

Sr. No. _____

Dated _____

THE DIRECTOR
National Institute of Secondary Steel Technology
MANDI GOBINDGARH-147 301

TENDER NOTICE NO. NISST/Admn/Pur/2023-24/1



TENDER DOCUMENT
FOR
PURCHASE OF EQUIPMENTS

AT
NISST COMPLEX
MANDI GOBINDGARH, PUNJAB

LAST DATE FOR SUBMISSION: 17th October, 2023

TIME: 03.00PM

I N D E X

TENDER NOTICE NO. NISST/Admn/Pur/2023-24/1

PURCHASE OF EQUIPMENT

AT

**National Institute of Secondary Steel Technology
MANDI GOBINDGARH-147 301**

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National Institute of Secondary Steel Technology
(Established by Ministry of Steel, Government of India)
Post Box No. 92, G T Road, Mandi Gobindgarh-147301, Punjab.

TENDER NOTICE No. NISST/ADMN/PUR/2023-24/1

NISST intends to procure instruments related to Energy Audit and Electrical/Mechanical/Chemical Testing of Steel. Accordingly, open tender is invited for various instruments. Last date for submission of tender is 17.10.2023. For details refer Tender Document at our website: www.nisst.org.

Sr. Dy. Director (P&A)

LIST OF EQUIPMENTS

1. CHEMICAL LAB:

S No.	Name of Equipments	QTY
1	Salt Spray Corrosion Test Chamber	01
2	XRF Coating Thickness Gauge	01
3	UV-Visible Spectrophotometer	01
4	Halogen lamps & Reference solutions for AAS	01
5	Atomic Absorption Spectrophotometer	01
6	Electronic weighing balance	01
7	Hot Air Oven	01
8	Platinum Crucibles	01
9	Electrolysis Apparatus with Electrodes	01
10	Magnetic stirrer	01
11	Hot Plate	01
12	Muffle Furnace	01
13	Lab Pulveriser	01
14	Oxygen Analyser upgradation to Nitrogen	01
15	Certified Reference Materials (CRMs)	01
16	A. Glass wares B. Chemicals	Details at Page no. 23 to 26

2. MECHANICAL LAB:

S No.	Name of Equipments	QTY
1	Universal Testing Machine 1.0 Ton	01
2	Universal Testing Machine 2.5 Ton	01
3	Wire Relaxation testing Machine	01
4	Fracture toughness testing machine	01
5	High temperature Tensile Test Machine	01
6	Portable Eddy current flaw detector	01
7	Compression Testing Machine	01
8	Digital bend & Reverse Bending Machine For Wires	01
9	Wrapping Testing Machine	01
10	Torsion Testing Machine	01
11	FBH standard block For Ultrasonic testing	01
12	Portable Magnetic Particle inspection Machine	01
13	Superficial Rockwell Hardness Tester	01
14	Vickers hardness tester	01
15	Computerized Creep Testing Machine	01
16	Spring back tester	01
17	Vertical V&U Notch Cutter Machine	01
18	Fatigue Testing Machine	01
19	Chiller	01

3. METALLURGICAL LAB:

S No.	Name of Equipments	QTY
1	High Temperature Muffle Furnace	01
2	Magnify Glass with Stand	01
3	Stage Micrometer standard block For Microscope	01

4. ELECTRICAL PROPERTIES TESTING:

S No.	Name of Equipments	QTY
1	Coercimeter	01
2	Flux meter	01
3	Magnetometer	01
4	Digital ohm meter.	01

5. ELECTRICAL LAB

S. No.	Name of Equipments	QTY
1.	Power analyzer with accessories (portable)	02
2	Compressed Air Flow meter (portable)	02
3	Ultrasonic Flow meter for Fluids	02
4	Pressure gauges for air & water 1. Digital Pressure gauge (0-20 Kg/cm ²) 2. Digital Pressure gauge (0-50 Kg/cm ²) 3. Analog Pressure gauge (0-20 Kg/cm ²) 4. Analog Pressure gauge (0-50 Kg/cm ²)	02 each
5	Optical and Radiation pyrometer a) Radiation Pyrometer b) Infra red Pyrometer	01 each
6	Digital temperature meters a) Digital Temperature indicator (0-200/300 °C) b) Thermocouple probe along with temperature meter	02 each
7	Lux Meter	02
8	Flue Gas Analyzer	02
9	a) Air flow meter b) Pitot Tube	02 each
10	Thermal Imager	02

The tender must reach this office on or before, **17th October, 2023 by 03:00 PM.**

Sr. Dy. Director (P&A)

SUPPLY OF EQUIPMENT

INVITATION FOR TENDER

Messrs: _____

TENDER NOTICE NO. NISST/Admn/Pur/2023-24/1

Ref: Your letter no. _____ dated _____

Dear Sirs:

1. Sealed tenders in prescribed proforma enclosed are invited from bonafide, resourceful and experienced persons/firms/companies for supply of equipments as per specifications mentioned at **page nos. 17** at Mandi Gobindgarh.
2. Financial Standing:
The tenderer should be of sound financial standing and should provide a certificate from their Bankers, based on their transactions during the preceding three years.
3. Eligibility of Tenderers:
The tenderer should have good market reputation.

Tender documents in duplicate are enclosed and one copy of the same duly filled in and signed by a duly authorized person may be put in the Tender Box kept for this purpose in the office **latest by 3.00 PM on 17th October, 2023** Tenders can also be submitted by Post/Courier. Tenders must be submitted in 3 parts in 3 separate sealed covers put inside one master cover super scribing **“Tender against Notice No. NISST/Admn/Pur/2023-24/1 for SUPPLY OF Equipments”** and shall indicate the name and address of the tenderer.

- i) Part I: Tender comprising Earnest Money.
- ii) Part II: Tender comprising Techno-commercial offer, covering all terms except prices.
- iii) Part III: Tender comprising the price bid only.

4. By submitting a quotation the tenderer shall be deemed to have fully familiarized himself/itself with all requisite details including the quantity and specification as information contained in the enclosed instructions to Tenderer including the terms and conditions of the supply and have fully satisfied himself/itself of his/its capabilities to undertake and perform the jobs to the satisfaction of the institute. Any alteration or modification or imposition or suggestion in deviation to the terms and conditions prescribed by NISST in Tender Papers shall be ignored and such Tenders shall be considered as invalid.
5. The tender shall be kept valid for a period of 180 days **from the date of opening of Part I of the tender** and any modification, variation, clarification made thereto by the tenderer during the above period shall be construed as withdrawal of the tender in which event the institute (NISST) shall reject the Tender and forfeit the EMD without any reference to the tenderer.
6. Please note that by merely inviting you to submit the tender, there is absolutely no commitment, implied or otherwise, at this stage from our side as to the award of actual contract and no correspondence in this regard will be entertained by us. Nor, NISST shall be liable in any manner whatsoever, for costs and expenses etc. incurred in responding to this invitation.
7. The Institute (NISST) reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.

Yours faithfully,

Sr. Dy. Director (P&A)

INSTRUCTIONS TO TENDERERS

1. **ELIGIBILITY FOR REQUESTING AGENCIES:**
 - a) The requesting agencies should be reputed, resourceful and bona fide having at least 5 years experience in the line and should have supplied equipment to reputed parties including Government departments.
 - b) The requesting agencies should have the financial ability to undertake the supply of this magnitude and amount, and should submit along with the application for a certificate from a nationalized bank to prove his financial soundness.

2. Tender documents should be duly filled in and signed by the authorized signatory and addressed to Manager (P&A), NISST and sent to **NATIONAL INSTITUTE OF SECONDARY STEEL TECHNOLOGY, POST BOX NO.92, G T ROAD, SIRHIND SIDE, MANDI GOBINDGARH – 147 301.**

3. All entries should be clearly written in ink. Corrections, if any, should be clearly made and duly signed and dated by the requesting agencies.

4. The requesting agencies should sign each and every page of the tender documents.

5. The Director, NISST reserves the right to reject any or all the suppliers without assigning any reason.

6. Each requesting agency should submit a declaration to the effect that he/they is/are an experienced agency or an Associate of a firm which has successfully carried out supply of this nature and has adequate organization machinery and experienced personnel to handle this type of work and of this magnitude.

7. Full information should also be given by the requesting agencies in respect of the following:
 - a) **IN CASE OF PROPRIETORSHIP FIRMS:**
 - i) His full name, address and place of business.
 - ii) His financial status
 - iii) His previous experience

 - b) **IN CASE OF PARTNERSHIP FIRMS:**
 - i) The name of all the partners and their address
 - ii) The financial status of the firm and its partners
 - iii) Previous experience of the firms and its partners.

 - c) **IN CASE OF COMPANIES:**
 - i) Date and place of registration including date of commencement certificate in case of public companies. Certified copies of Memorandum and articles are also to be furnished.
 - ii) Nature of business carried out by the company and provisions of its memorandum of article.
 - iii) Names and particulars including addresses of all the Directors.

1. EARNEST MONEY DEPOSIT

- 8.1 Suppliers are required to give an amount as per following schedule as earnest money in the form of Demand Draft/Pay Order/Banker's cheque from any scheduled Bank in favour of NISST towards EMD at the time of submitting tender documents.

Tender value (Rs. in Lac)	EM (Rs.)
Upto 1 lakh	1,000
Above 1 lakh to 10 Lakhs	5,000
Above 10 lakhs to 50 Lakhs	15,000
Above 50 lakhs to 2 crore	1 Lakh
Above 2 crore to 10 crore	5 Lakhs

- 8.2 Micro & Small Enterprises (MSEs)/PSU/Govt. Undertaking and Co-operative Societies/ Start-ups as recognized by Department of Industrial policy & Promotion (DIPP) etc., may be exempted from submission of EMD as per extant Government Policy. For MSEs, the exemption will be extended on the basis of self-certified copy of UDYOG Aadhar Memorandum (UAM) Provided the concerned MSE is also registered in the MSME databank and MSE is registered for given scope of job/ procurement. SSI/NSIC certificate holders are also exempted from submitting EMD and should submit a copy of valid Entrepreneurs Memorandum, if available.

- 8.3 **Acceptable modes of EMD;** Earnest Money Deposit may preferably be submitted in the form of online transfer-NEFT, RTGS, SWIFT. The proof of such transfer/transaction needs to be submitted with the offer in the envelop titled Earnest Money Deposit. However, EMD will also be accepted in the form of demand draft, pay order, Bankers cheque of Bank Guarantee (BG) from any Scheduled Commercial bank except Co-operative and Gramin Bank. The tenderers are required to submit EMD in a separate envelop and not to enclose the same with any part of the quotation. No request for adjustment of earlier dues in place of EMD will be entertained. EMD will not be accepted in cash.

- 8.4 The banks details are given below for submission of EMD through online transfer-NEFT, RTGS, SWIFT:

**Name of Bank Central Bank of India,
Account in the name of National Institute of Secondary Steel Technology
Account No. 1359614052
Type of Account Saving Bank Account
IFSC CBIN0280323
Address of Bank GT Road, Mandi Gobindgarh Punjab 147301
MICR Code 147016102**

- 8.5 No interest will be payable to the tenderers for the EMD amount.

8.5 The EM, provided by unsuccessful Tenderers, shall be refunded after 30 days of issue of purchase order to the successful tenderers. EM in respect of successful tenderers will be retained as a part of security deposit which shall be adjusted with final bill.

9. Validity of Tender

The tenderers shall have to keep their tenders valid for 180 days from the date of opening of tenders.

10. Mode of Submission of the Tender

The tenderers shall submit their tenders in 3 parts. The EMD shall be put in a sealed envelope **No. 1 super scribed with “Limited Tender against Notice No. NISST/Admn/Pur/ 2023-24/1 for SUPPLY OF EQUIPMENTS”– EMD**. The Techno-commercial Bid shall be put in a separate sealed envelope **No. 2 super scribed with “Limited Tender against Notice No. NISST/Admn/Pur/2023-24/1 for SUPPLY OF EQUIPMENTS”– Techno- commercial Bid**. The price bid shall be put in a separate sealed envelope **No.3 super scribed with “Limited Tender against Notice No. NISST/Admn/Pur/2023-24/1 for SUPPLY OF EQUIPMENTS”– Financial Bid**.

All the envelopes shall indicate the name and address of the tenderer and shall be sealed and put inside another envelope **No. 4** which shall be submitted in sealed condition by the tenderer. The envelope **No. 4 shall have the superscription “Limited Tender against Notice No. NISST/Admn/Pur/2023-24/1 for SUPPLY OF EQUIPMENTS”** shall indicate the name and address of the tenderer.

11. Techno- commercial Bid

The Techno- commercial bid shall contain the following documents-

- a) The tender papers, i.e. the application for submission of Tenders, Tender Notice, invitation to Tender, instruction to Tenderers and Term & Condition of the contract alongwith all the related documents and annexures. All the pages shall be duly filled up as required signed by a person authorized to do so on behalf of the tenderer and stamped with the seal of the tenderer.

Copy of the power of attorney in favour of the authorized signatory submitting the tender documents on behalf of the tenderer. Authorization certificate in case of agent of foreign manufacturer.

It shall be responsibility of the persons submitting the tender to ensure that tenders have been submitted on the formats and as per the terms and conditions prescribed and no change is made therein before submission of their tenders. In the event of any doubt regarding the terms and conditions in the formats, the person concerned may seek clarifications from the Dy. Director (P&A), NISST, Mandi Gobindgarh. In case any tampering/unauthorized alterations is noticed in the tender submitted, from the Tender Document available, the said tender shall be summarily rejected and the institute shall have no liability whatsoever in the matter. However, deviation, if any, proposed by Tenderer may be separately indicated for acceptance or other wise by NISST. Such proposed deviation will not be treated on tampering for the purpose of applications of this clause. In case price quoted in the Techno-commercial bid tender shall be summarily rejected.

12. Receipt of Tenders

The following shall be the accepted modes for receipt of tenders:

- a. Tenders received by post
- b. Tenders received by courier service
- c. Tenders received through tender box

Tenders which have been sent by post or through courier shall be received at the Receipt & Dispatch Section of the office. Particulars regarding receipt of such tenders shall be entered in a register kept for this specific purpose indicating the name of the tenderer alongwith the date and time of receipt of the tender.

Tenders shall also be received in the Tender Box kept for this purpose up to the closing time specified in the Tender notice. Immediately thereafter the tender box shall be sealed and removed so as to eliminate any possibility of submission of any further tenders after the stipulated closing time for receipt of tender is over. **Late tender received after the scheduled time and date will not be opened/considered in any case.**

13. Opening of Tender

The tenders received by the institute shall be opened at the stipulated date, time and place in presence of the Tenderer(s) and/or their authorized representative(s) who is/are to be present. Tender(s) not fulfilling all the conditions shall be liable to be rejected. The tenders which are not accompanied by EMD shall also be liable to be rejected summarily.

A tender opening committee constituted for the purpose shall first open the envelope No. 4 submitted by the tenderers at the appointed time and date. Name, addresses and signature of the persons present at the time of opening of tenders along with the names of Firms/Companies/concerns such persons are representing shall be recorded by the Tender Opening Committee. In case any individual is representing more than one tenderer, the fact should be noted for future reference to avoid any possibility of cartel formation. Next the envelope No. 1 shall be opened for all the tenderers to see as to whether all the tenderers have submitted the EMDs. In case any tenderer fails to submit the EMD (excepting the exempted tenderers, if any,) the tender submitted by such tenderers shall be rejected. The Techno- commercial bids of eligible tenderers whose tenders have not been rejected due to non-submission of required EMD, as contained in the envelope No.2, would be taken up next for opening and thereafter for evaluation and verification. The date & time of the opening of the financial bid shall be intimated to such tenderers who qualify technically.

14. Evaluation of Bids/Proposal

Two bids/proposal system i.e. Techno-commercial & Financial (separately) will be followed. After opening the technical bids/proposal, the same will be evaluated. The evaluation of the bids/proposal will be based on criteria as mentioned below.

However, depending on the type of tender enquiry i.e whether it is for services / consultancy or purchase of goods, plant and machinery, the specified evaluation criteria out of the following will be selected for further evaluation of bids/proposals.

- Stipulation as mentioned under technical part of the tender enquiry every time when the request for proposal/quotation/bid is sought.
- Conformity to specification
- Delivery period
- Technical capacity of the supplier
- Spare parts availability for at least 10 years
- After sale and service facilities. Party has to provide maintenance services for next at least 10 years and give it's rates for AMC in the financial Bid.
- Each evaluation criteria will be allotted definite marks and overall technical rating will be developed
- The suppliers/service providers should be considered technically qualified and responsive if they score at least 80% marks. Those who do not meet these requirements must be rejected as non-responsive.
- Submission of EMD as per Para 8 (page No.7-8) shall be mandatory for procurements. In absence of EMD, bid will be summarily rejected.
- If taxes and duties are not included in the techno-commercial bid, the price will be taken as inclusive of taxes and duties.
- If the delivery date is an important factor in the bid, and has been so stated in the invitation, the bids not meeting the required delivery schedule shall be rejected. If all bids are disqualified and re-advertising is not feasible, it may be necessary to enter into a negotiated contract.
- Terms of payment.
- Warranty/guarantee conditions.

15. Financial Bid

The financial bids will be opened only for those suppliers/consultants who have qualified on the technical evaluation. The following criteria will be considered for price evaluation.

- ☞ **Landed price (instruments/equipments) CIF/FOR, freight, insurance, handling charges, taxes and duties shall be taken into account.**
- ☞ **Price of spares for 2 years of operation**
- ☞ **Price of consumables for 3 months (commissioning consumables will be treated a part of equipment supply).**
- ☞ **Cost of transportation to the site (in case of imported item).**

16. Performance Guarantee

The successful bidder will have to furnish a performance guarantee to the tune of 15% of the value of the contract for proper fulfillment of the contract in the form of a Bank Guarantee obtained from nationalized / scheduled bank with a validity period of minimum one year.

17. Termination of Contract

NISST, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:

- a) If the Supplier fails to deliver any or all of the Goods within any extension thereof granted by the Purchaser.
- b) If the supplier fails to perform any other obligation (s) under the contract.

18. Force Majeure

In the event of and as soon as possible after the occurrence of any cause constituting Force Majeure the supplier shall give notice and full particulars in writing to NISST of such occurrence or change if the supplier is rendered unable wholly or in part to perform its obligations and meet its responsibility under this contract. However NISST shall have the right to suspend or terminate the contract giving a notice of seven days on receipt of such information.

Force majeure shall mean fires, floods, natural disasters or other acts such as war, turmoil, strikes, sabotage, explosions and quarantine restriction beyond the control of either party.

19. Settlement of disputes

Amicable settlement

The Parties shall use their best effort to settle amicably any dispute, controversy or claim arising out of, or relating to this Contract or the breach, termination or invalidity thereof. Where the parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the procedure as may be agreed between the parties.

Arbitration

If at any time, any question, dispute of difference whatsoever shall arise between the purchaser / owner and the supplier upon or in relation to, or in connection with the contract (except as to any matter the decision on which is specifically provided for) the same may be referred to the sole arbitration of the Chairman, NISST or a person appointed by him.

20. All disputes will be subject to the territorial jurisdiction of Fatehgarh Sahib, Punjab.

TERMS & CONDITIONS

1. Only valid tender which conform to the following will be considered:
 - (a) Must have been received by Institute in time
 - (b) Earnest money required as per tender must have been furnished along with the tender in the prescribed form of remittance
 - (c) It must have been securely packed and closed so that the cover is not opened or torn during transit.
 - (d) The firm must not have been black listed by the Institute.
 - (e) It must have been addressed correctly.
 - (f) The reference to Tender inquiry No and Date, the last date for receipt of tender and the date of opening tender must have been super scribed on the cover containing the tender.
2. Tender will be opened on the due date in the office in the presence of those tenderers or their representatives who may like to be present.
3. The rates quoted should be inclusive of all packing forwarding, freight, incidental and insurance charges and F.O.R. Mandi Gobindgarh if stores are delivered by road.
4. **Rates quoted should be valid for a period of 90 days from the due date of tender opening.**
5. **The successful bidder will have to furnish a performance guarantee to the tune of 15% of the value of the contract for proper fulfillment of the contract in the form of a Bank Guarantee obtained from nationalized / scheduled bank with a validity period of minimum one year.**
6. **Payment to supplier will be made by crossed A/c payee cheque normally within 15 days from the date of receipt of the stores in good order and acceptable condition. 50% of the payment will be released after delivery within 15 days and rest 50% after successful installation and operation of equipment. In case of imported equipments where payment is to be made in foreign currency L/C shall be established.**
7. Institute accepts no liability what so ever for any breakage, pilferage or damage to the materials in transit & payment will be made strictly on the basis of stores received in good and acceptable condition by the Institute.
8. The supplies will have to be completed with in 90 days from the date of placement of the purchase order, failing which the tender shall liable to be rejected.
9. Manufacturers name and country of origin of the materials offered must be clearly specified and illustrated literature or drawing must accompany all quotation whenever possible.
10. In case of proprietary article, manufacturer's standard price list/proforma invoice must be furnished with the quotation for price verification.
11. Institute reserves its right to reject outright any tender/to make or not to make any purchases against a tender/to increase or to decrease the quantity without assigning any reason therefore.
12. GST where applicable and intended to be charged from Institute should be distinctly shown along with the price quoted. A copy of GST Registration Certificate should be attached along with the tender documents.

- 13.** All the materials supplied shall be subject to inspection by Institute's representative at the registered office of the Institute only and must strictly conform to the specification and quality as per purchase order. The Institute reserves the right to reject such stores as are not found to be acceptable on these grounds and impose liquidated damage at the rate applicable in case of failure to execute the order.
- 14.** If a firm accepts an order but fails to execute the same in full or part, as per the terms and conditions stipulated therein, it will be open to this Institute to recover liquidated damages from that firm at the rate of 0.5% of the contract price of the delayed/undelivered store/services for every week of delay or part of a week, subject to a maximum of 5% of the value of the delayed stores. It will also be open to this Institute, alternatively, to arrange procurement of the required stores from any other source, at the risk and expenses of firm which accepted and then failed to execute the order according to stipulations agreed upon.
- 15.** Where it is necessary, inspection of the equipment may be carried out before delivery if required by the Institute.
- 16.** The facilities of the Annual Maintenance Service contract and the terms & conditions thereof may also be indicated.
- 17.** Installation, commissioning and training where necessary has to be made free at the site by the supplier after delivery of the material.
- 18.** Equipment shall be opened in presence of supplier or its authorized representative and commissioning shall be done within 15 days of receipt of equipment. The convenient date shall be decided mutually.
- 19.** Supplier shall intimate the requirement if any in advance for commissioning and or demonstration of the equipment to avoid wastage of time.

NATIONAL INSTITUTE OF SECONDARY STEEL TECHNOLOGY (NISST)

(QUESTIONNAIRE FOR THE REQUESTING AGENCY)

1. NAME OF REQUESTING AGENCY :
2. POSTAL ADDRESS :
3. TELEPHONE Nos. :
4. E-MAIL ADDRESS :
5. GST No. :
6. HAVE YOU ENCLOSED THE FOLLOWING :
 - a) PROFILE OF THE ORGANISATION :
(as per Para 7 at page no. 6)
 - b) EARNEST MONEY :
 - c) CERTIFIED COPY OF REGISTRATION :
AS SUPPLIER WITH GOVT/SEMI-GOVT
PUBLIC UNDERTAKING/ANY OTHER
AGENCY IF ANY
 - d) SELF ATTESTED PHOTO COPY OF :
PAN CARD
 - e) BANK REFERENCE FROM YOUR :
BANKERS
 - f) LIST OF CLIENTS TO BE PROVIDED :
FOR INDUSTRIAL AND R&D LABS
 - g) YOUR ANNUAL TURNOVER
 - h) WHETHER YOU HAVE ANY FOREIGN :
COLLABORATION
 - i) WHETHER YOU ARE AN AGENT OF :
FOREIGN MANUFACTURER. IF YES,
SUBMIT THE AUTHORIZATION
CERTIFICATE
 - j) Copy of GST Certificate :
 - k) UNDERTAKING REGARDING LEGAL PROCEEDINGS :
(As per Performa at Annexure-1 at Page no. 39)

LETTER OF SUBMISSION OF TENDERS

DATED :

FROM:

To
The Director,
National Institute of Secondary Steel Technology,
G.T. Road, Sirhind Side,
Mandi Gobindgarh – 147 301

Sub : Tender against Notice No. NISST/Admn/ Pur/2023-24/1 for SUPPLY OF EQUIPMENTS.

Dear Sir,

Subject to the instructions & conditions given in the tender document and terms & conditions of supply, I/we hereby submit quotations duly completed with other related documents / annexures as required in the tender documents for your kind consideration. I/we hereby certify that I/we have examined and am/are familiar with all the provisions of the tender document and agree to abide by all the terms and conditions laid down therein.

2. The following documents are enclosed:

- a. Detailed list indicating documents/statements submitted as part of Technical bid.
- b. Evidence of the authority of person signing this document and the requisite Powers of Attorney (if required).
- c. Certificate from _____ (Name of the Bank) who are my bankers and are a schedule bank about my sound financial standing.
- d. This tender document with all pages intact and dully signed by the undersigned.

3. A sum of Rs. _____ (Rupees _____) only is forwarded herewith as Earnest Money in the form of demand draft/ Banker's Cheque/BG No. _____ drawn on _____ in favour of "**National Institute of Secondary Steel Technology**" payable at **Mandi Gobindgarh.**

4. I/We agree to keep this tender open for a period of 180 (One hundred eighty) days from the date fixed for opening and the same cannot be withdrawn from the said period of 180 (One hundred eighty) days or until the purchase order is issued, whichever is earlier.

5. I/We do hereby declare that the entries made in the tender document and the Annexures/appendices attached are true and every page of the tender documents is dully signed.

Yours Faithfully,

(SIGNATURE OF AUTHORISED SIGNATORY)

SEAL OF FIRM

PLACE: _____

DATE: _____



NISST National Institute of Secondary Steel Technology
(Established by Ministry of Steel, Government of India)
Post Box No. 92, G T Road, Mandi Gobindgarh-147301, Punjab.

TENDER NOTICE NO. NISST/Admn/ Pur/2023-24/1

LIST OF THE EQUIPMENTS, SPECIFICATIONS & QUANTITY

CHEMICAL LAB

Sl No.	Name of Equipment & Specifications	Quantity
01	<p>Salt Spray Corrosion test Chamber Function : To test corrosion resistance of galvanized Steel sheets, metallic coated steel strips Samples Type of Tests to be conducted: Neutral Salt Solution Test, Acetic Acid Solution Test, Cyclic Corrosion Test (CCT), Seawater, Acidified Test (SWAAT) or Cupric, Acid (CASS), Salt MIST Treatment Capacity :450-500 liter Display : HMI based touch screen LCD screen Brine tank capacity : 30 -40 liter Chamber Temperature range:35-50 ±1 °C Operating Temperature range: 35 ±2 °C Temperature accuracy : ±0.5 °C Spray Quantity :1.0 to 2.0 ml /hr per 80 cm² Air pressure :70-170 Kpa Air saturator temperature range: 40-49 °C PH value of salt solution: 6.5-7.2 Temperature control: Inbuilt PID temperature controller to be provided Timer: 6 digit Air regulator: to be provided Power Supply: 220 volt, 50 Hz Safety: low water alarm and safety system to protect saturator heater to be provided Conformity: The equipment shall conform to requirements of IS:9844</p>	01
02	<p>XRF Coating Thickness Tester Function: To measure coating thickness of galvanized/Tin coated sheets Accuracy :±(2.0%+1um) Resolution :0.5µm Measurement Range F/N : 0~2000um Displayed Values Mean, Maximum, Minimum and standard deviation Display type: 2.4 inch color screen , Auto rotate display Power supply: Chargeable batteries with 220V, 50 Hz Calibration: Inbuilt calibration facility</p>	01
03	<p>UV-Visible Spectrophotometer Function: Wet analysis of steel samples Optical System :Spectrophotometer with UV-Visible Double Beam Microprocessor Wavelength range: 190 to 1100 nm Bandwidth: 0.5 nm Wavelength Accuracy: ±0.1 nm Stray Light : < 0.1%T Noise : ±0.0005A Wavelength repeatability : +/-0.05 nm (UV-Vis) Photometric Reproducibility : <0.1 %T</p>	01

	<p>Scanning speed :(Fast/Medium/Slow options Detector :Dual Silicon photodiode/photomultiplier tube Accessories: All standard accessories like quartz cells, glass cells of different capacities to provided along with the machine Power Supply: 220 volt, 50 Hz</p>	
04	<p>Halogen lamps & Reference solution for AAS Function: Reference solution to be used for reference in Atomic Absorption Spectrometer (AAS) & UV visible spectrophotometer Type of Solutions: Copper solution, Iron Solution, Aluminum Solution, Zinc solution, Niobium solution, Cobalt , Vanadium, Manganese solution, Nickel Solution, Molybdenum Solution, Titanium Solutions, Boron Solution, lead, Arsenic Solution, tungsten solution, Tin solution. Certificate: Certificate of analysis to be provided with each solution. Concentration: minimum 1000 ppm Quantity:100 ml each Traceability: The solutions should be traceable to international/Indian standards/Institutions</p>	01
05	<p>Atomic absorption spectrophotometer Function: Analysis of micro alloying elements in steel Wavelength range :185-930 nm Operation : Fully automated Type :Double beam PC controlled system with deuterium background Monochromator:With motorized drive for automatic wavelength selection and peaking Diffraction grating :1800 lines/mm Spectral Bandwidths :User selectable automatic variable slit widths from 0.1 to 2.0 nm Sensitivity: 0.9 Absorbance for 5 mg/L Cu Wavelength Accuracy:±0.5nm Burner Head Adjustment: Burner head adjustment in vertical and horizontal direction should be software controlled method. Dual System Instrument :Dual Type i.e. Furnace & flame. The system should have separated. Air- Acetylene and acetylene-nitrous oxide Titanium Burner Head Lamp Turret: 6/8-lamp mount with built-in power supplies, cable less hollow cathode lamps. Detector :Advanced Wide-range solid-state detector, including a built-in low-noise complementary metal oxide semiconductor charge amplifier array or photo-multiplier tube detector. Lamps: The hollow cathode lamp to be supplied with the system for estimation of Cu, Zn, Si, Al, Ca, Zr Gas Controls :Fully computer-controlled. Touch screen or keyboard activated remote ignition system with air/acetylene. Acetylene flow should automatically be adjusted prior to the oxidant change when switching to or from nitrous oxide/acetylene operation. Accessories: All standard accessories like 5 KVA UPS, air compressor, fume hood assembly, Computer of latest configuration, printer to be supplied alongwith instrument Additional requirement: Hydride generation assembly to be supplied along with the instrument Conformance: The instrument should conform to International/ISO standards Power Supply: 220 volt, 50 Hz</p>	01

06	<p>Electronic weighing balance Capacity: Upton 220 gm Weighing range: 0.1mg to 220gm Readability: 0.01mg. Repeatability:0.01mg Automatic calibration: facility to included Display :LCD Overload protection:To be provided Draft shield for the balance with door: To be provided Compliance: The instruments should meet the requirements of International/ISO standards Additional features: The instrument should have facility of keeping memory and password protection. A built in under hook for below weighing to be provided. Standard RS 232 C Interface to be preferred. Tare range up to max. Capacity to be preferred. Power Supply: 220 volt, 50 Hz</p>	01
07	<p>Hot air oven Temperature range: Ambient +10°C to 300°C Chamber size: Height-24", Width-24", Depth-36" Temperature accuracy: ±0.1°C or better Temperature display: Digital Temperature controller: Microprocessor PID temperature controller with display of SV & PV and with timer Construction: Double walled Inner chamber: Stainless steel 304 Shelves: Chrome plated wire mesh cable trays (removable) Air circulation: Motor driven blower assembly to be provided Vent port: fume vent port to be provided Safety: Over temperature thermostat to be provided Power supply: 220 Volts / 50 Hz</p>	01
08	<p>Platinum crucible Usage: To be used up to at 1200 OC for chemical analysis Material :Platinum Crucible with Purity Certificate Capacity: 80ml Lid: Lid to be supplied alongwith the crucible</p>	01
09	<p>Electrolysis apparatus with electrodes Purpose: determination of metallic chromium and chromium in the oxides on the surface of electrolytic chromium/chromium oxide-coated steel Cell and electrodes: A cell as shown in figure given at page no.-16 of IS:12591 for the electrolytic stripping of the metallic chromium and consisting of a sample holder, a platinum gauze cathode and a reference electrode (standard calomel). Cell/sample holder : The cell/sample holder should expose a minimum sample area of 2000 mm² from which the metallic chromium is electrolytically stripped. Sample holder to conform the details given on page no.-14 of IS12591 Electro Circuit: Electro Circuit for stripping chromium metal to have a D.C. stabilizer of 30mA, Voltmeter of 0-2V, Reference electrode, Platinum cathode, Sample holder & Sample (anode) Power supply: With direct current stabilizer with a built-in milliammeter setting to 30 mA and an on off switch. Conformity: The apparatus should conform to requirements of IS:12591</p>	01

10	<p>Magnetic Stirrer Function: Heating & stirring of solutions in chemical lab Capacity: 2 liter Stirrer: Advanced stirrer (teflon Coated) with microprocessor technology to be provided Maximum stirring speed :1200 rpm with stepless speed control and good speed stability Heating Capacity :300W Temperature control : Facility for set and actual temperature control. Hotplate Size :Minimum 175mm dia. Power Supply: 220/240V,50Hz, A.C Hotplate :Should be chemically resistant to acid and alkali preferably of stainless steel</p>	01
11	<p>Hot plate Function: Heating of solutions in chemical lab. Temperature: Up to 300°C Heating plate surface: Stainless Steel 304 Cast Iron Cabinet MOC Powder coated MS Controller: Thermostatic controller to be provided Temperature controller: Digital temperature controller to be provided Size: 18"x12" Power supply: 220 Volts 50Hz</p>	01
12	<p>Muffle Furnace Inside Chamber Size : 6" x 6" x 12"(Depth) Max. Temperature : 1200°C Working Temperature : 1150°C Heating Element : Kanthal A-1 Temperature Accuracy : +/- 1°C Temperature Controller : PID controller Display : LED / LCD Display External Chamber Construction : GI sheet with Powder Coating / Stainless Steel Insulation : Ceramic fiber boards/Zirconia fiber blanket Thermocouple : PT-RH type thermocouple to be provided with Recrystallized alumina sheath & connecting holder. Heating Rate : 0-10 0C/minute Alarm : Audible & Visual type Safety Protection : Overheat and thermocouple break alarm to be provided, Safety switch on door required. Stabilizer : As standard Certification : Machine should be calibrated as per NABL. Power Supply : 220 / 440 Volts Special requirement: Cooling Fan/ Air Circulation to be provided inside the control unit to protect Costly components</p>	01
13	<p>Lab pulveriser Function :Grinding of sponge iron/Ferro alloys to fine powder for laboratory purpose Type : disc type Fineness of powder required: up to 200 mesh Discs: High Manganese Steel grinding discs to be provided Gap setting: Machine should have due to accurate gap setting for Reproducible results Throughput rate: 15-20 Kg/hr</p>	01

14	<p>Upgradation of Oxygen Analyser to Oxygen cum Nitrogen: Existing gas analyzer: Oxygen analyzer in steel, Make-Chromatography & Instruments Company, Vadodra Upgradation required: Analysis of Nitrogen in Steel/Ferro Alloys in addition to existing oxygen analysis CRM: All standard CRMs for oxygen as well as nitrogen with NABL traceability to be supplied with machine. Conformity: The machine should conform to BIS/NABL requirements PC& software: The required software as well as PC of latest configuration to be supplied along with the machine. Accessories: Standard accessories for testing of at least 200 samples to be supplied along with machine Special requirement: The supplier will have to calibrate the existing oxygen facility also. Replacement of existing machine with Oxygen cum nitrogen analyzer will also be considered.</p>	01
15	<p>Certified reference Materials (CRMs): Purpose : To be used for standardization in Chemical Analysis of steel samples Quantity : 100ml/100grams Certification : The CRMs should be traceable to NIST/BAS/NML/BAM The CRMs to be supplied with Certificate of Analysis/Assay Potassium Hydrogen Pthalate Potassium Dichromate Potassium Permagnate Sodium Oxalate Sodium Thiosulphate Potassium Iodate Benzoic Acid Conductivity Standard 1.0µS/Cm Austenitic Cast Iron ECRM No. 451-2 (BAS CRM) High Si, P Cast Iron ECRM-453-1 (BAS CRM) Cast Iron SCRM 660/10 (BASCRM) Ferro Silicon 305/2 (BCS/BAS CRM)</p>	01

16. A. List of Glass Wares

Purpose: For Use in Chemical Analysis of Iron, Steel, Ferroalloys & Sponge Iron

S.No.	Item	Capacity	Quantity	Code
1.	Beaker Tall Form With Spout	250ml	6	1060D21
		500ml	6	1060D24
		1000ml	6	1060D29
2.	Aspirator Bottle	1000ml	2	1220029
3.	Reagent Bottles With Screw Cap	100ml	5	1501016
		250ml	5	1501021
		500ml	5	1501024
		1000ml	5	1501029
4.	Reagent Bottle With Screw Cap Amber	100ml	2	1519016
		250ml	2	1519021
		500ml	2	1519024
		1000ml	2	1519029
5.	Weighing Bottle With lid	5ml	2	1630005
		15ml	2	1630007
6.	Dropping Bottle	60ml	3	1640013

7.	LDPE Plastic Wash Bottle	500ml	10	166024
8.	Gas Washing bottle	125ml	2	1760017
9.	Auto Burette A Class With Certificate	50ml	4	2155012
10.	Burette Class A With Certificate	50ml	1	2129012
11.	Nitrogen Apparatus Fitted in Wooden Cabinet as per IS 228(160)	--	1	As Per IS 228 (16)
12.	1.5 Liter Water Distillation Unit	1.5 Liter	1	SDU1500
13.	Silicone Tubing 4 mm Id X 7 mm OD	One pack	1	3369001
14.	Erlenmeyer Conical Flask	250ml 500ml	4 4	5020021 5020024
15.	Boropure Glass Filtration Assembly	--	2	5350024
16.	Boropure Gridded Cellulose Nitrate Membrane	--	1	524745N
17.	Volumetric Flasks A Class With Certificate	100ml	6	5645016
18.	Kipps Gas Generation Apparatus	500ml	1	65500140
19.	Gooch Crucibles With Sintered Disc Grade 1,2 &3	80ml	One Each	3606072 3606672 3606772
20.	Weighing Scoop	0.5ml 1.0ml	1 1	7200P45 7200001
21.	Tongs	For Beakers For Flasks	1 1	LATG8888B1 2 LATG8888F1 2
22.	Whatman Filter Papers 125 mm Dia	541 No.	2	--
23.	Whatman Ashless Filter Aid Clippings	--	2	--
24.	Heating Mantles	250ml 500ml	2 2	GME250 GME 500
25.	Micropipette	1000 μ L 5000 μ L	1 1	LHC3711102 9 LHC3711103 3
26.	Nickel Crucibles With Lid	80ml	6	--
27.	Silica Crucible With Lid	80ml	6	--
28.	Carbon Burettes For Strohlein Apparatus	1.5% 4.55%	1 1	-- --
29.	Absorption Vessels For Strohlein Apparatus	--	2	--
30.	Silicon Carbide Rods For Strohlein Apparatus Furnace With Clamps & Wires	--	3	--
31.	Three Way Stop Cock For Strohlein Apparatus	--	2	--
32.	Two Way Stop Cock For Strohlein Apparatus	--	2	--
33.	Corks	Size: 2,4,6,8,10	3 Each	--

		,12		
34.	Thermometer	350oC	1	--
35.	Jones Reducter	Dimensio ns As Per IS: 1559 Fig.4 & E350-18	2	--
36.	Apparatus For Volumetric Determination Of Zinc Coating On Thin Wires	Apparatu s as per IS: 6745	1	--
37.	Combustion Boats (For Strohlein Apparatus)	For Carbon Determin ation	Two Packets of 100 Each	

B. List of Chemicals

Purpose: For Use in Chemical Analysis of Iron & Steel, Ferro Alloys, Sponge Iron.

S.No.	Chemical /Reagent	Quality	Quantity
1.	Ammonia	AR Or Equivalent	2.5Liter
2.	Ammonium Ferrous Sulphate	0.10N	One Packet/500ml
3.	Ammonium Ferrous Sulphate	AR Or Equivalent	500grams
4.	Ammonium Molybdate	AR Or Equivalent	300grams
5.	Ammonium Persulphate	AR Or Equivalent	500grams
6.	Perchloric Acid	AR Or Equivalent	500ml
7.	Alpha Benzoinoxime	AR Or Equivalent	200Grams
8.	Ammonium Chloride	AR Or Equivalent	500grams
9.	Ammonium Nitrate	AR Or Equivalent	500grams
10.	Ammonium Bromide	AR Or Equivalent	500grams
11.	Ammonium Acetate	AR Or Equivalent	500grams
12.	Aluminium Persulphate	AR Or Equivalent	500grams
13.	Anion Exchange Resin	AR Or Equivalent	500grams
14.	Acetic Acid	AR Or Equivalent	500ml
15.	Cadmium Chloride	AR Or Equivalent	500grams
16.	Citric Acid	AR Or Equivalent	500grams
17.	Calcein Indicator	AR Or Equivalent	100grams
18.	EDTA	AR Or Equivalent	100grams
19.	Ferrous Sulphate	AR Or Equivalent	500grams
20.	Ferric Sulphate	AR Or Equivalent	500grams
21.	Hydrochloric Acid Conc.	AR Or Equivalent	2.5Liter
22.	Hydrochloric Acid 0.10N	0.10N	One Packet/500ml
23.	Hydrofluoric Acid Conc.	AR Or Equivalent	500ml
24.	Hydrogen Sulphide Saturated Solution	--	500ml
25.	Hydrazine Sulphate	AR Or Equivalent	500 grams

26.	Isopropyl Ether	AR Or Equivalent	1000ml
27.	Iodine Solution	0.10N	500ml
28.	Mandelic Acid	AR Or Equivalent	500grams
29.	Molybdenum Trioxide	AR Or Equivalent	100grams
30.	Manganese Metal	AR Or Equivalent	100grams
31.	Molybdenum Metal	AR Or Equivalent	100grams
32.	Molybdic Acid	AR Or Equivalent	200grams
33.	Murexide Indicator	AR Or Equivalent	100ml
34.	Mercuric Chloride	AR Or Equivalent	200grams
35.	Nitric Acid Conc.	AR Or Equivalent	2.5Liters
36.	Nitric Acid	0.10N	One Packet/500ml
37.	Phosphoric Acid	AR Or Equivalent	2.0Liter
38.	Potassium Hydroxide	AR Or Equivalent	1000Grams
39.	Potassium Dichromate	AR Or Equivalent	500Grams
40.	Potassium Dichromate	0.10N	One Packet/500ml
41.	Potassium Per magnate	AR Or Equivalent	500Grams
42.	Potassium Permagnate	0.10N	One Packet/500ml
43.	Perchloric Acid	AR Or Equivalent	1000ml
44.	Potassium Pyrosulphate	AR Or Equivalent	200grams
45.	Potassium Thiocyanate	AR Or Equivalent	500grams
46.	Potassium Metaperiodate	AR Or Equivalent	500grams
47.	Silver Nitrate	AR Or Equivalent	50 grams
48.	Sulphuric Acid	AR Or Equivalent	500Grams
49.	Sulphuric Acid	0.10N	One Packet/500ml
50.	Sodium Peroxide	AR Or Equivalent	200 grams
51.	Sodium Hydroxide	AR Or Equivalent	1000Grams
52.	Sodium Hydroxide	0.10N	One Packet/500ml
53.	Sodium Thiosulphate	AR Or Equivalent	500Grams
54.	Sodium Thiosulphate	0.10N	One Packet/500ml
55.	Stannous Chloride	AR Or Equivalent	200Grams
56.	Sodium Tungsten Dihydrate	AR Or Equivalent	100Grams
57.	Sodium Bismuthate	AR Or Equivalent	500Grams
58.	Sodium Molybdate	AR Or Equivalent	100Grams
59.	Tin Granules	AR Or Equivalent	500Grams
60.	Titanium metal	--	50 grams
61.	Titanium Dioxide	AR Or Equivalent	100Grams
62.	Tartaric Acid	AR Or Equivalent	100Grams
63.	Test Lead	AR Or Equivalent	100Grams
64.	Vanadium	AR Or Equivalent	50 Grams
65.	Zinc Oxide	AR Or Equivalent	1000 Grams
66.	Zinc Metal 20-30Mesh Size	AR Or Equivalent	1000 Grams

MECHANICAL LAB

Sl No.	Name of Equipment & Specifications	Quantity
01	<p>Universal Testing Machine: Test/Measuring range : 1.0 Ton Tests to be conducted : Tensile/shear test to be done on steel wires as per BIS standards. Dia of wires to be tested: 0.05 mm to 1 mm Operation : Computerized, Fully Automatic Load measurement : Digital Elongation measurement : Digital Test Load accuracy : $\pm 1\%$ Least count : 0.1 N Resolution of piston movement : 0.01 mm Crosshead travel : Up to 500 mm or more Effective stroke : Up to 150 mm or more Strain Rate : 0.00025 s⁻¹ to 0.008 s⁻¹. Machine to have strain rate as well as stress rate display and control facility. Load measurement : With load cell to be preferred, machine to have load rate control along with display of load rate Accessories : All standard accessories like clamping jaws suitable for wire samples, attachments & fixtures to control various types of tests to be supplied Computer hardware : Compatible configuration with minimum Intel I-5, 4 GB ram, Window XP operating system & led Monitor 18” and UPS Software : A window based software having user interface with real time display of test parameters like load Vs elongation with facilities for recording, storage and retrieval of results, tare load & reset elongation facility, fully automatic on screen calculation of UTS, YS, Proof stress and unit change facility. Printer : A printer interface with a laser jet printer to be provided Calibration : Machine should be calibrated as per NABL/BIS standards and should meet the requirements of IS:1608 Safety : Overload and over travel safety to be provided Extensometer : Electronic extensometer for proof stress calculation to be provided Power supply : 220/440 volts, AC drive</p>	01
02	<p>Universal Testing Machine: Test/Measuring range : 2.5 Ton Tests to be conducted : Tensile, bend, Rebend, shear test to be done on steel specimens especially steel wires as per BIS standards. Operation : Computerized Load measurement : Digital Elongation measurement : Digital Test Load accuracy : $\pm 1\%$ Least count : 1 N Resolution of piston movement : 0.01 mm Crosshead travel : Up to 500 mm or more Strain Rate : 0.00025 s⁻¹ to 0.008 s⁻¹. Machine to have strain rate as well as stress rate display and control facility. Load measurement : With load cell to be preferred, machine to have load rate control along with display of load rate Accessories : All standard accessories like a comprehensive range of grips clamping jaws suitable for round and flat samples, attachments & fixtures to control various types of tests on different sizes samples to be provided. Computer hardware : Compatible configuration with minimum I-5, 8 GB ram,</p>	01

	<p>Latest Window operating system & LED Monitor 18” and UPS</p> <p>Software : A window based software having user interface with real time display of test parameters like load Vs elongation with facilities for recording, storage and retrieval of results, tare load & reset, elongation facility, fully automatic on screen calculation of UTS, YS, % reduction in area, Young's modulus, proof stress and unit change. Also the software should have facility for testing of hollow pipes.</p> <p>Printer : A printer interface with a laser jet printer to be provided</p> <p>Calibration : Machine should be calibrated as per NABL/BIS and should meet the requirements of IS:1608</p> <p>Safety : Overload and over travel safety to be provided</p> <p>Extensometer : Electronic extensometer for proof stress calculation to be provided</p> <p>Power supply : 220/440 volts, AC drive</p>	
03	<p>Wire relaxation test machine:</p> <p>Capacity : 50 Ton</p> <p>Type of Test : Wire stress relaxation test</p> <p>Dia of wire : 2.5 to 8 mm</p> <p>Duration of Test : 1000 hrs</p> <p>Operation : Computerized</p> <p>Load measurement : Digital</p> <p>Elongation measurement : Digital</p> <p>Test Load accuracy : $\pm 0.5\%$</p> <p>Least count : 0.1 N</p> <p>Vertical Clearance : minimum 1200 mm.</p> <p>Cross-head Max travel : 1000mm.</p> <p>Cross-head speed selection : 0.2 % increment of speed range.</p> <p>Speed Accuracy : +/- 1%.</p> <p>Strain Rate : Machine to have strain rate as well as stress rate display and control facility.</p> <p>Accessories : All standard accessories like a grips, steel strand test fixtures for different sizes of samples to be provided</p> <p>Computer hardware : Compatible configuration with minimum I-5, 8 GB ram, Latest Window operating system & LED Monitor 18” and UPS to be provided.</p> <p>Calibration : Machine should be calibrated as per NABL</p> <p>Power supply : 220/440 volts, AC drive</p>	01
04	<p>Fracture Toughness Test Machine</p> <p>Function : Plane strain fracture toughness testing of steel samples</p> <p>Operation : Computerized</p> <p>Load Measurement : With Load Cell</p> <p>Load Accuracy : $\pm 1\%$</p> <p>Display : Digital</p> <p>Load rate/Stress intensity : Load rate and corresponding increase of stress intensity to be in range of 0.55 to 2.75 MPa m²/s corresponding to loading rate for standard 25 mm thick specimen between 0.34 to 1.7 KN/s.</p> <p>Accessories : All requisite accessories including Bend Test Fixture, Grips and Fixtures for Single Edge Notched Tension Test to be provided as specified in IS:10180</p> <p>Software : A window based software having user interface with real time display of test parameters like load rate, stress intensity, displacement/elongation, recording of load-displacement relationship with facilities for recording, storage and retrieval of results on screen along with calculation of all the test results as specified in S:10180</p> <p>Calibration : Machine should be calibrated as per NABL/BIS standards.</p>	01

05	<p>High Temperature Tensile Testing Machine</p> <p>Tests to be conducted : To check Tensile properties of steel samples a high temperature</p> <p>Test/Measuring range : 60 Ton</p> <p>Operating : Automatic/computerized</p> <p>Accuracy : 0.1%</p> <p>Max. testing Temperature : 900 degree Centigrade</p> <p>Load measurement : Digital</p> <p>Elongation measurement : Digital</p> <p>Test Load accuracy : $\pm 1\%$</p> <p>Least count : 0.01 KN</p> <p>Crosshead travel : Up to 1000 mm or more</p> <p>Strain Rate : 0.00025 s-1 to 0.008 s-1. Machine to have strain rate as well as stress rate display and control facility.</p> <p>Load measurement : With load cell to be preferred, machine to have load rate control.</p> <p>Accessories : All standard accessories like a comprehensive range of grips, clamping jaws suitable for round and flat samples, attachments & fixtures to control various types of tests on different sizes of samples to be provided.</p> <p>Computer hardware : Compatible configuration with minimum I-5, 8 GB ram, Latest Window operating system & LED Monitor 18" and UPS.</p> <p>Software : A window based software having user interface with real time display of test parameters like load Vs elongation with facilities for recording, storage and retrieval of results, tare load & reset elongation facility, fully automatic on screen calculation of UTS, YS, proof stress and unit change facility.</p> <p>Printer : A printer interface with a laser jet printer to be provided.</p> <p>Calibration : Machine should be calibrated as per NABL/BIS and should meet the requirements of IS:1608</p> <p>Safety : Overload and over travel safety to be provided</p> <p>Extensometer : Electronic extensometer for proof stress calculation to be provided</p> <p>Power supply : 220/440 volts, AC drive</p>	01
06	<p>Eddy Current Flaw detector Machine</p> <p>Function : Detection of surface and near-surface faults such as cracks, corrosion, and other defects in steel products</p> <p>Type : Portable Type</p> <p>Display : High Contrast TFT display</p> <p>Flaw size/Location : Machine to be capable of detection of flaws with the depth from 0.05 mm and width from 0.002 mm.</p> <p>Power supply : 220/440 volts, AC drive</p> <p>Operating Temperature : 0-50 0C</p> <p>Rating Meter : Digital</p> <p>Accessories : All requisite accessories including two sets of probes to be supplied along with machine for testing of all type of steel products</p> <p>Calibration : Machine should be calibrated as per NABL/BIS standards.</p>	01
07	<p>Compression Testing Machine</p> <p>Tests to be conducted : Compression test to be done on concrete cube of side upto 225 mm</p> <p>Test/Measuring range : 200 Ton</p> <p>Operation : Computerized</p> <p>Load measurement : Digital, Machine should display Load vs time plot and</p>	01

	<p>instantaneous load rate. Load rate control : Machine should have facility to control and display load rate control from 1kN/sec to 20 kN/sec. Test Load accuracy : $\pm 1\%$ Least count : 0.2 KN Size of the bearing plate : 300 X 300 mm. Load measurement : With load cell to be preferred, machine to have load rate control. Computer hardware : Compatible configuration with minimum I-5, 8 GB ram, Latest Window operating system & LED Monitor 18" and UPS. Software : A window based software having user interface with real time Display of test parameters like Load vs time plot, instantaneous load rate, load rate control with facilities for recording, storage and retrieval of results on screen. Printer : A printer interface with a laser jet printer to be provided Calibration : Machine should be calibrated as per BIS standards as per IS:516 Power supply : 220/440 volts, AC drive</p>	
08	<p>Digital Bend & Revers Bend Testing Machine for wires Tests to be conducted : Bend & Revers Bending through 900 in opposite direction of a test Piece. Operation : Computerized Measurement : Digital Wire Range : 0.3 – 8 mm Accessories : Cylindrical supports of radius (in mm) : 1.25\pm0.05, 1.75\pm0.05, 2.5\pm 0.01, 3\pm0.01, 3.75\pm0.01, 5\pm0.1, 6\pm0.1, 7.5\pm0.1, 10\pm0.1, 12.5\pm0.1, 15\pm0.1, 20\pm0.1, 25\pm0.1 to be provided. Calibration : Machine should be calibrated as per BIS standards Power supply : 220/440 volts, AC drive Requirement : Machine should conform to IS: 1716:1985.</p>	01
09	<p>Digital wire wrapping Test Machine Tests to be conducted : Suitable for wrapping test for wires Operation : Digital Measurement: Digital revolution indicator Speed & direction : 60 RPM reverse Wire range : 0.07 to 5 mm Accessories : All standard accessories like mandrels of different sizes like 0.07, 1,2,3,4,5 mm to be supplied Calibration : Machine should be calibrated as per NABL/BIS standards and meet the requirements of IS:1755 Power supply : 220/440 volts, AC drive</p>	01
10	<p>Digital Torsion Testing Machine Max. Torque Capacity : 200 Nm Tests to be conducted : Suitable for torsion & twist test for steel samples Size of samples to be Tested : 0.5mm to 10 mm Operation : Computerized Display : Display of torque and angle of twist on LCD display to be provided. PC connectivity: Facility for connecting the DAS panel to PC to be provided Load measurement : Digital Elongation measurement : Digital Test Load accuracy : $\pm 1\%$ Torque to resolution : 0.01% Angle of twist resolution : 0.10 Least count : 0.01 Torsion Speed & direction : 1.5 RPM reverse, speed to be digitally displayed Clearance between Grips : 0-450 mm</p>	01

	<p>Grips for Round specimens : 0.5mm to 10 mm Grips for flat Specimens width : 0.1 – 10 X 30 mm Power supply : 220/440 volts, AC Accessories : All standard accessories to be provided. Provision to conduct test slowly by a handle which facilitates finding modulus of rigidity “G” Software : Special comprehensive software for Torsion test to give Torque vs Angle of Twist graph and also to calculate various parameters like Torsional Shear Strength, Modulus of Rigidity, etc. Printer : A printer interface with a laser jet printer to be provided Calibration : Machine should be calibrated as per BIS standard IS:1717 Power supply :220/440 volts, AC drive</p>	
11	<p>FBH standard blocks for Ultrasonic testing.(Two Sets) Tests to be conducted : Used to evaluate the performance of ultrasonic equipment for Longitudinal (straight beam) inspection. Specification : Two sets for Size 50 & 100 mm. Material : Plain Carbon Steel Calibration : Blocks should be calibrated as per ASTM E-127 & E-428.</p>	01
12	<p>Portable Magnetic Particle Inspection Machine: Function : Detection of surface and sub surface faults such as cracks and other defects in steel products Type : Portable Type Display : High Contrast TFT display Current rating : up to 2000 amp Special feature : Auto AC Decay Demagnetization Power supply : 220/440 volts, AC drive Operating Temperature : 0-50 0C Rating Meter : Digital Accessories : All requisite accessories including two sets of probes to be supplied along with machine for testing of all type of steel products. Calibration : Machine should be calibrated as per NABL/BIS standards.</p>	01
13	<p>Superficial Rockwell Hardness Testing Machine. Tests to be conducted : Rockwell/Rockwell superficial Hardness test to be done on steel samples. Test/Measuring Load : (15,30,45,60,100,150)Kgf. Minor Load : (3, 10) kgf Operation : Automatic Load/Dwell/Unload Load measurement : Digital Test Height (mm.) : 250 mm max Resolution : 0.1 Rockwell Superficial Output : USB Storage facility for test results & ethernet connectivity for computers. Auto load & scale selections. Accessories : All standard accessories like Rockwell Diamond Indenter, Superficial Diamond Indenter, Testing Tables, ‘V’ Groove for round Job, steel Ball Indenter 1/16”, Steel Ball Indenter 2.5 mm, Steel Ball Indenter 5 mm, Test Block for Rockwell Superficial 30N with NABL calibration, Steel Balls 1/16”, Clamping Device, PVC Cover for Machines, Instruction Manual. Calibration : Machine should be calibrated as per NABL standards Power supply : 220/440 volts, AC drive.</p>	01
14	<p>Vickers Hardness Testing Machine. Tests to be conducted : Vickers Hardness test to be done on steel samples. Test/Measuring Load : 3, 5, 10, 20, 30, 50 Kgf. Load measurement : Digital, LCD display Test Height (mm.) : 200 mm Maximum Least count : 0.001</p>	01

	<p>Size of the bearing plate : 300 X 300 mm. Calibration : Machine should be calibrated as per NABL/BIS standard IS:1501 Power supply : 220/440 volts, AC drive</p>	
15	<p>Creep Testing Machine Function : To test the creep properties of steel samples Capacity : 100 KN Time of testing : Upto 100000 hrs Temperature of Testing : upto 600 0C Type of samples : Steel samples Hardened & Tempered upto 1050 MPa and maximum rupture strength of upto 550 Mpa. Dia of Test Piece : upto 12 mm dia or width Load Accuracy : $\pm 0.5\%$ Time measurement Accuracy : $\pm 0.5\%$ Requirements : Machine should be capable of measurement of stress rupture properties as per IS:3407, Part-1 & Part-2 Operation : Automatic/Computerized Display : Display of parameters to be Digital Power supply : 220/440 volts, AC drive Calibration : Machine should be calibrated as per NABL/BIS standards, IS:3407, Part-1 & Part-2 Software : Software should have Control system for load control, extension control. The loading testing curve can be plotted automatically.</p>	01
16	<p>Spring back tester. Function : To estimate the tensile yield strength of double-reduced tin plates from measurement of thickness and angle of spring back of a rectangular strip test piece. Thickness of samples : Nominal thicknesses of sheets to be tested is 0.14 mm to 0.49 mm, width of sheet upto 25 mm Simple Dimensions : length-150 mm, width-25 mm Calibration : Machine should be calibrated as per NABL</p>	01
17	<p>Vertical V & U Notch Cutter Machine. Function : V & U Notch cutting for impact test on steel samples Test/Measuring range : V & U Notch for Izod/Charpy impact tests Accessories' to be provided : Two sets Cutters for V notch and U notch to be provided along with machine V notch cutter : To make V – notch for Izod/Charpy samples U notch cutter : To make U – notch for Izod/Charpy samples Type : Vertical Calibration : Notches should meet the requirements of IS:1598 & IS:1757.</p>	01
18	<p>Fatigue Test Machine Function : To test the fatigue strength of materials and to draw S-N diagram of steel samples. Maximum Bending Moment : 400 Kg.cm Bending Moment adjustable : 25-400 Kg.cm Range : Range-I 2.5-12.5 Nm Testing dia of specimen : 8 mm Operation : Automatic Accuracy of applied bending moment : $\pm 1\%$ Counter : Digital (up to 8 Digit) Power supply : 220/440 volts, AC drive Calibration : Machine should be calibrated as per NABL/BIS standards, ISO:12106/IS:5074.</p>	01
19	<p>Chiller Tests to be conducted : To chill steel samples for impact testing to temp up to -1000 C.</p>	01

	Test/Measuring range : Up to -1000C to 30 0C Measurement : Digital temp display Accuracy : ± 1% Least count : 0.010C Type : Bench Type. Internal dimension : Minimum Depth - 150 mm, Height – 75 mm, Width –150mm. Shelves : At least two shelves to be provided. Temp. Control : Automatic recording and Alarm facility. Calibration : Machine should be calibrated as per NABL.	
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Metallurgical Lab

Sl No.	Name of Equipment & Specifications	Quantity
01	Muffle Furnace Max. Temperature : 1800°C Working Temperature : 1700°C Heating Element : Kanthal A-1/ Silicon Carbide (SiC)/ Molybdenum Silicide (MoSi2) Temperature Accuracy : +/- 1°C (+/- 1.8°F) Temperature Controller : PID controller Display : LED / LCD Display External Chamber Construction : MS w/ Powder Coating / 304 Grade Stainless Steel. Internal Chamber Construction : Ceramic Board & Grooved Refractory Chamber as per Temp. Requirement Insulation : Ceramic wool insulation Alarm : Audible & Visual type Power Supply : 220 / 440 Volts Stabilizer : As standard Optional Accessories : Data logger, Safety switch on door, Temperature Chart Recorder, Extra port for gas - Extra heating element & rod with clips, Extra thermocouple. Dimension (Inches) : 8 x 8 x 12/ 12 x 12 x 12 / 18 x 18 x 18 Volume (Liter) : 13/ 28 / 96 Certification : Machine should be calibrated as per NABL.	01
2	Magnifying glass with stand Lightweight : Yes Magnification Power : 10X Body Material : Plastic Illumination : Yes Wattage of Tube : 22 W Power Supply : 220 / 440 Volts	01
3	Stage Micrometer standard block for Microscope Function :To Calibrate metallurgical Microscopes Slide size : 25mm x 75mm Least Count : 0.001mm Brightly Illuminated Grid Lines NPL/NABL certificate to be given	01

Electrical Properties Testing Lab

Sl No.	Name of Equipment & Specifications	Quantity
1	<p>Coercimeter Function : To determine the coercive field strength of magnetic materials Products to be tested : Flats -Thickness upto 5 mm and width upto 15 mm and rounds upto 30 mm Maximum sample length: 100 mm Magnetization of samples required: Minimum upto 16000 gauss Field strength : minimum upto 50 A/cm Repeatability : $\pm 1\%$ Operation : Computer controlled Conformity : The machine should conform to IS/IEC standards Requirement : measurement to be independent of specimen geometry Additional features :Machine to have additional features of measurement of polarization (at 1.7 tesla), Initial magnetization curve, Remanence of steel samples Software : software to have facility for Setting of measurement parameters, such as Applied field waveform and Maximum applied field strength etc and Real time display of measured curves and values, such as Magnetic field strength H [A/m], Coercivity, Applied current , Coil temperature etc.</p>	01
2	<p>Flux meter Function : For measuring magnetic induction intensity of all kinds of magnetic field, including DC magnetic field, AC magnetic field, etc. Also to measure the materials' residual magnetic after mechanical processing, products' residual field after demagnetization, Type : Portable/Handheld Display : LED Range : 0-3000 gauss Resolution : One Gauss Accuracy : 0.5% Power : 220V, 50 Hz Special feature: Indicate the direction of the magnetic field.</p>	01
3	<p>Magnetometer Function: To measure the magnetic field/magnetic flux density, magnetic remanence, magnetic permeability, Testing of Steel samples. Type: Portable, preferably microprocessor controlled Display: Digital, LCD Measurement: Through Hall Probes/fluxgate probes Measuring Range: upto 100/200 μT Accuracy : 2% Accessories: All the standard probes and other accessories required for measurement to be supplied Calibration: The measuring instrument as well as the probes should be calibrated with NABL traceability Power : 220V, 50 Hz, Battery Back up to be provided. Data logger: Data logging facility to be preferred</p>	01
4	<p>Digital ohm meter Function : To determine the resistance/resistivity of steel samples Maximum voltage:1000 V Maximum amps:10 A Frequency :50 Hz Display Type :Digital Maximum Resistance to be measured: 100 ohm Accuracy: 0.001 % Power Source :Battery (chargeable)</p>	01

Electrical Lab

S. No.	Name of instruments	Name of Equipment & Specifications	Quantity (Set/No.)
1	Power analyzer with accessories (Portable)	<p>Three-Phase Power Quality and Energy Analyser</p> <p>Comprehensive power quality measurement (Dip/Swells, transient, Flicker, Harmonics and Unbalance)</p> <p>Voltage inputs : 4 (3 phase + neutral referenced to PE) (5 connectors) dc-coupled, Maximum input voltage 1000 Vrms, Nominal voltage range Selectable 1 V to 1000 V</p> <p>Current inputs 4 (3 phase + neutral), Clamp CT Range 0.5A to 600A and 5 A to 6000 A with flexible CT</p> <p>The instrument should comply to CLASS A Ed3 as per IEC 61000 4-30. Harmonics for voltage, current and power upto 50th order, Interharmonics, High frequency harmonics up to 30KHz</p> <p>7" Inch touch display</p> <p>Fast Transient detection upto 8kV with 1Mhz sampling on all phases simultaneously</p> <p>Self-powering from measuring lines with rechargeable battery backup of 1 hours or more for uninterrupted operation</p> <p>Ethernet & Wi-Fi Communication compatibility</p> <p>Auto configuration check with auto correction</p> <p>8 GB internal (expandable with micro SD card) Memory to store the data upto 400 parameters, event and waveform</p> <p>Should provide report as per IEEE519 - 2014, EN50160 limit</p> <p>The instrument should be minimum warranted for a period of 2 years.</p> <p>Basic measurement accuracy</p> <p>Voltage $\pm 0.1\%$ of nominal voltage</p> <p>Current $\pm(1.5\% + 0.03\%)$ with 6000A</p> <p>Power $1.7\% + 0.0075\%$ with 6000A</p> <p>Facilities of recording through internal memory, PC Card Data Storage, PC connectivity, Power/Energy Recording, Simultaneous recording of Demand Values and Harmonics.</p> <p>With Standard and optional accessories viz. Flexible Clamp on sensor 6000A (4 Nos.), optional HT CT of 40A (3 nos.), Voltage cords (5 Nos.), AC Adapter, PC Card/ Flash card of 8 GB, Software for analysis on PC, Carrying case, Battery pack etc.</p> <p>Reputed make computer notebook/laptop of latest configuration</p>	02
2	Compressed Air Flow meter (portable)	<p>For checking the performance of air compressors</p> <p>Capable of accurate measurement of Flow, Pressure, Dew point, Temperature etc. of compressed air/gas with all accessories like probes/sensors, fittings, data logger, software, adapter, battery backup, connecting cable/USB Cable, carrying case etc. Suitable for wet and dry compressed air.</p> <p>Range of measurement :</p> <p>Flow : up to 650 sfps suitable for different pipe diameters/up to 50000 CFM, Pressure – up to 15 Bar, Temp. – up to 100°C</p>	02
3	Ultrasonic Flow meter for Fluids	<p>Ultrasonic water flow meter</p> <p>TYPE : PORTABLE</p> <p>Range : 0 - 10000 LPM</p> <p>Velocity : 0.01 – 25 meter/sec.</p> <p>Pipe Dia Range : 20 – 1000mm</p>	02

		<p>Process Temperature: up to 150 Deg.C</p> <p>Media : All sonically conductive liquids</p> <p>Pipe Materials : All commonly used pipe materials</p> <p>Resolution : 0.05 m/s</p> <p>Repeatability : + 0.01meter/sec. or 0.01% of reading</p> <p>Accuracy : + 1 % of flow rate reading</p> <p>Measurements : Volumetric flow, velocity, flow totalizer</p> <p>Power Supply : 220V input, battery backup of 3 hrs.</p> <p>Data Logger : Internal or supplied along with RS 232 port.</p> <p>Printer : Facility for printer to be provided</p> <p>Display : LCD screen</p> <p>Sensors : Two sets of required sensors to be supplied along with machine</p> <p>Accessories : All the standard accessories like battery charger, sensor cables, clamping fixtures, couplant bottle t etc to be provided</p>	
4	Pressure gauges for air & water	<p>1. Digital Pressure gauge (0-20 Kg/cm2)</p> <p>2. Digital Pressure gauge (0-50 Kg/cm2)</p> <p>3. Analog Pressure gauge (0-20 Kg/cm2)</p> <p>4. Analog Pressure gauge (0-50 Kg/cm2)</p>	02 each
5	Optical and Radiation pyrometer	<p>A. Radiation Pyrometer:</p> <p>Type: Portable type</p> <p>Radiation: Total Radiation type</p> <p>Temperature range: 200 to 1800 Deg.C</p> <p>Emissivity: 0.1 to 1.0</p> <p>Display: Digital, °C or °F</p> <p>Accuracy: ± 1%</p> <p>Supply: 220 volt</p> <p>Battery backup: 3 hrs</p> <p>Sighting: laser & Scope</p> <p>Mounting facilities to be provided</p> <p>B. Infra red Pyrometer</p> <p>Type: Portable type</p> <p>Radiation: Bi colour infrared radiation</p> <p>Temperature range: 700 to 3000 Deg.C</p> <p>Emissivity: 0.1 to 1.0</p> <p>Optical resolution: 100:1 (minimum)</p> <p>Display: Digital</p> <p>Accuracy: ± 0.5%</p> <p>Supply: 220 volt</p> <p>Battery backup: 3hrs</p> <p>Sighting: laser & Scope</p> <p>Mounting facilities to be provided</p>	01 each
6	Digital temperature meters	<p>Digital Temperature indicator (0-200/300 Deg.C)</p> <p>Thermocouple probe along with temperature meter</p> <p>Sensor Type : S Type</p> <p>Temperature range: 0 to 1450 Deg.C</p> <p>Standard (Limit of error): ±1.50C or ± 0.25%</p> <p>Operating Temperature: 1300–1450 Deg.C, Continuous basis</p> <p>Probe length: 1 meter</p> <p>Sheath: Refractory</p> <p>Meter : 4 digit LCD display</p>	02
			02

		<p>Operating Temperature: -200 to 1650 Deg.C Operating Parameter: Single thermocouple input Timer function Temperature reading,0C or 0 F and hold function Max, avg and min. function Auto power off Auto low battery indicator Last eight data memory RS- 232 interface compatible</p> <p>It should be supplied with compensating wire of at least 5 meter. The wire thickness should be 0.5 mm and insulation beads should be imported one.</p>																																									
7	Lux Meter	Digital illuminance meter with a maximum display of 199900 lux at different ranges with chargeable battery/AC adapter	02																																								
8.	Flue Gas Analyzer	<p>Flue Gas Analyzer The equipment shall be portable in nature, equipped with re-chargeable battery and printing facility as well as interface RS232 connector. It should be capable to measure following parameters in specified range and accuracy.</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Range</th> <th>Resolution</th> <th>Accuracy</th> </tr> </thead> <tbody> <tr> <td>Oxygen</td> <td>: 0 to 25%</td> <td>0.1%</td> <td>±0.1%</td> </tr> <tr> <td>Carbon dioxide (NDIR sensor)</td> <td>: 0 to 40 % (measured value)</td> <td>0.1%</td> <td>1 ppm</td> </tr> <tr> <td>Carbon monoxide with H2 compensation</td> <td>:0 to 20,000 ppm</td> <td>1ppm</td> <td>± 5 to10%</td> </tr> <tr> <td>Hydrocarbon (NDIR sensor)</td> <td>: 0 to 10000 ppm</td> <td>1ppm</td> <td>± 5 %</td> </tr> <tr> <td>Nitrogen oxide</td> <td>: 0 to 5000 ppm</td> <td>1ppm</td> <td>± 5 %</td> </tr> <tr> <td>Nitrogen dioxide</td> <td>: 0 to 1000ppm</td> <td>1ppm</td> <td>± 5 %</td> </tr> <tr> <td>Sulphur dioxide</td> <td>: 0 to 5000 ppm</td> <td>1ppm</td> <td>± 5 %</td> </tr> <tr> <td>Draft</td> <td>: 0 to 150 mbar</td> <td>0.01 mbar</td> <td>±0.5 %</td> </tr> <tr> <td>Temperature</td> <td>: Ambient to 1300 Deg.C</td> <td></td> <td></td> </tr> </tbody> </table> <p>The equipment shall give calculated value for Excess air, Combustion efficiency, CO/CO2 ratio, inlet temperature, losses etc. The equipment should be capable of measuring these parameters on different type of fuels such as solid, liquid and gas. The supplier shall clearly state guarantee for different sensors supplied along with equipment and also the life and guarantee for next supply. The AMC cost with and without spares shall also be indicated.</p>	Parameter	Range	Resolution	Accuracy	Oxygen	: 0 to 25%	0.1%	±0.1%	Carbon dioxide (NDIR sensor)	: 0 to 40 % (measured value)	0.1%	1 ppm	Carbon monoxide with H2 compensation	:0 to 20,000 ppm	1ppm	± 5 to10%	Hydrocarbon (NDIR sensor)	: 0 to 10000 ppm	1ppm	± 5 %	Nitrogen oxide	: 0 to 5000 ppm	1ppm	± 5 %	Nitrogen dioxide	: 0 to 1000ppm	1ppm	± 5 %	Sulphur dioxide	: 0 to 5000 ppm	1ppm	± 5 %	Draft	: 0 to 150 mbar	0.01 mbar	±0.5 %	Temperature	: Ambient to 1300 Deg.C			02
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09	Air flow meter/Pitot Tube	<p>A. Air Flow meter Type: Portable type Media compatibility: Air, Natural gas Flow range: 0.2 to 3.0 M3/Second Pipe size compatibility: 3” to 15” Air Temperature: 20 Deg.C to 500 Deg.C Max. operating pressure: 0.13 Kg/cm2 Display: Digital preferred Accuracy: ± 2% Supply: 220 volt</p> <p>B. Pitot Tube Operating Temperature:0-700 Deg.C</p>	02 each																																								

		<p>Material: Stainless steel Probe Length: 1.5 meter/one meter Probe type: Adjustable length Display: Digital display of static as well as velocity pressure</p>	
10	Thermal Imager	<p>Function: Thermal imaging of equipments, furnace structures etc for insulation evaluation Type: Portable/Handheld Detector Resolution: 640 x 480 (307200 Pixels) or Higher. Super resolution/ Image enhancement shall not be accepted IFOV : 0.9 mRad or less, D:S 1060:1 or higher Focus: Laser sharp Auto Focus to be provided. Also advanced manual focus to be provided Minimum focus distance: 6 inch or less Distance measurement: Laser distance meter to be provided to measure target distance Connectivity: Wireless connectivity to PC/Mobile phone to be provided Display: LCD display 3.5 Inch Touchscreen Temperature measurement:: minimum up to 500 Deg.C Memory : Internal (4 GB or more) & External SD Card (4GB or more) both Thermal sensitivity: < 0.1 Deg.C Modes of operation: Both Auto and manual mode Camera: Built in digital camera of 5 MP Laser Pointer: To be provided Software: Software to have capability of analysis and reporting Battery: Chargeable battery packs with 3 hr backup. Minimum Two lithium ion rechargeable batteries, it should have charge level indication on battery itself Power Supply :220V, 50 Hz Lens Upgradation : Camera should be capable of connecting to Telephoto or Wide-angle lenses in future</p> <p>Accessories: All standard accessories like different types of lenses etc to be provided</p>	02

(On the letter head of the Requesting Agency)

TO WHOMSOEVER IT MAY CONCERN

This is to certify that we don't have any legal proceedings regarding criminal or civil litigation, fraud or other malpractices with any associate organization/customer in the last three years.

Signature: _____

Name: _____

Designation: _____

Date: _____

(Seal of the Organization)

TENDER NOTICE NO. NISST/Admn/Pur/2023-24/1

S.No.	Items	MAKE/MODEL & SPECIFICATIONS	PRICE QUOTED	GST	ANY OTHER (PL. SPECIFY)	TOTAL AMOUNT
1	Salt Spray Corrosion Test Chamber					
2	XRF Coating Thickness Gauge					
3	UV-Visible Spectrophotometer					
4	Halogen lamps & Reference solutions for AAS					
5	Atomic Absorption Spectrophotometer					
6	Electronic weighing balance					
7	Hot Air Oven					
8	Platinum Crucibles					
9	Certified Reference Materials (CRMs)					
10	Electrolysis Apparatus with Electrodes					
11	Magnetic stirrer					
12	Hot Plate					
13	Muffle Furnace					
14	Lab Pulveriser					
15	Oxygen Analyser upgradation to Nitrogen					
16	Glass wares & Chemicals					
17	Universal Testing Machine 1.0 Ton					
18	Universal Testing Machine 2.5 Ton					
19	Wire Relaxation testing Machine					
20	Fracture toughness testing machine					

21	High temperature Tensile Test Machine					
22	Portable Eddy current flaw detector					
23	Compression Testing Machine					
24	Digital bend & Reverse Bending Machine For Wires					
25	Wrapping Testing Machine					
26	Torsion Testing Machine					
27	FBH standard block For Ultrasonic testing					
28	Portable Magnetic Particle inspection Machine					
29	Superficial Rockwell Hardness Tester					
30	Vickers hardness tester					
31	Computerized Creep Testing Machine					
32	Spring back tester					
33	Vertical V&U Notch Cutter Machine					
34	Fatigue Testing Machine					
35	Chiller					
36	High Temperature Muffle Furnace					
37	Magnify Glass with Stand					
38	Stage Micrometer standard block For Microscope					
39	Coercimeter					
40	Flux Meter					
41	Magnetometer					
42	Digital ohm meter.					

43	Power analyzer with accessories (portable)					
44	Compressed Air Flow meter (portable)					
45	Ultrasonic Flow meter for Fluids					
46	Pressure gauges for air & water 1. Digital Pressure gauge (0-20 Kg/cm ²) 2. Digital Pressure gauge (0-50 Kg/cm ²) 3. Analog Pressure gauge (0-20 Kg/cm ²) 4. Analog Pressure gauge (0-50 Kg/cm ²)					
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48	Digital temperature meters A. Digital Temperature indicator (0-200/300 °C) B. Thermocouple probe along with temperature meter					
49	Lux Meter					
50	Flue Gas Analyzer					
51	A. Air flow meter B. Pitot Tube					
52	Thermal Imager					

PLACE: _____

DATE: _____

(SIGNATURE OF AUTHORISED SIGNATORY)
SEAL OF FIRM