

**SUPPLIER REGISTRATION**

**FOR**

**VARIOUS TYPES OF PRODUCTS BEING PROCURED**

**BY**

**BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR,  
NORTHERN REGION, NOIDA**



**APPLICATION FORM, PROCEDURE & FORMATS FOR REGISTRATION**

**BHARAT HEAVY ELECTRICALS LIMITED**  
(A GOVERNMENT OF INDIA UNDERTAKING)  
POWER SECTOR - NORTHERN REGION HRDI  
& PSNR COMPLEX, PLOT NO 25, SECTOR 16 A  
NOIDA-201301 .

**V E N D O R   E M P A N E L M E N T**

FOR

VARIOUS TYPES OF PRODUCTS BEING PROCURED

BY

BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR- NORTHERN REGION, NOIDA

**APPLICATION FORM, PROCEDURE & FORMATS FOR REGISTRATION**

**LAST DATE FOR SUBMISSION:** - Please obtain updated information from web sites

([www.bhel.com](http://www.bhel.com) → Tender Notification → View Corrigendum )

THIS APPLICATION FORM IS ISSUED TO:

M/s. ....

.....

PLEASE NOTE:

**THIS APPLICATION FORM IS NOT TRANSFERABLE.**

For Bharat Heavy Electricals Limited

Dy. Manager (Purchase)

Place: Noida


Date:


**TABLE OF CONTENTS**


<b>SN</b>	<b>DESCRIPTION</b>	<b>Page Number</b>
1.	Vendor REGISTRATION Cover Page	1
2.	Vendor Empanelment Document Issue form	2
3.	Table of Contents	3
4.	Notice for Vendor Registration	4 to 5
5.	Introduction to Vendor Registration	6
6.	Guidelines for filling up Formats	7 to 8
7.	Procedure for submission	9
8.	Application for Registration	10
9.	Declaration by Authorized Representative	11
10.	Categories for Vendor Registration (Section –I)	12 to 14
11.	General Requirements & Conditions for registration Section (II)	15
12.	Supplier registration Form (Section –III)	16 to 29
13.	Vendor Evaluation (Section –IV)	30 to 32
14.	Tentative Technical Specifications Of Products Categorized (Section –V)	33 to77

### NOTICE FOR VENDOR REGISTRATION


Bharat Heavy Electricals Limited, Northern Region, Noida herein invites application from experienced and reputed vendors for empanelment for the supply of various products as listed in Section-I of this document

 Availability and web site hosting of Vendor Empanelment documents: from 07.07.2012 onwards

 Scrutiny of documents and Vendor Empanelment shall be done on yearly basis in April –May of every year. However, BHEL may choose to scrutinize on on-going basis.

 As we are initiating empanelment process in JULY 2012, hence as a special case this year Scrutiny will be done in SEPT-2012. All the application received before MID AUG 2012 will be considered for empanelment.

Please visit our following web sites for complete details, procedure for submission etc.:-

 [www.bhel.com](http://www.bhel.com) → Tender Notification

---


### GENERAL


Complete details of Vendor Empanelment hosted in BHEL web page (as given above) can be directly downloaded and used for submission of Application Forms. Vendors facing difficulties in downloading of the documents may contact Purchase Department .Applications may be submitted subject to following

**1) Holidays:** Except on National Holidays, holidays declared by the Central or State Governments, Sundays, second and last Saturdays

**2) Fulfilment of Basic Criteria:** Vendors shall have to meet the Criteria stipulated in the Application documents in order to be considered for Empanelment.


**3) Other :**


 BHEL takes no responsibility for any delay/loss of documents or correspondences sent by courier/post.


 All corrigenda, addenda, amendments and clarifications to the Vendor Empanelment will be hosted in web page ([www.bhel.com](http://www.bhel.com) → Tender Notification → View Corrigendum

 BHEL reserves the right to :-

- Delete, modify, rename etc any of the Groups, Categories, Codes, Conditions, procedures etc. given in the Empanelment documents
- Reject any application on the basis of unsatisfactory performance of the vendor in any on-going job
- or any similar job in the last seven years or for furnishing false information/declaration in the application
- Withhold the issue of Application for Empanelment and also subsequently the Tender documents to any Empanelled Vendor, and also annul the Empanelment process without assigning any reasons whatsoever.
- Obtain confirmation from the principals, Owner to verify the contents of the supporting documents Submitted by the applicant .
- Any Typical Error may be ignored and if need be Corrigendum may be issued for correcting the error.

 Procedure for submission of application and evaluation by BHEL is detailed in the documents

 **Vendors previously registered / working with PSNR Noida are also required to comply with this notice for Empanelment.**

 Detailed verification shall be carried out by BHEL later. However additional information as and when required by BHEL shall be produced by the applicant.

**IMPORTANT NOTE:**

1 Applications submitted after month of SEPTEMBER of any year shall necessarily include AU-DITED

ACCOUNTS for the PREVIOUS FINANCIAL YEAR (i.e. Applications submitted after 30/09/2012, Audited Accounts of FY 11-12 shall have to be submitted, and so on)

2 This Vendor Empanelment Endeavour is only for Products and **not for Works**

Dy. Manager (Purchase) BHEL: PSNR: Noida

## **INTRODUCTION:**

### **ABOUT BHEL :**

Bharat Heavy Electricals Limited, a Public Sector Undertaking, is the largest engineering and manufacturing enterprise in India in the energy related/infrastructure sector, today. BHEL was established more than 50 years ago when its first plant was set up at Bhopal, ushering in the Indigenous Heavy Electricals Equipment Industry in India – a dream that has been realized with a well recognized track of performance. The company has been earning profits since 1971-72 and paying dividends since 1976-77.

BHEL has acquired certifications to the Quality Management Systems (ISO 9001), Environment Management Systems (ISO 14001) and Occupational Health & Safety Management Systems (OHSAS 18001) and is well on its journey towards Total Quality Management.

BHEL has installed equipments for over 90,000 MW of power generation for utilities, captive and industrial users.

BHEL's operations are organized around three business sectors, namely Power, Industry and overseas business.

To serve the customer better, four Power Sector Regions were formed as Business Centres. Power Sector Northern Region headquartered at Noida primarily covers the states of Delhi ,Punjab , Haryana ,Uttar Pradesh, Rajasthan , J & K ,Himachal Pradesh ,Uttaranchal in the installation of Power Plants.

### **VENDOR EMPANELMENT**

BHEL-PSNR intends to source & empanel the technically competent, quality conscious, financially sound probable suppliers who can meet our prequalification requirement listed as under. Product categories for enlistment are listed as per Section-I enclosed.

Interested vendors for the respective product categories who are able to comply the above requirement may login on our website [www.bhel.co.in](http://www.bhel.co.in) and download the supplier registration form the web site & submit the same duly filled in and supplemented with all relevant documents to us for further processing as per laid procedures of BHEL-PSNR.

## **GUIDELINES FOR FILLING UP VENDOR EMPANELMENT FORM and OTHER CONDITIONS**

- 1 This Vendor empanelment methodology has been devised for easy data capturing, analysis and for eventual empanelment. Vendors are requested to go through the entire procedure and fill up all information asked for and attach all the documents/evidences as specified against each.
- 2 The Vendor Empanelment Form has the following five Sections

### **Section-I: CATEGORIES FOR VENDOR EMPANELMENT**

- i) This section contains the entire list of 'CATEGORIES' for which vendors are proposed to be empanelled through this endeavour. Refer the Consolidated technical specification as per **Section V**.
- ii) Kindly tick (✓) against the relevant 'CATEGORY' for which the Applicant wants to be Empanelled

### **Section-II: GENERAL REQUIREMENT & CONDITIONS FOR EMPANELMENT**

It includes the general requirement & criteria for vendor empanelment. It provides a consolidated set of criteria which has to be met by vendor for the products they are applying for.

### **Section-III: SUPPLIER REGISTRATION FORM**

It has a two parts namely Organizational Information and Quality Systems. These forms are devised in such a way to acquire the essential information so as to make the assessment objectively.

### **Section-IV: VENDOR EVALUATION**

This section has two parts and deals with the Evaluation Procedure for Vendor empanelment:

Part A : Organizational Soundness

Part B : Quality

Part C : Technical Competence

Vendors are evaluated against specified parameters for two (2) aspects viz Organizational Soundness, Quality and Technical Competence as detailed in Part A, B & C. The Empanelment criteria and the final Recommendation for Vendor Empanelment are defined in Part D.

### **Section-V: TENTATIVE TECHNICAL SPECIFICATIONS OF PRODUCTS CATEGORIZED**

- i) It lists out the range of products and Technical Specifications of the products for which empanelment is to be done.
- ii) Vendor's production or supply range needs to be fulfilled against the respective product category in order to be considered for empanelment.

### **3. GENERAL**

- i) Applicants desirous of **applying for more than one code** may kindly refer "PROCEDURE FOR SUBMISSION"
- ii) Please fill up the form neatly and clearly in BLOCK LETTERS
- iii) All columns are to be filled up. Do not leave any column blank. If a particular item is not pertinent to your Organization, please write "Not applicable" or "N.A".
- iv) Kindly provide correct, complete and precise information in the designated column or space provided therein. Please attach separate sheet in case the space provided is insufficient
- v) Incomplete, partially complete, not clearly filled forms giving incorrect information are liable to be rejected without any consideration.
- vi) Any information/clarification required by BHEL during evaluation must be provided expeditiously
- vii) Submission of this empanelment forms do not automatically guarantee for empanelment in BHEL. BHEL also does not take any responsibility for loss of any Application form in transit.
- viii) BHEL reserves the right to call for additional information and/or check, verify all the information furnished in the application. BHEL also reserves the right to inspect all premises / facilities to confirm the authenticity of information furnished / capabilities whatsoever. mentioned in the application.
- ix) BHEL reserve the right to reject application on the basis of furnishing false information / declaration in the application.
- x) BHEL reserve the right to reject any or all the applications without assigning any reasons whatsoever.
- xi) Please fill up the Check list
- xii) BHEL's decision shall be final on all matters
- xiii) Bidder to note that Application for Empanelment with conditions unacceptable to BHEL shall be rejected.

**4. CLARIFICATION:**

Any clarification with respect to Vendor empanelment may be obtained from

**Shri V.K.SARIN**  
**Mgr/Pur**  
**BHEL-PSNR COMPLEX**  
**PLOT 25, SECTOR 16-A**  
**NOIDA-201301**  
**Phone: 0120-2416278**

**Ms SANA MASOOD**  
**JE/Pur**  
**BHEL-PSNR COMPLEX**  
**PLOT 25 , SECTOR-16-A**  
**NOIDA-201301.**  
**Phone: 0120-2416447**

**5. EVALUATION PERIOD:**

Scrutiny of applications shall commence yearly as per following schedule:

- April of every year : for applications received from 1st April of previous year to 31st March of the evaluating year. After receipt of completed application forms from a vendor, BHEL shall endeavour to complete the evaluation process in three (3) months time in case no further documents are required, and six (6) months in case further documents/clarification is required.

**6. Suspension of Business dealings**

- 6.1 BHEL reserves the right to take action against supplier who fails to perform or indulge in malpractices, by suspending business dealings with them.
- 6.2 Suspension could be in the form of 'Hold', 'De-listing' or 'Banning' a Vendor.
- 6.3 A bidder may be put on HOLD for a period of 6 months, for future Enquiries for specific works on the basis of one or more of the following reasons: a) Bidder does not honour his own offer or any of its conditions within the validity period. b) Bidder fails to respond against three consecutive enquires of BHEL. c) After placement of order, Bidder fails to execute a Order.
- 6.4 A Bidder may be de-listed from the list of registered Bidders of the region for a period of 1 year on the basis of one or more of the following reasons:
  - a) Bidder tampers with tendering procedure affecting ordering process or commits any misconduct which is contrary to business ethics.
- 6.5 A Bidder can be banned from doing any business with all Units of BHEL for a period of 3 years on the basis of one or more of the following reasons:
  - a) Bidder is found to be responsible for submitting fake/ false/ forged documents, certificates, or information prejudicial to BHEL's interest.
  - b) Bidder is found to be involved in cartel formation
  - c) The Bidder has indulged in malpractices or misconduct such as bribery, corruption and fraud, pilferage etc which are contrary to business ethics.
  - d) The Bidder is found guilty by any court of law for criminal activity/ offences involving moral turpitude in relation to business dealings.
  - e) The Bidder is declared bankrupt, insolvent, has wound up or been dissolved; i.e. ceases to exist for all practical purposes.
  - f) Bidder is found to have obtained Official Company information/ documentation by questionable means.
  - g) Communication is received from the administrative Ministry of BHEL to ban the Bidder from business dealings.
- 6.6 Contracts already entered with a contractor before the date of issue of order of 'HOLD' or 'DE-LISTING' shall not be affected.
- 6.7 Once the order for suspension is passed, existing offers/new offers of the contractor shall not be entertained
- 6.8 The above guidelines are not exhaustive but enunciate broad principles governing action against contractors



**PROCEDURE FOR SUBMISSION**

1. The vendors are required to submit the Application form and relevant annexure in a sealed cover as per procedure given below:
  - i. Sign all pages of this booklet and fill up all pages from 10 to 24
  - ii. Use additional sheets wherever necessary
  - iii. Enclose relevant supporting documents/Registration certificates as called for in the application form
2. **Enclosures for Envelope / Sealed Cover**
  - a) This envelope shall be prominently superscripted as follows "APPLICATION FOR VENDOR EMPANELMENT FOR PRODUCTS"
  - b) The following shall be enclosed in this envelope
    - i. Application Form for Empanelment
    - ii. Declaration by Authorized Representative along with copy of valid Power of Attorney
    - iii. Signed Copy of Vendor Empanelment Document Issue form  
Filled up Section-I (Filled up 'CATEGORIES FOR VENDOR EMPANELMENT')  
Filled up Section-III (SUPPLIER REGISTRATION FORM) along with all relevant enclosures / documents
    - vi. Signed Section-V (CONSOLIDATED TECHNICAL SPECIFICATIONS OF PRODUCTS CATEGORIZED) for the products which the empanelment is sought
3. **Vendors desirous of Empanelment for more than one 'CODE' in the same 'CATEGORY':**  
Tick(√) against all the required 'CODES' in Section-I (CATEGORIES FOR VENDOR EMPANELMENT)
4. **Vendors desirous of Empanelment for more than one CATEGORY:** Tick (√) against all the required 'CODES' in Section-I (CATEGORIES FOR VENDOR EMPANELMENT) Relevant supporting documents for the each product category should be attached for each applying product.

**Application for Empanelment**

To  
AGM (PURCHASE)  
BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR – NORTHERN REGION (PSNR)  
HRDI PSNR COMPLEX PLOT 25,  
SECTOR 16-A NOIDA-201301

Dear Sir,

SUB : Application for Vendor Empanelment for Products

I/we hereby submit our application for empanelment with BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR-NORTHERN REGION, NOIDA. The 'Categories' of products for which empanelment is sought have been ticked (√) as listed in 'SECTION-I. All documents as per 'Procedure for Submission'

I/we have carefully perused the application documents and I/we hereby give our unqualified acceptance to the procedure adopted by BHEL for Empanelment. I also understand that BHEL reserves the right to withhold my application for empanelment, issue Tender documents to any empanelled vendor, and also annul the empanelment process without assigning any reasons whatsoever.

I/we shall submit additional documents whenever asked for by BHEL.

I am also enclosing the 'Declaration by Authorised Applicant' along with valid power of Attorney

SIGNATURE OF AUTHORISED APPLICANT

PLACE:  
DATE:

**Enclosures:**

- i) Declaration by Authorized Applicant
- ii) All other documents for Vendor Empanelment along with enclosures/attachments

**DECLARATION BY AUTHORISED APPLICANT**

1	Name of Authorized Applicant of the company seeking Registration	
2	Designation of Applicant	
3	Name of Company for which seeking Registration	
4	Head office Address  Tel No: Fax No: Email: Web site:	

I hereby certify that all information and data furnished by me with regard to Vendor Registration/Empanelment are true and complete to the best of my knowledge. I further certify that I am duly authorized representative of the above mentioned company and a valid Power of Attorney to this effect is enclosed

Signature of Authorized Applicant  
With name and address Place: Date:

PLACE:

DATE:

**SECTION – I: CATEGORIES FOR VENDOR EMPANELMENT.**

<b>TENTATIVE LIST OF PRODUCTS/ITEMS THEIR CATAGORIZATION AND CODIFICATION FOR VENDER REGISTRATION IN BHEL-PSNR</b>				
SL NO	ITEM AND CATEGORY	CODE /SUB CODE	DISCRIPTION OF ITEMS	TICK AGAINST THE REQD ITEM / CODE
1	STRUCTURAL STEEL-( I )	(I) / STLS 01	ROD (M S)	
2		(I) / STLS 02	ROD (SS/AS)	
3		(I) / STLS 03	STEEL PLATES (MS)	
4		(I) / STLS 04	STEEL PLATES ( SS/AS)	
5		(I) / STLS 05	MS PIPES & FITTINGS ( ERW / SEAM LESS)	
6		(I) / STLS 06	SS/AS PIPES & FITTING	
7	CEMENT (II)	(II) / CMT 01	OPC GR 43 CEMENT	
8		(II) / CMT 02	PPC CEMENT	
9		(II) / CMT 03	SULPHUR RESISTANT CEMENT	
10	CHEMICALS ( III)	(III)/ CH-01	AMONNIATED EDTA	
11		(III)/ CH-02	BHEL MAX & BHEL SOL	
12		(III)/ CH-03	RINOPOL & SNID PGN CHEMICAL	
13		(III)/ CH-04	HYDRAZINE HYDRATE .	
14		(III)/ CH-05	AMMONIA SOLUTION	
15		(III)/ CH-06	DI-SODIUM HYDROGEN PHOSPHATE	
16		(III)/ CH-07	TRISODIUM PHOSPHATE	
17		(III)/ CH-08	INDUSTRIAL PAINTS	
18	ENABLING WORKS ELEC-TRICAL (IV)	(IV) / EWE-01	POWER DISTRIBUTION BOARD , HIGH POWER SWICHT BOARD,	
19		(IV) / EWE-02	POWER DISTRIBUTION TRANSFOIRMER	
20		(IV) / EWE-03	DG SETS 25 KVA TO 1000 KVA	
21		(IV) / EWE-04	ELECTRICAL POWER CABLES	
22		(IV) / EWE-05	LIGHTING HIGH MASTS	
23	ENABLING WORKS MECHANICAL (V)	(V) / EWM-01	PRE-FABRICATED PORTA CABINES/BUNK HOUSE	
24		(V) / EWM-02	TARPAULINES	
25		(V) / EWM-04	OFFICE FURNITURE	
26		(V) / EWM-05	CONSTRUCTION ELEVATORS	
27		(VI) /CAP -01	STEEL WIRE ROPES	

28	CAPITAL ITEMS T&P'S (VI)	(VI) /CAP -02	AIR COMPRESSORS	
29		(VI) /CAP -03	BOLT STRETCHING DEVICE	
30		(VI) /CAP -04	WALKY TALKY	
31		(VI) /CAP -05	WELDING GENERATOR/TRANSFORMERS	
32		(VI) /CAP -06	HARDWARE ITEMS SUCH AS PVC CABLES, LUGS, and BOLTS CLAMPS WASHERS MNNUAL & PHYSICAL MEASURING METERS ETC).	
33	IMTE'S / MEASURING IN- STRUMENTS (VII)	(VII) / IMTE-01	TONG TESTERS	
34		(VII) / IMTE-02	3-PHASE VARIAC	
35		(VII) / IMTE-03	DIGITAL MULTIMETER	
36		(VII) / IMTE-04	MILIAMP CLAMP METER	
37		(VII) / IMTE-05	DC POWER SUPPLY	
38		(VII) / IMTE-06	ELECTROSTATIC LIQUID CLEANER MACHINE,	
39		(VII) / IMTE-07	VACCUM DEHYDRATORS.	
40		(VII) / IMTE-08	EARTH RESISTANCE METER	
41		(VII) / IMTE-09	DIGITAL INSULATION TESTERS , MEGGAR	
42		(VII) / IMTE-10	DIGITAL INFRAED TACHOMETER	
43		(VII) / IMTE-11	DC LOW RESISTANCE & DIGITAL MICRO OHM METERS	
44		(VII) / IMTE-12	RELAY INJECTION TEST KIT ,	
45		(VII) / IMTE-13	DIGITAL OSCILSCOPE,	
46		(VII) / IMTE-14	BAROMETER	
47		(VII) / IMTE-15	PITOT TUBE	
48		(VII) / IMTE-16	DUAL CHANNEL VIBRATION ANALYSER PORT- ABLE VIBERATION METERS	
49		(VII) / IMTE-17	POWER TRANSDUCER	
50		(VII) / IMTE-18	PORTABLE NOISE LEVEL METER	
51		(VII) / IMTE-19	FLOW METER	
52		(VII) / IMTE-20	DIGITAL LEVEL METER	
53		(VII) / IMTE-21	PRESSURE PUMP	
54		(VII) / IMTE-22	VACCUM PUMP	
55		(VII) / IMTE-23	PRESSURE CALIBRATOR	
56		(VII) / IMTE-24	PRESSURE TRANSMITTERS	
57		(VII) / IMTE-25	THERMOCOUPLES / K TYPE THERMOCOU-	

			PLES	
58		(VII) / IMTE-26	TEMPERATURE SCANNER.	
59		(VII) / IMTE-27	NON CONTACT THERMOMETER	
60		(VII) / IMTE-28	PRT'S	
61		(VII) / IMTE-29	DIFFERENTIAL PRESSURE THERMOMETERS	
62		(VII) / IMTE-30	THICKNESS GAUGE	
63		(VII) / IMTE-31	MATEL IDENTIFIER	
64		(VII) / IMTE-32	ULTRA SONIC TEST MACHINE	
65		(VII) / IMTE-33	WEDG DEFLECTION TEST KIT ETC.	

**(REFER SECTION – V FOR FURTHER SPECIFICATIONS)**

\*- FOR THESE CATEGORIES, GIVEN LIST OF SUB-CATEGORIES ARE INDICATIVE/TENTATIVE ONLY. BIDDER SHALL BE CONSIDERED FOR THE SIMILAR TYPE OF NEW PRODUCT SUB CATEGORY REQUIREMENTS, IF SAME FALL INTO THEIR PRODUCT RANGE. HENCE, BIDDERS ARE REQUESTED TO ATTACH THE PRODUCT CATALOGUE MENTIONING THE PRODUCT RANGE WITH THE RELEVANT IS STANDARDS.

**SECTION - II: GENERAL REQUIREMENT & CONDITIONS FOR EMPANELMENT**  
**Various Parameters of Pre-Qualification Requirement (PQR):**

Vendor should be a (i) Manufacturer Or (ii) Authorized dealer of Manufacturer of the product they are supplying.

Vendor should have minimum three years of experience in supply of relevant products.

Vendor should have sufficient financial soundness.

Vendor's products quality standards have to meet international or Indian quality standards relevant to the product category.

Vendor enlistment in other units of BHEL shall be considered for similar product.

PQR criteria should be supported by appropriate documents. BHEL may verify the authenticity of the documents from the originator if necessary.

Vendor shall fill **Supplier registration Form.**

Qualifications and enlistment of vendors for product wise shall be done by BHEL-PSWR according to the PQR mentioned in this document.

**Documents required:**

(It is a consolidated list only; you are requested to provide all relevant documents in respect of product you are applying for)

1. Vendor shall submit Authorization certificate or certificate for manufacturer.

2. At least 3 Purchase Order copies to be submitted of prominent customer comprising of customer's name, address, year of supply order value, contact person's name & contact details including e-mail address related to product.

3. Financial Information (profit and loss account, Balance sheet duly signed by CA etc) for last three

consecutive years.

4. Latest valid ISO certificate, if you are ISO certified.

5. Vendor Code and Items, if you are registered with any other unit/region of BHEL.

6. Technical Catalogue, Brochure or literature of the items for which vendor are seeking empanelment

7. Organization chart.

8. Bidder shall submit the technical acceptance as per Section-V for the product for which bidder is seeking registration.

**SECTION: III SUPPLIER REGISTRATION FORM** (Page 1 of 10)**PART- A: ORGANISATIONAL SOUNDNESS**

ALL COLUMNS SHOULD BE PROPERLY FILLED IN THE SPACE PROVIDED FOR, WHEREVER IT IS NOT APPLICABLE, PLEASE WRITE "NOT APPLICABLE". INCOMPLETE OR INCORRECT FORMS MAY NOT BE CONSIDERED. **PLEASE ATTACH SEPARATE SHEET, IF SPACE AVAILABLE IS INADEQUATE. INFORMATION WITH \* MARKS IS SCOREABLE.**

**ALL THE PAGES OF THE FORM ARE TO BE SIGNED ALONGWITH SEAL BY THE AUTHORISED SIGNATORY**

<b>ORGANISATIONAL INFORMATION</b>				
<b>NAME AND CORRESPONDENCE ADDRESS OF THE SUPPLIER SEEKING REGISTRATION :</b>				
<b>1.0 PRODUCTS FOR WHICH REGISTRATION IS APPLIED FOR(PI Choose from Annexure-I) :</b>				
<b>SL. NO.</b>	<b>SUBCATEGORY CODE</b>	<b>DESCRIPTION</b>	<b>SIZE &amp; RANGE</b>	<b>MFG. STD/ IS / DIN /BS ETC.</b>
<b>SUPPLIER'S AUTHORISED SIGNATORY</b> <span style="float: right;"><b>BHEL</b></span>				



**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 2 of 10)**  
**(SECTION: III)**

<b>ORGANISATIONAL INFORMATION</b>
<b>2.0 GENERAL INFORMATION :</b>  2.1 NAME OF THE WORKS/DIVISION :  ADDRESS :  E - Mail :  TELEPHONE :  Landline:  Mobile:  FAX :
<b>2.2 NAME OF CHIEF EXECUTIVE / PROPRIETOR /PARTNER &amp; ADDRESS :</b>  <b>2.3 DETAILS OF AUTHORISED SIGNATORY FOR SEEKING CLARIFICATION :</b>  NAME : DESIGNATION :  E - Mail :  TELEPHONE :  Landline Mobile  FAX :
<b>SUPPLIER'S AUTHORISED SIGNATORY</b> <span style="float: right;"><b>BHEL</b></span>

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 3 of 10)**  
**(SECTION: III)**

**ORGANISATIONAL INFORMATION**

**3.0 OWNERSHIP INFORMATION: DOCUMENTS TO BE FURNISHED**

**3.1 GOVT. OF INDIA UNDERTAKING:**

OR

STATE GOVT. UNDERTAKING :

OR

LIMITED COMPANY : MEMORANDUM AND ARTICLES OF ASSOCIATION

OR

PRIVATE COMPANY : MEMORANDUM AND ARTICLES OF ASSOCIATION

OR

CO-OPERATIVE SOCIETY : SOCIETY RULES AND BYE LAWS

OR

PARTNERSHIP FIRM : PARTNERSHIP DEED OR PROPRIETORSHIP : PROFESSION TAX REGN. AND MUNICIPAL REGN. ANY OTHER (SPECIFY) :

**3.2 NATURE OF BUSINESS :** (MANUFACTURING UNIT/ ENGG CONSULTANT/ EPC CONTRACTOR) (AGENTS/ DISTRIBUTORS/STOCKISTS/DEALERS/ TRADERS/ INDIAN SUBSIDIARY/ CHANNEL PARTNER – attach authorization certificate of principal)

**3.3 YEAR OF ESTABLISHMENT :**

**\*3.4 YEAR OF COMMENCEMENT OF BUSINESS :**

**SUPPLIER'S AUTHORISED SIGNATOR**

**BHEL**

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 4 of 10)**  
**(SECTION: III)**

<b>ORGANISATIONAL INFORMATION</b>			
<b>4.0 REGISTRATION PARTICULARS</b> ( FURNISH DETAILS AND ENCLOSE COPY OF CERTIFICATE FOR THE FOLLOWING)  4.1 PERMANENT ACCOUNT NO :  4.2 CENTRAL SALES TAX REGN NUMBER :  4.3 STATE SALES TAX / TIN NUMBER :  4.4 EXCISE DUTY REGN NUMBER :  4.5 EXCISE CONTROL CODE NUMBER :  4.6 SERVICE TAX REGN NUMBER :  4.7 CATEGORY AS PER MSMED ACT: MICRO/ SMALL/ MEDIUM REGN NO. :  VALID UPTO :  (Attach Certificate)			
<table style="width: 100%;"><tr><td style="width: 60%;"><b>SUPPLIER'S AUTHORISED SIGNATORY</b></td><td style="width: 40%; text-align: right;"><b>BHEL</b></td></tr></table>		<b>SUPPLIER'S AUTHORISED SIGNATORY</b>	<b>BHEL</b>
<b>SUPPLIER'S AUTHORISED SIGNATORY</b>	<b>BHEL</b>		

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 5 of 10)**

**(SECTION: III)**

**ORGANISATIONAL INFORMATION**

**5.0 O T H E R P A R T I C U L A R S:** (FURNISH DETAILS AND ENCLOSE DOCUMENTARY EVIDENCE/ COPY OF CERTIFICATE FOR THE FOLLOWING)

\* 5.1 IF THE COMPANY IS ALREADY REGISTERED WITH ANY OF BHEL UNITS GIVE:

5.1.1. B H E L UNIT'S NAME:

5.1.2. S U P P L I E R REGN. CODE NO. :

5.1.3. I T E M S FOR WHICH REGISTERED & THEIR SPECIFICATION (ENCLOSE PROOF OF SUCCESSFUL EXECUTION OF ONE OR MORE PURCHASE ORDERS):

\* 5.2 IS THE COMPANY APPROVED BY ASME / NTPC / NPC / EIL / DGS&D / RAILWAYS / IBR / LLOYDS ETC FOR INTENDED MATERIAL CATEGORY? : YES / NO  
(ENCLOSE DOCUMENTARY EVIDENCE)

\* 5.3 IS THE COMPANY ISO 9001 APPROVED? : YES / NO

(ENCLOSE CERTIFICATE & TOC OF QUALITY SYSTEM) :

\* 5.4 IS THE COMPANY AN ISO 14000 APPROVED? : YES / NO  
(ENCLOSE CERTIFICATE):

\* 5.5 ARE THE COMPANY OHSAS - 18000 APPROVED? YES / NO  
(ENCLOSE CERTIFICATE)

\* 5.6 TECHNICAL COLLABORATOR : (FOREIGN OR INDIGENOUS) (ENCLOSE DOCUMENTARY EVIDENCE)

5.7 DIRECTORS / PARTNERS, IF RELATED TO ANY BHELEMPLOYEE.  
NAME :

STAFE NO. :

DESIGNATION :

Unit & DEPARTMENT:

RELATIONSHIP:

**SUPPLIER'S AUTHORISED SIGNATORY**

**BHEL**

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 6 of 10)**  
**(SECTION: III)**

## ORGANISATIONAL INFORMATION

**5.8 IF ANY EX-BHEL PERSONNEL IS EMPLOYED BY THE COMPANY, MENTION HIS / HER DETAILS OF LAST POSTING.**

NAME :  
STAFF NO. :  
DESIGNATION :  
UNIT & DEPARTMENT:  
DATE OF LEAVING SERVICE :

**5.9 EXPERIENCE LIST:** (ATTACH LIST OF PRESENT CUSTOMERS WITH NAME & ADDRESS FOR OFFERED / SIMILAR TYPE&SIZE OF ITEM / EQUIPMENT FOR WHICH REGISTRATION HAS BEEN SOUGHT AND WITH WHOM YOU HAVE CONTINUOUS BUSINESS SINCE LAST THREE YEARS . ALSO ATTACH PURCHASE ORDER COPY.)

5.10 DETAILS OF PENDING LEGAL ISSUES ON CONTRACTUAL ASPECTS WITH CUSTOMER, IF ANY

5.11 The following information of B a n k Account of the Company, duly endorsed by the Bank (required for Electronic Fund Transfer –EFT/RTGS) is to be submitted

1. Name of the Company
2. Name of Bank
3. Name of Bank Branch
4. City/Place
5. Account Number
6. Account type
7. IFSC code of the Bank Branch
8. MICR Code of the Bank Branch
9. Details of other Bankers (for reference purpose only)

NOTE: (i) Suppliers who have already submitted the above information are requested to submit a copy of the same.

**SUPPLIER'S AUTHORISED SIGNATORY**

**BHEL**

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 7 of 10)**  
**(SECTION: III)**

**ORGANISATIONAL INFORMATION**

**6.0 INSPECTION & TESTING FACILITIES:**

**\*6.1 LIST OF INSPECTION & TESTING FACILITIES / EQUIPMENT**

SL. NO	DESCRIPTION OF FACILITY/ EQUIPMENT & CAPACITY	NOS.	MAKE & YEAR OF MANUFACTURING	LAST DATE OF CALIBRATION
<b>IN CASE OF SPACE LIMITATION ENCLOSE ANNEXURE / CATALOGUE WITH TAG</b>				

**\*6.2 IF IN HOUSE TESTING FACILITY NOT AVAILABLE, INDICATE SOURCE OF TESTING ALONG WITH THEIR FACILITIES AND EXPERIENCE.**

SL. NO	TEST	SOURCE OF TESTING	DESCRIPTION OF FACILITY/ EQUIPMENT & CAPACITY	APPROVAL OF EQUIPMENT/ PROCESS/PERSONNEL QUALIFICATION
<b>IN CASE OF SPACE LIMITATION ENCLOSE ANNEXURE / CATALOGUE WITH TAG</b>				
<b>SUPPLIER'S AUTHORISED SIGNATORY</b>				<b>BHEL</b>

**BHARAT HEAVY ELECTRICALS LIMITED**  
**SUPPLIER REGISTRATION FORM (Page 8 of 10)**  
**(SECTION: III)**

<b>ORGANISATIONAL INFORMATION</b>					
<b>FINANCIAL INFORMATION FOR THE PREVIOUS FOUR YEARS</b>					
<b>7.0</b>	<b>Parameter</b>	Year 1	Year 2	Year 3	
		(Years in ascending order, Money value in Rs.)			
7.1	CASH PROFIT				
7.2	NET WORTH				
7.3	IFR/NCLT case OR "SICK"	Referred to IFR/NCLT OR declared "SICK" by any Statutory Authority( YES / NO)			
<p>NOTE: 1. Copies of annual accounts (Balance Sheet) for the last three years (or from date of incorporation whichever is less) along with audit report are to be submitted. The above details shall be highlighted in the Balance Sheet.</p> <p>2. Status of Tax assessments done under various laws (Income Tax, VAT/Sales Tax, Excise &amp; Service Tax, Custom) and details of disputes pending, if any, with these authorities to be submitted.</p>					
<b>SUPPLIER'S AUTHORISED SIGNATORY</b>			<b>BHEL</b>		

**BHARAT HEAVY ELECTRICALS LIMITED****SUPPLIER REGISTRATION FORM (Page 9 of 10)****(SECTION: III)****ORGANISATIONAL INFORMATION****8. LIST OF ENCLOSURES** (Tags to be put on enclosures):

(i) MEMORANDUM AND ARTICLES OF ASSOCIATION

/ SOCIETY RULES AND BYE LAWS / : YES / PROFESSION TAX REGN &amp; MUNICIPAL REGN.

(ii) Copy of certificate of following:

❖ PERMANENT ACCOUNT NO :	YES / NO
❖ CENTRAL SALES TAX REGN NUMBER :	YES / NO
❖ STATE SALES TAX / TIN NUMBER :	YES / NO
❖ EXCISE DUTY REGN NUMBER :	YES / NO
❖ EXCISE CONTROL CODE NUMBER :	YES / NO
❖ SERVICE TAX REGN NUMBER :	YES / NO
❖ REGN NUMBER OF CATEGORY ASPER :	YES / NO
(iii) ORGANISATION CHART :	YES / NO

(iv) If registered with any other BHEL Unit,

❖ LETTER OF REGISTRATION WITH BHEL UNIT : YES / NO

❖ PROOF OF SUCCESSFUL EXECUTION OF MORE PURCHASE ORDERS : YES / NO

(v) Letter of approval from ASME / NTPC / NPC / EIL / DGS&amp;D : YES / NO

(vi) Accreditation certificate for

❖ ISO: 9001 :	YES / NO
❖ TOC of Quality System Manual :	YES / NO
❖ ISO : 14000 :	YES / NO
❖ OHSAS , ISO 18000 :	YES / NO
(vii) Letter regarding technical collaboration :	YES / NO
(viii) Experience List / Performance certificate :	YES / NO
(ix) Balance Sheet for the last four years along with audit :	YES / NO
(x) Principal's authorization in case of dealers/ agents :	YES / NO
(xi) EFT Bank's certificate :	YES / NO

I / WE GIVE THE UNDERTAKING THAT BHEL DRAWINGS & SPECIFICATIONS SHALL NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL AND/ OR FOR SUPPLY OF ANY MATERIAL, PRODUCT OR SERVICES DIRECTLY OR INDIRECTLY TO ANY OTHER CUSTOMER.

SUPPLIER'S AUTHORISED SIGNATORY

**BHEL**



**SUPPLIER REGISTRATION FORM (SECTION: III)**

Page 10 of 10

**Part B (QUALITY SYSTEM):**

Sl. No	PARAMETERS	SYSTEM IN EFFECT (Tick if exists & provide evidences if ticked in)		RECORDS (Tick if available & submit evidences)	REMARKS
		Written Procedure	Practice		
1	Manufacturing / Testing Procedure Qualification				Procedure Qualification specification may be submitted
2	Calibration system				Submit list of instrument & their calibration status
3	System of Storage, Preservation , Painting & packing				Copy of procedure to be submitted
4	Purchase order for the similar product and Proof of Completion Certificate				Submit PO copy and Work completion certificate or the LR Copy or invoices as the proof of work .
<div style="display: flex; justify-content: space-between; align-items: flex-end; padding: 10px;"> <div><b>SUPPLIER'S AUTHORISED SIGNATORY</b></div> <div><b>BHEL</b></div> </div>					

**SECTION-IV VENDOR EVALUATION (TO BE FILLED BY BHEL)****Part A: ORGANISATIONAL SOUNDNESS**

<b>Sl. No.</b>	<b>PARAMETER</b>	<b>QUALIFICATION CRITERIA</b>	<b>EVALUATION BY BHEL</b>
1	NET WORTH: (from audited figures for the LATEST FINANCIAL YEAR)	Should not be less than 50% of Paid up Share Capital in case of Companies	
3	CASH PROFIT: (From Audited figures of Profit After Tax + Non Cash Expendnditure like Depreciation)	Should have made Cash profit in any one of the three preceeding FINANCIAL YEARS	
4	BIFR/NCLT case OR "SICK"	Should NOT have been referred to BIFR/NCLT or declared "SICK" by any Statutory Authority	
6	<b>Remarks if any :</b>		
7	<b>Signature of evaluation committee:</b>		

**SECTION-IV VENDOR EVALUATION (TO BE FILLED BY BHEL)****Part B: QUALITY:**

CATEGORY CODE: \_\_\_\_\_

SUB CATEGORY CODE: \_\_\_\_\_

Sl. No	PARAMETERS	SYSTEM IN EFFECT	
		AVAILABLE	NOT AVAILA-BLE
1	Manufacturing / Testing Procedure Qualification		
2	Calibration system		
3	System of Storage, Preservation , Painting & packing		
4	Purchase order for the similar product and Customer feed-back		
REMARKS BY BHEL			
<div> <div>QUALIFIED</div> <div>NOT</div> </div>			

(NOTE: - THIS EVALUATION SHALL BE DONE FOR EACH SUB-CATEGORY, THE VENDOR HAS APPLIED FOR REGISTRATION/EMPANELMENT.)

**SECTION-IV VENDOR EVALUATION (TO BE FILLED BY BHEL)****Part C: TECHNICAL:**

SI no	PARAMETER	QUALIFICATION CRITERIA	EVALUATION BY BHEL	
1	BASIC RE-QUIREMENT	Should fulfil the <b>CONSOLIDATED TECHNICAL SPECIFICATIONS AS PER Section-V OF PRODUCTS CATEGORIZED</b> for the Product CATEGORY for which empanelment is sought  <b>Note:</b> To be evaluated for every 'CODE' for which 'Empanelment' sought	<b>CATEGORY &amp; sub-CATEGORY Code : i</b>	
			ii	
			iii	
			iv	
			v	
			vi	
			vii	
			viii	
			ix	
			x	
			xi	
			xii	
2	Adequacy of Inspection, Measuring and Testing Equipments (owned by the Company)	Adequately available OR Available for the major part		
3	Remarks if any:			

**SECTION-IV VENDOR EVALUATION (TO BE FILLED BY BHEL)****Part D: FINAL RECOMMENDATION**

Name of VENDOR :	
------------------	--

**Table-1 CRITERIA for VENDOR EMPANELMENT (for each CATEGORY/SUB-CATEGORY CODE)**

SI no	Evaluation of Vendor for Empanelment	ASSESSMENT CRITERIA		
		Organisational Soundness	Quality	Technical Capa- bility
1	RECOMMENDED	QUALIFIED	QUALIFIED	QUALIFIED
2	NOT RECOMMENDED	IF NOT QUALIFIED FOR EVEN ANY ONE OF THE ABOVE ASPECTS		
3	Further Review ###	IN CASE OF "HOLD" ON ANY ASPECT OR IF FURTHER DETAILS REQUIRED		

### : These Organisations shall be reviewed once again before final recommendation for empanelment

**Table-2 RECOMMENDATION FOR EMPANELMENT OF VENDOR**

SI No	CATEGORY	SUBCATEGORY	CODE	Recommendation of BHEL
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

**SECTION -V: TENTATIVE TECHNICAL SPECIFICATIONS OF PRODUCTS CATEGORIZED**

SL NO	ITEM CATAGORY	CATA-GORY CODE	SUB CATAGORY CODE	DISCRIPTION OF ITEMS	STANDARD SPECIFICA-TIONS
1	STRUC-TURAL STEEL	STLS	STLS 01	ROD (M S)	AS PER RELEVANT IS CODE
2		STLS	STLS 02	ROD (SS/AS)	AS PER RELEVANT IS CODE
3		STLS	STLS 03	STEEL PLATES (MS)	AS PER RELEVANT IS CODE
4		STLS	STLS 04	STEEL PLATES ( SS/AS)	AS PER RELEVANT IS CODE
5		STLS	STLS 05	MS PIPES & FITTINGS ( ERW / SEAM LESS)	AS PER RELEVANT IS CODE
6		STLS	STLS 06	SS/AS PIPES & FITTING	AS PER RELEVANT IS CODE
7	CEMENT (II)	CMT	CMT 01	OPC GR 43 CEMENT	AS PER RELEVANT IS CODE
8		CMT		PPC CEMENT	AS PER RELEVANT IS CODE
9		CMT		SULPHUR RESISTANT CE-MENT	AS PER RELEVANT IS CODE
10	CHEM-ICALS ( III)	CH	CH-01	AMONNIATED EDTA	CONCENTRATION OF EDTA 40% W/W,PH=9-9.8 AND SPECIFIC GRAVI-TY=1.18
11		CH	CH-02	BHEL MAX & BHEL SOL	AS PER BHEL SPECIFICA-TIONS
12		CH	CH-03	RINOPOL & SNID PGN CHEMI-CAL	AS PER RELEVANT IS CODE
13		CH	CH-04	HYDRAZINE HYDRATE.	IS 12086-1991
14		CH	CH-05	AMMONIA SOLUTION	IS 799-1990
15		CH	CH-06	DI-SODIUM HYDROGEN PHOSPHATE	IS 566-1991
16		CH	CH-07	TRISODIUM PHOSPHATE	IS 573-1992
17		CH	CH-08	INDUSTRIAL PAINTS	AS PER RELEVANT IS CODE
18	ENA-BLING WORKS ELECTRICAL (IV)	EWE	EWE-01	POWER DISTRIBUTION BOARD , HIGH POWER SWITCH BOARD,	440 VOLTS 400 AMPS/ 1000AMPS AS PER AN-NEXURE-‘A’
19		EWE	EWE-02	POWER DISTRIBUTION TRANS-FORMER	3 PHASE 315 KVA – 630 KVA AS PER ANNEX-URE-‘B’
20		EWE	EWE-03	DEISEL GENERATING SETS	25 KVA TO 1000 KVA FIT-TED WITH BRANDED EN-GINES AND ALTERNA-TORS. AS PER ANNEXURE-‘C’
21		EWE	EWE-04	ELECTRICAL POWER CABLES	AS PER RELEVANT IS CODE AND ANNEXUE -D
22		EWE	EWE-05	LIGHTING HIGH MASTS	20 MTRS FITTED WITH WINCHES HAVING SS WIRE ROPE AND BRAND-ED LIGHTS & FITTINS OF BAJAJ / SURYA /

					CROMPTON GREAVES ETC.
23	ENABLING WORKS MECHANICAL (V)	EWM	EWM-01	PRE-FABRICATED PORTA CABINES/BUNK HOUSE	OF DIFFERENT ES AS PER RELEVANT CODES
24		EWM	EWM-02	TARPAULINES	AS PER RELEVANT IS CODES AND ANNEXURE-E
25		EWM	EWM-04	OFFICE FURNITURE	STANDARD SIZES AS PER BHEL REQUIREMENT
26		EWM	EWM-05	CONSTRUCTION ELEVATORS	AS PER ANNEXURE-F
27		CAP	CAP -01	STEEL WIRE ROPES	AS PER RELEVANT IS CODES AND DIFFERENT SIZES
28	CAPITAL ITEMS T&P'S (VI)	CAP	CAP -02	AIR COMPRESSORS	AS PER ANNEXURE-G
29		CAP	CAP -03	BOLT STRETCHING DEVICE	AS PER ANNEXURE-H
30		CAP	CAP -04	WALKY TALKY	AS PER ANNEXURE-I
31		CAP	CAP -05	WELDING GENERATOR/RECTIFIERS	AS PER ANNEXURE-J
32		CAP	CAP -06	HARDWARE ITEMS SUCH AS PVC CABLES, LUGS, BOLTS CLAMPS WASHERS MNNUAL & PHYSICAL MEASURING METERS ETC).	AS PER BHEL REQUIREMENT
33	IMTE'S / MEASURING INSTRUMENTS (VII)	IMTE	IMTE-01	TONG TESTERS	AS PER ANNEXURE-K
34		IMTE	IMTE-02	3-PHASE VARIAC	AS PER ANNEXURE-L
35		IMTE	IMTE-03	DIGITAL MULTIMETER	AS PER ANNEXURE-M
36		IMTE	IMTE-04	MILIAMP CLAMP METER	AS PER ANNEXURE-N
37		IMTE	IMTE-05	DC POWER SUPPLY	AS PER ANNEXURE-O
38		IMTE	IMTE-06	ELECTROSTATIC LIQUID CLEANER MACHINE,	AS PER BHEL REQUIREMENT
39		IMTE	IMTE-07	VACCUM DEHYDRATORS.	AS PER BHEL REQUIREMENT
40		IMTE	IMTE-08	EARTH RESISTANCE METER	AS PER ANNEXURE-P
41		IMTE	IMTE-09	DIGITAL INSULATION TESTERS , MEGGAR	AS PER ANNEXURE-Q
42		IMTE	IMTE-10	DIGITAL INFRAED TACHOMETER	AS PER ANNEXURE-R
43		IMTE	IMTE-11	DC LOW RESISTANCE & DIGITAL MICRO OHM METERS	AS PER ANNEXURE-S
44		IMTE	IMTE-12	RELAY INJECTION TEST KIT ,	AS PER ANNEXURE-T
45		IMTE	IMTE-13	DIGITAL OSCILSCOPE,	AS PER ANNEXURE-U
46		IMTE	IMTE-14	PITOT TUBE	AS PER ANNEXURE-V
47		IMTE	IMTE-15	VENTURI METER	AS PER ANNEXURE-W
48		IMTE	IMTE-16	DUAL CHANNEL VIBRATION ANALYSER PORTABLE VIBERATION METERS	AS PER ANNEXURE-X
49		IMTE	IMTE-17	POWER TRANSDUCER	AS PER BHEL REQUIREMENT

50	IMTE	IMTE-18	PORTABLE NOISE LEVEL METER	AS PER ANNEXURE-Y
51	IMTE	IMTE-19	FLOW METER	AS PER BHEL REQUIREMENT
52	IMTE	IMTE-20	DIGITAL LEVEL METER	AS PER BHEL REQUIREMENT
53	IMTE	(IMTE-21	PRESSURE PUMP	AS PER ANNEXURE-Z
54	IMTE	IMTE-22	VACCUM PUMP	AS PER ANNEXURE-A-1
55	IMTE	IMTE-23	PRESSURE CALIBRATOR	AS PER ANNEXURE-A-2
56	IMTE	IMTE-24	PRESSURE TRANSMITTERS	AS PER ANNEXURE-A-3
57	IMTE	IMTE-25	THERMOCOUPLES / K TYPE THERMOCOUPLES	AS PER ANNEXURE-A-4
58	IMTE	IMTE-26	TEMPERATURE SCANNER.	AS PER ANNEXURE-A-5
59	IMTE	IMTE-27	NON CONTACT THERMOMETER	AS PER ANNEXURE-A-6
60	IMTE	IMTE-28	PRT'S	AS PER ANNEXURE-A-7
61	IMTE	IMTE-29	DIFFERENTIAL PRESSURE THERMOMETERS	AS PER BHEL REQUIREMENT
62	IMTE	IMTE-30	THICKNESS GAUGE	AS PER ANNEXURE-A-8
63	IMTE	IMTE-31	METAL IDENTIFIER	AS PER ANNEXURE-A-9
64	IMTE	IMTE-32	ULTRA SONIC TEST MACHINE	AS PER ANNEXURE-A-10
65	IMTE	IMTE-33	WEDG DEFLECTION TEST KIT	AS PER ANNEXURE-A-11
66	IMTE	IMTE-34	BAROMETER	AS PER ANNEXURE A-12

\*- FOR THESE PACKAGES, GIVEN LIST OF SUB-CATEGORY'S ARE INDICATIVE/TENTATIVE ONLY. BIDDER SHALL BE CONSIDERED FOR THE SIMILAR TYPE OF NEW PRODUCT SUB-CATEGORY REQUIREMENTS, IF SAME FALL INTO THEIR PRODUCT RANGE. HENCE, BIDDERS ARE REQUESTED TO ATTACH THE PRODUCT CATALOGUE MENTIONING THE PRODUCT RANGE WITH THE RELEVANT IS STANDARDS.



TENTATIVE TECHNICAL SPECIFICATIONS FOR POWER DISTRIBUTION BOARDS

- 1) 440 V , 4 WIRE ,1000 A / 400A POWER DISTRIBUTION BOARD CONSISTING OF MAIN BUS BARS ( COPPER ) , 1 NO 1000 ACB ( HAVING ELECTRICAL OPERATION , MECH SPRING CHARGING , O/C + E/F PROTECTION ) AND 1 NO 100 A , 5 NOS 200 A AND 1 NO 315 A O/G SFU . IN ADDITION NORMAL INDICATIONS AND METERING AND EARTH BUS TO BE PROVIDED.
- 2) 440 V , 4 WIRE ,1000 A POWER DISTRIBUTION BOARD CONSISTING OF MAIN BUS BARS ( COPPER ) , INCOMER 1 NO 1000 ACB ( HAVING ELECTRICAL OPERATION , MECH SPRING CHARGING , O/C + E/F PROTECTION ) SFUS FOR EACH PDB AS DETAILED BELOW:

A.(SFU 400A-01 NOS, SFU 200A-02NOS

SFU 100A-01NOS,SFU 63A-01 NOS)

B. SFU 400A-01 NOS,SFU 200A-03NOS

C. .(SFU 315A-01 NOS,SFU 200A-02NOS

SFU 100A-02NOS,SFU 63A-02 NOS)

PANELS ARE FLOOR MOUNTED, OUTDOOR TYPE (IP 55) , 2 MM THICK POWDER COATED SHEET HAVING MAJOR COMPONENTS FROM L&T / GE / C&S / SIEMENS / ALSTOM  
BUSBAR OF CU , CURRENT DENSITY 1A / MM<sup>2</sup>

**(ANNEXURE-B)**

TENTATIVE TECHNICAL SPECIFICATIONS FOR POWER DISTRIBUTION TRANSFORMERS.

- 1) 315 KVA, 11/0.433 KV, 3 PHASE, 50 Hz , OIL FILLED ONAN , 5% IMPEDENCE, +/- 5% OFF CIRCUIT TAP SWITCH IN STEPS OF 2.5% CONFIRMING TO IS:2026, FITTING & ACCESSORIES AS PER CBIP MANUAL OF TRANSFORMER , PROTECTION REQUIRED ARE BUCCHOLZ , OTI & EXPLOSION VENT. HV CABLE BOX (WITHOUT DISCONNECTING BOX) SUITABLE TO ACCEPT 2 RUNS OF 3.5C X 300 SQ MM CABLE.
- 2) 630 KVA, 11/0.433 KV, 3 PHASE, 50 Hz , OIL FILLED ONAN, 5% IMPEDENCE , +/- 5% OFF CIRCUIT TAP SWITCH IN STEPS OF 2.5% CONFIRMING TO IS:2026 , FITTINGS AND ACCESSORIES AS CBIP MANUAL OF TRANSFORMER. PROTECTION REQUIRED ARE BUCCHOLZ, OTI AND EXPLOSION VENT. HV SIDE SHOULD BE SUITABLE FOR BARE CONDUCTOR CONNECTIONS AND LV CABLE TO ACCEPT 2 RUNS OF IC X 630 MM<sup>2</sup> CABLE PER PHASE.

**(ANNEXURE-C)**

TENTATIVE TECHNICAL SPECIFICATIONS FOR DIESEL OPERATED POWER GENERATING SETS

25 KVA TO 1000 KVA SILENT DIESEL OPERATED POWER GENERATING SETS FITTED WITH BRANDED ENGINES AND ALTERNATORS . FURTHER DETAILS OF SOME OF THE GENERAL REQUIREMENTS ARE AS PER BELOW.

25 KVA Silent Diesel Generator Set (Totally Enclosed with side open able doors and lifting hooks, Suitable For Outdoor / Indoor operation, Comprising Of Water Cooled diesel Engine 1500 RPM Coupled With 25 KVA, 3 phase, 4 Wire Alternator With standard Accessories Including Base Frame, Fuel tank, Battery, Silencer And Standard control panel ETC.

62.5 KVA Silent Diesel Generator Set (Totally Enclosed with side open able doors and lifting hooks, Suitable For Outdoor / Indoor operation, Comprising Of Water Cooled diesel Engine 1500 RPM Coupled With 62.5KVA 3 phase 4 Wire Alternator With standard Accessories Including Base Frame, Fuel tank, Battery, Silencer And Standard control panel ETC.

250 KVA Silent Diesel Generator Set (Totally Enclosed with side open able doors and lifting hooks , Suitable For Outdoor / Indoor operation, Comprising Of Water Cooled diesel Engine 1500 RPM Coupled With 250 KVA 3 phase 4 wire Alternator With standard Accessories Including Base Frame, Fuel tank, Battery, Silencer And Standard control panel ETC.

Following general requirements

- 1 .Diesel Engine (Water cooled ): Make: Cummins / Kirloskar / Leyland / Greaves ETC.
- 2.Alternator (Brush less) Make: Kirloskar Elect. / Standford / Crompton Greaves.
3. BIDDERS SHOULD HAVE FULL LOAD TESTING ARRANGEMENTS FOR THE D.G.SETS AT THEIR WORKS.
4. BIDDERS SHOULD HAVE THE VALID AUTHORIZATION FORM ORIGINAL MANUFACTURERS OF THE DIESEL ENGINES,ALTERNATORS AND OTHER AUXILIARIES USED IN THE D.G.SETS.

**(ANNEXURE-D)**

**TENTATIVE TECHNICAL SPECIFICATIONS FOR ELECTRICAL CABLES**

- 1) 660 / 1100 V GRADE (COMPACTED STRANDED,ALUMINIUM CONDUCTOR,PVC INSULATION TYPE A,CORES LAID UP,PVC TYPE ST1 INNER SHEATH,GALVANISED STEEL STRIP ARMOUR.PVC TYPE ST1 OUTER SHEATH AS PER IS 1554 PART-1) POWER CABLES OF DIFFERENT SIZES.
- 2) 660/1100 V GRADE ( COMPACTED STRANDED,ALUMINIUM CONDUCTOR,XLPE PVC INSULATION TYPE A,CORES LAID UP ,PVC TYPE ST1 INNER SHEATH,GALVANISED STEEL STRIP ARMOUR.PVC TYPE ST1,OUTER SHEATH AS PER IS 7098 PART-1) XLPE POWER CABLE OF DIFFERENT SIZE.
- 3) 11 KV (E) GRADE CABLE WITH COMPACTED STRANDED , ALUMINIUM CONDUCTOR,EXTRUDED SEMI-CONDUCTING COMPOUND SCREEN,EXTRUDED XLPE INSULATED,EXTRUDED SEMI-CONDUCTING COMPOUND WITH A LAYER OF NON-MAGNETIC TAPE FOR INSULATION SCREEN,EXTRUDED FRLS PVC (TYPE ST2) INNER SHEATH,GALVANISED STEEL ARMOUR,EXTRUDED FRLS PVC (TYPE ST2) OUTER SHEATH CABLE CONFORMING TO IS-7098 PART 2

**ANNEXURE – E**  
(TENTATIVE SPECIFICATIONS OF TARPAULINES)

- 1) HDPE TARPAULINS CONFIRMING TO IS: 7903-1995 Rev-02 HAVING 340 GSM SIZE 10M X 10M WITH EYELETS OF HIGH ALUMINIUM / BRASS SPACED 450MM APART, ALL AROUND THE EACH TARPAULINE.
- 2) CANVAS TARPAULINES FIRE RESISTANT HAVING GSM-600,AS PER BS-2010 STANDARD WITH HIGH QUALITY ALUMINIUM/BRASS EYELETS ON ALL AROUND BORDER OF EACH TARPAULINE (SIZE- 20 MTR X 20 MTRS).

**ANNEXURE – F**  
(TENTATIVE SPECIFICATIONS OF ELEVATORSS)

TECHNICAL SPECIFICATIONS FOR DESIGN, ENGINEERING, SUPPLY: TESTING & COMMISSIONING OF RACK & PINION TYPE ELEVATORS FOR BOILER ERECTION.

Equipment:

Electrically operated vertically (up & down) rack and pinion type elevator.(Details as per technical specifications to be submitted with catalogues by bidders of the offered models/makes with the technical bids).Deviation if any may be specified.

Purpose:

Installation on columns of boiler of 500 MW / 250 MW Units for Hoisting Passengers & Materials.

Sites: Jhajjar ( Haryana ) & Farrakka (West Bengal )

Atmosphere: Normally Hot & Dusty with welding activities going all around.

Elevator Particulars:

Pay load capacity - 1000 kg.

Type of loading for which the elevator is to be designed: Passenger-cum-goods.

Type of elevator – Rack & Pinion.

Speed of elevator – 28 meters/Min. (approx).

Total Travel - 78 Meters.

Numbers of Floors/Landings – Ground + 6 with push button stations & landing doors with interlocks

Specification of Components:

- a) Ground Enclosures - Structural steel with wire mesh and suitable stair case for ground entry/exit.
- b) Cabin body - Structural Steel
- c) Cabin Platform: Chequered aluminium suitable size /gauge
- d) MAST - Modular System type mast of ERW tubes of structural steel with close tolerances for coupling sections.
- e) Drive Unit: Squirrel cage motors shall be totally enclosed air cooled induction type with electro magnetic brakes and gear box. Suitable for this specification.
- f) Cabin doors: Two separate doors preferably sliding one for entry and one for exit with Electrical / Mech. Interlocks.

Method of Control: Push Button / Joy stick

Operation – 415V : 3 phase A.C. supply with trailing cable on guides.

Power & Control Cable (fixed) – PVC insulated of copper cables.

Power Cable (trailing) – copper, PVC insulated of 1100 V grade with suitable cable reeling drum.

Electrical Panel (Controls):

All electrical control devices shall be in enclosed panels with IP-55 protection and fitted broadly with followings:

Momentary-contact push button for hoist/lower control.

Reversing combination motor starter with 3 phase overload relay for motor protection of approved make (GE/Siemens/ L&T) and control circuit shall have a miniature circuit breaker & single phasing preventer of approved make (Siemens/GE/L&T)

Hour meter to indicate total operational hours.

Electrical and mechanical interlocks on cab. Access door.

An ultimate 3 phase over travel protection limit switches to cut off power and control supply in the event of over travel.

Reverse phase relay to prevent operation of cab. With improper phase rotation or failure in any phase in the power supply.

Trailing cable shall be intermittently supported by brackets on the cage and mast guides to avoid cable rapture.

One base panel to be mounted at ground floor with ONE-OFF selector switch, main contactor; switch fuses unit (lockable type). Control switches for Operation: Selector switch for Remote / Local operation and Power-On Indication. The panel shall have drip shield and provision for padlocking.

Cab. Shall be controlled by a semi-automatic control system with push buttons for 'UP'-'DOWN' & 'STOP' 'Next landing. Cab shall be furnished with a suitable 3 pin rounding type receptacle, emergency alarm/hooter in cabin and ground floor end use. Suitable call back device shall also be provided between cabin and ground/top level.

The control panel for elevator mounted on cabin shall have drip shield and suitably protected from dust/water etc.

The Power-On indication shall be available on cabin panel, besides electrical fault indicators like over load ..single phasing etc

Suitable interior lighting and emergency light with cabin fan & cab Bell

Safety Devices:

- a) Elevator shall be provided with totally enclosed type safety device and its operation should be independent from drive shaft and drive pinion and it is to be actuated during on exceeding of normal speed.
- b) Suitable safety arrangement should be provided to bring the cabin down gradually incase of power failure. The release device should be operative from cabin itself.

Painting:

Painting shall be as per relevant IS standard suitable for operation in hot and dusty environment.

Buffers:

Sufficient quantity of buffers of spring loaded / hydraulic type shall be fitted with cab. The buffers should be capable for stopping the cab. Without permanent damage / deformation to themselves.

## **ANNEXURE – G**

### **TECHNICAL PARTICULARS OF AIR COMPRESSORS.**

COMPRESSOR TYPE	ELECTRICAL MOTOR DRIVEN AND RECIPROCATING TYPE.
OPTIONS	WITH TROLLEY / WITHOUT TROLLEY.
FREE AIR DELIVERY	250 CFM (7M <sup>3</sup> /Min).
WORKING PRESSURE	7 KG/CM <sup>2</sup> .
ELECTRIFICATION	SUITBLE 3 PHASE,4 WIRE POLE 415 V AC TEFC IP55 PROTECTION.



**ANNEXURE –H**

Tentative Technical specifications of Heavy Duty Hydraulic Stud Tensioner / Bolt stretching device suitable for M-42 – M-90 stud tensioning completed with the following accessories and first fill of hydraulic oil. ( For Each Set of Stretching Device)

1. Two speed hand pump fitted with DCV, PRV & pressure gauge.
2. Thermo plastic hose pipe (3 meter length) with quick change coupling, working pressure 700 bar.
3. Device capacity – 150 Tons
4. Closed height 200 / 150 mm
5. Stroke – 5 mm
6. Device Body Dia. – 300 mm
7. Device centre hole dia – 145 mm
8. Working pressure – 700 KG / CM<sup>2</sup>
9. Bridge height (approx) : 100 mm (For bolt size M64 – M90)
10. Bridge height (approx) : 60 mm (For bolt size M42 – M56)
11. Bridge outside dia – 290 mm (common to all bolt sizes)
12. Bridge wall thickness (approx.) 35 mm for bolt size – M-64 – M90
13. Bridge wall thickness (approx.) 25 mm for bolt size – M-42 – M56
14. Adopter collar thickness (approx.) 60mm for M64 – M90
15. Adopter collar thickness (approx.) 50mm for M42 – M56
16. Tomy Bar for rotating disc – 16 – 20 mm.
17. Load indicating pressure gauge - 0 – 900 BAR
18. Piston rod will be duly hard chrome plated.
19. Bridge have three cuts at equal distance.
20. Lifting pad with 4 Nos. heavy duty handles for suitable handling of device.

## ANNEXURE – I

### TECHNICAL PARTICULARS \_OF WALKI TALKI.

PORTABLE VHF HAND HELD SYNTHESISED TRANS RECEIVERS (WALKI TALKI SET) AS PER THE DETAILS GIVEN BELOW.

FREQUENCY----136—174 MHZ

PROGRAMABLE CHANNELS APPROX 16 12.5 KHZ / 25 KHZ PROG CHANNEL SPACING 1.5 WATT RF POWER OUT PUT 1450 mAh HIGH CAP Ni-Cd BATTERY LCD DISPLAY,VHF HELICAL ANTENNA ,BELT,CLIP & OPERATIONAL MANUAL ,SIMPLEX PUSH TO TALK WITH BUILT IN SPEAKER & TONE TAGGING SINGLE UNIT RAPID RATE BATTERY CHARGERS.

NOTE: OPERATING LICENCE OF THESE SETS ISSUED BY MOC NEW DELHI SHALL BE ARRANGED BY THE SUPPLIER

**TECHNICAL SPECIFICATIONS / PARTICULARS**  
**TROLLEY MOUNTED WELDING GENERATORS / RECTIFIERS**

**1) FOR WELDING GENERATORS**

TYPE	ELECTRIC MOTOR DRIVEN AND TROLLEY MOUNTED ( WITH REGULATORS).
CURRENT RANGE	35 Amps to 320 Amps
VOLTAGE	415 V. A.C. FREQUENCY-50HZ
FOR WELDING ELECTRODES	RANGING FROM 2.5 MM TO 6.0 MM
KW/HP OF THE MOTOR	13.5/18
RPM OF THE MACHINE	3000
OPERATION	STAR DELTA STARTER
INDICATORS	ON / OFF ,AND VOLTMETER & AMMETER.
INSULATION	F Class
OVC	90 TO 100 V.

**2 ) FOR WELDING RECTIFIERS**

TYPE	TROLLEY MOUNTED CHOPPER BASED (WITH REGULATORS).
CURRENT RANGE	10 Amps to 400 Amps
VOLTAGE	415 V. A.C. FREQUENCY-50HZ
FOR WELDING ELECTRODES	RANGING FROM 2.5 MM TO 6.0 MM
OPERATION	ON/OFF SWITCH
INDICATORS	ON / OFF ,AND VOLTMETER & AMMETER.
INSULATION	H Class
COOLING	FORCED AIR COOLING
OVC	78 TO 80 V.
SAFETY AND PROTECTIONS	FUSES , SINGLE PHASING , SHORTCIRCUIT THERMAL OVER LOAD, UNDER VOLTAGE & OVER VOLTAGE
SUITABLE OUT PUT TERMINALS & EYE BOLT ARE TO BE PROVIDED WITH EACH MACHINE.	

## ANNEXURE – K

### TENTATIVE TECHNICAL PARTICULARS OF TONG TESTER.

AC CURRENT 2000A & 200A WITH MIN. ACCURACY 2%

VOLTAGE upto 1000V AC / 700 V AC WITH MIN. ACCURACY 1%

POWER upto 2000K / 200 K WITH MIN. ACCURACY 2%

FREQUENCY 45-65 Hz WITH MIN. ACCURACY 0.4%

DUAL DISPLAY reqd.

DISPLAY OF MIN / MAX & AV. VALUE

MIN.JAW OPENING OF 50 mm

INTERNAL POWERED BATTERY

ALL LEADS, CLAMPS FOR ALL RANGES & SIMULTANEOUS 3 PHASE POWER MEASUREMENT ALL LEADS, CLAMPS

FOR ALL RANGES & SIMULTANEOUS 3 PHASE POWER MEASUREMENT

ALONGWITH VALID CALIBRATION CERTIFICATE

ANNEXURE – L

TECHNICAL PARTICULARS\_\_OF THREE PHASE VARIAC

HAND OPERATING KNOB WITH DIAL MARKINGS FOR INCREASING THREE PHASE VARIAC.  
3PHASE/4 WIRE INPUT PORTABLE AIR COOLED, FLOOR MOUNTING UNIT

INPUT VOLTAGE: 415/470 VOLTS, 3 PHASE, 50 HZ

OUTPUT VOLTAGE: 0-470 VOLTS

CAPACITY: 28 AMPS

INPUT/OUTPUT CONNECTIONS ON TERMINAL PLATES  
/ DECREASING THE OUTPUT VOLTAGE.

## ANNEXURE – M

### TENTATIVE TECHNICAL PARTICULARS OF MULTIMETERS

- 1) 6 and 1/2 Digit True RMS digital Multimeter  
With AC/DC Voltage, AC/DC Current, Resistance  
And Frequency measurement functions

AC Voltage range 0-100mV to 700V

DC Voltage range 0-100mV to 700V

DC Current range 0-100 mA to 3 Amps

AC Current range 0 - 3 Amps

Resistance 0-200Ohm to 10Mohm 2/4 wire measurement

Accuracies in :-

DC Voltage (0-100mV & 0-10V range) - 0.01%

AC Voltage (0-200V range/45-55Hz bandwidth) - 0.1%

Resistance (0-400 Ohm range) - 0.05%

FACILITIES:-

Auto Ranging, Protection for wrong range selection.

Carrying case and 4-wire measurement leads to be

Supplied along with Standard Accessories.

Back up service facility and spares availability in India

- 2) 4 1/2 digit auto ranging True RMS Digital Multimeter with Voltage, Current, Resistance, Frequency, Capacitance Continuity, Diode Test Data Hold Min/Max, Measurement

AC / DC Volts : 10 $\mu$ V to 1000Volts

DC Current : 10nAmp. to 10Amp.

AC Current : 10nAmp. to 10Amp.

Resistance : 10m $\Omega$  to 30M $\Omega$

Frequency : 0.01Hz to 100KHz

Basic Accuracy :  $\pm$  0.05%

Number of counts : 31000 Attachment to measure current up to 150 Amps.

**Special features** Overload protection in AC/DC Voltage upto 1200V DC/AC RMS sinusoidal, overload duration Continuous Overload protection in resistance diode, capacitance and frequency is 500V DC/AC RMS sinusoidal, overload duration – up to 10 minutes. Auto ranging, data hold function Max / Min recording mode, Protection for damage against wrong range / measurement selection:- by ABC automatic blocking systems.

**Traceable Calibration Certificates are Required**

## ANNEXURE – N

### TENTATIVE TECHNICAL PARTICULARS OF MILLI AMP CLAMP METERS

AC CURRENT 2000A & 200A WITH MIN. ACCURACY 2%

VOLTAGE upto 1000V AC / 700 V AC WITH MIN. ACCURACY 1%

POWER upto 2000K / 200 K WITH MIN. ACCURACY 2%

FREQUENCY 45-65 Hz WITH MIN. ACCURACY 0.4%

DUAL DISPLAY reqd.

DISPLAY OF MIN / MAX & AV. VALUE

MIN.JAW OPENING OF 50 mm

INTERNAL POWERED BATTERY

ALL LEADS, CLAMPS FOR ALL RANGES & SIMULTANEOUS 3 PHASE POWER MEASUREMENT ALL LEADS, CLAMPS

FOR ALL RANGES & SIMULTANEOUS 3 PHASE POWER MEASUREMENT

ALONGWITH VALID CALIBRATION CERTIFICATE

## ANNEXURE –O

### TENTATIVE TECHNICAL PARTICULARS OF D.C.POWER SUPPLY.

TWO INDEPENDENT SOURCE OF DC SUPPLY HOUSED IN SINGLE  
PORTABLE

INPUT VOLTAGE 220 V AC +/- 10%

INPUT FREQ 50 Hz +/- 10%

OUTPUT VOLTAGE RANGE 24 V + 10 %

OUTPUT CURRENT 6A min.

OUTPUT POWER 250 W

PROGRAMBLE VOLTAGE RANGE 24 V +/- 10%

OUTPUT VOLTAGE STABILITY 0.2 % or better on Full Load of 6 A

OUTPUT CURRENT STABILITY 0.2 % or better on Full Load of 6 A

Output Control through front panel potentiometer or programmable

OPERATING TEMP. 0-50 Deg C

OVER VOLTAGE ,OVER CURRENT & OVER TEMPERATURE PROTECTION.

FRONT PANEL OUTPUT DATA MONITORING ( Current & Voltage ) Digital Display

Hard Top ( Fibre Body ) CARRYING CASE



ANNEXURE –P

TENTATIVE TECHNICAL PARTICULARS OF EARTH RESISTANCE METER..

- |                       |   |
|-----------------------|---|
| 1) Range:             | 0 $\Omega$ to 20 $\Omega$                       |
| 2) Accuracy:          | +/- 2%  |
| 3) Type:              | Hand Cracked or Battery Oerated.                |
| 4) Measure:           | Three or Four Terminal Measurement( Selectable) |
| 5) Voltage:           | 50 V  |
| 6) Testing Frequency: | Other than 50 Hz or Multiple of 50Hz.           |
| 7) Weight:            | Less than 2 Kg.                                 |
| 8) Accessories:       | Four Terminal Earth testing Kit in carry bag.   |
|                       | Four Galvanized Steel Spikes of 450 mm Length.  |
|                       | Suitable cables on Winder                       |
|                       | Associated Tools Etc.                           |

**ANNEXURE-Q**  
**TENTATIVE TECHNICAL SPECIFICATIONS**  
**FOR**

**Motorised Megger (Insulation Tester)**

DESCRIPTION	SPECIFICATION	
TEST VOLTAGES	UPTO 10 KV IN STEPS TO READ 500 V, 1000 V, 2500 V, 5000 V, 10000 V	
TEST VOLTAGE ACCURACY	±5% ON 10 MEGA OHMS LOAD	
NOMINAL TEST CURRENT LIMIT	2 mA or 5 mA SELECTABLE	
MEASUREMENT RANGES	DIGITAL: I) RESISTANCE: UPTO 1 TETRA OHM II) CURRENT: 0.01 nA to 999 Micro A III) CAPACITANCE-0.01 MICRO FARAD-10.0 MICRO FARAD  ANALOG: RESISTANCE: 1 TETRA OHM	
ACCURACY	1) RESISTANCE: ±5% OF READING 2) CURRENT: ±5%±0.2 nA 3) CAPACITANCE: ±5%	
GUARD TERMINAL	REQUIRED	
INPUT VOLTAGE	240 V AC	
TEST TIME	UPTO 90 MINUTES	
BATTERY OPERABLE	8 HOURS	
<b>THE INSULATION TESTER SHOULD MEET THE REQUIREMENTS UNDER IEEE 43:2000</b>		
SUPPLIER TO ARRANGE DEMONSTRATION PREFERABLY AT NOIDA BEFORE DELIVERY		
ACCESSORIES; INCLUDED & OPTIONAL LIST TO BE FURNISHED		
CALIBRATION: THE INSTRUMENT SHOULD BE CALIBRATED AT NABL ACC. LAB BEFORE DELIVERY. <b>CALIBRATION CERTIFICATE BY SUPPLIER SHALL NOT HOLD WELL</b>		
AUTHORISATION FROM PRINCIPAL ON LETTER HEAD FOR AUTHORISED DEALER		
DOCUMENTARY PROOF FOR SERVICE CENTER AND AVAILABILITY OF ALL SPARES IN INDIA		

**ANNEXURE-R**  
**TENTATIVE TECHNICAL SPECIFICATIONS**  
**FOR**  
**DIGITAL NON CONTACT INFRARED TACHOMETER**

PORTABLE DIGITAL INFRARED NONCONTACT TACHOMETER WITH 5 INDICATING DIGITS, ACCURACY 0.02% MEMORY FEATURE, LOW BATTERY ALARM WITH CARRYING CASE AND 5 ROLLS OF REFLECTIVE TAPE, OPERATING MANUAL/INSTRUCTIONS AND WARRANTY CERTIFICATE. (CALIBRATION CERTIFICATE FROM NABL ACCREDITED LAB, IS REQUIRED).  
DETAILED CATALOGUE SHOULD BE ATTACHED.

**Annexure- S**  
**Tentative Technical Specifications For Micro ohm meter**

---

**Specifications:-**

**1) Resistance Range:**

Size

Weight

---

**0.1 micro ohm-400 k ohm**

Length 450mm, Width 400mm height 200mm

6-6.5 Kg

Power  
Measurement Parameters

Lithium Ion Battery, 14.8 volt & 6 Amp. /Hour

Current Range	Measuring Range
10Amp F / R	0.1Micro ohm-40 mili ohm
10Amp	1Micro ohm-40 mili ohm
1 Amp F/R	1Micro ohm-1 ohm
1Amp	10 Micro ohm-1 ohm
0.1 Amp	100 Micro ohm-10 ohm
10 m Amp	1Mili ohm-400 ohm
1m amp	10Mili ohm-40k ohm
1m Amp	40 k ohm-400 kohm
Acuracy	1% of reading
	Automatic Forward/Reverse current measurement
F/R	
Resistance Range	0.1 micro ohm-400 k ohm
Temperature	Operating -10 degree C to 60 degree C
Storage	-20 degree C to 70 degree C
Accessories	Set of test lead, Battery charger(100 to 265 v Ac)
	Soft ware for data down load

– K MICRO OHM METER

- Measurement:- Resistive as well as Inductive Loads.
- Resistance range 4 range 199.9 milliohms, 1999 micro ohms, 19.99 milliohms, 199.9 milliohms

test current	Multiplier setting		
	low	med	high
200,100,50,20	199.9micro	1999micro	19.99 milli
10,5	1999 micro	19.99milli	199.9 milli

- Resolution:- 0.1 micro ohms in 0-199.9 micro ohms range. 1 micro in 0-1999 micro ohm range. 10micro in 0-199.99milli range. 100 micro in 0-199.9 milli.
  - Accuracy:- +/- 1% of Reading +/- 5 DIGITS on all ranges.
  - Measuring current:- 100A DC 3min ON—15minOFF. 100A DC 3min ON—15minOFF. 50ADC 6min ON –15 OFF. 5 to 20 A DC continuous.
  - Displays & continuous:- 3 ½ panel meter to show resistance & current through switch. Warning indicator for over range of current. Over temp trip indicator. Milli/micro ohm indicator. DC current Amp indicator.
  - Control & switch:- Switch to select resistance/current. Switch to select range for resistance.
- Power on indicator. Switch to select. Fuse on front panel. Independent current & potential terminals.
- Open circuit:- Measuring voltage 8 VDC. Operating temp 0 to 45DegC. Power 230 V.
  - Power cord, instruction manual & measurement cord
  - Calibration Certificate of instrument.
  - Guarantee/ Warranty certificate. Supplier to indicate other optional accessories

## **ANNEXURE-T**

### **TENTATIVE SPECIFICATIONS FOR SECONDARY INJECTION RELAY TEST KIT**

Portable three phase secondary injection relay test kit for testing of static, numerical and electromagnetic type protection relays based on impedance, voltage, current, frequency, harmonics and synchronization with facility to stimulate all waveforms and transients. Facility for frequency

variation with respect to time. Three nos. of additional current generators should be available for differential relay testing.

The relay test kit must be capable of operating with PC and without PC as a stand alone device. On board display of test parameters and measurement data.

Four phase voltage output	:	4 x (0-150 V), 80 VA 2 x (0-300 V), 140 VA
---------------------------	---	---

Three phase current output	:	3 x (0-30 A), 200 VA
----------------------------	---	----------------------

Accuracy	:	$\pm 0.5\%$
----------	---	-------------

Distortion	:	0.2%
------------	---	------

All voltages and current generators should be independently adjustable in amplitudes and phase angles. Out put should be fully overload and short circuit proof and protected against external high voltage transients.

Power supply requirement	:	220 V $\pm$ 10% AC single phase
--------------------------	---	---------------------------------

Minimum 10 binary inputs in 2 galvanically separated groups of min 5 contacts in each group with minimum voltage 220V AC and DC.

Measuring time	:	0 - 1 Hr.
----------------	---	-----------

Resolution	:	1 ms
------------	---	------

One auxiliary DC voltage output of 210 V DC, 70 Watts for feeding numerical relays should be provided.

Analog high and low inputs for measurement of AC/DC current and voltages as per following specifications.

DC current measuring inputs (low)

Measuring range	:	$\pm 20$ mA
-----------------	---	-------------

Accuracy	:	0.03% or better
----------	---	-----------------

DC voltage measuring inputs (low)

Measuring range	:	$\pm 10$ V
-----------------	---	------------

Accuracy	:	0.03% or better
----------	---	-----------------

AC/DC current measuring inputs (High)

Measuring range	:	$\pm 10$ A DC, 150 V, AC
-----------------	---	--------------------------

Accuracy	:	0.3% or better
----------	---	----------------

AC/DC voltage measuring inputs(High)

Measuring range	:	$\pm 220$ V DC, 150 V AC
-----------------	---	--------------------------

Accuracy	:	0.3% or better
----------	---	----------------

Phase angle meas. Range	:	0 -360 degree
-------------------------	---	---------------

Phase resolution	:	0.1 degree
------------------	---	------------

Phase accuracy	:	$\pm 0.2$ degree
----------------	---	------------------

Generator frequency range

Continuous signals	:	DC - 2 KHz
--------------------	---	------------

Transient signals	:	DC - 3 KHz
-------------------	---	------------

Frequency accuracy	:	0.01% or better
--------------------	---	-----------------

Frequency resolution	:	1 mHz
----------------------	---	-------

Software should be windows based. Facility to automatically create the IEC and IEEE standard waveforms and/or to create other characteristics using the standard lens and linear elements.

Kit should have capability to accept transient fault data recorded by disturbance recorder and replay. Simulation software should have minimum support for following disturbance recorder like formats:

COMTRADE  
EMTP INCLUDING EMTP PC  
INDACTIC  
REOR

Facility for self calibration through software (built in) and independent calibration box as an independent external means of verifying the calibration of relevant parameters.

Kit should be able to withstand external electromagnetic interference/noise and input voltage/frequency variations without affecting its performance.

Laptop with preloaded window based software should be provided. All standard accessories to be supplied with the kit. Instrument should be housed in a rugged/hard case for preventing damage during frequent transportation.

## **ANNEXURE-U TENTATIVE TECHNICAL SPECIFICATION OF OSCILLOGRAPHIC RECORDER**

### **Measurement Input:**

- a) Type - 4 Channels
- floating unbalanced input, I/O isolation for each channel
- b) Mode - DC Grounded
- c) Range - 100mV to 1000 V in steps of 13 steps
- d) Measurable range -  $\pm 100\text{mV}$  to  $\pm 1000\text{ V}$  steps of 13 steps
- e) Accuracy -  $\pm (1\% \text{ of FS} + 1 \text{ mV})$
- f) Can be set to zero at any position with null function
- g) Frequency Input - DC to 40 K Hz
- h) Low pass filter - 5 Hz to 500 Hz – 3 steps
- i) Noise - (with filter off & 10 mV/Div/shorted = 2mV p-p)
- j) Sampling Speed - 400 ks/ sec.
- k) Input Imp. -  $1 \text{ M}\Omega \pm 1\%$ , 5 pf. l) Input terminal - Safety terminal for banana plug

### **Memory Function:**

- a) Time axis -  $200 \mu\text{s/div}$  to 2 min /dv selectable
- b) Resolution - 1/80 of time axis
- c) Recording length - 10,20,50,100,200,400 div.
- d) Max. memory div blocks - 32
- e) Auto function - Printing, Statistical calculation, saving.
- f) Two cursor function - X2
- g) Zoom function - X axis to X/1000
- Y axis X5, X2, X1, 1/2X

### **Recording:**

- a) Paper - 111 mm x 10 meters with effective length of 104mm
- b) Feed accuracy -  $\pm 3\%$
- c) Speed selection - 2 Sec. to 1 hr/Div. in steps

### **Printing Function:**

- a) Prints - Settings, units, time, chart speed, Ch No. TAG, Trigger time
- b) Prints comments in 100 mm length
- c) Prints channel No. or TAG on waveform

**Power supply:** - Alkaline Drycells + AC Adapter

**Accessories:** - Standard + Optional required for use should be quoted.

**ANNEXURE – V Tentative Technical Specification of Pitot Tube**

**L Type Pitot Tube**

- Length: 1 meter
- Nozzle Dia: 8mm
- Material: SS316
- With Calibration Certificate and carrying case

**B) Handheld, Multi-range, Digital Manometer**

- Range: 0 – 1500mm of Water Selectable in steps of 100mm
- Resolution: 1mm of Water
- Accuracy: 0.2% of range
- Connection: 1/8 " BSP
- Indication: Digital, LCD
- With Carrying case and Calibration Certificate
- Power supply: Battery with provision for charging
- Unit of measurement: Selectable in mm of Water, mm of HG, mPascal and mBar.



**ANNEXURE – W**  
**TECHNICAL SPECIFICATION FOR VENTURI METER**

1. Venturi Meter : For flow measurement of  $10000 \text{ M}^3 / \text{Hr}$  and Differential pressure of 250 mm H<sub>2</sub>O.
  - Pipe size: 200NB , Sch 40
  - Air Temperature: Ambient
  - Calibration range :  $10000 \text{ M}^3 / \text{Hr}$  to  $1000 \text{ M}^3 / \text{Hr}$
  - DP gauge is to be supplied along with the Venturi.
  - Body material: A105
  - Flange Material: A105
  - Material test certificate, dimensional report, RT report & Hydro test report shall be supplied along with the consignment.

**ANNEXURE –X - DUAL CHANNEL VIBRATION ANALYZER**

<b>Sl.No</b>	<b>FEATURES</b>	<b>SPECIFICATIONS</b>
1	<b>Operational Requirement</b>	1. Instrument must be capable of carrying out the 'Vibration Analysis' and 'Balancing' of Hydro, Thermal & Gas Power generating machines including any other rotating equipment. And also must be capable of measuring 'Shaft & Bearing Housing Vibration'. 2. Instrument must be capable of recording data of Vibration, Velocity, Displacement & Speed of all Power generating machines. 3. It should have capability for analyzing data for time & frequency domain and real time data capture & display. 4. Instrument should be capable of analyzing Overall Vibration, Time signal & phase, FFT, Live Spectrum, Bode plots, Orbits etc. 5. Instrument should be capable of accepting signals from all standard type of vibration probes. 6. Instrument should be portable i.e. comfortable for carrying. 7. There should be facility to 'Store' data & 'Transmit' data to PC.
2	<b>Accessories Required</b>	1. Non-contact Pick-ups ( <b>For 'Shaft Vibration'</b> ) with extension leads. --- <b>6 Nos.</b> 2. Vibration Pick-ups ( <b>For measuring 'Bearing Housing Vibration' of frequency range from 1 Hz to 10 KHz</b> ) with magnetic base & cable --- <b>3 Nos.</b> 3. Extension leads ( <b>20 Meters Length</b> ) for Vibration Pick-ups --- <b>3 Nos.</b> 4. DC supply for all non-contact Pick-ups. 5. Proximometers --- <b>6 Nos.</b> 6. Cables ( <b>20 Meters Length</b> ) from 'Proximeter to Instrument'. --- <b>6 Nos.</b> 7. Hard carrying case with provision for keeping manuals, probes, cables etc. 8. Photocell ( <b>For Speed &amp; Phase Measurement</b> ) -- <b>2 Nos.</b> 9. Extension cable ( <b>10 Meters Length</b> ) for Photocell --- <b>1 No.</b> 10. <b>10 Points 'Selector Switch Box' for 'Velocity Pick-ups &amp; Non Contact Pick-ups' having 2 Nos. parallel output signal terminals with inbuilt 24 V DC supply and connecting cable to the instrument.</b>
3	<b>Power Supply Back-up its operating time.</b>	The instrument should have rechargeable battery back up with min. 6 to 8 hours of continuous operation.
4	<b>Frequency Range of Instrument.</b>	<b>0 to 20 K Hz</b>
5	<b>Other Requirements</b>	1. Calibration Certificates of Instrument.. 2. Instruction Manual. 3. Hard carrying case with lockable arrangement. 4. Guarantee /Warranty Certificates. <b>5. Service center India.</b> 6. Supplier should provide calibration facility. <b>7. Commissioning, testing &amp; training of personal at purchaser's office.</b>

## **ANNEXURE-Y**

### **TENTATIVE TECHNICAL SPECIFICATIONS OF NOISE / SOUND LEVEL METER**

**PORTABLE NOISE/SOUND LEVEL METER CONFIRMING TO IEC 60651 TYPE 1 WITH STANDARD ACCESSORIES AND DETAILED TRACEABLE CALIBRATION CERTIFICATE. MEASURING RANGE 30 TO 140 dB DIGITAL DISPLAY & FAST, SLOW, IMPULSE RESPONSE MODES 3 dB / 5dB OR BOTH EXCHANGE RATE, "A" , "C" WEIGHTING MODE , CARRYING CASE TO BE SUPPLIED.**

**NOTE; COMPLIANCE REPORT OF THE OFFERED ITEM IN LINE WITH THE SPECIFICATIONS AS ABOVE SHOULD BE SUBMITTED WITH TECHNICAL PART OF THE OFFER.**

## **ANNEXURE-Z**

**Tentative Technical Specifications for Positive Pressure Pump**

Type	Tabletop Hand Pump				
Range	0-500 bar				
Fine Adjustment	Driver Block with Vernier				
Medium	Water/Oil				
Volume of Medium	Less than 1000 cc				
Vendor to supply two sets of total seals along with each pump					
Vendor to Supply the exhaust filter and one portable hard top carrying case for each pump					
Vendor to supply all required flexible metallic hose of 2 meter length each along with supply					
All accessories like Adapters : 1/8", 1/4", 3/8", 1/2" - NPT & BSP ( 2 full set of each type) 3 sets of Hoses , 2 sets of Gauge Manifold Blocks & one hard top Carry Case for these accessories & fittings are to be supplied by the vendor					

**ANNEXURE-A-1****TENTATIVE TECHNICAL SPECIFICATIONS OF VACCUM PUMP**

S.NO.	SPECIFICATION OF MOTOR DRIVEN VACUUM PUMP
1	MODEL /MAKE
2	Rotary Pump
3	AIR HANDLING CAPACITY (4-6 m3/hr)
4	ABSOLUTE PRESSURE < 2.6 mbar
5	NOISE LEVEL < 60 dB
6	MOTOR RATING < 500 W
7	SPEED OF PUMP 1350-1500
8	Connection Single Phase 230 V
9	WEIGHT Less Than 25 Kgs.
10	Two Sets of total seals
11	Exhaust Filter
12	Portable Wooden Carrying Case
13	Copper Pipe 2 meter length

**ANNEXURE-A-2****Specifications for Portable Pressure Calibrator**

Complete system for testing, calibrating, measuring and reporting for Absolute & Gauge Pressure Transmitters and DP Transmitters of the following ranges :

**Pressure Transmitters**

1. 2 mm Hg abs to 780 mm Hg abs ( Vacuum Transmitters)
2. 0-10 kg/cm<sup>2</sup> abs
3. 0-25 kg/cm<sup>2</sup> Gauge
4. 0-100 kg/cm<sup>2</sup> Gauge
5. 0-350 kg/cm<sup>2</sup> Gauge

**Differential Pressure Transmitters**

1. DP 0-2.5 Kg/cm<sup>2</sup>
2. DP 0-1.0 Kg/cm<sup>2</sup>

The accuracy of the calibrator has to be 0.025% of pressure /voltage reading or better.

The calibrator should also have facility for measure, source and simulate mA, mV, V, ohms

**Pressure Generating Capacity :**

Should have built in /external pressure generating capacity of following range : ( vendor may offer more than one source to cover from -0.95 bar to 400 bar)

1. (-) 0.95 bar Gauge to 20 bar Gauge
2. 0-400 bar

**Hart Communicator :**

There should be built in Hard Communicator in the pressure calibrator. Alternatively a separate Hard Communicator of reputed make will be supplied along with the calibrator.

**Power Supply :**

In built rechargeable battery along with charger ( to be charged from 180V-250V AC, 50 c/s supply source).

**Calibration Certificate :** Calibration certificate to be supplied by the vendor from any accredited lab such as NABL /UCAS/NIST or National Laboratories of any country for calibrator, sensors for the entire range.

Two sets of push fit hand tight connectors with set of spares, fittings , tools & hose capable of withstanding above pressure are to be supplied for connecting the test device to the calibrator

**Carrying Case :** Suitable hard top carrying case is to be supplied along with the pressure calibrator.

**ANNEXURE – A-3 - PRESSURE TRANSMITTERS**

**RANGE PRESSURE TRANSMITTERS**

a) 0-10 KG/cm<sup>2</sup> (a-d are absolute transmitters) b) 0-60 KG/cm<sup>2</sup> c) 0-250 KG/cm<sup>2</sup> d) 0-780 mm HG e) 0 – 2.5 KG/cm<sup>2</sup> DP Transmitters

Detailed Specification

**TECHNICAL SPECIFICATION OF ABSOLUTE PR.TRANSMITTER**

**Absolute Pressure transmitter**

: Scalable Absolute Pressure transmitter

: Accuracy  $\pm 0.1\%$  of span inclusive of Linearity, Hysteresis and Repeatability      Rangeability 200 :1

Stability  $\pm 0.2\%$  of URL for Ten years with limited 12 years warranty

Primary Pressure Range 0 to 56 Kg/Sq.cm A : Isolating diaphragm and Process connection material –

316 L SST : Process connection style , ½ -inch NPT female : 4-20 mA with digital HART protocol :

Mounting bracket, 2 inch pipe in 316 SST : Suitable 3 way valve manifold (SS) : Calibration Certificate  
: 100 ms

Response time

Update rate : 22 times per second

Power Supply : 24 V DC (10.5 to 42.4 V DC)

Fill fluid : Silicon Oil

Process temperature limit : 121 deg “C” Ambient 85 deg “C”

Humidity limits : 0 to 100 % rh

Enclosure rating : Low copper aluminium IP66

**PRESSURE TRANSMITTERS.DP TRANSMITTER TECHNICAL SPECIFICATIONS**

DESCRIPTION	TECHNICAL SPECIFICATION
ACCURACY	± 0.05 % OF SPAN INCLUSIVE OF LINEARITY, HYSTERESIS AND REPETABILITY OR BETTER
RANGEABILITY	200:1
RESPONSE TIME	100 ms
STATIC PRESSURE LIMIT	254 KG/SQ.CM
POWER SUPPLY	10.5 TO 42.4 V DC
PROCESS TEMPERATURE LIMIT	121 DEG "C" AMBIENT 85 DEG"C"
HUMIDITY LIMIT	0 TO 100% rh
LOCAL INDICATION	LCD METER, 5-DIGIT, 3-LINE, BAR GRAPH, PV ENGG UNIT, %
PRIMARY PRESSURE RANGE	-2.53 TO + 2.53 KG/SQ.CM
CALIBRATION RANGE	0 TO 2.5 KG/SQ.CM
OUTPUT	4-20mA
PROCESS CONNECTION	½ INCH NPT (FEMALE)
5-WAY MANIFOLD WITH EQUALISER	NON-INTEGRAL TYPE, SS316



**ANNEXURE-A-4****Tentative Specifications for Portable Thermocouples**

<b>S.No</b>	<b>Specifications of K-Type Thermocouple</b>
1	Measurement range 0-600 °C
2	Accuracy $\pm 1.1$ °C or $\pm 0.4$ °C whichever is greater.
3	Measuring junction element of 6 MM Rod, 450 MM tube of SS304/316 Material
4	MgO powder for measuring junction leads inside protection tube.
5	Protection tube with M 20x15 adjustable anodized brass coupling with Teflon/fibre glass ferrule inside.
6	Porcelain connectors & weatherproof light weight die cast metallic heads for Scratch resistance head with epoxy coating
7	Unique S.No. to be engraved on head and painted on ceramic block
8	Thermocouple element to be provided with 40M long, 2 core chromel-Alumel cable as per Annexure I.
9	Cromal alumel cable with 300MM long flexible spiral tube connected to head.
10	Cold Junction arrangement with 2 core, 10 meter long Neoprene rubber insulated 1 mm sq. copper cable as per details in annexure II.
11	Quality Plan with NABL accredited calibration certificate
12	Material test certificates
13	Inspection as per QP of full lot at supplier's works.
14	Fibre glass packing cases with foam lining of 40 grain density for packing of 10 T/C in a box
15	Address of Parties where similar accuracy thermocouples have been supplied.
16	Calibration certificate of thermocouples is required from NABL accredited laboratory. Calibration of each T/C to be done at 0, 250, 300, 350, 400, 450, 500, 550 & 600 °C

**ANNEXURE –A-5 – IR TEMPERATAURE SCANNER**

Temperature range : 20°C (68°F) to > 900°C (1652°F)

Accuracy : ± 1% of reading or ± 1°C whichever is greater at 23°C ±5°C ambient operating temperature.

Repeatability : ± 0.5 % of reading or ± 1°C whichever is greater.

Distance to Spot (D:S) : 60:1

Ambient operating temperature: 0°C – 50°C

Storage temperature : 0°C – 50°C

Spectral response : 8µm – 14µm

Power : AA batteries or 9V, 200 mA DC power supply.

Laser power : Class II (< 1mW)

Display hold : 7 sec.

Display : 4 digit backlit LCD.

MAX, MIN, DIFF temperature: yes

Accessories : Carry case, Computer analog & printer cable, Calibration certificate.

**ANNEXURE –A-6 – IR NON CONTACT THERMO METER**

NON-CONTACT TYPE PORTABLE DIGITAL IR THERMOMETERS

MEASUREMENT RANGE : (--)60 DEGREE TO 760 DEGREE C

LEAST COUNT 1 DEGREE C

ACCURACY +- 1.5%

AUTO HOLD FACILITY

DISTANCE TO SIGHTING -30:1

WITH TRACEABLE CALIBRATION CERTIFICATE

**ANNEXURE-A-7****Tentative Specifications for PRT'S**

1	<b>ELEMENT TYPE</b> : 4 WIRE / SIMPLEX
2	<b>MEASURING RANGE</b> : 0 TO 350 deg. C
3	<b>ELEMENT CALIBRATION /ACCURACY</b> : AS PER DIN 43760 , CLASS A ACCURACY
4	<b>IMMERSION LENGTH</b> : 450 mm
5	<b>SHEATH MATERIAL /OD</b> : 6 mm / SS 304 OR 316
6	<b>PROCESS CONNECTION</b> : Adjustable M 20 X 1.5 mm anodized brass coupling
7	<b>ELEMENT HEAD</b> : With Porcelain connectors & weather proof light weight Die Cast Mettalic head with Epoxy coating. Provision of 300 mm long spiral flexible tube with gland at cable entry part of head. Polarity Marking identification on terminals.
8	<b>S.No. punch mark</b> : At head & inside head
9	<b>Detailed Catalogue / drg.</b> : Showing construction details with offer
10	<b>Production drawing &amp; QP</b>
11	<b>Calibration cert. (each PRT)</b> : check at 8 points from NABL Accredited lab within 1/3 DIN accuracy.
12	<b>INSPECTION AT WORKS : FULL LOT</b>
13	<b>Guarantee</b> : One Year
14	<b>Delivery period</b> : With in 1 month from PO.

## ANNEXURE-A-7

### Tentative Specifications for PRT'S

1. PT - 100 PLATINUM RESISTANCE THERMOMETER OF FOUR WIRE DESIGN.
2. COMPLETE WITH LIGHT METAL HEAD AND SUITABLE INSIDE TERMINATION BLOCK.. SILVER LEADS TO BE USED FROM ELEMENT UPTO TERMINAL BLOCKS.
3. TWO METER LONG 4 CORE COPPER CABLE WITH SUITABLE INSULATION (e.g. PTFE) FOR WITHSTANDING HIGH TEMPERATURE TO BE PROVIDED FOR CONNECTING TO TERMINAL BLOCK OF PRT. AT OTHER END OF CABLE FOUR PIN TYPE, MALE & FEMALE GOLD PLATED CONNECTOR TO BE PROVIDED THE SAMPLE OF THIS CONNECTOR TO BE GOT APPROVED FROM PURCHASER AFTER THE PLACEMENT OF ORDER.
4. TO BE PROVIDED WITH 6 mm OD SHEATHING, OF SUITABLE METAL ALLOY, FOR PROTECTION AGAINST TEMP. OF 660 °C
5. IMMERSION LENGTH OF ELEMENT 450 mm BELOW HEAD.
6. SHEATHING TO BE PROVIDED WITH ADJUSTABLE M 20 X 1.5 mm. IMMERSION COUPLING WITH SUITABLE FERRULE INSIDE.
7. MEASURING RANGE: 0 TO 660 °C.
8. ACCURACY:  $\pm 0.3$  °C FOR FULL RANGE FROM 0 TO 660 °C
9. PRT RESISTANCE TEMPERATURE COEFFICIENCY AND ALL INHERENT ERRORS SUCH AS SELF HEATING ERRORS TO SUIT ABOVE SPECIFIED ACCURACY REQUIREMENT.
10. CALIBRATION CERTIFICATES FOR ESTABLISHING ACCURACY AT FIVE POINTS NAMELY, TRIPLE POINT OF WATER (0.010000 DEG. C) FREEZING POINT OF GALLIUM ( 29,76460 °C ), FREEZING POINT OF TIN ( 231,9280 °C ), FREEZING POINT OF ZINC ( 419,5270 °C ) AND FREEZING POINT OF ALUMINIUM ( 660.3230 °C ) – TO BE PROVIDED FOR EACH INSTRUMENT FROM A RECOGNISED LABORATORY TRACEABLE TO NATIONAL / INTERNATIONAL STANDARDS ( ACTUAL CALIBRATION CHARGES TO BE QUOTED SEPERATELY AND WILL BE REIMBURSED ON ACTUALS ).
11. UNIQUE SERIAL NUMBERS TO BE PRINTED IN THREE DIGITS FOR EACH PRT. SERIES TO BE INFORMED AT THE TIME OF PLACING PO
12. BEFORE OPENING OF PRICE BID, ALL THE TECHNICALLY SUITABLE PARTIES SHALL BE REQUIRED TO SUBMIT ONE SAMPLE PRT, MEETING ABOVE SPECIFICATIONS–ALONGWITH CALIBRATION CERTIFICATE AS MENTIONED ABOVE FOR PURCHASER'S APPROVAL.. ONLY THE PARTIES, WHOSE SAMPLE PRT IS FOUND MEETING ALL THE SPECIFICATIONS AND ACCURACY REQUIREMENTS (AS CHECKED FROM CALIBRATION CERTIFICATE ) SHALL BE RECOMMENDED FOR PROCUREMENT.
13. THE PRTs ARE TO BE SUPPLIED IN SUITABLE PACKING CASES MEETING THE FOLLOWING DESCRIPTION.
  - a) IN EACH PACKING CASE FIVE (05) NO. OF SUCH PRTs MAY BE PACKED.
  - b) THE PACKAGE BOX SHOULD BE OF WOOD/ALUMINIUM OR ANY OTHER SUITABLE MATERIAL WITH RACKSIN COVER, HANDY, LOCKABLE AND WEIGHING NOT MORE THAN 5 KG EACH.
  - c) THE SLOT FOR EACH PRT SHOULD BE PROPERLY DESIGNED WITH FOAM PACKING SO AS TO AVOID ANY MECHANICAL SHOCKS DURING HANDLING/TRANSPORTATION.
  - d) THE PACKING BOX SHOULD BE ROBUST ENOUGH FOR TRANSPORTATION IN ALL MODES OF TRANSPORT

- e) THE DESIGN AND MATERIALS OF THE PACKING CASES TO BE GOT APPROVED FROM THE PURCHASER BEFORE BULK MANUFACTURING AND SUPPLY.
- f) THE RATES FOR THE PACKING CASES MAY BE QUOTED SEPARATELY.

**ANNEXURE-A-8**

**Tentative Technical Specifications For Ultrasonic Thickness Guage**

FEATURES	SPECIFICATIONS
Operating Principle	Ultrasonic Pulse- Echo with dual element transducers with normal measurement capability
Live A Scan with waveform adj.	Compatability with scan A
Application	Measurement of metal and paint coating thickness simultaneously without removing the paint coating
Zero compensation	To compensate for transducer temperature and zero offset
Measuring Range	0.5mm to 50 mm
Display Resolution	0.01mm
Units: Selectable	millimeter or inches
Measurement rate	Standard : 4 per second Fast : 20 per second
Gain Adjust	Selectable gain between Standard, High and Low
Receiver Bandwidth	1 to 18MHz (-3dB)
Automatic Probe Recognition	Should automatically recognize the probe to adjust internal parameters and correct V-path
Material Velocity	508 to 18000m/s
Case/Key pad	Environmental IP-65 compliant : Splash proof, impact resistant case. Sealed color coded keypad with tactile and audible feedback
Display	Display holds or blanks after measurement Electroluminiscent Display back lighting: On or Auto On
Power supply	3 AA alkaline batteries
Operating Time	150 hours typical battery life, 30hours continuous with backlight On
Low Battery indicator	Continuously indicates battery status
Battery saver	Auto power off
Operating Temperature	" -10 to + 50 degree Celsius"
Size	85x153x40mm
Weight	Not more than 350grams

Thru-Coat Measurement	Measurement of true metal and coating thickness using a single backwall echo
Thru Paint Echo to Echo	To measure the true metal thickness and ignore the thickness

	of the coating layer using multiple backwall echoes
Auto sensitivity gain optimization	Normal measurement sensitivity to be automatically increased or decreased depending on the thickness and material noise level
Alarm modes	Programmable Hi-Low set points with audible and visual indicators
Differential Mode	To Display the difference between the actual thickness measurement and a user set reference value
Min/Max mode	To measure and recall minimum or maximum thickness at 20 measurements per second
Freeze Mode	Freeze the display to instantly capture critical thickness. Minimizes transducer couplant lift-off error and facilitates high temperature measurements
Datalogger	To identify,store,recall,clear and transmit thickness readings and gage setup information via the USB port Minimum storage: 8000 thickness readings or 350 waveforms with thickness readings
Data Transfer	Facility to up load data from Thickness guage to PC
Carrying Case	Hard carrying case with provision for keeping manual,probs , & test block

**ANNEXURE-A-9**



**TECHNICAL SPECIFICATIONS/PARTICULARS**  
**PORTABLE METAL IDENTIFIER ( P.M.I)**

TYPE	PORTABLE AND HANDY WITH CARRYING CASE AND OPTICAL OR X-RAY EMISSION (NO ISOTOPE OR RADIOACTIVE EMISSION) L.C.D.DISPLAY.
WORKING	NO SPARK OR DESTRUCTION TO THE PARENT METAL.
ELEMENTS TO BE ANALYSED	ALLOY STEEL GRADES AS PER ASTM / DIN / BIS; Etc.
ACESSARIES	RECHARGABLE BATTERIES AND BATTERY CHARGER , 1 G.B MEMORY WITH U.S.B PORT DOWN LOAD SYSTEM , BATTERY BACK UP ..4 HRS.
DISPLAY	LCD DISPLAY BLACK AND WHITE ONLY FOR CLEAR VIEW IN SUN LIGHT
PAST EXPERIENCE & QUALIFICATION REQD.	THE OFFERED MODEL SHOULD BE FROM CURRENT MANUFACTURING RANGE. OFFER FROM ONLY THOSE MANUFACTURERS (DIRECTLY OR THROUGH THEIR AUTHORISED DEALER) WILL BE CONSIDERED WHO HAVE BEEN MANUFACTURING SIMILAR OR BETTER TYPE AND SHOULD HAVE SUPPLIED SIMILAR OR BETTER TYPE TO SOME REPUTATED COMPANIES. CUSTOMER LIST TO BE ENCLOSED WITH TECHNICAL BID.
DOCUMENTS	3 SETS OF MANUALS AND GRADE IDENTIFICATION FOR ASTM/DIN/BIS ETC. AND RUNING CALIBRATION CERTIFICAT FROM NATIONAL / INTERNATIONAL LAB AND THE WARRANT/GAURANTEE CERTIFICATE.

**ANNEXURE-A-10**

**Tentative Technical Specifications For Ultrasonic Flaw Detector**

FEATURES	SPECIFICATIONS
Make & Model	Manufacturer and country of origin
Equipment	Microprocessor-Based Ultrasonic Flaw Detector with DAC/TVG software
Display Characteristics	Color High resolution LCD screen , 320 pixel (W) x 240 pixels(H) User defined color selections and brightness adjustment.
Dynamic Waveform Color	Dynamic waveform color variation changes color based on flaw or minimum depth alarm conditions
Screen	Large multicolor LCD with Full/split screen views
Display update rate	Minimum 60Hz
Sensitivity :	110 dB Max and reference level sensitivity feature with 6dB or 0.1 dB selectable resolution
Auto Transducer Calibration	Automated calibration of trasducer Zero Offset and /or velocity.
Reject :	0% to 80% of full scale in 1% increment
Units :	Inches ,Milimetric, or microseconds.
Material Velocity:	<b>650 to 15000m/s</b>
Range :	<b>1mm to 10000mm</b>
Refracted Angle :	Fixed settings of 0,30,45,60,70 deg or variable from 10 to 85 deg in 0.1degree resolution
Peak Memory :	<b>Simultaneous display of A-scan at 60 Hz and peak envelop of A scan display</b>
Peak Hold :	<b>Freezes Peak Memory echo envelope for waveform comparison with live A scan</b>
Pulsar Type	<b>User selectable Tunable Square wave , negative spike</b>
Pulsar Energy :	<b>Low (100V) , Medium (200V),High (300V) , Max (400V)</b>
Damping :	50 ,63, 150,and 400 ohms
Rectification:	Full Wave , Half Wave Positive or Negative
Analog Bandwidth :	<b>0.05MHz to 25 MHz at -3 dB.</b>
Filters :	Broadband,Narrowband or custom selectable Low and

Security Test Mode:	Highpass Filter Security Key Pulse Echo,Dual,or Through Transmission
Alarms :	Selectable threshold positive/negative or minimum depth modes
Size	11.15 " (H) x6.55" (W) x2.6" (T)

Operating Temperature	0 to 50 degree celcius
Power Requirements:	AC Mains :100-120 VAC ,200-240 VAC ,50-60 Hz
Battery :	Internal Rechargeable NiMH battery pack rated at 12 V at 4000mAH Charger with lead for charging rechargeable battery
Weight	Less than 2.75Kg ( with battery)
Monitor Gates	Dual gate with Echo-Echo measurements
Battery Operating Time	5-7 hours depending on display brightness ,two hours typical recharge time .
USB Communication Port:	For Hi-Speed interfacing with P.C
High Speed Parallel Port	For Alarm outputs,trigger in/out control
Analog Output :	Keypad selectable voltage output of depth or amplitude data
VGA Output Port	For Connection to standard VGA monitor or A / V projector
Data Logger	To save and recall inspection data sets in any combination of 6400 waveforms/calibrations and 128000 thickness readings
Trigger In/Out	To permit pulser input from a synchronized external device, allowing a high degree of positional accuracy
Carrying Case	

**Annexure –A-11****Tentative Specifications of Wedge Deflection Test Kit .**

Sno	Item description	Qty
-----	------------------	-----

1	Hydraulic Jack 0 to 200 kg/cm sq Piston size- of Hydraulic , Jack 50mm	1.No
2	Alluminium Pipe ( ID-25mm &OD 38 mm, & Length 770mm)	2.Nos
3	Glass Textolite Pieces Length-250mm X Width-38mm	1.No
4	Top Base of kit should have steel Ball for smoth movement	1.No
5	Handle for operation of test kit.	1.No
6	Steel Rod 1 feet long for operation of test kit.	1.No
7	Spanner and Allen Key for assembly and operation of test kit.	1.No
8	Pressure gauge 0-210 Kg / Cm2 with adapter	1.No AND 3 NOS AS SPARE
9	Suitable steel Carrying Box having provision for keeping pressure gauge , hydrolic jack , pipe etc.	1.No

## ANNEXURE A-12 TENTATIVE TECHNICAL SPECIFICATIONS OF BAROMETER

**DIGITAL BAROMETER**

PORTABLE , RUGGED, PRECISION DIGITAL BAROMETER FOR HAND HELD USE WITH HARD CARRYING CASE

1. RANGE : 750 to 1150 mbar Abs

2. OVERPRESSURE of 200% of FS range

3. ACCURACY : +/- 0.03% OF FS or better

4. STABILITY BETTER THAN 0.01% OF Full Scale

5. SIX DIGIT RESOLUTION LCD DISPLAY

6. OVERLOAD WARNING DISPLAY : 110% FS

7. In built rechargeable battery along with charger ( to be charged from 180V-250V AC, 50 c/s supply source).

8. OPERATING AMBIENT TEMP: 0 TO 50 DEG CENT

9. Internal rechargeable Battery & hard carrying case to be supplied by vendor

10. Items are to be supplied in a properly packed hard top ( minimum of fiber body ) portable carrying cases for trouble free transportation from site to site.

11. Calibration certificate to be supplied by the vendor from any accredited lab such as NABL /UCAS/NIST or National Laboratories of any country for the entire range.

ALL SPECIFICATIONS MENTIONED IN THE ANNEXURES ARE TENTATIVE .VENDERS ARE REQUESTED TO SUBMIT THEIR BEST SPECIFICASTIONS FOR THE PRODUCTS KEPING IN VIEW THAT ALL ABOVE PRODUCTS ARE TO BE USED IN INSTALLATION OF THERMAL/GAS / HYDRO POWER PROJECTS.

..... END OF THE TENDER DOCUMENT.....