon to 26/02/2016 at 3:00 PM on any working day on payment of an amount of Rs. 500.00 (Rupees Five Hundred) only by Demand Draft (non-refundable) in favour of the Principal, TIT, Narsingarh and Payable at Agartala or by downloading from the website [www.titagartala.nic.in](http://www.titagartala.nic.in). and [www.tenders.gov.in](http://www.tenders.gov.in) The bid forms so downloaded from above website shall accompany a Bank Draft of an amount Rs. 500/- for each bid in favour of the Principal, Tripura Institute of Technology, Narsingarh, Tripura (w), Pin: 799009 payable at Agartala .

Tender(s) may be sent through Registered Post /Speed post only or dropped in the tender box placed at the office of the Principal, TIT, Narsingarh within stipulated date and time mentioned above. The authority reserves the right to accept or reject any tender and to cancel the bidding process and reject all tenders at any time prior to the award of contract without assigning any reason there off.

1. **Bid Price**

- a) Bidders are to quote price for the full /part package as indicated in Annexure "A"
- b) Contract may be made for the full/ part package as per the discretion of the purchaser. Correction, if any shall be made by Crossing out, dating, rewriting and initial signature.
- c) All duties, taxes (VAT ) payable by the contractor under the contract shall be included in the total price **strictly as per format** (bill of quantities) and no conditional pricing should be made. **Details break up such as basic price, Taxes (VAT) as applicable etc. required to be furnished clearly against total price of each item. Nothing Extra will be entertained thereafter.**

Full Signature of Supplier/ Contractor.

Signature of the Principal.

Tripura Institute of Technology, Narsingarh

- d) The rates quoted by the bidders shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
2. Each bidder shall submit only one Tender.

3. **Validity of tender;**

Tender shall remain valid for a period not less than **90 days** after the deadline date specified for submission.

4. **Evaluation of Tenders ;**

The purchaser will evaluate and compare the tenders determined to be substantially responsive i.e. which

- (a) are properly signed and  
 (b) conform to the terms and conditions and specifications

5. **Award of contract;**

The purchaser will award the contract to the bidder whose tender has been determined to be substantially responsive and who has offered the lowest evaluated quoted price.

- a. Notwithstanding the above, the purchaser reserves the right to accept or reject any tender and to cancel the bidding process and reject all tenders at any time prior to the award of contract.
- b. The bidder whose bid to be accepted will be notified for the award of contract by the purchaser prior to expiry of the tender validity period. The terms of the accepted offer shall be incorporated in the purchase order.

6. Payment :-

(i) Advance:- No advance Payment.

(ii) On delivery :- No payment after delivery.

(iii) On final acceptance :- 100% payment of the contract Price shall be paid to the supplier within 30 (thirty) days after the date of the acceptance for the respective goods.

7. Warranty / Guarantee shall be for a period of 01 (One) year as a whole . If normal commercial warranty/guarantee exceeds by 01 (One) year, then higher of the two as indicated shall be applicable to the supplied goods.

8. The bidders are to submit copies of the following documents duly signed by the Owner of the Firm or Authorized Person of the Owner of the Firm.

- (i) **PAN CARD** (ii) **STCC of current validity or equivalent such TAX/VAT documents / certificates which established or qualify as bonafied traders / supplier which ever are applicable to be a valid bidder.**

Full Signature of Supplier/ Contractor.

Signature of the Principal.

9. **Brand Name / Model No., if any has to be mentioned wherever applicable along with the copies of authorization letter of the manufacturers / Distributorship or Dealership certificate** (duly signed by the bidder or Authorized person of the bidder) **from Manufacturers etc. in favour of the bidder.**
10. Tender has to be submitted along with Manufacturers' Original or downloaded brochure / catalogues, if any duly signed by the bidder or his Authorized person, without which tender may be rejected at the discretion of the Authority.
11. **Earnest money deposit :-**
- 11.1 Earnest money Rs. @ 1% ( Rs.12000/-) of the estimated cost put to the tender shall be deposited in the State Bank of India or any schedule bank of India guaranteed by the Reserve Bank of India , in the shape of **Deposit at call/Deposit receipt/Bank Demand Draft** only drawn in favor of the Principal Tripura Institute of Technology, Narsingarh, Tripura (west) payable at Agartala must be submitted along with the Tender(s) failing which the tender(s) will be summarily rejected.
- 11.2 *Validity of EMD / Bid security will be 45 ( forty five) days more beyond the original period of validity of bid / Tender or beyond any period of extension subsequently requested in exceptional circumstances.*
- 11.3 The earnest money deposited by the successful bidder will not carry any interest and it will be dealt with as provided in the conditions stipulated in the tender.
- 11.4 The EMD shall be forfeited.
- (a) In 50%, if the Tenderer withdraws the Tender during the validity period of Tender.
- (b) In full, in case the supplier fails to start supply ( or cannot show valid reasons which is acceptable to the authority) specified in the tender documents within 30<sup>th</sup> day or such time period as mentioned in letter of award after the date on which the Authority issues written orders to commence the work / supply.
12. Security deposit will be 10% of the contract value without any ceiling limit . The Earnest money of the successful tenderer deposited before issue of work / supply order will also form a part of security deposit. Security money will be deducted from Running Account bill(s) @10% (ten percent) of the bill(s) amount of the successful bidder till full Security Money is retained and will be retained up to “ defect liability period ” .
13. Supply, assembling, testing etc. of all equipment including others accessories shall be the responsibility of the contractor.
14. The contractor shall not be permitted to tender for works in Tripura Institute of Technology, Narsingarh responsible for award and execution of contract in which near relatives is posted in Accountant / as an Officer in any capacity between the grades of the Principal to Assistant Professor. He shall also intimate the name of persons who are working with him in any capacity or are subsequently employed by him and who are nearer relatives to any gazetted officer in the Tripura Institute of Technology, Narsingarh.
15. Confusions / errors, if any noticed need to be clarified / corrected from the Principal, Tripura Institute of Technology, Narsingarh prior to dropping of tender Any claim on such issues after dropping of tender will not be entertained.

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

Tripura Institute of Technology, Narsingarh

16. The contractors should initial all correction if any, to rate(s) and items in the tender. ***The contractor in full name should signed every pages.*** Letters etc. found in the tender box of raising or lowering the quoted rates or dealing with any other points in connection with tender shall not be considered.
17. The bidder shall seal the bid / tender in an envelope (for each work separately) addressed to the Principal, Tripura Institute of Technology, Narsingarh, Tripura(w) subscribing on it the Name of Work & DNIT/NIT No.
18. Tender(s) must be received in the office of the Principal, Tripura Institute of Technology, Narsingarh, Tripura(w) [ employer] not later than the time and date given in the notice of invitation. If the specified date is declared holiday, tender(s) shall be received upto the appointed time on the next working day.
19. Tenderers shall not add or deduct any percentage after the totals have been worked out in an item rate tender. Such tenders shall be liable to rejection.
20. Sale Tax (VAT) or any other Taxes of materials in respect of his contract shall be payable by the contractor and the Government shall not entertain any claim whatsoever in this respect.
21. Before submitting tender, tenderers are to satisfy themselves by actual visit to the site of work / supply as regards the prevailing condition to approaches and roads and availability of labourers and materials etc. and the tenderers submitting tenders shall be deemed to have done so. No claim on the above account will be entertained after wards.
22. Any bid received by the Principal, Tripura Institute of Technology, Narsingarh, Tripura(w) [ employer] after the deadline for submission of bid(s) will be summarily rejected and returned unopened to the bidder.
23. Supply order may be issued to the successful bidder(s) depending on the available sanctioned amount. Hence, quantity may be increased or decreased at the discretion of the authority during the time of evaluation of tender.
24. In addition to deduction of Income tax at source Tax (VAT) will also be deducted at source as per applicable rates from the bills of the contractor from running / final bill.
25. The contractors should quote in figures as well as in words the rates and amount tendered by them. The amount for each item should be worked out and requisite totals shall be given.
26. **Correction of Errors**
  - a) The contractor shall quote the rates and amounts tendered by them **both in figures as well as in words**. The amount for each item shall be worked out and requisite totals shall be given.
  - b) Special care must be taken so that the rates and amounts are always written both in figures and words in such a way that interpolation is not possible. In case of figure, the words Rs, should be written before the figure and paise at the end (Viz. Rs, 250.50p). in case of rate or amount in words, the words Rs. should precede and the word only shall be written at the end (Viz. two hundred fifty and paise fifty only).

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

Tripura Institute of Technology, Narsingarh

- c) Item(s) for which no rate or price has been entered by the contractor / agency shall not be paid for and shall be deemed covered by the other rates / prices in the contract.
- d) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the contractor, shall be taken as correct.
- e) When the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rate quoted by the contractor in words shall be taken as correct.
- f) When the rate quoted by the contractor in figures and words tallies but the amount is not worked out correctly. The rate quoted by the contractor shall be taken as correct and not the amount.
- g) All corrections to rates and amounts in the tender shall be initialed by the contractor. **Every pages including the blank pages of bid document shall be signed by the contractor.**
27. The Equipment shall be loaded and unloaded by the suppliers at his / her own cost and risk.
28. The Equipment shall be dispatched under coverage of transit insurance at the supplier own cost and risk.
29. The firm shall test the equipment at the site selected by the department and render demonstration / operational training to the departmental staff for a period suitable for the purpose.
30. Operation and service manual / catalogues and recommended maintenance chart should be supplied at free of cost along with each equipment.
31. Earnest money of the unsuccessful tenderer will be refunded on finalization of tender or on expiry of validity period which ever is earlier.
32. Transit permit / interstate clearance and such other issues will be the responsibility of the tenderer, Nothing extra will be entertained.
33. No transfer of earnest money from any amount already at the credit of tenderers (as earnest money or security money in connection with other works) will be allowed unless however, it is absolutely free and order for its release has been passed.
34. Canvassing in connection with tenders is strictly prohibited and the tender submitted by the tenderer who will resort to canvassing will be liable to rejection.
35. No non-Indian National as laborer, who does not possess valid passport and visa will be allowed to work under any contractor. If otherwise the contract will be cancelled and there is no bar by police for prosecution of these contractors along with their labourers.
36. Bids will be opened in presence of bidders or their authorized representatives (who choose to attend) on the date and time and at the place specified in the said bid.
37. Defects liability :-

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

The “Defects liability Period” for the work is 1 (One) year (for articles having commercial warranty more than 1 (one) year, the defect liability for those items will be in accordance with the commercial warranty period as applicable) from the date of acceptance. If any defects noticed within the “Defects liability Period” the same shall be rectified / replaced (same configuration or latest) by the bidder or firm at their cost and risk within 1(one) month from the date of intimation and the defect liability period for the replaced item(s) will be considered from the date of replacement for which proportionate Security Money would be retained till end of the defect liability period as would be applicable for particular Item(s).

38. **The bidder has to provide the duly signed (by the bidder or his Authorized Person) copy of Work / Supply order in similar nature of work / supply in support of previous experience as a prime contractor at least for one similar work of value not less than 80% of the estimated cost put to tender in the last 3 (Three) years to qualify for awarding of the work.**
39. **Tenderer(s) who do not fulfill any of these conditions or are incomplete in any respect, are liable to be rejected. The authority also reserves the right to cancel any of the tenders with out assigning any reason.**

Full Signature of Supplier/ Contractor.

Signature of the Principal.

Tripura Institute of Technology, Narsingarh

BID FORM

Name of the Works :- **Supplying , testing & Demonstration of Power System Laboratory Equipments for Electrical Engineering Department of Tripura Institute of Technology, Narsingarh, Tripura (West).**

Reference: letter No. .... dated..... from .....

Sir,  
We offer to execute the work ..... described in your letter referred to above in accordance with the Conditions of Contract enclosed therewith at a total Fixed Contract price of –

Rs \*\* \_\_\_\_\_ [in figures]

Rs. \_\_\_\_\_ [in words]

This bid and your written acceptance of it shall constitute a binding contract between us. We understand that you not bound to accept the lowest or any bid you receive.

We hereby confirm that this bid is valid for not less than 90 days as per terms and conditions already state earlier.

Yours faithfully,  
Authorized Signature : \_\_\_\_\_ Date: \_\_\_\_\_  
Name & Title of Signatory : \_\_\_\_\_  
Name of Bidder : \_\_\_\_\_  
Address : \_\_\_\_\_

\*\* To be filled in by the Bidder, together with his particulars and date of submission at the bottom of this Form.

Full Signature of Supplier/ Contractor.

Signature of the Principal.  
Tripura Institute of Technology, Narsingarh

## AGREEMENT FORM

**Name of work : Supplying , testing & Demonstration of Power System Laboratory Equipments for Electrical Engineering Department of Tripura Institute of Technology, Narsingarh, Tripura (West).**

### ARTICLES OF AGREEMENT

1. This deed of agreement is made in the form of agreement on \_\_\_\_\_ day \_\_\_\_\_ month \_\_\_\_\_ 2016\_\_\_\_\_, between the \_\_\_\_\_ (Employer), or his authorized representative (hereinafter referred to as the first party) and \_\_\_\_\_(Name of the Contractor), S/O \_\_\_\_\_ resident of \_\_\_\_\_(hereinafter to as the second party), to execute the work / supply of \_\_\_\_\_ (hereinafter referred to as work / supply ) on the following terms and conditions.
2. **Cost of the Contract**  
The total cost of the work / supply (hereinafter refer to as the “total cost”) is Rs. \_\_\_\_\_ as reflected in Annexure – “A”
3. **payments under its contract**
  - a) Payment to the second party for the work will be released by the first party in the following manner :-  
payment shall be made immediate after successful completion of the work/supply.
  - b) Payments at each stage will be made by the first party:-  
  
on the second party submitting an invoice for an equivalent amount;
4. **Completion time**  
The supply is to be completed within **90 (ninety) days**. The time shall be reckoned from the 15<sup>th</sup> (fifteenth) day from the date of issue of supply order. In exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.
5. Any willful delay on the part of the second party in completing the supply within the stipulated period will render him liable to pay liquidated damages @ **Rs. 0.01%** of the contract price per day which will be deducted from payments due to him. The first party may cancel the contract and take recourse to such other action as deemed appropriate once the total amount of liquidated damages exceeds **10%** of the contract amount.
6. **The second party shall:**
  - a) Take up the supply and arrange for its completion within the time period as stipulated.
  - b) Employ suitable skilled persons to carry out the assembling (where necessary) and commissioning; etc.
  - c) Be responsible for bringing any discrepancy to the notice of the representative of the first party and seek necessary clarification;

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

Tripura Institute of Technology, Narsingarh



- d) Keep the first party informed about the progress of work;
- e) Be responsible for all security and watch and ward arrangements at site till completion of the work and handing over as well.
- f) Pay all duties, taxes (VAT) and other levies payable by agencies as per law under the contract (First party will effect deduction from running bills in respect of such taxes as may be imposed under the law).

**7. Security money**

The Security money shall be refunded after expiry of the “**defects liability period**”.

**8. Dispute settlement:-**

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions hereinbefore mentioned and of workmanship or materials used on the work or as to any other question, claim, right matter or thing whatsoever, in any way arising out of or relating to the contract, designs, drawing, specifications, estimates, instructions orders or those, conditions or otherwise concerning the work / supply, or the execution or failure to execute the same whether arising during the progress of the work / supply or after the completion or abandonment thereof shall be referred to the sole arbitration of the person appointed by the Director of Higher Education, Government of Tripura. It will be no objection to any such appointment that arbitrator so appointed is a Government servant, that he had to deal with

the matters to which the contract relates and that in the course of his duties as Government servant he had expressed views on all or any of the matters in dispute or difference. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, such Director of Higher Education or as aforesaid at the time of such transfer, vacation of office on inability to act, shall appoint another person to act as arbitrator in accordance with the terms of the contract. Such persons shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. It is also a term of this contract that no person other than a person appointed by such Director of Higher

Education or as aforesaid should act as arbitrator and if for any reason that is not possible, the matter is not to be referred to arbitration at all. In all cases where the amount of the claim in dispute is Rs. 50,000 (Rupees fifty thousand) and above, the arbitrator shall give reasons for the award.

Subject as aforesaid the provisions of the Arbitration act, 1940, or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this part.

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this part together with the amount or amounts claimed in respect of each such dispute.

It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this part together with the amount or amounts claimed in respect of each such disputes.

It is also a term of the contract that if the contractor(s) do / dose not make any demand for arbitration in respect of any claim(s) in writing within 90 days of receiving the intimation from the Government that the bill is ready for payment the claim of the contractor(s) will be deemed to have been waived and absolutely barred and the Government shall be discharged and released of all liabilities under the contract in respect of these claims.

The arbitrator(s) may from time to time with consent of the parties and enlarge the time for making and publishing the award.

The Arbitration proceedings shall be held at Agartala, Tripura, India and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

**DECLARATION :-**

I / we .....have gone through carefully all the tender conditions and solemnly declare that I / we will abide by any penal action such as disqualification or black listing or termination of contract or any other action deemed fit, taken by, the department against us, if it is found that the statements, documents, certificates produced by us are false / fabricated.

I / we hereby declare that, I / we have not been black listed / debarred / suspended in any department in Tripura or in any other state of India due to any reason.

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

Tripura Institute of Technology, Narsingarh

## Annexure –“A”

Name of work :- **Supplying , testing & Demonstration of Power System Laboratory Equipments for Electrical Engineering Department of Tripura Institute of Technology, Narsingarh, Tripura (West).**

1	2	3	4	5	6	7	8	9	10
SL. No.	Name of Equipments with Specifications.	Brand name / Model no	Quantity	Unit	Unit Price In figure. ( In INR)	Unit Price in Words	Tax if any , if contract is awarded . ( In INR)	Rate in Figure (Inclusive of Taxes)	Total Amount  Col.( 4 X 9)
01	<p><b>AC TRANSMISSION LINE ANALYER</b></p> <p>The set-up should contain four individual modules:</p> <ul style="list-style-type: none"> <li>• Transmission Line Model</li> <li>• Transmission Line parameter measurement module</li> <li>• Load setup</li> </ul> <p><b><u>Description of the training panel system with photorealistic colour printing</u></b></p> <p>The training panels consist of 5 mm thick panels of compressed laminated sheets coated on both sides with highly resistant melamine resin. The base colour of the panel is RAL7035 (light grey). Panel dimensions are standard DIN A4 in height (297mm). There are three different width variations available: 114 mm, 228 mm or 456 mm. To reduce the potential for injury, the front panel corners have rounded edges with a radius of 3 mm. The component symbols or</p>		01 Set	.					

Full Signature of Supplier/ Contractor.

Signature of the Principal.

Tripura Institute of Technology, Narsingarh

<p>circuit diagrams are screen printed in black in accordance with the latest DIN guidelines on the front panels, and where necessary enhanced with contrast-rich UV colour. When possible and expedient the front panel has been supplemented by colour graphics or photos. The UV colour print is also fade-resistant even when exposed to the sun's rays. A special process using an additional protective lacquer coating protects the robust nature of the surface and makes it scratch resistant while it in no way compromising the front panel's print transparency and clarity. The electrical connections are terminated at 4-mm safety sockets. The rear side is protected against physical contact with a removable cover.</p> <p>For didactic reasons facilitating design and clarity the power supply bus is located at the upper and lower panel edges and features colours in accordance with DIN72551. The training panels can be inserted into special experiment panel frames without having to use a tool. Alternatively, there is always the option of setting up any experiment panel with desktop case directly on the table or inside a carrying case.</p> <p><b><u>Basic equipment set, consisting of:</u></b></p> <p><b><u>Transmission line Model 150 km and 300 km</u></b></p> <p>Three-phase line simulation of a high voltage overhead power line with different lengths for measuring various operational states (open-line, matched, short-circuit). Scale factor 1/1000 for current and voltage.</p> <p>Transmission line length: 150km and 300km</p> <p>Transmission line length: 93.2 miles and 196.4 miles</p> <ul style="list-style-type: none"> <li>• Resistance per phase: 3,6Ohm 7,2 Ohm</li> <li>• Inductance per phase: 150mH 300mH</li> <li>• Capacity per phase:             <ul style="list-style-type: none"> <li>Line-to-line: 2 x 150nF 300nF</li> <li>Line-to-ground: 2 x 0.55µF 1.1µF</li> </ul> </li> <li>• Max power consumption: 1kW</li> <li>• Voltage: 3x 400V; 50/60Hz</li> </ul>								
---	--	--	--	--	--	--	--	--

Full Signature of Supplier/ Contractor.

Signature of the Principal.

<ul style="list-style-type: none"> <li>• Current: 2A</li> <li>• Inputs/outputs: 4mm safety sockets</li> </ul> <p><b><u>Capacitive load, three-phase, 1kW</u></b></p> <p>Three groups of MP-capacitor, each consists four capacitors .</p> <ul style="list-style-type: none"> <li>• for parallel, series, star and delta circuits</li> <li>• capacity: 3 x 2/4/8/30 <math>\mu</math>F, 450 V</li> <li>• Inputs/outputs: 4mm safety sockets</li> <li>• Training panel design</li> </ul> <p><b><u>Ohmic load, three-phase, 1kW</u></b></p> <p>Three synchronously adjustable circular rheostats with scale 100 - 0%, each with a fuse in the sliding-contact connection.</p> <ul style="list-style-type: none"> <li>• for parallel, series, star and delta circuits</li> <li>• Resistance: 3 x 750 Ohm</li> <li>• Current: 3 x 2 A</li> <li>• Inputs/outputs: 4mm safety sockets</li> <li>• Training panel design</li> </ul> <p><b><u>Inductive load, three-phase, 1kW</u></b></p> <p>Consist of three inductive loads with the following taps:</p> <p>1,2H (0,65A), 1,6H (0,5A), 2H (0,45A), 2,4H (0,35A), 2,8H (0,30A), 3,2H (0,25A)</p> <ul style="list-style-type: none"> <li>• for parallel, series, star and delta circuits</li> <li>• Voltage: max. 400V</li> <li>• Inputs/outputs: 4mm safety sockets</li> <li>• Training panel design</li> </ul> <p><b><u>Power switch module</u></b></p> <p>The voltage can be switch on and off manually or automaticlly.</p> <ul style="list-style-type: none"> <li>• Nominal voltage: 230/400V/50Hz</li> <li>• Control voltage: 24V</li> <li>• Nominal operating current: 16A, ohmic</li> <li>• Functions: 2 pushbutton switches and remote control for switch-off</li> </ul>								
---	--	--	--	--	--	--	--	--

Full Signature of Supplier/ Contractor.

Signature of the Principal.

<p>relay</p> <ul style="list-style-type: none"> <li>• Indicators: signal lamps for "on" and "off"</li> <li>• Contacts: 3 n.o. &amp; 1 n.o. auxiliary</li> <li>• Inputs/outputs: 4mm safety sockets</li> <li>• Training panel design</li> </ul> <p><b><u>Supplement to basic set( for Parallel and series connection of transmission lines</u></b></p> <p><b><u>Transmission line Model 150 km / 300 km</u></b></p> <p>Three-phase line simulation of a high voltage overhead power line with different lengths for measuring various operational states (open-line, matched, short-circuit). Scale factor 1/1000 for current and voltage.</p> <p>Transmission line length: 150km    300km</p> <p>Transmission line length: 93.2 miles    196.4 miles</p> <ul style="list-style-type: none"> <li>• Resistance per phase: 3,60hm    7,2 Ohm</li> <li>• Inductance per phase: 150mH    300mH</li> <li>• Capacity per phase:       <ul style="list-style-type: none"> <li>Line-to-line: 2 x    150nF    300nF</li> <li>Line-to-ground: 2 x    0,55μF    1,1μF</li> </ul> </li> <li>• Max power consumption: 1kW</li> <li>• Voltage: 3x 400V; 50/60Hz</li> <li>• Current: 2A</li> <li>• Inputs/outputs: 4mm safety sockets</li> </ul> <p><b><i>TRANSMISSION LINE PARAMETER MEASUREMENT MODEL</i></b></p> <ul style="list-style-type: none"> <li>• One no. of PIC Micro controlled used to measure all parameters</li> <li>• One no,. Of LCD display to indicate       <ul style="list-style-type: none"> <li>- Sending end voltage (Vs)</li> <li>- Sending end current (Is)</li> <li>- Receiving end voltage(Vr)</li> <li>- Receiving end current (Ir)</li> <li>- Phase angle between Vs/Vr</li> </ul> </li> </ul>								
---	--	--	--	--	--	--	--	--

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

<p>- Phase angle between <math>V_s/I_s</math>          - Phase angle between <math>V_s/I_r</math>          - Phase angle between <math>V_r/I_r</math></p> <ul style="list-style-type: none"> <li>• One no. of PIC Microcontroller can be used to calculate the A,B,C,D values</li> <li>• One no. Of LCD display to indicate A,B,C,D value of transmission line in rectangular form</li> <li>• Provision to interface with PC</li> </ul> <p>High-voltage networks are usually operated with voltages in the region of 110 kV to 380 kV, whereby urban areas and large-scale industrial facilities are supplied with 110 kV, and 380 kV is used for long-distance transmission lines. The line simulation system is designed for operation at model voltages between 110 V and 380 V. Various voltage levels and line lengths can be selected via corresponding overlay masks. Examinations with the training system can be performed off-load, in normal operating mode, in the presence of a short-circuit or earth fault, with or without earth-fault compensation. The system also permits assembly of complex networks by connecting the line simulation models in parallel or series. The voltage can be supplied via a fixed grid or synchronous generator.</p> <p><b><u>Investigations on Three-phase Transmission Lines</u></b></p> <p><i>Training contents:</i></p> <ul style="list-style-type: none"> <li>• Voltage increases on open-circuit lines</li> <li>• Voltage drop as a function of line length</li> <li>• Voltage drop as a function of <math>\cos\phi</math></li> <li>• Capacitive and inductive power losses on a line as a function of U and I</li> <li>• Phase shift on a line</li> </ul> <p><b><u>Parallel and series connection of transmission lines</u></b></p> <p><i>Training contents:</i></p> <ul style="list-style-type: none"> <li>• Distribution of power and current among parallel-connected lines of equal length</li> <li>• Distribution of power and current among parallel-connected lines of unequal length</li> <li>• Distribution of power and current among series-connected lines of equal length</li> </ul>							
--	--	--	--	--	--	--	--

Full Signature of Supplier/ Contractor.

Signature of the Principal.

	<ul style="list-style-type: none"> <li>• Distribution of power and current among series-connected lines of unequal length</li> <li>• Load distribution, power flow</li> <li>• Voltage distribution</li> <li>• Quantitative and qualitative evaluations of operational relationships</li> </ul>							
--	--	--	--	--	--	--	--	--

**Gross Total Cost : Rs.-----**

We agree to supply the above goods in accordance with the technical specification for a total contract price of Rs..... (Amount in figures) ( Rupees ..... amount in words ) with in the period specified in the Invitation for tender.

We also confirm that the normal commercial warranty / guarantee of ..... months shall apply to the offered goods.

**Full Signature of Supplier/ Contractor.**

**Signature of the Principal.**

Tripura Institute of Technology, Narsingarh