



ಭಾರತ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್  
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Page 1 of 3

Bharat Heavy Electricals Ltd.,  
(A Government of India undertaking)  
Electronics Division

CE: PR: 003- Rev 01

PB 2606 , Mysore Road Bangalore , 560026 INDIA

**SPECIAL COMMERCIAL CONDITIONS OF CONTRACT**

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01).

These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No: **SAM0000225**

RFQ Date: **18/06/18** Due Date: **18/07/18**

Customer/Project: **KRISHNAPATNAM STAGE-II, 1x800MW**

Item Description: **ELECTRICAL C & I, Lab Items**

TYPE OF BID: **SINGLE PART BID- / TWO PART BID- / THREE PART BID**

**Purchase Executives:** Clarifications with regard to the tender shall be addressed to purchase officers whose e-mail IDs are given below: [umapathi@bhel.in](mailto:umapathi@bhel.in) or [sapna@bhel.in](mailto:sapna@bhel.in)

**Splitting of tendered quantity to MSE vendors:** The tendered quantity will /will not be split to MSE vendor/s subject to submission of relevant documents by vendors. Refer clause I of Instructions to Bidders for conditions applicable and for information on documents to be submitted.

**Destination:** Items are to be directly despatched to BHEL's Site Office or Stores located in **KRISHNAPATNAM 1x800MW, ANDHRA PRADESH**. Consignee details and Road Permit, if applicable, will be issued by BHEL along with Despatch Clearance.

**Project Benefits:**

**Imported scope of supply:**

- a) ~~DEEC / SEZ / EPCG / DFIA / Physical Export contract: Eligible for "NIL" Basic Customs Duty.~~
- b) ~~Project Imports: Supply of Main analysers for both projects are eligible for Concessional Basic Customs Duty. Merit Duty is applicable on Spares of both projects.~~
- c) ~~Basic Custom duty and Cess on Basic Custom duty are reimbursable by customer.~~

**Terms of Delivery:**

• **Indigenous scope of supply:**

Ex-works < station of dispatch > (including Packing & Forwarding charges but excluding Taxes & Duties).

• **Imported scope of supply:**

F.C.A. (for air consignments) < indicate international port of dispatch > / C.I.F. (for sea consignments)  
< ICD, Bangalore > (including Packing, Forwarding, Handling, Ancillary charges like processing of Sight Draft/ Letter of Credit, negotiation of bank documents, Export declaration, Country of Origin etc.).

Kindly indicate the approximate weight of the total imported consignment, which is required for calculating air freight charges:

\_\_\_\_\_

Under-mentioned details shall be provided against indigenous supplies and services:

a. GSTIN (no.) of place of supply: \_\_\_\_\_

b. HSN (Harmonized System of Nomenclature) code: \_\_\_\_\_  
Applicable tax and Rate: \_\_\_\_\_ & \_\_\_\_\_

c. SAC (Service Accounting Code) no.: \_\_\_\_\_  
Applicable tax and Rate: \_\_\_\_\_ & \_\_\_\_\_

d. GSTIN (no.) of place of supply of service: \_\_\_\_\_

I. Bidders to mandatorily provide confirmation/compliance for the under-mentioned terms:

| SL NO. | TERMS                                                  | BHEL ACCEPTABLE TERM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BIDDER'S CONFIRMATION                                                                                                                                                            | REMARKS,if any |
|--------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 01     | <b>Reverse Auction</b>                                 | BHEL's decision for opting Reverse Auction or price-bid opening, will be intimated separately to qualified bidders after finalization of techno-commercial evaluation. In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) shall be opened as per BHEL's standard practice.<br>Note: Non-acceptance to participate in RA may result in non-consideration of the bid, in case BHEL decides to go for RA.                                                                                                                                                                                                                                                                                                                                                            | <b>AGREE</b>                                                                                                                                                                     |                |
| 02     | <b>Parting of license for imported raw materials</b>   | In case of projects where Basic Custom Duty is NIL and vendor is importing any raw materials / components for the enquired item, same are eligible for Zero Customs duty. As per EXIM policy, BHEL will part the import licence with the vendors to obtain import licence by themselves and custom clear the raw materials/ components by availing zero customs duty. Hence, please furnish list of raw materials / components to be imported by you with Quantity and CIF value (for which BHEL has to share import licence). The benefit due to the above shall be passed on to BHEL and confirmed in the quotation. If there are no imported raw materials/components, same shall be confirmed in the offer.                                                                                           | <b>AGREE</b><br><br>CIF value .....<br><br><del>Yes, benefit passed on to BHEL in the priced quotation.</del><br>(or)<br><b>We confirm that there are no imported components</b> |                |
| 03     | <b>Delivery Period</b>                                 | Delivery for all items shall be within <b>10 weeks</b> from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later.<br>Delay in contractual delivery will attract Penalty as per GCC Clause no.:04.b.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>AGREE</b><br><br>..... weeks                                                                                                                                                  |                |
| 04     | <b>Terms of Payment at the time of material supply</b> | Refer Clause "F" of Instructions to Bidder for BHEL standard Payment terms and loading factors applicable for non-compliance against payment terms:<br><b>Indigenous Scope :</b><br>a) <del>Supply with Erection &amp; Commissioning</del><br>b) <b>Supply with Erection Supervision &amp; Commissioning</b><br>c) <del>Supply only</del><br><b>Imported Scope :</b><br>d) <del>Supply with Erection &amp; Commissioning</del><br>e) <del>Supply with Erection Supervision &amp; Commissioning</del><br>f) <del>Supply only</del><br><b>High-Sea sales :</b><br>g) <del>Supply with Erection &amp; Commissioning</del><br>h) <del>Supply with Erection Supervision &amp; Commissioning</del><br>i) <del>Supply only</del><br><b>Spares &amp; Consumables:</b><br>e) and/or f)/i) depending upon the scope | <b>AGREE</b>                                                                                                                                                                     |                |

**II. Bidder to note that Deviations shall not be permitted for the below mentioned terms and are deemed to be complied. In case of non-compliance/deviation, offer shall be liable for rejection:**

- (1) **Submission of documents post PO viz., drawings /data sheet etc. as indicated in Cl: 04 of GCC:** Within 03 weeks from the date of receipt of Purchase Order. Delay in submission of complete set of specified documents in NIT, will attract Penalty as per GCC Clause no.:04.a.
- (2) **Validity:** The offer will be valid for a period of **120** days from the date of part-I bid opening and in case of Negotiation/ Counter-offer/Reverse Auction, price validity will apply afresh for a period of **60** days from the date of according final price by bidder (or) up to original validity period, whichever is later.
- (3) **Warranty:** 24 months from the date of dispatch of goods or 18 months from the date of commissioning of goods, whichever is earlier.
- (4) **Performance Bank Guarantee (PBG):** PBG will be applicable for a period of 36 months from the date of dispatch of goods + claim period of 03 months, for a value equal to 10% of the basic value of the purchase order.  
Refer Clause "H" of Instructions to Bidders. Also note that PBG should be in the format specified in Annexure VII of ITB and no deviation to this format will be allowed.  
Note: In case PBG is not furnished, the 10% basic amount will be withheld from the supply invoice. This withheld amount will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.
- (5) **Despatch Documents:** Complete set of despatch documents (original + 1 photocopy set) as per Purchase Order shall be forwarded to Purchase Executive/BHEL directly. Depending upon the project/customer demands, despatch documents may include one or more documents from the following: Invoice (02 sets of original), Original Lorry Receipt (L/R), Packing List, ~~Air Way Bill (AWB)/Bill Of Lading (BOL), Copy of High Sea Sales (HSS) agreement, Country of origin certificate,~~ Warranty Certificate, NIL Short Shipment Certificate, Original Performance Bank Guarantee (directly from issuing bank to BHEL), insurance intimation letter, POD (Proof of Delivery) on L/R.  
**The precise list of despatch documents needed for the project will be specified in the Purchase Order.**  
One set of Invoice, Packing List and L/R or AWB shall be e-mailed/faxed immediately to BHEL-EDN after despatch.
- (6) **Freight Charges (for indigenous scope of supply):** Freight charges shall be to vendor's account. Against each project, vendor to quote lump sum reasonable Freight charges along with applicable tax, in priced offer.
- (7) **Evaluation criteria for tendered item/s:**
  - (a) ~~Item wise evaluation of tendered item.~~
  - (or)
  - (b) **Evaluation of the lowest bidder will be done on complete package basis.**
- (8) ~~**Integrity Pact:** Execution of Integrity Pact is applicable for this tender (Refer clause "K" of Instructions to Bidders)~~

~~Details of IEM for this tender are mentioned below:~~

Name: \_\_\_\_\_ Address: \_\_\_\_\_ Email: \_\_\_\_\_

***With this, we hereby confirm that all the terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01) are accepted without any deviation.***

**Vendor's Signature with Seal**

**Note B:**

The above filled-in document shall be furnished as part of Techno-commercial Bid without fail.

# REQUEST FOR QUOTATION

|                                                                                                    |                                                                                                                         |                                                                          |                                                                                                                |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <br>MMI:PU:RF:003 | <b>BHARAT HEAVY ELECTRICALS LIMITED</b><br>Electronics Division<br>PB No. 2606, Mysore Road Bangalore - 560026<br>INDIA | <b>RFQ NUMBER:</b><br>SAM0000225<br><br><b>RFQ DATE :</b><br>18.JUN.2018 | <b>Due Date</b><br><b>12.JUL.2018</b><br><b>Time: 13:00 HRS</b><br><br><b>VENUE :</b><br><b>NEW ENGG. BLDG</b> |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|

|                           |                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>PURCHASE FILE COPY</b> | (for all correspondence)<br>Purchase Executive : Sarita<br>Phone : 080 26998239<br>Fax :<br>E-mail: sarita@bheledn.co.in |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------|

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no.and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

| Sl No. | Description                                                                                    | Qty | Unit | Delivery qty | Delivery Date |
|--------|------------------------------------------------------------------------------------------------|-----|------|--------------|---------------|
| 1      | EC-001 ERECTIONING AND COMMISSIONING                                                           | 1   | AU   | 1            | 28.JUL.2018   |
| 2      | PR0900005351 ELECTRICAL LAB ITEMS - BOP<br>ELECTRICAL LAB ITEMS<br>UNDER C AND I - BOP PACKAGE | 1   | ST   | 1            | 30.AUG.2018   |

Total Number of Items - 2

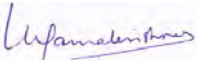
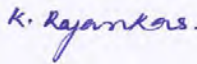
Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.  
Preference will be given to vendors who accepts our standard payment terms i.e.100% payment - 30 days after receipt of material at our works subject to acceptance.  
Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance,P&F, Freight and other taxes very clearly .  
For evaluation,exchange rate(TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid incase of two part bid) shall be considered.  
The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected.The list of banned firms is available on BHEL web site [www.bhel.com](http://www.bhel.com)

- This is only RFQ not an order.
- In all correspondence quote RFQ No. & due date.
- In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly.
- Quotation Envelope / Fax not superscribed with RFQ No.and due date is liable for rejection.
- Quotation should remain valid for a minimum period of 90 days from due date.
- In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list.
- All Prices should be written in words and numbers.
- Excise Chapter Heading should be mentioned for all items where VAT is applicable .

For and On behalf of BHEL.

**SPECIAL TERM(S):**

- a) Please indicate current rate of GST, HSN Number of the quoted goods and GSTIN Number of the billing location.
- b) Please note that, the reimbursement of GST however, shall be at actuals against proof of Tax Invoice only. (Within contractual delivery).
- c) Evaluation will be done as a package for Supply portion, Supervision of Erection & Commissioning together and ranking will be done based on overall package for the complete project.
- d) Please fill the terms & conditions attached as Special Commercial Conditions of contract. In this connection, GCC & ITB shall also be referred for needful.
- e) As per the clause 171 has been inserted in the GST bill which provides that it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices. In view of this clause, kindly pass on the benefit to BHEL.  
Any claim is against the proof of document.
- f) Splitting of tendered quantity to MSE vendors: The tendered quantity ~~will~~ /will not be split to MSE vendors subject to submission of relevant documents by vendors. Refer clause H of Instructions to Bidders for conditions applicable and for information on documents to be submitted.
- g) Inspection agency: Material will be inspected by BHEL/Customer/Consultant/ BHEL nominated Third Party Inspection Agency(TPIA)

|                                                                                                                                                                                                                                            |  |                                                                                                                                                          |                                                                                                                                                  |                                  |                                     |
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|                                                                                                                                                                                                                                            |  | <div><div><div>बि एच डी एल</div><div></div><div>A4-10</div></div></div> | <div>CE/416/GLAB(E)/PQC</div> <div>REV 00</div>                                                                                                  |                                  |                                     |
|                                                                                                                                                                                                                                            |  | <div>PQR REQUIREMENTS FOR LAB ITEMS (ELECTRICAL)</div>                                                                                                   |                                                                                                                                                  |                                  |                                     |
|                                                                                                                                                                                                                                            |  |                                                                                                                                                          |                                                                                                                                                  |                                  |                                     |
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|                                                                                                                                                                                                                                            |  |                                                                                                                                                          | <div>PREPARED</div> <div></div> <div>K.RAJASEKAR</div>       | <div>ISSUED</div> <div>416</div> | <div>DATE</div> <div>19/06/18</div> |



A4-10

CE/416/GLAB(E)/PQC

REV 00

PAGE 01 OF 02

| SL.NO | PROJECT                                   | CUSTOMER   |
|-------|-------------------------------------------|------------|
| 1     | 1X 800 MW SDSTPS DATGE-II KRISHNAPATTINAM | M/S APPDCL |

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## SECTION-A

### GENERAL INSTRUCTION TO BIDDERS

|                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                               |
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|                                                                                                                                                                                                                        |  | <p><b>Introduction:</b> Bidders are required to offer Laboratory Instruments (C&amp;I Pacakge) as per BHEL Technical Specifications (Ref : )</p> <p>1.0 ALL REQUIRED DOCUMENTS AGAINST THIS TENDER/SPECIFICATION SHALL BE SUBMITTED IN ENGLISH ONLY.</p> <p>2.0 In order to accept the Technical offers/ proposals from Bidders mentioned in BHEL Technical Specification, certain Pre-qualification criteria Requirements are to be met by Bidder.</p> <p>3.0 Pre – qualification requirements (PQR) are clearly mentioned in Section-B of this Specification. Bidder to read the same carefully and submit the details required for BHEL’s acceptance.</p> <p>4.0 If a Bidder does not submit Complete PQR Documents or the Documents submitted by vendor does not meet the PQR Criteria mentioned , offer of such bidders will be summarily rejected and will not be considered for Further evaluation in the tender.</p> <p>5.0 Technical Bid’s of those bidders who meet the PQR Criteria shall be opened for Review and further consideration by BHEL.</p> <p>6.0 i) BHEL has Provided <i>Proposed Approved makes submitted to customer</i> against each item, to be followed for the BOM items .However If a vendor in his technical bid , offers <i>makes</i> different from <i>proposed approved makes</i> and if found technically acceptable by BHEL , such <i>makes</i> only will be forwarded to customer for approval , along with credentials (Po copies of Past supplies/ commissioning Reports(MoM)/Satisfactory performance reports ) <i>all the mentioned credentials as requested by bhel</i> has to be submitted by vendor</p> <p>ii) If the customer does not approve the makes submitted for approval or If BHEL finds that the credentials are not submitted/not satisfactory , the item will not be acceptable and supplier has to offer any other suitable make /model from approved makes ,without any financial implication to BHEL Else the vendor’s offer will be Rejected technically .</p> <p>iii) If any makes against Proposed makes are not accepted by customer .supplier has to offer any other suitable make /model from approved makes ,without any financial implication to BHEL Else the vendor’s offer will be Rejected technically .</p> <p>7.0 Changes in technical specification scope/BOM , If any shall be informed to participating bidders only.</p> <p>8.0 If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project/Projects.</p> |  |                                               |
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|                                                                                                                                                                                                                                        |  | <p>9.0 <b>Evaluation methodology:</b> BHEL shall initially open Bidder's Part1 (PQR documents) only as per Section B (Pre-qualification Requirements ) of this specification for review acceptance. Only after acceptance of PQR evaluation, BHEL shall open Bidder's Technical offer(Part2 ) for evaluation.</p> <p><b>10.0 Bidders are required to submit offers as detailed below:</b></p> <p>aa. Documents pertaining to Pre-Qualification requirement shall be submitted/Uploaded in E-procurement system under attachment titled "PQR Documents " (Part1)</p> <p>bb. Technical offers/proposals (Part2 ) for requirements mentioned in BHEL Technical Specifications shall be submitted /uploaded in E-procurement system as attachments</p> <p>11.0 If Bidder is not Registered in BHEL-EDN or any other unit of BHEL For supply of Lab equipment package ,Submit duly- filled Source Request form (SRF ), which shall be downloaded by Bidder from bhel website .<a href="http://supplier.bhel.in/">http://supplier.bhel.in/</a> and to be submitted along with offer.</p> <p>12.0 Name &amp; registered address of The Bidder with Organization chart, service team and contact details shall be submitted</p> <p>13.0 Bidder shall be responsible for complete package supply, installation/commissioning and satisfactory demonstration to customer. Wherever OEM Representative to be deputed for commissioning bidder shall coordinate at his own cost and complete the work. Qualified technical persons shall only be deputed by the bidder for commissioning of the items in the package.</p> <p>14.0 Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the Vendor documents by End-users/Customers, Vendor shall accompany BHEL representative for discussions( If Required ).</p> |  |                                               |
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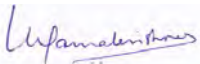
PAGE 01 OF 03

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## SECTION-B PRE-QUALIFICATION REQUIREMENTS

|                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                  |
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|                                                                                                                                                                                                                                                                                                     |  | <div data-bbox="280 29 415 142">  </div> <div data-bbox="310 142 378 168">A4-10</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <div data-bbox="1154 58 1398 86">CE/416/GLAB(E)/PQC</div> <div data-bbox="1154 132 1261 157">REV 00</div> <div data-bbox="1154 197 1390 222">PAGE 02 OF 02</div> |
|                                                                                                                                                                                                                                                                                                     |  | <b>AA.Pre-Qualification Requirements (PQR) bidders for Lab instruments(Electrical) (C&amp; I Package) as Part of offer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                  |
| <div data-bbox="139 646 168 1155">COPY RIGHT AND CONFIDENTIAL</div> <div data-bbox="172 367 240 1434">THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.</div> |  | <div data-bbox="280 405 1471 1329"> <p>1.0 Vendor should have supplied Lab instruments(Electrical) equipments to process plant/ refinery/ power plant/ nuclear plant / testing Lab.</p> <p>2.0 Vendor should be in business of supplying Lab instruments(Electrical) equipments for at least last two (2) years from the date bid opening .</p> <p>3.0 Minimum One no. purchase order for Lab instruments(Electrical) equipment shall be submitted which should not be more than 5 years old from date of bid opening for establishing continuity in business.</p> <p>4.0 Bidder has to submit letter of undertaking stating that they will take care of service Requirements till guarantee /warranty period/ commissioning &amp; Demonstration and handing over whichever is later</p> <p>5.0 The Bidder's Average Annual financial turnover during the last 3 financial year, ending 31st March 2018 should be at least 39 lakhs INR per year. Certificate from bankers/chartered accountant/IT return in this regard should be submitted along with the offer</p> <p>5.0 Bidder should have a Clean track Record , i.e the Bidder should not be under Hold or blacklist by any of the BHEL units/any Govt of india PSU/Govt of india as on bid submission date.To this effect a declaration should be given by the bidder.</p> <p>Note : Proof for Points 1,2,3,4 should be submitted.</p> <p>6.0 <b>Important note:</b> - In case Bidder does not submit clause wise details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily Rejected and Bidder's Technical offers/proposals will not be Evaluated. Please read carefully the General instructions in Section A of this specification.</p> </div> |                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                  |
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|                                                                                                                                                                                                                                            |                                           | <div><div><div>बि एच ई एल</div><div></div><div>A4-10</div></div></div>         |                                                                                                                                                  | <div>CE/416/KRISH/LABI</div> <div>REV 00</div> <div>PAGE 01 OF 05</div> |          |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           |                                                                                                                                                                 |                                                                                                                                                  |                                                                         |          |   |                                           |            |  |  |
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|                                                                                                                                                                                                                                            | SL.NO                                     | PROJECT                                                                                                                                                         | CUSTOMER                                                                                                                                         |                                                                         |          |   |                                           |            |  |  |
| 1                                                                                                                                                                                                                                          | 1X 800 MW SDSTPS DATGE-II KRISHNAPATTINAM | M/S APPDCL                                                                                                                                                      |                                                                                                                                                  |                                                                         |          |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           | <div>LABORATORY INSTRUMENTS ELECTRICAL ( C&amp;I PACKAGE )</div>                                                                                                |                                                                                                                                                  |                                                                         |          |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           | <div>REVISION:00</div>                                                                                                                                          | <div>APPROVED</div> <div></div> <div>K.C.RAMAKRISHNAN</div> |                                                                         |          |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           |                                                                                                                                                                 | <div>PREPARED</div> <div></div> <div>K.RAJASEKAR</div>       | <div>ISSUED</div> <div>416</div> <div>11.05.18</div>                    |          |   |                                           |            |  |  |



**PAGE 02 OF 05**

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**S.No**

### Description

## Reference

- 1.
- 2.

**SCOPE OF SUPPLY**  
**TECHNICAL SPECIFICATIONS**

CE/416/KRISH/LABI/SOS Rev 00, Pages 04  
CE/416/ KRISH /LABI/TS Rev 00, Pages 13

|                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                  |
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|                                                                                                                                                                                                                         |  | <br>A4-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | CE/416/KRISH/LABI/SOS<br>REV 00<br>PAGE 03 OF 05 |
| COPY RIGHT AND CONFIDENTIAL<br>THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED . IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY. |  | <p style="text-align: center;"><b><u>SCOPE OF SUPPLY</u></b></p> <p>The scope of supply consists of LABORATORY INSTRUMENTS (C&amp;I) Package for the project mentioned</p> <p>Although immense care has been taken to cover all the items applicable for the project, it is possible that some items may have been missed (which needs to be added) or some items have been already supplied which are not to be supplied now for these projects. Then in either case, unpriced impact (technical) and price impact will be taken from participating vendors. But please note that if a vendor has not participated in this RFQ and if the impact is applicable due to change in quantities or due to acceptance of deviations, non-participating vendor will not be sent intimation (under this RFQ) as the changes are very, very minimal keeping the non-participating vendor still debarred under this packaged RFQ. Hence, all vendors should actively participate offering all the items. If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project.</p> <p>Please note that if any item requires battery, same should be rechargeable type of same item make or equivalent good make. Then the corresponding charger is also to be provided. Also, please note that computer interface is to be provided with relevant pre-fabricated cable of 2 or 3 meters length for connectivity to computer, Current Probe and High Voltage Probe as and where applicable for the individual instrument. If any application software is required due to this, same is also to be provided as and where applicable for that particular instrument.</p> <p>If any deviations are accepted by bhel During evaluation stage and subsequently not accepted by end customer during datasheet submission stage ,then vendor has to replace the model without any financial implication to BHEL.</p> <p>Project wise unit rates are to be offered taking care of applicable BOM for individual projects since the items are being enquired as a package for individual projects. Subsequently, after ordering, unit rates of each and every BOM item of project is to be provided to take care of any addition/deletion during detailed engineering stage. Erection supervision and commissioning is also to be offered with lump sum rates each project wise.</p> <p>Please note that for any item offered by vendor BHEL reserves the Right to ask the vendor, any or all of these credentials (Po copies of Past supplies/ commissioning Reports(MoM)).If the credentials are not submitted/not satisfactory , the item will not be acceptable and supplier has to offer any other suitable make /model without any impact to BHEL.</p> <p>All the electronic M&amp;C items shall be microprocessor based and shall have the data logging facility for keeping calibration/maintenance records with proper communication facility for downloading these data on the Lab PC. Wherever such facility is available in the Equipment offered</p> <p>The calibration standards of all M&amp;C equipments furnished under this sub-section shall be traceable to National Bureau of Standards, USA or NPL, India or to the applicable standards existing in the country where the equipment is manufactured.Dust proof carrying case and Rechargeable battery along with external charger shall be provided For the project site under this RFQ vendor has to offer following option:-</p> <ol style="list-style-type: none"> <li>1.) Despatch of items as per standard package as done normally.</li> </ol> <p><b>ERECTION SUPERVISION &amp; COMMISSIONING:</b></p> <p>Please note that Erection Supervision &amp; Commissioning is to be offered each project wise and same will be considered while evaluating lowest commercial tender. The commissioning will involve demonstrating the healthiness and working of all the items within the project to the satisfaction of BHEL site office/end-user. This will necessitate maximum of 3 -5days stay at project site.</p> |  |                                                  |
|                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                  |
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A4-10

CE/416/KRISH/LABI/SOS

REV 00

PAGE 04 OF 05

**TECHNICAL DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER(MANDATORY):**

- 1.) Technical bid should be having Desc, Qty, make, Model, Strictly as per the Template format given below (In Pdf and excel)
- 2.) Catalogues of all the items in soft copy

**DOCUMENTS TO BE SUBMITTED AFTER PLACEMENT OF ORDER:**

- a. Datasheets along with catalogs for each and every item properly indexed.
- b. Mounting details including necessary accessories (If applicable)
- c. Recommendations (if any) for installation/ storage etc
- d. Spare part list
- e. Consumable list
- f. Training details
- g. O&M Manual (After datasheet approval)
- h. Any other scheme, data, drawing, document, etc required to establish product quality and completeness of supply.

The above documentation shall be each project wise with around 8 copies or On as required for each project on an average. Apart from hard copies, soft copy in the form of CD/Pen drive should also be provided for each project.

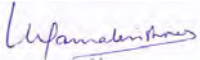
**TEMPLATE To be followed for technical bid (Example) :**

| Sino | Desc              | Qty | make  | model                                                                                                            |
|------|-------------------|-----|-------|------------------------------------------------------------------------------------------------------------------|
| 1    | Soldering Station | 2   | HAKKO | <b>FR-810 Accessories :</b> handpiece holder, FP pick-up (with pick-up wire SS), heat resistant pad, power cord, |
|      |                   |     |       |                                                                                                                  |

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|                                                                                                                                                                                                                                                                                   |  | <div data-bbox="277 79 412 191">  </div> <div data-bbox="305 195 375 218">A4-10</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <div data-bbox="1105 79 1328 102">CE/416/KRISH/LABI/TS</div> <div data-bbox="1105 132 1187 155">REV 00</div> <div data-bbox="1105 163 1255 186">PAGE 05 OF 05</div> |
|                                                                                                                                                                                                                                                                                   |  | <div data-bbox="277 228 566 256">GENERAL INSTRUCTIONS :</div> <div data-bbox="277 291 1382 350"> <p>Testing instrument / devices offered shall be proven type and shall incorporate latest design. All instruments supplied under this package shall be in brand-new and unused condition.</p> </div> <div data-bbox="277 384 1421 472"> <p>The workmanship and design shall be proven and in accordance with the best engineering practice to meet the intended purpose. Bidder shall ensure satisfactory performance of testing instruments/devices even in the worst environmental condition. All instruments shall be supplied from reputed and proven manufacturer.</p> </div> <div data-bbox="277 506 1453 562"> <p>Testing instruments/devices shall be furnished with all necessary accessories and original instruction/operating and maintenance manuals.</p> </div> <div data-bbox="277 596 1066 623"> <p>All instruments offered, shall conform to the relevant International Standards.</p> </div> <div data-bbox="277 657 1469 745"> <p>The various instruments/devices, small tools, accessories, etc. shall be furnished (in applicable cases) with suitable and durable crates, kits or carry boxes of convenient size; complete with necessary packing etc. for safe storage when not in use.</p> </div> <div data-bbox="277 749 1411 808"> <p>Measuring/testing instruments, along with associated accessories shall be suitable for intended operation (both indoor and outdoor installations as applicable).</p> </div> <div data-bbox="277 840 1437 928"> <p>Bidder shall be responsible for proper functioning of supplied items and shall make any necessary additions/modifications, as required for proper maintenance and testing of the installed instruments and controls. Bidder shall also be responsible for erection and commissioning of the test equipment.</p> </div> <div data-bbox="277 961 1437 1050"> <p>It is obligatory to Bidder to furnish a complete list of spare parts for these testing/calibrating, instruments/devices. Bidder shall render guarantee for easy availability of all the spare parts required, especially for the components, which are prone to failure.</p> </div> <div data-bbox="277 1083 1421 1140"> <p>Bidder shall repair or replace the defective instruments/ devices at no extra cost within the guaranteed period of each instrument/device.</p> </div> <div data-bbox="277 1173 1386 1232"> <p>Scope of service of the Bidder shall also include operational and service training of Owner's personnel at site. Calibration and test certificates, as applicable, shall not be more than one (1) year old.</p> </div> <div data-bbox="277 1266 535 1291"> <p>CODES AND STANDARDS</p> </div> <div data-bbox="277 1325 1469 1415"> <p>The design, material, construction features, manufacture, inspection and testing of laboratory instruments shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards</p> </div> |                                                                                                                                                                     |
| <div data-bbox="142 411 240 1451"> <p>COPY RIGHT AND CONFIDENTIAL<br/>THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED<br/>. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF<br/>THE COMPANY.</p> </div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                     |
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|                                                                                                                                                                                                                                            |                                           | <div><div><div>बि एच ई एल</div><div></div><div>A4-10</div></div></div>         |                                                                                                                                                  | <div>CE/416/KRISH/LABI/TS</div> <div>REV 00</div> <div>PAGE 01 OF 13</div> |                                     |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           |                                                                                                                                                                 |                                                                                                                                                  |                                                                            |                                     |   |                                           |            |  |  |
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|                                                                                                                                                                                                                                            | SL.NO                                     | PROJECT                                                                                                                                                         | CUSTOMER                                                                                                                                         |                                                                            |                                     |   |                                           |            |  |  |
| 1                                                                                                                                                                                                                                          | 1X 800 MW SDSTPS DATGE-II KRISHNAPATTINAM | M/S APPDCL                                                                                                                                                      |                                                                                                                                                  |                                                                            |                                     |   |                                           |            |  |  |
| <div>TECHNICAL SPECIFICATIONS FOR LABORATORY INSTRUMENTS ELECTRICAL (C&amp;I PACKAGE)</div> <div>Note : Package is Common for total plant</div>                                                                                            |                                           |                                                                                                                                                                 |                                                                                                                                                  |                                                                            |                                     |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           | REVISION:00                                                                                                                                                     | <div>APPROVED</div> <div></div> <div>K.C.RAMAKRISHNAN</div> |                                                                            |                                     |   |                                           |            |  |  |
|                                                                                                                                                                                                                                            |                                           |                                                                                                                                                                 | <div>PREPARED</div> <div></div> <div>K.RAJASEKAR</div>       | <div>ISSUED</div> <div>416</div>                                           | <div>DATE</div> <div>11.05.18</div> |   |                                           |            |  |  |



A4-10

CE/416/KRISH/LABI/TS

REV 00

PAGE 02 OF 13

## BILL OF MATERIALS

| Sl. No | Item Description                                                         | Unit | Qty (No.) |
|--------|--------------------------------------------------------------------------|------|-----------|
| 1      | Decade Resistance box                                                    | Nos  | 2         |
| 2      | Multifunction portable calibrator (for voltage, current, ohms frequency) | Nos  | 3         |
| 3      | Signal generator                                                         | Nos  | 2         |
| 4      | Test RTDs                                                                | Nos  | 2         |
| 5      | Vibration Calibrator(Proximity & Seismic Probe)                          | Nos  | 1         |
| 6      | Digital Stop watch                                                       | Nos  | 2         |
| 7      | Electronic test bench with Computerised calibration system               | Nos  | 2         |
| 8      | DC Regulated power supply                                                | Nos  | 2         |
| 9      | Continuity tester                                                        | Nos  | 10        |
| 10     | A.C universal bridge                                                     | Nos  | 1         |
| 11     | Rheostats                                                                | set  | 1         |
| 12     | Portable digital multimeter                                              | Nos  | 10        |
| 13     | portable pH calibrator                                                   | Nos  | 2         |
| 14     | Hand held thermocouple and PT-100 ohm simulator and indicator            | Nos  | 1         |
| 15     | Stabilised power supply                                                  | Nos  | 2         |
| 16     | Hand tachometer                                                          | Nos  | 2         |
| 17     | Insulation tester of different range                                     | Nos  | 1         |
| 18     | Tong tester                                                              | Nos  | 3         |
| 19     | Stroboscope                                                              | Nos  | 1         |
| 20     | Portable trend recorder                                                  | Nos  | 1         |
| 21     | Field transmitter calibrator                                             | Nos  | 2         |
| 22     | Soldering iron with solder sucker                                        | Nos  | 8         |
| 23     | Variac                                                                   | Nos  | 1         |
| 24     | Power pack                                                               | Nos  | 2         |
| 25     | Vibration Analyzer balancer instrument                                   | Nos  | 2         |
| 26     | Hand held sound level meter                                              | Nos  | 1         |
| 27     | Portable multi function calibrator                                       | Nos  | 3         |
| 28     | Dual beam portable digital storage oscilloscope                          | Nos  | 2         |
| 29     | Phase sequence meter                                                     | Nos  | 1         |
| 30     | Frequency meter                                                          | Nos  | 1         |
| 31     | Desoldering station                                                      | Nos  | 1         |
| 32     | Signal generator                                                         | Nos  | 2         |
| 33     | Frequency Meter                                                          | Nos  | 1         |
| 34     | High Range tong tester                                                   | Nos  | 1         |
| 35     | Portable Ma Calibrator                                                   | Nos  | 3         |
| 36     | Table mounted Ma Calibrator                                              | Nos  | 2         |
| 37     | Portable Mv Calibrator                                                   | Nos  | 2         |
| 38     | Desktop Digital Multimeter                                               | Nos  | 2         |
| 39     | Portable meter Caibrator                                                 | Nos  | 2         |
| 40     | Digital cable Identification system                                      | Nos  | 1         |
| 41     | I.C insetion & extraction tools pin number 14,16&48                      | Nos  | 2         |
| 42     | Miniscope Meter                                                          | Nos  | 1         |
| 43     | Module Tester                                                            | Nos  | 1         |

**Note1 :** vendor has to offer the above items in BOM as per makes list attached. This makes list is under approval From customer .

In case the Final approved list from customer does not have the makes offered by vendor .Vendor has to replace the item with equivalent makes from approved list without any cost implication to BHEL.

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PAGE 05 OF 13

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1.2 The test bench shall include necessary power packs to feed the following socket mounted on the bench:

|   |                                                                            |                                                                                                                                                                                                                      |                                                                                          |
|---|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 1 | Main power Supply                                                          | It includes main switch for the whole workstation 3 ground socket for other instrument 240V 5A                                                                                                                       |                                                                                          |
| 2 | Isolated supply Module                                                     | It shall include main switch, ELCB ,circuit breaker, 240V AC+/-0.5%,1Phase 50 Hz, 3KVA stabilized p/s supply socket , 110V AC ,2 AMPS(Step Down Transformer),50hz supply socket 415V AC 15/5A 220V DC 2 A 230V 15/5A | No of socket-6<br>No of sockets -1<br>No of socket-2<br>No of socket-2<br>No of socket-4 |
| 3 | Variable Ac Power supply                                                   | It shall include 0-260V AC, 1 phase, 50 Hz, (variac)10 Amp, socket and terminal, 0-50V AC/2A, terminals. Digital meter for current and voltage                                                                       | no. of socket - 2                                                                        |
| 4 | Variable DC power supply                                                   | shall include 0-64V DC 5A (Programmable ) stabilized output voltage supply , Digital display for voltage and current with RS-232 Interface                                                                           | no of socket - 1                                                                         |
| 5 | Constant Dc Voltage Supply                                                 | ± 48 V DC, 3A<br>± 24V DC, 6A<br>± 12 V DC, 10A<br>± 5 V DC 5A<br>Each unit shall include Digital meter for volts & ampere DC supplies should be externally settable, floating type, reverse polarity protected      | No Of Socket-2<br>No of Socket-2<br>No of Socket-2<br>No of Socket-2                     |
| 6 | Digital Multimeter (Agilent /Fluke/Yokogowa/ nagman/tektronix,extech)      | One 6 ½ (Five and half Digit) Multimeter for display of voltage, current, resistance, with +/- 0.1% accuracy with RS-232 Connection/interface                                                                        | One no (1)                                                                               |
| 7 | Standard Current source                                                    | Accuracy :+/- 0.01 ma,range 0-60 ma, load 500 ohms with digital current indicator-one no with RS-232 Interface                                                                                                       | One no (1)                                                                               |
| 8 | Standard milli volt source                                                 | Accuracy +/-0.01mv ,Range 0-100mv with digital millivolt indicator-one No with RS-232 Interface                                                                                                                      | One no (1)                                                                               |
| 9 | One AC voltage stabilizer (Input 240V ac nominal) (Output 240V ac +/-0.5%) | Regulation +/-0.5% for 0-100% Voltage variation                                                                                                                                                                      | One no (1)                                                                               |

(Voltage level is tentative and shall be matched to supply requirements of Bidder's and owner's Range of Products)  
Continuity tester , Frequency indicator may be provided.

1.3 The test bench shall be including socket holders, where the electronic gadgets under test may be plugged. The front equipment shall include multi point connectors and test jacks for Interconnection. There shall be connection between the connectors and holder in which device under test shall be plugged in.

1.4 The standard high accuracy resistor(250 ohm) shall be included to load and measure the current output of devices . Necessary control devices for voltage and current adjustment/ control switches for power supply to feeders, isolation, etc., shall be included. All electric circuits shall be protected against overload by fuses, whose holders are located on front of the panel. All electrical circuits and metal structure shall be properly grounded.

1.5 Anti-Static Band & other necessary accessories should be provided along with the equipment.

Computerised calibration system shall consist of PC, 21" TFT monitor with calibration software and A3 color laser jet printer and shall be located on the test bench (Details are shown below)

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|                                                                                                                                                                                                                                                                                                   |  | <p><b>9. CONTINUITY TESTER - (10 NOS.)</b></p> <p>Continuity tester shall be electronic and battery operated. A hooter shall be provided which will sound when continuity detected. Tester shall be supplied with battery charger, lead wires and probes. The tester shall be kept in a carrying case</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                            |
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|  |  | <div><b>35.PORTABLE mA CALIBRATOR – (3 NO.)</b><br/>01. Type : Microprocessor based<br/>02. Application : To measure or source mA signal for calibration of receiver type instruments<br/>03. Range : 0-24 mA<br/>04. Resolution : 0.001<br/>05. Accuracy : 0.001%<br/>06. Measure Volts : 0 to 60 V<br/>07. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                                            |  |
|  |  | <div><b>36.TABLE MOUNTED mA CALIBRATOR – (2NO.)</b><br/>01. Input range : 0 to ±100 mA DC, 0 to ±1200 mV , 0 to ±80 V (Programmable)<br/>02. Output range : 0 to 25 mA DC, 0 to ±1200 mV , 0 to 10 V (Programmable)<br/>03. Accuracy : ±0.03% of reading<br/>04. Temperature : 0-50°C<br/>05. Accessories : Test lead, power cord, carrying case etc</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |
|  |  | <div><b>37 . PORTABLE mV CALIBRATOR – (2NO.)</b><br/>01. Input range : 0 to 120 mV , 0 to 30 V (Programmable)<br/>02. Output range : 0 to 120 mV , 0 to 12 V , 0 to 30 V, 0 to 24 mA (rogrammable)<br/>03. Accuracy : ±0.02% of reading<br/>04. Temperature : 0-50°C<br/>05. Preferred feature : Reference junction compensation for thermocouple, over voltage/ current protection<br/>06. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                            |  |
|  |  | <div><b>38. Desktop Digital Multimeter- (2 NOS.)</b><br/>Bidder shall supply desktop type Digital Multimeter for measuring DC and AC voltages, currents and resistances. Desk top type Digital Multimeters shall have the following features:<br/>01. Display : 5 – ½ digit LED display<br/>02. Measurements : DCV, ACV, Resistance (2W, 4W), DCA, ACA<br/>03. Maximum Measurements in standard ranges : DCV - 1000V,ACV - 700V,Resistance - 200 Mohm,DCA - 2A,ACA - 2A<br/>04. Sampling rate : Selectable<br/>05. Over range information : To be displayed<br/>06. Data Memory : To store upto 2000 measured data and atleast 10 set up information<br/>07. Operating Temperature : 5 – 40 deg C<br/>08. Power Requirements : 240V AC, 50 Hz<br/>09. Communication Interface : RS-232C<br/>10. Special functions : Auto range mode, Auto sample mode<br/>11. Accessories : Power supply cord, Measurement lead,Remote connector</div> |  |                                                                            |  |
|  |  | <div><b>39.PORTABLE METER CALIBRATOR (2 NOS.)</b><br/><br/>This instrument shall provide an accurate measure of DC, AC, Volts, amps and ohms. It shall be able to generate milliamperes for instrument calibration. It shall be electronic type with LCD display and shall be provided with battery and battery charger.<br/>Battery charging circuit shall be integral with the instrument and shall be suitable for 240V, AC, 50 Hz supply.<br/>Ranges :<ul style="list-style-type: none"><li>• D.C. Volts : 0 - 1mV - 10V</li><li>• D.C. Current : 0 - 1 micro A-1A</li><li>• A.C. Volts : 0 - 1mV - 10V</li><li>• A.C. Current : 0 - 1 micro A - 1A</li><li>• Ohms : 1 Ohm - 10 M Ohms</li><li>• Accuracy : ± 0.1%</li></ul></div>                                                                                                                                                                                                 |  |                                                                            |  |

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|                                                                                                                                                                                                                                                                                                           |  | <p><b>40.DIGITAL CABLE IDENTIFICATION SYSTEM (1 NO.)</b></p> <p>Features : Quick identification of shorting lines and open lines. It shall handle upto 96 pairs at one time.</p> <p><b>41. I.C. INSERTION AND EXTRACTION TOOLS FOR VARIOUS PIN NUMBERS 14,16 AND 48 (2 NOS.)</b></p> <p>Bidder shall supply the tool having professional quality and of reputed make.</p> <p><b>42. Miniscope meter : (QTY :1 NO)</b></p> <p>BW: 100Mhz, Sampling rate: 5 Gs/s, No. of channel: 2 + ext. trigger, Rise time: 3.5 ns, Time/divn.: 5ns-60s, Vol / div. 1mv to 100v, Record length: 512 Bytes / 30000 Bytes, Screen wave form / set up memory:- 10,20,40, Ni-cd operation and charger for minimum 4 hour operation, Automatic set up and trend plot Accessories: Charger set, Probe set and Carrying case etc.</p> <p><b>43.Module tester (QTY : 1 NO)</b></p> <p>01. Type : Latest version PC with windows based test software</p> <p>02. No. of channels : More than 48</p> <p>03. Power supply : Built in</p> <p>04. Loop test : Continuous</p> <p>05. Feature : Testing of memory devices, open collector devices, resistance, capacitance &amp; voltage measurement, self test, diagnostic software, circuit tracer for IC links, extensive IC libraries</p> <p>06. Accessory : Standard set of Dip clips, probes, different type of connectors, ribbon cables etc.</p> <p>Note :Suitable PC to be supplied along with Circuit tester</p> |  |                                                 |
| <p style="text-align: center;"><b>COPY RIGHT AND CONFIDENTIAL</b></p> <p style="text-align: center;">THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED<br/>. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF<br/>THE COMPANY.</p> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                 |
|                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                 |
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**VENDOR LIST FOR C&I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)**

**Following are makes under approval with customer**

**B Item wise make list for C&I (Electrical) Laboratory Items**

|   |                                                                           |                               |
|---|---------------------------------------------------------------------------|-------------------------------|
| 1 | DECADE RESISTANCE BOX                                                     | TOSHNIWAL                     |
|   |                                                                           | YOKOGAWA                      |
|   |                                                                           | TINSLEY                       |
|   |                                                                           | TIME ELECTRONICS              |
|   |                                                                           | IET LABS                      |
| 2 | MULTIFUNCTION PORTABLE CALIBRATOR (For voltage, current, frequency, ohms) | GE /GE DRUCK                  |
|   |                                                                           | FLUKE                         |
|   |                                                                           | AGILENT(KEYSIGHT)             |
|   |                                                                           | YOKOGAWA                      |
|   |                                                                           | BEAMEX                        |
|   |                                                                           | NAGMAN                        |
|   |                                                                           | EXTECH                        |
|   |                                                                           | WIKA/SCANDURA                 |
|   |                                                                           | AOIP FRANCE                   |
|   |                                                                           | TIME ELECTRONICS              |
|   |                                                                           | TINSLEY                       |
|   |                                                                           | EUROTRON                      |
| 3 | SIGNAL GENERATOR                                                          | FLUKE                         |
|   |                                                                           | APLAB                         |
|   |                                                                           | YOKOGAWA                      |
|   |                                                                           | TEKTRONIX                     |
|   |                                                                           | RIGOL                         |
|   |                                                                           | AGILENT(KEYSIGHT)             |
| 4 | TEST RTD                                                                  | FLUKE                         |
|   |                                                                           | Wika                          |
|   |                                                                           | ASP SENSORS                   |
|   |                                                                           | ISOTECH                       |
| 5 | VIBRATION CALIBRATOR (PROXIMITY & SEISMIC PROBE)                          | MECHANLYSIS                   |
|   |                                                                           | MODAL SHOP                    |
|   |                                                                           | METRIX                        |
| 6 | DIGITAL STOP WATCH                                                        | EXTECH                        |
|   |                                                                           | CASIO                         |
|   |                                                                           | FLUKE-AMPROBE                 |
|   |                                                                           | BHEL APPROVED SOURCES         |
| 7 | ELECTRONIC TEST BENCH With Computerised calibration system                | GE                            |
|   |                                                                           | WIKA/SCANDURA                 |
|   |                                                                           | CONVERGENT TECHNOLOGIES       |
|   |                                                                           | NAGMAN                        |
|   |                                                                           | ISOTHERMAL TECHNOLOGIES(ITPL) |
|   |                                                                           | YOKOGAWA                      |
|   |                                                                           | FLUKE                         |
|   |                                                                           | TINSLEY                       |
| 8 | DC REGULATED POWER SUPPLY                                                 | APLAB                         |
|   |                                                                           | AGILENT(KEYSIGHT)             |
|   |                                                                           | GW INSTEK                     |
|   |                                                                           | TEKPOWER /USA                 |

**VENDOR LIST FOR C&I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)**

*Following are makes under approval with customer*

|    |                                                               |                       |
|----|---------------------------------------------------------------|-----------------------|
| 9  | CONTINUITY TESTER                                             | EXTECH                |
|    |                                                               | FLUKE/FLUKE AMPROBE   |
|    |                                                               | MECO                  |
|    |                                                               | YOKOGAWA              |
|    |                                                               | RS COMPONENTS         |
| 10 | AC UNIVERSAL BRIDGE                                           | FLUKE AMPROBE         |
|    |                                                               | GW INSTEK             |
|    |                                                               | APLAB                 |
|    |                                                               | WAYNE KERR            |
|    |                                                               | AGILENT(KEYSIGHT)     |
|    |                                                               | YOKOGAWA              |
|    |                                                               | TINSLEY               |
|    |                                                               | EXTECH                |
| 11 | RHEOSTATS                                                     | TOSHNIWAL             |
|    |                                                               | BHEL APPROVED SOURCES |
| 12 | PORTABLE DIGITAL MULTIMETER                                   | FLUKE                 |
|    |                                                               | YOKOGAWA              |
|    |                                                               | AGILENT(KEYSIGHT)     |
|    |                                                               | EXTECH                |
|    |                                                               | NAGMAN                |
|    |                                                               | MECO                  |
|    |                                                               | TEKTRONIX             |
| 13 | PORTABLE PH CALIBRATOR                                        | OAKTON                |
|    |                                                               | ORION                 |
|    |                                                               | HANNA                 |
|    |                                                               | EXTECH                |
| 14 | HAND HELD THERMOCOUPLE AND PT-100 OHM SIMULATOR AND INDICATOR | AGILENT(KEYSIGHT)     |
|    |                                                               | FLUKE                 |
|    |                                                               | EXTECH                |
|    |                                                               | AOIP FRANCE           |
|    |                                                               | YOKOGAWA              |
|    |                                                               | NAGMAN                |
|    |                                                               | ISOTECH               |
|    |                                                               | GE/GE Druck           |
|    |                                                               | WIKA/SCANDURA         |
|    |                                                               | BEAMEX                |
|    |                                                               | EUROTRON              |
| 15 | STABILIZED POWER SUPPLY                                       | APLAB                 |
|    |                                                               | BHEL APPROVED SOURCES |
| 16 | HAND TACHOMETER                                               | FLUKE- AMPROBE        |
|    |                                                               | EXTECH                |
|    |                                                               | LINE SEIKI            |
| 17 | INSULATION TESTER OF DIFFERENT RANGE                          | FLUKE/FLUKE- AMPROBE  |
|    |                                                               | EXTECH                |
|    |                                                               | MEGGER                |
|    |                                                               | YOKOGAWA              |
|    |                                                               | TINSLEY               |
|    |                                                               | SONEL                 |
|    |                                                               | MOTWANE               |

**VENDOR LIST FOR C&I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)**

*Following are make under approval with customer*

|    |                                        |                       |
|----|----------------------------------------|-----------------------|
| 18 | TONG TESTER                            | FLUKE/FLUKE AMPROBE   |
|    |                                        | YOKOGAWA              |
|    |                                        | AGILENT(KEYSIGHT)     |
|    |                                        | EXTECH                |
|    |                                        | NAGMAN                |
|    |                                        | MECO                  |
| 19 | STROBOSCOPE                            | LUTRON                |
|    |                                        | FLUKE/FLUKE AMPROBE   |
|    |                                        | EXTECH                |
|    |                                        | RS COMPONENTS         |
| 20 | PORTABLE TREND RECORDER                | CHINO                 |
|    |                                        | YOKOGAWA              |
|    |                                        | SHINKO                |
|    |                                        | HONEYWELL             |
|    |                                        | Fuji Electric         |
| 21 | FIRLD TRANSMITTER CALIBRATOR           | YOKOGAWA              |
|    |                                        | WIKA/SCANDURA         |
|    |                                        | FLUKE                 |
|    |                                        | GE/ GE Druck          |
|    |                                        | MERIAM                |
|    |                                        | ABB                   |
|    |                                        | EMERSON               |
| 22 | SOLDERING IRON WITH SOLDER SUCKER      | HONEYWELL             |
|    |                                        | SOLDRON               |
|    |                                        | HAKKO                 |
| 23 | VARIAC                                 | BHEL APPROVED SOURCES |
|    |                                        | AE                    |
| 24 | POWER PACK                             | BHEL APPROVED SOURCES |
|    |                                        | APLAB                 |
|    |                                        | KEITHLY               |
|    |                                        | TEKTRONIX             |
|    |                                        | TEKPOWER /USA         |
| 25 | VIBRATION ANALYZER BALANCER INSTRUMENT | AGILENT(KEYSIGHT)     |
|    |                                        | SKF                   |
|    |                                        | MECHANLYSIS VB SERIES |
|    |                                        | B&K VIBRO GERMANY     |
|    |                                        | GE BENTLEY NEVADA     |
|    |                                        | ROCKWELL              |
|    |                                        | PRUFTECHNIC GERMANY   |
|    |                                        | SPM INSTRUMENTS       |
|    |                                        | MASIBUS AUTOMATION    |
| 26 | HAND HELD SOUND LEVEL METER            | TINSLEY               |
|    |                                        | FLUKE-AMPROBE         |
|    |                                        | HT ITALIA             |
|    |                                        | RS COMPONENTS         |
| 27 | PORTABLE MULTIFUNCTION CALIBRATOR      | EXTECH                |
|    |                                        | GE /GE DRUCK          |
|    |                                        | FLUKE                 |
|    |                                        | AGILENT(KEYSIGHT)     |

**VENDOR LIST FOR C&I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)**

Following are makes under approval with customer

|    |                                         |                       |
|----|-----------------------------------------|-----------------------|
|    |                                         | YOKOGAWA              |
|    |                                         | BEAMEX                |
|    |                                         | NAGMAN                |
|    |                                         | EXTECH                |
|    |                                         | WIKA/SCANDURA         |
|    |                                         | AOIP FRANCE           |
|    |                                         | TIME ELECTRONICS      |
|    |                                         | TINSLEY               |
|    |                                         | EUROTRON              |
| 28 | DUAL BEAM PORTABLE STORAGE OSCILLOSCOPE | TEKTRONIX             |
|    |                                         | AGILENT(KEYSIGHT)     |
|    |                                         | YOKOGAWA              |
|    |                                         | FLUKE                 |
|    |                                         | RIGOL                 |
| 29 | PHASE SEQUENCE METER                    | FLUKE /FLUKE-AMPROBE  |
|    |                                         | AGILENT(KEYSIGHT)     |
|    |                                         | YOKOGAWA              |
|    |                                         | EXTECH                |
|    |                                         | RS COMPONENTS         |
| 30 | FREQUENCY METER                         | FLUKE                 |
|    |                                         | AGILENT(KEYSIGHT)     |
|    |                                         | YOKOGAWA              |
|    |                                         | TEKTRONIX             |
|    |                                         | APLAB                 |
|    |                                         | EXTECH                |
| 31 | DESOLDERING STATION                     | HAKKO                 |
|    |                                         | WELLER                |
|    |                                         | XYTRONICS             |
|    |                                         | BHEL APPROVED SOURCES |
| 32 | SIGNAL GENERATOR                        | FLUKE                 |
|    |                                         | APLAB                 |
|    |                                         | YOKOGAWA              |
|    |                                         | TEKTRONIX             |
|    |                                         | RIGOL                 |
|    |                                         | AGILENT(KEYSIGHT)     |
| 33 | FREQUENCY METER                         | FLUKE                 |
|    |                                         | AGILENT(KEYSIGHT)     |
|    |                                         | YOKOGAWA              |
|    |                                         | TEKTRONIX             |
|    |                                         | APLAB                 |
|    |                                         | EXTECH                |
| 34 | HI RANGE TONG TESTER                    | FLUKE-AMPROBE         |
|    |                                         | AGILENT(KEYSIGHT)     |
|    |                                         | YOKOGAWA              |
|    |                                         | TEKTRONIX             |
|    |                                         | EXTECH                |
|    |                                         | MECO                  |
| 35 | PORTABLE Ma CALIBRATOR                  | FLUKE                 |
|    |                                         | AGILENT(KEYSIGHT)     |

|                                                                                      |
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|                                                                                      |
| <b>VENDOR LIST FOR C&amp;I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)</b> |

Following are makes under approval with customer

|  |                  |
|--|------------------|
|  | GE DRUCK         |
|  | SCANDURA/WIKA    |
|  | EXTECH           |
|  | NAGMAN           |
|  | YOKOGOWA         |
|  | TIME ELECTRONICS |
|  | BEAMEX           |
|  | EUROTRON         |
|  | TINSLEY          |
|  | AOIP FRANCE      |

**VENDOR LIST FOR C&I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)**

~~Following are makes under approval with customer~~

|    |                             |                   |
|----|-----------------------------|-------------------|
| 36 | TABLE MOUNTED Ma CALIBRATOR | FLUKE             |
|    |                             | AGILENT(KEYSIGHT) |
|    |                             | GE DRUCK          |
|    |                             | SCANDURA/WIKA     |
|    |                             | EXTECH            |
|    |                             | NAGMAN            |
|    |                             | YOKOGOWA          |
|    |                             | TIME ELECTRONICS  |
|    |                             | BEAMEX            |
|    |                             | EUROTRON          |
|    |                             | TINSLEY           |
|    |                             | AOIP FRANCE       |
| 37 | PORTABLE Mv CALIBRATOR      | FLUKE             |
|    |                             | AGILENT(KEYSIGHT) |
|    |                             | GE DRUCK          |
|    |                             | SCANDURA/WIKA     |
|    |                             | EXTECH            |
|    |                             | NAGMAN            |
|    |                             | YOKOGOWA          |
|    |                             | TIME ELECTRONICS  |
|    |                             | BEAMEX            |
|    |                             | EUROTRON          |
|    |                             | TINSLEY           |
|    |                             | AOIP FRANCE       |
| 38 | DESKTOP DIGITAL MULTIMETER  | KEYSIGHT(AGILENT) |
|    |                             | FLUKE             |
|    |                             | YOKOGOWA          |
|    |                             | EXTECH            |
|    |                             | TEKTRONIX         |
|    |                             | KEITHLEY          |
| 39 | PORTABLE METER CALIBRATOR   | FLUKE             |
|    |                             | AGILENT(KEYSIGHT) |
|    |                             | GE DRUCK          |
|    |                             | SCANDURA/WIKA     |
|    |                             | EXTECH            |
|    |                             | NAGMAN            |
|    |                             | YOKOGOWA          |
|    |                             | TIME ELECTRONICS  |
|    |                             | BEAMEX            |
|    |                             | EUROTRON          |
|    |                             | TINSLEY           |
|    |                             | AOIP FRANCE       |

|                                                                                      |
|--------------------------------------------------------------------------------------|
| <b>VENDOR LIST FOR C&amp;I LAB ITEMS (ELECTRICAL) SDSTPS KRISHNAPATNAM (1X800MW)</b> |
|--------------------------------------------------------------------------------------|

~~Following are makes under approval with customer~~

|    |                                                     |                       |
|----|-----------------------------------------------------|-----------------------|
| 40 | DIGITAL CABLE IDENTIFICATION SYSTEM                 | IDEAL                 |
|    |                                                     | EXTECH                |
|    |                                                     | RS COMPONENTS         |
| 41 | IC INSERTION & EXTRACTION TOOLS PIN NUMBER 14,16&18 | RS COMPONENTS         |
|    |                                                     | BHEL APPROVED SOURCES |
| 42 | MINISCOPE METER                                     | FLUKE                 |
|    |                                                     | AGILENT(KEYSIGHT)     |
|    |                                                     | EXTECH                |
|    |                                                     | YOKOGOWA              |
| 43 | MODULE TESTER                                       | QMAX                  |
|    |                                                     | ESTECH                |