



**Dr B R AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY**

**G T Road By Pass, Jalandhar-144011, Punjab (India)**

EPABX-0181-2690301 & 453 website: [www.nitj.ac.in](http://www.nitj.ac.in) email: [registrar@nitj.ac.in](mailto:registrar@nitj.ac.in)

**Ref. No. NITJ/PUR/EE/223/20/e-Tender No. 35/2021**

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**Assistant Registrar**

**Dr. B. R Ambedkar NIT Jalandhar**

**Email: [arpurchase@nitj.ac.in](mailto:arpurchase@nitj.ac.in)**



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**THIS DOCUMENT IS FOR REFERENCE ONLY. ONLY E-TENDERS WILL BE ACCEPTED**

**e-TENDER NOTICE – NITJ/PUR/EE/223/20/e-Tender No. 35/2021**

National Institute of Technology, Jalandhar invites e-tender for purchase of Various Equipments/Kits as per detail available at Annexure-I along with Tender Fee & EMD required for Power System Lab (EEPC-322) for the Department of Electrical Engineering of the Institute as per details given below:

|     |                                                  |                                    |
|-----|--------------------------------------------------|------------------------------------|
| I   | Downloading & Submission of Online e-tender/bids | Start Date: 29.07.2021 at 11:00 AM |
| II  | Last date of submission of online bids           | End Date: 19.08.2021 upto 11:00 AM |
| III | Physical submission of Tender Fee and EMD        | End Date: 20.08.2021 upto 11:00 AM |
| IV  | <b>Opening of Technical e-Bid (online)</b>       | <b>20.08.2021 at 11:00 AM</b>      |

Detailed Terms and Conditions are available in e-tender document. The bid document can be downloaded from the [CPP Portal](#).

Complete tender document is available for reference purposes on Institute website [www.niti.ac.in](http://www.niti.ac.in) and [CPP Portal](#). Only e-tenders will be accepted.

**Registrar**



**Annexure-I**

**Ref. No. NITJ/PUR/EE/223/20/e-Tender No. 35/2021**

**Detail of Equipment, Tender Fee & EMD are as under:**

| <b>Sr. no.</b> | <b>Item/Equipment</b>                          | <b>Qty.</b> | <b>Tender Fee</b> | <b>EMD</b>   |
|----------------|------------------------------------------------|-------------|-------------------|--------------|
| 1.             | Over Current Relay Trainer                     | 01          | Rs. 500/-         | Rs. 26,500/- |
| 2.             | Earth Fault Relay Trainer                      | 01          |                   |              |
| 3.             | Over Voltage Relay Trainer                     | 01          |                   |              |
| 4.             | Under Voltage Relay Trainer                    | 01          |                   |              |
| 5.             | Directional Overcurrent Relay Trainer          | 01          |                   |              |
| 6.             | Differential Relay Trainer                     | 01          |                   |              |
| 7.             | Negative Sequence Relay Trainer                | 01          |                   |              |
| 8.             | Digital Directional Over Current Relay Trainer | 01          |                   |              |
| 9.             | Air Circuit Breaker Trainer Kit                | 01          |                   |              |
| 10.            | Generator Protection Simulator                 | 01          |                   |              |
| 11.            | Three phase line fault simulator               | 01          |                   |              |

**Note: The quantity of required equipment/item may vary as per requirement.**

**\*Exemption of Tender fee & EMD will only be given to MSME/NSIC registered bidders.**



### **Important Note**

1. All corrigenda, addenda, amendments and clarifications regarding this tender document will be uploaded on the website [www.nitj.ac.in](http://www.nitj.ac.in) and CPP Portal and not in the newspaper; Bidders shall keep themselves updated with all such developments.
  2. In case, the last date of receipt/opening of bids falls on holiday, the bids shall be receipt/opened on the next working day at same time.
  3. In case, the last date of submission of EMD & Tender fee falls on holiday, the EMD & Tender fee shall be submitted on the next working day at same time.
  4. Tenderer who have downloaded the tender document form from the institute website, shall submit a declaration along with tender document that I/We have downloaded the Tender Form from the institute website [www.nitj.ac.in](http://www.nitj.ac.in) and I/we have not tempered /modified the tender form in any manner. In case, if the same is found to be tempered/modified in any manner, I/we understand that my/our tender will be summarily rejected and I/we are liable to be banned from doing business with institute.
  5. **Tender fee of Rs.500/- (Non- refundable) in the form of DD in favour of Director, D R B R Ambedkar NIT, Jalandhar.**
  6. **EMD (refundable) in the form of DD in favour of Security- A/c, DR B R Ambedkar NIT, Jalandhar.**
  7. **Both EMD and Tender fee are be submitted as per dates mentioned in schedule, failing which e-bids will not considered.**
- ❖ **All the bidders are required to submit the Tender Fee and EMD as per requirement of tender document failing which bids received straightway rejected and bid will be treated invalid.**
  - ❖ **Note: If the bidder inadvertently or otherwise upload the quoted rates in the technical bid, the bid will be straightway rejected and treated invalid.**
  - ❖ **If the bidder is exempted for payment of Tender Fee and EMD as NSIC/MSME registered bidders, then bidder is required to submit NSIC/MSME exemption certificate for same. The Certificate must be valid as on last date of submission of bid.**

**Tenderer must submit a scanned copy (duly signed and stamped) regarding terms & conditions as per our tender documents along-with make/model, specifications, bill of quantity as per required equipment in the technical bid for examine the bid as per our institute tender documents. It is noted that no rate should be depicted in the letter head.**



**Instructions to Tenderer**

1. No tender will be accepted in physical form. The bidders shall have to submit their bids online in Electronic Format under Digital Signatures. For participation in the e-tendering process, the bidders need to register themselves on CPP Portal.
2. Bids are to be submitted online and opened online as per time given failing which no tender will be considered..
3. Bids will be opened online as per time given schedule.
4. **Before submission of online bids, bidders must ensure that scanned copies of all the necessary/relevant documents have been uploaded with the bid which should be duly signed and stamped. The duly signed and stamped copies of Terms & Conditions of the tender, reply of the Questionnaire of Plant & Machinery and other documents of the Tender & Annexures must be uploaded, failing which their bids may be rejected.**
5. NIT JALANDHAR, will not be responsible for any delay in online submission of bids due to any reason whatsoever.
6. **Bidders should also upload the scanned copies of Tender fees/EMD/Exemption Certificate as specified in the tender documents along with online technical documents. EMD in the form of a Demand Draft in favour of the Security – A/c, Dr B R Ambedkar NIT, payable at Jalandhar (refundable separate) and Tender Fee in the form of a Demand Draft in favour of the Director, Dr B R Ambedkar NIT, payable at Jalandhar (Non- refundable separate) should also be submitted in physical form to the following address as per scheduled time given for physical submission of EMD and Tender fee. The Envelope should be super-scribed as EMD and Tender Fee for Tender for Supply of Various Equipments/Kits and sent to following address:-**  
  
**Kind Attention- Assistant Registrar (Purchase Section)  
Director,  
Dr B R Ambedkar National Institute of Technology,  
G T Road Amritsar By Pass, Jalandhar-144001, Punjab (India).**
7. The details of EMD specified in the tender document should be same as submitted online (scanned copies). Otherwise tender will be rejected summarily.
8. The conditional bids shall not be considered and will be out rightly rejected.

**Read and Accepted**

**(Signature & Stamp of Tenderer)**



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9. The Financial Bid through e-tendering process shall be opened of only those bidders, who will qualify in the technical bid and approved by the Purchase Committee/Technical Experts. The date, time & place of opening of the financial bid(s) will be intimated in due course of time.
10. At any time prior to the deadline for submission of bid, the institute may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective tenderer(s), modify the tender document by issuance of an amendment.
11. The amendment will be uploaded on Institute website and CPP Portal only. In order to provide reasonable time to prospective tenderer(s), for preparing their bid as per amendment, the institute may, at its discretion extend the deadline for the submission of tender.
12. **The supplier must upload the original manuals / catalogue and Make/Model of the Equipment /Item. Otherwise bid is liable to be rejected.**
13. The Institute is not liable to pay any interest on EMD. Earnest money deposit shall be forfeited, if the tenderer, withdraws its bid during the period of tender validity. The Earnest money deposit of the tenderer, whose tender has been accepted, will be returned on the submission of **performance security @ 3% of the total value of the offer. The performance security will be kept till the warranty period + 02 months more of the Equipment /Item. The warranty period will start from the date of satisfactory installation of the Equipment /Item duly given by the concerned department.** Earnest money deposit of the successful tenderer shall be forfeited, if it refuses or neglects to execute the contract or fails to furnish the required performance security within the time frame as specified by the institute. The EMD(s) of other Bidder(s) whose offer are found according to required specifications/lowest will be released after finalization of Technical Bids/ Lowest Bid/Purchase.
14. The Format of Performance Bank Guarantee bond or Performance Bank Guarantee issued by the bank as per the format given in **Annexure "B" & "C"**.
15. Delivery time is the essence of the contract and must be met with.
16. Nearest specifications/better specifications can be considered. In case of deviation, complete justification should be furnished with proper documents.
17. The Director may accept a tender in part or whole of the quantity offered, reject any tender without assigning any reasons and may not accept the lowest bidder. Further in case of any doubt/dispute, the decision of the Director of the Institute shall be final.
18. The offer shall be kept valid for minimum 120 days.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



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19. a) Either the Indian agent/ dealer on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.  
  
b) If an agent/ dealer submits bid on behalf of the Principal/OEM, the same agent /dealer shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.  
  
c) All offers other than those from the Principal/OEM should be supported by an authority letter from the manufacturer authorizing the dealer /supplier to tender on their behalf as per **Annexure-D**. In case of manufacturer, a certificate or a copy thereof to the effect that the bidder is a manufacturer of the Equipment /Item must be accompanied with the technical bid.
20. The supplier will be responsible till the entire stores contracted for, arrive in good condition at destination.
21. The tenderer should not have been debarred and/ or blacklisted by any Central Government/ or any State Government Department(s) . This must be supported by an affidavit as per format given in Annexure-“E”.
22. If any information furnished by the bidder is, at any stage found to be incorrect/false/fabricated, the Institute shall have the absolute right to forfeit the EMD, warranty/performance guarantees or/and security deposits, in addition to cancellation of contract, and in accordance with law, such other actions may be taken like black-listing of the bidder etc.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



## **TENDER EVALUATION**

Institute will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in two stages as:

**(a) Stage – I (Technical Evaluation):**

- (i) Institute shall evaluate the technical bid(s) to determine the following like the bid qualifies the essential eligibility criteria or not, the tenderer has submitted the EMD & Tender fee or not, any computational errors have been made or not, all the documents have been properly filled or otherwise, all the documents have been submitted/ uploaded with technical bid or not, the specifications, Make/Model, Catalogue of quoted Equipment /Item are as per requirement tender specifications or not, Authorization of Dealer / Distributor/ Exclusive Agent certificate from manufacturer is in order or not, Sales & service policy of equipment / item during warranty period and after warranty period will also be seen, location of their authorized service centre will also be seen for evaluation etc.

After evaluation of technical bid(s), a list of the qualifying tenderer (s)/ bidder (s) shall be made. Short-listed tenderer(s) will be informed of the date, time and place of opening of financial bid(s) and they may attend or depute their authorized representative/s to attend the schedule of opening of financial bid(s) on the scheduled date and time, if they wish to do so. The representative(s) should have a letter of authority to attend the price bid(s) opening event.

**Read and Accepted**

**(Signature & Stamp of Tenderer)**





**PART – II (e-FINANCIAL BID):**

- a) Bidders should offer the rates as per the format of BOQ as available on CPP Portal. **Detailed bill of material/quantity is also to be provided along with the price breakup of each item as per requirement of the tendered specification of the equipment in the online price bid at [CPP Portal](#).**

❖ **Note: The quoted amount as filled in the Annexure(s) of online financial bid and detailed bill of material/quantity provided with price break up of each item in the online financial bid should be tallied and both must be same, otherwise bid will be treated invalid.**

- b) Conversion to Single Currency: To facilitate evaluation and comparison, the Institute will convert all the bid prices expressed in the amounts in various currencies to the Indian Rupees as per the TT selling rates of RBI on the date of opening of technical bids.
- c) Custom, GST or any other taxes, Education Cess and other charges must be mentioned in the price bid. The financial evaluation/comparison will be made after including all the above mentioned charges/taxes.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**ARBITRATION:**

In case of any dispute or difference arising out in connection with the tender conditions/job order/Contract, the Institute and the Seller/Service Provider will address the dispute/difference for a mutual resolution and failing which, the matter shall be referred for arbitration to a sole Arbitrator to be appointed by the Institute.

The Arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the venue of arbitration shall be at Jalandhar only. The decision of the Arbitrator shall be final and binding on both the parties.

**JURISDICTION:**

The courts at Jalandhar alone will have the jurisdiction to trial any matter, dispute or reference between parties arising out of this tender / contract. It is specifically agreed that no court outside and other than Jalandhar Court shall have jurisdiction in the matter.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**(TERMS AND CONDITIONS (FOR THE SUPPLY OF GOODS, EQUIPMENT /ITEM)**

1. Rate should be quoted F.O.R NIT Jalandhar.
2. a) For Foreign Import goods/ Equipment, the rates will be evaluated on DAP basis alongwith the item/equipment to be supplied in Indian rupees (If any). Therefore, rates should be quoted on DAP basis with separately mentioning of CIF or FOB charges. The complete description viz. make and model of the Equipment / item and name of the manufacturer must be clearly indicated. The equipment should be insured upto NIT, Jalandhar. Institute will provide all the documents regarding custom clearance.  
b) e-Bids found without quoted upto DAP NIT value shall be treated as invalid.
3. Where the Equipment / Machinery/ Instrument are composed of several sub units/components, the rate should be quoted for each subunit/component separately. NIT Jalandhar reserves the right to increase or decrease the number of sub units/components and number of Equipment / Machinery/ Instrument according to its requirements.
4. The institute being government educational institute is having Excise and Custom duty exemption in terms of government notification No. 51/96-customs Dt. 23-7-1996 and No. 10/97-central excise Dt. 1-3- 1997 as amended from time to time, therefore taxes be quoted accordingly and this must be depicted in Price Bid clearly.
5. a) The tenderer(s) who are quoting rates in foreign currency should quote Custom Duty for import (Foreign) goods against Custom Duty Exemption Certificate. The tenders claiming custom duty as extra should specifically give the present rate of Custom Duty as payable against each Equipment /Item. The custom duty so claimed will be reimburse on custom duty receipt basis.  
b) The tenderer(s) who are quoting rates in Indian Rupees, the rates should be quoted inclusive of custom Duty against Custom Duty Exemption Certificate (if any). No custom duty will be paid separately. Only custom duty certificate will be provided.
6. GST or any other chargeable duty where applicable must be specifically mentioned, failing which no tax or duty will be allowed at subsequent stage.
7. All items shall be indicated both in words as well as in figures. If there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**8. Payment:**

(a) 100% payment will be made against physical delivery, inspection, installation, training of the Equipment/Machinery/Instrument etc in the institute, receipt of satisfactory working report of the Equipment / Machinery/Instrument etc and receipt of Performance Bank Guarantee @ 3%.

b) **For Import Equipment /Item:** 90% of the DAP value of the equipment will be released, through irrevocable Letter of Credit (LC)/ Wire Transfer/ foreign draft/ draft at sight document. Balance 10% of the DAP value will be released after inspection, installation, training and performance bank guarantee of the Equipment / Machinery/Instrument etc in the institute. The payment charged by bidder on account of custom clearance, loading/unloading, transportation, insurance etc. as per price bid and delivery up to NIT, Jalandhar will be reimbursed against actual receipt basis in Indian rupees.

In case of payment through Letter of Credit, all the Bank charges within India will be borne by NIT Jalandhar and all bank charges outside India will be borne by the supplier.

**9. Warranty: Rates should be quoted with comprehensive warranty.** Besides this, policy regarding after sale service on the expiry of warranty period of Equipment / Machinery/Instrument etc may be explained. The bidders should attach duly signed and stamped certificate of **warranty** as per **Annexure-F** with the technical bid.

**10. Training: In house training (where applicable) after the installation and commissioning of Equipment / Machinery/Instrument etc shall be provided by the supplier.**

**11. Delivery:** Delivery date will be mentioned in the supply order. The time and date of delivery or dispatch stipulated in a supply order shall be deemed to be the essence of the supply order and if the supplier fails to deliver or dispatch any consignment within the period prescribed for such delivery, the delayed consignment will be accepted subject to penalty as laid down in the supply order, which will be recovered from the pending payments.

1. No recovery of penalty will be made, if the delayed supplies are acceptable by extending the delivery period by the Director with our any LD charges.

2. Director will allow extension on the request of the supplier by recording in writing that in exceptional circumstances the supply was beyond the control of the supplier and there was no loss to the institute.

3. Penalty on account of delay, Director NIT, Jalandhar reserves the right to impose 0.5% (Half) per cent penalty per week on account of delay in supply, if delivery received after expiry of the original delivery period. The total penalty will not exceed 10% of the value of the delayed goods.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**12. Installation:** Supplier has to install the Equipment / Machinery/ Instrument within two to three weeks from the receipt of the Equipment / Machinery/Instrument etc in NIT Jalandhar.

13. Spares and Accessories, wherever required should be quoted separately and clearly, even if these are not asked for.

**14. Site Preparation:** The supplier shall inform NIT Jalandhar about the site preparation, if any, needed for the installation, immediately after receipt of the supply order. Supplier must provide complete details regarding space and all infrastructural requirements needed for the Equipment / Machinery/Instrument etc which NIT Jalandhar should arrange before the arrival of Equipment / Machinery/Instrument etc to ensure its early installation and smooth operation thereafter. The supplier may offer his advice and render assistance to NIT Jalandhar in the preparation of the site and other pre installation requirements.

**15.** The total scope of work includes the supply, installation, satisfactory commissioning and testing of the Equipment / Machinery/Instrument etc by the supplier, training at NIT Jalandhar, method development and validation for parameters as mentioned in specifications at **Annexure-A**. The supplier will complete installation & Commissioning of Machine within two to three weeks from the date of receipt of Equipment / Machinery/Instrument etc of NITJ.

**16.** Details about the service center for the quoted Equipment / Machinery/Instrument etc. in India may be mentioned.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**SPECIAL CONDITIONS FOR SUBMITTING BID IN FOREIGN CURRENCY BY THE INDIAN AGENTS/DEALERS:**

1. The Tenderer should submit the following documents/information while quoting:
  - a) Foreign Principal's Performa invoice/quote indicating the commission payable to the Indian Agent and nature of after sales service to be rendered by the Indian Agent.
  - b) Copy of Agency agreement with the Foreign Principal and the Indian Agent, precise relationship between them and their mutual interest in the business.
  - c) Agency Commission will be paid in only Indian Currency.
  - d) Compliance of the tax laws by the Indian Agent.
2. The following information/documents are to be submitted wherever applicable.
  - Product Literature.
  - The earliest delivery period and country of origin of the Stores.
  - Banker's name, address, telephone/fax Nos. & e-Mail ID of the Contractor.
  - The approximate net and gross weight and dimensions of packages/cases.
  
  - Recommended spares for satisfactory operation for a minimum period of one year.
  
  - Details of any technical service, if required for erection, assembly, commissioning and demonstration.
3. The FOB/FCA and C & F prices quoted should be inclusive of all taxes, levies, duties arising in the tenderer's country.
4. Samples, if called for, should be sent free of cost.
5. The offer should be accompanied with with a certification that the quoted item/items has/have not been restricted or canalized under ITC (HS) classification of Import & Export items.
6. The authority of person signing the tender, if called for, shall be produced.
7. Instructions/ Operation Manual containing all assembly details including wiring diagrams should be sent wherever necessary in duplicate. All documents/ correspondence should be in English language only.
8. It is expressly agreed that the acceptance of the Stores Contracted for, is subject to final approval in writing by the Purchaser.
9. Part shipment is not allowed unless specifically allowed by the Institute.
10. Inspection/ Test Certificate (if required) should be provided.

**Read and Accepted.**

**(Signature & Stamp of Tenderer)**



**Acceptance**

We \_\_\_\_\_ read and accept the instructions to the tenderer, terms & conditions and all other documents as mentioned in the tender and shall Comply with them strictly.

Name of Bidder \_\_\_\_\_

Signature

Address \_\_\_\_\_

Seal of firm:

\_\_\_\_\_

\_\_\_\_\_

Date:



**Questionnaires A & B**

**QUESTIONNAIRE FOR PLANT & MACHINERY**

**Note: Please submit the reply in detail and also enclose the necessary documents with proof where required as per Questionnaire. These documents must be submitted in the technical bid document.**

Please state that you have submitted your quotations as per procedure mentioned below:-

➤ Bids consisting of technical details bringing out clearly in a separate sheet, the deviation in the specifications if any from that of tender enquiry specifications along with commercial terms and tender form.

1. Please attach list duly signed by you, for such spare parts and tools which are absolutely essential for proper maintenance and operation of machine for a period of two years giving full particulars of spare and tool with a price of each spare parts and tools separately.
2. Please confirm that you have adequate servicing and spare parts facilities in India in respect of Equipment /Item tendered by you or that you should arrange to provide such facilities simultaneously.
3. Please indicate that you guaranteed that before going out of production of spare parts, you will give adequate advance notice to the purchaser so that the institute may order his requirements of spares in one lot, if he so desire.
4. Please indicate that you guaranteed that if you go out of production of spare parts, then you will make available prints, drawings of the spare parts and specifications of the material at no cost if and when required in connection with Equipment /Item to enable the purchaser to fabricate or procure spare parts from other sources.
5. Please confirm that you undertake to enter into a rate contract with the purchaser to supply spare parts on an agreed basis for an agreed period.
6. Status:-
  - a) Indicate whether you are ISU or SSI
  - b) Are you registered with Government e-Marketing (GeM) for the item quoted? If so indicate whether there is any monetary limit or registration.
  - c) If you are a small scale unit registered with NSIC under single point registration scheme whether there is monetary limit.
7. a) If you are registered either with NSIC or with Government e-Marketing (GeM), please State whether you are registered with Directorate of industries of the state government concerned.  
  
b) If so, confirm whether you have attached a copy of the certificate, issued by Director of industries.
8. Please indicate:-  
Name & Full Address of your Banker
9. Please indicate whether you agree to submit advance samples if called upon to do so within the specified period of 21 days.





10. Business name and constitution of firm:-

- i) The Indian company Act.1956
- ii) Indian partnership Act.1932
- iii) Any act, if not, who are the owner/partners (please give full name and address)

11. Whether the tendering firm is / are:-

- i) Manufacturers authorized agents
- ii) Holders stock of the stores tendered for
- iii) **NBI manufacturer's agents please enclose with tender the copy of manufacturer's authorization.**

12. Please state whether the inspection clause is acceptable to you

13. Here state specifically:-

- i) Whether the price quoted by you is to the best of your knowledge and belief is not more than the price usually charged by you on stores of the same natures, class of description to any private purchase either foreign or as well as government purchaser. If not state the reason thereof if any also indicates the margin of Difference.
- ii) In respect of indigenous items for which there is a controlled price fixed by law, the price quoted shall not be higher than that the controlled price and rates available on DGS&D/ Government e-Marketing (GeM) contract. The reason thereof should be stated.

14. State whether business dealing with you has been banned by Ministry /Department of supply or any other Govt. Department.

15. Please confirm that you have read all the instruction carefully and have complied with accordingly.

**(Signature of Tenderer)**

(\_\_\_\_\_)

1. Full Name & Address of the person signing

(\_\_\_\_\_)

2. Whether signing as proprietor /partners



**Dr B R AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY**

**G T Road By Pass, Jalandhar-144011, Punjab (India)**  
EPABX-0181-2690301 & 453 website: [www.niti.ac.in](http://www.niti.ac.in) email: [registrar@niti.ac.in](mailto:registrar@niti.ac.in)

**PROFORMA FOR PERFORMANCE STATEMENT**  
**(For the Period of last 3 years)**

| e-Tender Notice - NITJ/PUR/EE/223/20/e-Tender No. 35/2021 |                                          |                   |                                        |                |                                |                                                       |
|-----------------------------------------------------------|------------------------------------------|-------------------|----------------------------------------|----------------|--------------------------------|-------------------------------------------------------|
| Sr.No.                                                    | Order (full placed address of purchaser) | Order No. & dated | Description And Qty. of Stores Ordered | Value of Order | Date of Completion of delivery | Has the Equipment/Item been satisfactory commissioned |
|                                                           |                                          |                   |                                        |                |                                |                                                       |



DETAILED TECHNICAL SPECIFICATIONS

**1. Over Current Relay Trainer**

TECHNICAL SPECIFICATIONS

Electro mechanical type Over Current relay /IDMT or DMT or Instantaneous type, CT Input - 1A or 5A / with PSM, TSM, ATTM circuit with Time interval meter for relay trip time measurement, Variable AC Current source of 0-25A, Digital AC Ammeter for output current Measurement, 230VAC AC Input.

**Over current Relay**

- Type Single Pole /element Over Current Relay
- CT Input 5A
- PMS 50% -200% in steps of 25%
- TMS 0.1 to 1 in steps of 0.1s
- Function IDMT
- Curve IDMT curve of 3sec as per IEC-255
- Features Self powered
- Hand reset type-Mechanical Flag Indicator

**Trainer**

- One number of variable AC current Source of 0-25A
- One number of Autotransformer is provided to adjust the current output continuously
- One number of digital AC Ammeter (0-30A) /3.5 digit / is provided to measure the current input in amp.
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number LCD - Digital stop Clock is provided in ATTM Circuit to measure relay trip time in S, S/10, S/100
- One number reset switch is provided in front panel to restart the digital stop clock
- All are mounted on a nice cabinet with diagram stickered on front panel. & 230VAC@50Hz AC Input with power ON/OFF Switch
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty



## 2. Earth Fault Relay Trainer

### TECHNICAL SPECIFICATIONS

Electro mechanical type E/F Current relay /IDMT or DMT or Instantaneous type, CT Input - 1A or 5A / with PSM, TSM, ATTM circuit with Time interval meter for relay trip time measurement, Earth Fault Simulator set up (0.5hp AC Motor) to create real time earth fault & current limit Resistor, Digital AC Ammeter for fault current Measurement, 230VAC AC Input.

#### Earth Fault Relay

- Type Single Pole / element E/F Relay
- CT Input 2A
- PMS 50% -200% in steps of 25%
- TMS 0.1 to 1 in steps of 0.1s
- Function IDMT
- Curve IDMT curve of 3sec as per IEC-255
- Features Self powered
- Hand reset type-Mechanical Flag Indicator

#### Trainer

- One number of 3 phase ac induction motor/0.5hp/3 phase/1440rpm-siemens Make is provided for short circuit /earth fault creation.
- One number of short circuit resistor is provided to limit short circuit /Earth current
- One number of digital AC Ammeter (0-20A) /3.5 digit / is provided to measure the earth current input in amp.
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number LCD - Digital stop Clock is provided in ATTM Circuit to measure relay trip time in S, S/10, S/100
- One number reset switch is provided in front panel to restart the digital stop clock
- All are mounted on a nice cabinet with diagram stickered on front panel. & 230VAC@50Hz
- AC Input with power ON/OFF Switch
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty





### 3. Over Voltage Relay Trainer

#### TECHNICAL SPECIFICATIONS

Electro mechanical type Over Voltage relay /IDMT or DMT or Instantaneous type, PT Input - 110V / 220V / with PSM, TSM, Variable AC Voltage source of 0-350V AC, Digital AC Voltmeter for output voltage Measurement, 230VAC AC Input

#### Overvoltage Relay

- Electromechanical type – IDMT Type
- With Plug setting & Time setting multiplier
- 110V, With "NO" & "NC" Contact @5A Ratings
- The relay is mounted with POWDER COATED MS Cabinet with stickered front panel
- Voltage input (PT Input) are terminated by banana connectors for external

#### Trainer

- One number of variable AC voltage Source of 0-400VAC
- One number of Autotransformer is provided to adjust the voltage output
- One number of digital AC Voltmeter (0-300V) is provided to measure the Voltage output
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided for Relay trip time measurement
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number Digital stop Clock is provided in ATTM Circuit to measure relay trip time
- All are mounted on a nice cabinet with diagram stickered front panel.
- 230VAC@50Hz AC Input with power ON/OFF Switch
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty



#### 4. Under Voltage Relay Trainer

##### TECHNICAL SPECIFICATIONS

Electro mechanical type Over Voltage relay /IDMT or DMT or Instantaneous type, PT Input - 110V / 220V / with PSM, TSM, Variable AC Voltage source of 0-350V AC, Digital AC Voltmeter for output voltage Measurement, 230VAC AC Input.

##### **Undervoltage Relay**

- Electromechanical type – IDMT Type
- With Plug setting & Time setting multiplier
- 110V, With "NO" & "NC" Contact @5A Ratings
- The above relay is mounted with POWEDER COATED MS Cabinet with stickered front panel
- Voltage input (PT Input) are terminated by banana connectors for external voltage input

##### **Trainer**

- One number of variable AC voltage Source of 0-400 VAC
- One number of Autotransformer is provided to adjust the voltage output
- One number of digital AC Voltmeter (0-300V) is provided to measure the Voltage output
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided for Relay trip time measurement
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number Digital stop Clock is provided in ATTM Circuit to measure relay trip time
- All are mounted on a nice cabinet with diagram stickered front panel
- 230VAC@50Hz AC Input with power ON/OFF Switch
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty



## 5. Directional Overcurrent Relay Trainer

### TECHNICAL SPECIFICATIONS

Electro mechanical type Directional Over Current relay /IDMT or DMT, CT Input: 1A & PT input: 110 VAC- with PSM, TSM, ATTM circuit with Time interval meter for relay trip time measurement, Variable AC Current source of 0-25A AC, Fixed Voltage source of 110vac & Digital AC Ammeters output current Measurement, 230VAC AC Input.

#### **Directional Overcurrent Relay**

- Type Directional Over Current Relay
- CT Input 2A
- PMS 0.5,0.75,1,1.25,1.5,1.75&2A
- TMS 0.1 to 1 in steps of 0.1s
- Function IDMT
- Curve IDMT curve of 3sec as per IEC-255
- Features Self powered /aux supply 48vdc
- Hand reset type-Mechanical Flag Indicator

#### **Trainer**

- One number of variable AC current Source of 0-20 A
- One number of Autotransformer is provided to adjust the current output continuously
- Provision to change the direction of current coil One number of digital AC Ammeter (0-30A) /3.5 digit / MECO Make is provided to measure the current input in amp
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number LCD - Digital stop Clock is provided in ATTM Circuit to measure relay trip time in S, S/10, S/100
- One number reset switch is provided in front panel to restart the digital stop clock
- All are mounted on a nice cabinet with diagram stickered on front panel.
- 230VAC @ 50Hz AC Input with power ON/OFF Switch
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of instruction working manual.





## 6. Differential Relay Trainer

### TECHNICAL SPECIFICATIONS

Single phase differential Relay (% Biased) & Fault simulation transformer, Electro mechanical type relay /IDMT, Ct's Input: -1A or 5A / with PSM, TSM, Single phase Transformer, 48V,5A with primary & secondary tapings for Fault Simulation, Digital AC Ammeters for Transformer Primary & secondary & differential current Measurement, 230VAC AC Input.

#### % Biased Differential Relay

- 5A Ratings
- IDMT or DMT Type (any one type)
- With bias setting key & digital display
- With One number of "NO" Contact of 5A ratings
- With One number of "NC" Contact of 5A ratings

#### Trainer

- One number of single-phase Fault simulating transformer for differential protection test set up Primary: 0-6-12-24-48V @ 4A, Secondary: 0-6-12-24-48V @ 4A
- One number of 230/ 48v Step down transformer is provided for Fault simulating transformer input
- Two number of digital AC Ammeter (0-10A) is provided to measure the primary and secondary current of fault simulating transformer
- One number of 5A rheostat is provided as short circuit resistor
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number Digital stop Clock is provided in ATTM Circuit to measure relay trip time
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- 230VAC@50Hz AC Input with power ON/OFF Switch
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty





## 7. Negative Sequence Relay Trainer

### TECHNICAL SPECIFICATIONS

Static Negative Sequence Relay, CT Input: 1A / 5A, Provision to change 3 Phase supply Phase reversal & Provision for unbalance load & supply, Digital AC Ammeter for 3 phase Current Measurement, 3 Phase, 415VAC AC Input.

#### Negative Sequence Relay

- K setting selection from K = 2 to 40
- Reset function approximates machine cooling
- Remote I2 readout meter available
- Alarm function available
- Electrically operated target seal-in
- Alarm level LED available
- Drawout case

#### Trainer

- One number of Three phase Autotransformer is provided to adjust the voltage output individually
- Facility to change the RYB reversal
- One number of three phase Lamp load with unbalance load selection facility
- One number of digital AC Ammeter (0-300V) is provided to measure the Voltage output
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number Digital stop Clock is provided in ATTM Circuit to measure relay trip time
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- 230VAC@50Hz AC Input with power ON/OFF Switch
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty



## 8. Digital Directional Over Current Relay Trainer

### TECHNICAL SPECIFICATIONS

Parallel and ring main Distribution System, Digital relay /IDMT & DMT, CT Input :-1A or 5A & PT Input : 110VAC with PSM,TSM, ATTM circuit with Time interval meter for relay trip time measurement, Variable AC Current source of 0-25A & Fixed 110V AC Voltage source for PT input, Digital AC Ammeter /MFM for output current /Parameters Measurement, 230VAC AC Input.

#### Time Overcurrent Relay

- Nominal frequency: 50 to 60 Hz
- Power consumption in the circuit path: 0.1 VA at  $I_N = 1A$
- Thermal load capacity of current circuit:  
Surge current (half-wave)  $250 \times I_N$   
for 1s  $100 \times I_N$   
for 10s  $30 \times I_N$   
continuous  $4 \times I_N$
- Output relay:  
Switch-on current: 20A  
Nominal current: 5A  
Max. contact rating:  
 $1250 VA/DC$ ;  $120W/DC$ , ohmic  
 $500VA/AC$ ;  $75W/DC$ , inductive
- Trip parameters:  
 $I > 0.5-2 \times I_N$   
 $I > 1-15 \times I_N$   
 $t_l > 0-100s$   
 $t_l > 0-2.5s$
- LED indicators:  
"ON" for ready  
 $I >$  and  $I >>$  starting (flashing)  
 $I >$  and  $I >>$  tripping (permanently On)
- Controls:  
"TEST" button to initiate the self-test  
6 potentiometers for adjusting operate and trip times  
8 DIP switches for adjusting the characteristics  
Adjustments for time factors and nominal data
- Inputs/outputs: 4mm safety sockets



- The integrated interface RS 485 is suitable for setting the relay parameters. It is also possible to store and transmit measured relay values to and from the PC.
- Optical signal transmission guarantees galvanic isolation.
- Indicators of the interface:
  1. LED green = operation indicator
  2. LEDs green = data transfer
- Dimensions: 297 x 228 x 125mm (HxWxD)
- Weight: 1kg

#### Time Overcurrent Relay with directional feature

- Nominal current:  $I_N=1A$
- $U_n$ : 400V
- Nominal frequency: 50-60Hz
- Setting ranges:
  - $I>$ : 0.5-2.0x  $I_N/tI>$ : 0-100s
  - $I>>$ : 1-15x  $I_N/tI>$ : 0-2.5s
- Tripping characteristics:
  - normal inverse
  - very inverse
  - extremely inverse
  - independent
- Inputs/outputs: 4mm safety sockets
- The integrated interface RS 485 is suitable for setting the relay parameters. It is also possible to store and transmit measured relay values to and from the PC.
- Optical signal transmission guarantees galvanic isolation.
- Dimensions: 297 x 456 x 125mm (HxWxD)
- Weight: 1.8kg

#### Trainer

The trainer will consist of the following equipment's:

- Transmission line model 150km/300km (93.2miles/186.4miles)
  - Resistance per phase: 3,6Ohm 7,2 Ohm
  - Inductance per phase: 115mH 230mH
  - Capacity per phase:
    - Line-to-line: 2 x 150nF 300nF
    - Line-to-ground: 2 x 0,55 $\mu$ F 1,1 $\mu$ F
  - Max power consumption: 1kW
  - Voltage: 3x 400V; 50/60Hz
  - Current: 2A



Inputs/outputs: 4mm safety sockets

Dimensions: 297 x 456 x 125mm (HxWxD)

Weight: 6kg.

- Power switch module
  - Nominal voltage: 200-400V, 50/60Hz
  - Control voltage: 24V
  - Nominal operating current: 16A, ohmic
  - Functions: 2 pushbutton switches and remote control for switch-off relay
  - Indicators: signal lamps for "on" and "off"
  - Contacts: 3 no. & 2 auxiliaries
- Inputs/outputs: 4mm safety sockets
- Dimensions: 297 x 114 x 95mm (HxWxD)
- Weight: 2kg
- Connection plugs for PROFIBUS with PG socket and terminating resistor
- Connection cable for PROFIBUS, per metre
- Wire stripper for PROFIBUS cables
- Interactive Lab Assistant: Protective systems for highvoltage transmission line
- Patch cable Cat5E 1x 1 m yellow, 2x 2 m yellow
- 5-Port Ethernet Switch
- Interface converter USB/RS485
- Adjustable 3-phase power supply, 0-450V/2A
- Three-phase power quality meter, display and longterm memory
- Relay Test Unit
- Set of safety measurement cables
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty





## 9. Air Circuit Breaker Trainer kit

### TECHNICAL SPECIFICATIONS

ACB & ACB Test Kit with Panel set up, 600A , Fixed or Draw out type / 3 pole or 4 Pole ACB, Over current , Earth fault, Over voltage & Under voltage Relays, Artificial variable AC Current source of 0-25A with digital meters, 3-phase Autotransformer is provided for OV/UV Fault simulation, 3 phase AC Motor set up is provided as earth fault simulator, 3 phase AC input with MCB & Indicators.

#### **Air Circuit Breaker**

- Breaking Capacity: 55kA
- Tripping Type: Electronic / Microprocessor Based
- Rated Current (A): 800A
- Protection Type: O/L, S/C & E/F
- No. Of Poles: 3Pole
- Rated Voltage (V): 500V AC
- Operating Type: Manual/Automatic

#### **Panel with ACB Test set up (current injection source)**

This panel consists of the following components

- Meter with Relay
- Variable ac current source with trip time indicator /meter
- Earth Fault SIMULATOR

#### **Specification**

- One number of IDMT OC Relay with necessary CT
- One number of Electromechanical Type Earth Fault Relay with necessary CT
- Over Current Relay
- Type Single Pole /element Over Current Relay
- CT Input 5A
- PMS 50% -200% in steps of 25%
- TMS 0.1 to 1 in steps of 0.1s
- Function IDMT
- Curve IDMT curve of 3sec as per IEC-255
- Features Self powered
- Hand reset type-Mechanical Flag Indicator
- One number of IDMT E/F Relay with necessary CT

#### **E/F Current Relay**

- Type Single Pole /element E/F Relay
- CT Input 2A



- PMS 50% -200% in steps of 25%
- TMS 0.1 to 1 in steps of 0.1s
- Function IDMT
- Curve IDMT curve of 3sec as per IEC-255
- One number of Variable current source of 0-30A is provided to test ACB
- One number of digital AC Ammeter is provided to indicate the Fault current in Amp
- Autotransformer is provided to adjust the current output.
- One number of Automatic trip time measurement circuit (ATTM Circuit) is provided
- One number START push button is provided in ATTM Circuit
- One number STOP push button is provided in ATTM Circuit
- One number LCD - Digital stop Clock is provided in ATTM Circuit to measure relay trip time in S , S/10 , S/100
- One number reset switch is provided in front panel to restart the digital stop clock
- ACB busbar input & output indicator is provided
- Necessary CT With suitable rating is provided
- Breaker trip status indicator with manual on/off switch
- All are mounted on a nice cabinet with diagram stickered on front panel. & 230VAC@50Hz AC Input with power ON/OFF Switch
- Mimic diagram is printed on panel front plate for easy understanding
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty



## 10. Generator Protection Simulator

### TECHNICAL SPECIFICATIONS

#### Features

- **Time overcurrent protection**  
Operating response and release response for single-pole and three-pole faults  
Determining the tripping times
- **Unbalanced load protection**  
Operating and release response to unbalanced load  
Determining the reset ratio and the tripping times  
Determining the relay characteristic  $TA = f(\text{unbalance})$
- **Reverse power protection**  
Synchronisation of the generator to the power grid  
Detection and disabling of the generator in the case of reverse power flow
- **Overvoltage and undervoltage protection**  
Reactions to phase failure  
Detection of starting and tripping times
- **Stator-earth fault protection**
- Detection of system voltages under normal operating conditions or stator-earth fault occurrence
- Measurement of tripping times
- Calculation of the earth-fault current

#### Panel

##### 1. Multi-function relay, power controller, cos-phi controller, synchronizing unit

- **Control functions:**
  - Automatic synchronisation
  - Automatic power control
  - Automatic power factor control
  - Automatic voltage control
  - Automatic frequency control
  - Automatic active and reactive power distribution
  - Operating data acquisition
- **Protective and monitoring functions:**
  - Generator: voltage/frequency
  - Generator: overload, reverse/reduced power
  - Generator: unbalanced load
  - Generator: instantaneous overcurrent
  - Generator: time-overcurrent



- Generator: ground fault
- Generator: power factor
- Generator: rotation field
- Generator set: speed/frequency mismatch
- Grid: voltage/frequency/phase shift/ROCOF
- Grid: rotation field

• **Technical data:**

- Measuring voltage: 180...440 V/AC
- Measuring frequency: 40...85 Hz
- Measuring current: 2.5 A
- Outputs: Relay manager with 3 floating relays
- Synchronising output LS-on
- Synchronising output LS-off
- Inputs: Circuit-breaker (LS) acknowledgment signaling
- Displays: 2 LED – Alarm, Stop red lamp – Circuit-breaker (LS) on
- 128×64 dot graphical interactive LC display with soft keys
- Interface: USB
- Motor protection switch, 1 - 1.6A
- Measuring inputs: 4-mm safety sockets

**2. Three-phase synchronous machine with smooth core rotor, 1kW**

- Nominal voltage: 400/230V, 50Hz
- Nominal current: 1.5A / 2.6A
- Nominal speed: 1500rpm
- Nominal power: 0.8kW
- Cos phi: 0.8 ... 1 ... -0.8
- Exciter voltage: 220V
- Exciter current: 1.6A

**3. Variable Ohmic load, three-phase, 1kW**

- Three synchronously adjustable circular rheostats with scale 100 - 0%, each with a fuse in the sliding-contact connection. for parallel, series, star and delta circuits
- Resistance: 3 x 750 Ohm
- Current: 3 x 2 A
- Inputs/outputs: 4mm safety sockets

**4. Servo machine test bench for 1kW machines**

• **Controller**

- Dynamic and static four-quadrant operation
- 10 selectable operating modes/machine models





- (torque control, speed control, flywheel, lifting drive,
- roller/calander, fan, compressor, winding gear,
- arbitrarily defined time-dependent load, manual and
- automated network synchronization)
- Integrated galvanically isolated amplifier for voltage
- and current measurement
- Speed and torque displays
- Four-quadrant monitor
- USB interface
- Thermal monitoring of the machine under test
- Testing for the presence of a shaft cover.
- Connection voltage: 400V, 50Hz
- Maximum power output: 10kVA
- **Servo motor**
  - Maximum speed: 4000rpm
  - Maximum torque 30Nm
  - Temperature monitoring: continuous temperature
  - sensor (KTY)
  - Resolver resolution: 65536 pulses/revolution

#### 5. Universal power supply for electrical machines

- Power supply for DC, AC and three-phase current and for excitation of synchronous machines. The supply is specially designed for use with electrical machines.
- **Outputs:**
  - Three phase: L1, L2, L3, N from 4-mm safety sockets
  - DC: 0...240 V DC variable, controlled and electronically
  - protected against overload and short circuits.
  - Output current: 3...10 A (adjustable current limiting)
  - Second DC supply ca. 210 V DC, 6 A fixed
  - Protective systems:
    - Motor protection switch adjustable from 6.3...16 A
    - Under voltage trip
    - Safety cut-out
  - Power connection: 3x 230/400 V, 50/60 Hz via CEE
  - plug with 1.8 m power lead

#### 6. Motor protection switch, 3 poles, 1.8-2.5A



- Power circuit breaker incorporating thermal overload trip and undelayed current trip.
- Contact rating: 500V AC at 10A
- Nominal current: 1.8A...2.5A adjustable

#### 7. Exciter voltage controller with de-excitation

- The exciter voltage controller is used in experiments involving synchronisation. The de-excitation switch is used in generator protection measures and is responsible for the disconnection of the generator from the grid and its de-excitation in the event of a fault.
- **Output:** DC 200 V/2 A
- 2 Inputs for voltage boosting and decreasing
- 1 Input for de-excitation using a relay
- 1 Input for switching the DC voltage on
- 2 Push-buttons for switching the DC voltage on and off
- Incremental rotary encoder for setting the voltage
- Inputs and outputs: 4-mm safety sockets
- Power supply: 230 V, 50/60 Hz

#### 8. HMI (Human Machine Interface) for generators

- **Technical data:**
  - Three-phase measurement of current and voltage up to 3x 400V/5A
  - Measurement of phase voltages, line-to-line voltages and currents
  - Determination of the apparent, active and reactive power
  - Determination of active, reactive and apparent work
  - Determination of the frequency and distortion factors for current and voltage
  - Detection of harmonic oscillations and neutral conductor current in the electricity supply
  - Pulse measurement
  - Peak and mean value detection
  - Event logging, Real-time clock
  - Large-scale, contrast-rich graphic display with background illumination
  - Display in tables, diagrams and vector diagrams
  - 2 digital inputs
  - 6 digital outputs
  - Ethernet interface
  - Demonstration measuring instrument for network operation
- **Max. measurement values:**
  - Voltage P-P: 690 V



- Current: 5A
- **Measurement accuracy:**
  - Voltages 0,2%
  - Currents 0,2%
  - Apparent power 0,5%
  - Active power 0,2%
  - Reactive power 1%
  - Active energy Class 0,2
  - Reactive energy Class 2
- **Operating voltage: 110V-230V, 50/60Hz**
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty

*Handwritten signature and initials*



## 11. Three Phase Line Fault Simulator

### TECHNICAL SPECIFICATIONS

- 3 phase power supply, simulating the 3-phase generation
- To simulate 3 phase Balanced system Fault and unsymmetrical faults
- Fault study with single line and double line in 3 phase system
- Faults:
  - L-G -Fault
  - L-L- Fault
  - L-L-G-Fault
- Single Conductor open fault
- Double Conductor open fault
- Fault through impedance
- Theoretical calculations a verification with practical results.
- The transmission lines are simulated by high frequency Inductance & resistance for short, medium at long line.
- Input supply: 0-415 V AC  $\pm 10\%$  50 HZ.
- Three phase Auto transformers: rating 1KVA, having suitable no. of digital volt meters and ammeters or other displays on the panel for measuring requisite values of voltages and currents provided on modular Extruded Aluminum Profile panel
- Resistive loads for current limiting while faults.
- Other requirements: Adequate number of patch cords, connecting leads, Good quality, reliable terminals, sockets required at appropriate places on panel for connections, strongly supported by lab manual and diagrammatic representation, detailed operating instructions.
- Enclosed in Sturdy nicely powder coated MS Box with terminals for all necessary points laying out from the box and circuit diagram is stickered on front panel.
- Facilitate easy and safe wiring using 4mm sturdy shrouded banana patch chords
- Set of experiment wise instruction working manual.
- On campus demonstration and training of lab staff
- All components should be ISI mark and made by the reputed manufactures.
- Three years warranty

*Handwritten signature and initials*





**FORMAT FOR PERFORMANCE BOND/GUARANTEE**

**(Undertaking from the supplier on a Non Judicial Stamp Paper of requisite duly attested by Notary)**  
**In consideration for "The Registrar, National Institute of Technology Jalandhar (hereinafter called NIT Jalandhar)** having agreed to release the payment of net value as per terms and conditions of a concluded Order No. \_\_\_\_\_ dated \_\_\_\_\_ **(hereinafter called "the order")** for supply of \_\_\_\_\_ **(here in after called "the Equipment /Item )** to us Messrs \_\_\_\_\_ **(hereinafter called "the supplier")** on submission of a Performance Bond to the satisfaction of NIT Jalandhar for the due performance of the said order  
We, Messers \_\_\_\_\_ hereby submit the FDR/TDR No \_\_\_\_\_

issued by \_\_\_\_\_ (Name of Bank) for \_\_\_\_\_ pledged in favour of Registrar, NIT Jalandhar as performance guarantee amount and hereby irrevocably, unconditionally and absolutely undertake against any loss or damage caused or suffered by NIT Jalandhar by reason of any failure of the supplier to perform or omission or negligence to perform any part of its obligations to the satisfaction of NIT Jalandhar in terms of the order.

We, the supplier, do hereby authorize Registrar, NIT Jalandhar to forfeit this Performance Guarantee amount / undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the NIT Jalandhar stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the NIT Jalandhar by reason of any breach by us of any of the terms and conditions contained in the said order or by reason of our failure or omission or negligence to perform the said order or any part thereof. We, the Supplier, undertake to pay to NIT Jalandhar any amount so demanded by NIT Jalandhar, notwithstanding:

- a) Any dispute or difference between NIT Jalandhar and supplier or any other person or between the supplier or any person or any suit or proceeding pending before any court or tribunal or arbitrator relating thereto; or
- b) The invalidity, irregularity or unenforceability of the order; or
- c) Any other circumstances which might otherwise constitute discharge of this guarantee, including any act of omission or commission on the part of NIT Jalandhar to enforce the obligations by the supplier or any other person for any reason whatsoever.

We, the Supplier, further agree that the performance Bond/ Guarantee herein contained shall be continued one and remain in full force and effect during the period that would be taken for the performance of the said order and that it shall continue to be enforceable till all the dues of the NIT Jalandhar under or by virtue of the said order have been fully paid and its claims satisfied or discharged or till the office of the Registrar, NIT Jalandhar certifies that terms and conditions of the said order have been fully and promptly carried out by us and accordingly discharges this Performance Bond/ Guarantee.

We, the Supplier, further agree with NIT Jalandhar, that NIT Jalandhar shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said order or to extend time of performance by the said supplier from time to time or to postpone for any time or from time to time and of the powers exercisable by the NIT Jalandhar against the said supplier and forbear or enforce any of the terms and conditions relating to the order and we shall not be relieved from our liability by reason of any such variation or extension being granted to us or for any forbearance, act or omission on the part of NIT Jalandhar or any indulgence by NIT Jalandhar to us or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

This Performance Bond/Guarantee will not be discharged due to the change in the constitution of the supplier. We, the Supplier, undertake not to revoke this Performance Bond / Guarantee except with the prior consent of NIT Jalandhar in writing.

The disputes relating to this Bank Performance Bond / Guarantee shall be resolved as per the terms and conditions of the order.



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## Annexure "C"

### FORMAT FOR PERFORMANCE BOND (BANK GUARANTEE)

In consideration for the Registrar, National Institute of Technology Jalandhar, (*hereinafter called NIT Jalandhar*) having agreed to release the payment of net value as per terms and conditions of a concluded Order No. \_\_\_\_\_ dated \_\_\_\_\_ (*hereinafter called 'the order'*) for supply of \_\_\_\_\_ (*hereinafter called 'the Equipment /Item'*) to Messrs \_\_\_\_\_ (*hereinafter called 'the supplier'*) on submission of a Bank Guarantee to the satisfaction of NIT Jalandhar for the due performance of the said order.

We, \_\_\_\_\_ (*hereinafter called 'the Bank'*) at the request of the supplier do, as a primary obliger and not merely as surety, hereby irrevocably, unconditionally and absolutely undertake against any loss or damage caused or suffered by NIT Jalandhar by reason of any failure of the supplier to perform or omission or negligence to perform any part of its obligations to the satisfaction of NIT Jalandhar in terms of the order.

We, the Bank do hereby undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from NIT Jalandhar stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by NIT Jalandhar by reason of any breach by the said supplier of any of the terms and conditions contained in a said order or any part thereof. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the bank under this guarantee, which shall not be considered as satisfied by any intermediate payment or satisfaction of any part of or obligation hereunder. However, our liability under this guarantee shall be restricted to an amount not exceeding \_\_\_\_\_.

We, the Bank, undertake to pay to NIT Jalandhar any amount so demanded by NIT Jalandhar, notwithstanding a). Any dispute and difference between NIT Jalandhar and supplier or any other person or between the supplier or any person or any suit or proceeding pending before any court or tribunal or arbitrator relating thereto or

a). The invalidity, irregularity or unenforceability of the order or

b). Any other circumstances which might otherwise constitute discharge of this guarantee, including any act of omission or commission on the part of NIT Jalandhar to enforce the obligations by the supplier or any other person for any reason whatsoever.

We, the Bank, further agree that the guarantee herein contained shall continue and remain in full force and effect during the period that would be taken for the performance of the said order and that it shall continue to be enforceable till all the dues of NIT Jalandhar under or by virtue of the said order have been fully paid and its claims satisfied or discharged or till the office of the Registrar, NIT Jalandhar confirms that the terms and conditions of the said order have been fully and promptly carried out by the said supplier and accordingly discharge this guarantee.

We, the Bank, hereby agree and undertake that any claim which the bank may have against the supplier shall be subject to and subordinate to the prior payment and performance in full of all the obligations of the bank hereunder and the bank will not, without prior written consent of NIT Jalandhar, exercise any legal rights or remedies of any kind in respect of any such payment or performance so long as the obligations of the bank hereunder remain owing and outstanding, regardless of the insolvency, liquidation or bankruptcy of the supplier or otherwise. We, the Bank, will not counter claim or set off against its liabilities to NIT Jalandhar hereunder any sum outstanding to the credit of NIT Jalandhar with it.

We, the Bank, further agree with NIT Jalandhar, that NIT Jalandhar shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said order or to extend time of performance by the said supplier from time to time or to postpone for any time or from time to time and of the powers exercisable by the NIT Jalandhar against the said supplier and forbear or enforce any of the terms and conditions relating to the order and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said supplier or for any forbearance, act or omission on the part of NIT Jalandhar or any indulgence by NIT Jalandhar to the said supplier or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

This guarantee will not be discharged due to the change in constitution of the Bank or the supplier.

We, the Bank, lastly undertake not to revoke this Guarantee during its currency except with the prior consent of NIT Jalandhar in writing.

The disputes relating to this Bank Guarantee shall be resolved as per the terms and conditions of the order.



Annexure "D"

FORMAT FOR MANUFACTURER'S AUTHORIZATION FORM

To,  
The Registrar  
Dr B. R Ambedkar National Institute of Technology  
Jalandhar

Sub. : e-Tender for "\_\_\_\_\_".

Dear Sir,

We, \_\_\_\_\_, who are established and reputed manufacturers of \_\_\_\_\_, having factory/office at \_\_\_\_\_, hereby authorize M/s \_\_\_\_\_ [name & address of agents/distributors] to bid, negotiate and conclude the order with you for the above goods manufactured by us.

We shall remain responsible for the tender/Agreement negotiated by M/s

\_\_\_\_\_, jointly and severally. No company or firm or individual other than M/s \_\_\_\_\_ are authorized to bid, negotiate and conclude the order in regard to this business against this specific tender as for all business in the entire territory of India.

We hereby extend our full guarantee and warranty as per the terms and conditions of tender for the goods offered for supply against this invitation for bid by the above supplier.

1. \_\_\_\_\_
2. \_\_\_\_\_

**\*specify in detail manufacturer's responsibilities** the services to be rendered by M/s \_\_\_\_\_ are as under:

- i) \_\_\_\_\_
- ii) \_\_\_\_\_

[Specify the services to be rendered by the agent/distributor] In case duties of the agent/distributor are changed or agent/ distributor is changed it shall be obligatory on us to automatically transfer all the duties and obligations to the new Indian Agent failing which we will ipso-facto become liable for all acts of commission or omission on the part of new Indian Agent/ distributor.

Yours faithfully,  
[Name & Signature] For and on behalf of M/s. \_\_\_\_\_ [Name of manufacturer]



**Annexure “E”**

**DECLARATION REGARDING BLACKLISTING / DEBARRING FOR TAKING PART IN TENDER**

**Self Attested**

I / We \_\_\_\_\_ (Tenderer) hereby declare that the firm / agency namely M/s. \_\_\_\_\_ has not been blacklisted or debarred in the past by Union / State Government or organization from taking part in Government tenders in India.

Or

I / We \_\_\_\_\_ (Tenderer) hereby declare that the Firm / agency namely M/s. \_\_\_\_\_ was blacklisted or debarred by Union / State Government or any Organization from taking part in Government tenders for a period of \_\_\_\_\_ years w.e.f. \_\_\_\_\_ to \_\_\_\_\_. The period is over on \_\_\_\_\_ and now the firm/company is entitled to take part in Government tenders.

In case the above information found false I / we are fully aware that the tender/ contract will be rejected / cancelled by Director, NIT Jalandhar, and EMD / SD shall be forfeited.

DEPONENT

**Attested:**

**(Stamp of Company with authorized sign)**

Name \_\_\_\_\_

Address \_\_\_\_\_





**CERTIFICATE OF WARRANTY**

- i). I/We certify that the warranty shall be for a period of \_\_\_\_\_ years for \_\_\_\_\_ and starting from the date of satisfactory installation, commissioning and handing over of the Equipment /Item and of the works conducted therewith covered under the supply order in working order. During the **warranty period, I/we shall provide free "after sale service" and the replacement of any part(s) of the** Equipment /Item or rectification of defects of work of the Equipment /Item will be free of cost. The replacement of the parts shall be arranged by us, at our own cost and responsibility. We undertake that the above warranty shall begin only from the date of satisfactory and faultless functioning of the Equipment /Item for 60 days at NIT Jalandhar premises. The benefit of change in dates of the warranty period shall be in the interest of the use/your organization.
- ii). During the warranty period, we shall provide at least \_\_\_\_\_ **preventive maintenance visits.**
- iii). Uptime Guarantee: During the warranty period, we will be responsible to maintain the Equipment /Item in good working conditions for a period 350 days (i.e. 95% uptime) in a block of 365 days.
- a). All complaints will be attended by us within 2 working days of receipt of the complaint in our office.
- b). In case there is delay of more than 2 days in attending to a complaint from our side then you can count the number of days in excess of the permissible response time in the downtime. The above said response time of 2 days for attending to a complaint by us will not be counted in the downtime.
- c). **Penalty:** We shall pay a penalty equivalent to **0.5 % of the FOB/CIF** value of the Equipment /Item for every week or part thereof delay in rectifying the defect.

**Note: The right to accept the reason (s) for delay and consider reduction or wave off the penalty for the same shall be at the sole discretion of Director, NIT Jalandhar**

- iv). We certify that the Equipment /Item being/ quoted is the latest model and that spares for the Equipment /Item will be available for a period of at least \_\_\_\_\_ years and we also guarantee that we will keep the organization informed of any update of the Equipment /Item over a period of \_\_\_\_ years.
- v). We guarantee that in case we fail to carry out the maintenance within the stipulated period, NIT Jalandhar reserves the right to get the maintenance work carried out at our risk, cost and responsibility after informing us. All the expenses including excess payment for repairs/maintenance shall be adjusted against the Performance Bank Guarantee. In case the expenses exceed the amount of Performance Bank Guarantee, the same shall be recoverable from us with/without interest in accordance with the circumstances.
- vi). We shall try to repair the Equipment /Item at NIT Jalandhar premises itself. However, the Equipment /Item will be taken to our site on our own expenses in case it is not possible to repair the same at NIT Jalandhar. We shall take the entire responsibility for the safe custody and transportation of the Equipment /Item taken out for repairs till the Equipment /Item is rehabilitated to the NIT Jalandhar after repair Any loss of Equipment /Item or its accessories under its charge on account of theft, fire or any other reasons shall be at our sole risk and responsibility which will be compensated to NIT Jalandhar for such losses at the FOB/CIF value for the damaged/lost Equipment /Item part, including accessories.
- vii. We undertake to perform calibration after every major repair/breakdown/taking the Equipment /Item for repair out of NIT Jalandhar premises.
- viii. In case of extended warranty, we undertake to carry out annual calibration of the Equipment /Item.
- ix. We guarantee that we will supply spare parts if and when required on agreed basis for an agreed price. The agreed basis could be an agreed discount on the published catalogue price.
- x. We guarantee to the effect that before going out of production of spare parts, we will give adequate advance notice to you so that you may undertake to procure the balance of the life time requirements of spare parts.
- xi. We guarantee the entire unit against defects of manufacture, workmanship and poor quality of components.

**Signature & Seal of the Manufacturer/Tenderer**