



Tender for
“Supply, Installation,
Commissioning & Testing of
10KN (1000 kgf) Electro
Dynamic Vibration Shaker
System and Environmental
Chamber”

(Revised technical specifications after
Pre-bid conference)

By

Central Manufacturing Technology Institute
Tumkur Road, Bangalore-560022

सेन्ट्रल मैन्युफेक्चरिंग टेक्नोलॉजि इंस्टिट्यूट 

CENTRAL MANUFACTURING
TECHNOLOGY INSTITUTE

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CMTI - CENTRAL MANUFACTURING TECHNOLOGY INSTITUTE

Tumkur Road, Bengaluru - 560022, Karnataka, INDIA

INVITATION FOR BIDS

Tender No. CMTI/PUR/06/2023-24/BS/SMPM

Date: 09.01.2024

1. CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, Invites sealed Bids from Manufacturers and their Distributors / Indian Agents, if any, for purchase of items listed below.

Sl. No.	Tender No.	Description of items	Qty	Two Bid	Bid Security (EMD) (Rs.)
1	CMTI/PUR/06/2023-24/BS/SMPM	Supply, Installation, Commissioning and Testing of 10KN (1000 kgf) Electro Dynamic Vibration Shaker System and Environmental Chamber.	One No.	Two Bid System [Techno - Commercial	INR 1,30,000.00

2. Interested Bidders may obtain further information from the office of the Group Head, Purchase & Stores, CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, mail: purchase@cmti.res.in
3. The Bidding Documents can be downloaded at www.tenderwizard.com/CMTI/ <https://cmti.res.in/all-tender/>.
4. The Director, CMTI- Bengaluru, reserves the right to accept any or all tenders either in part or in full or to split the order without assigning any reasons therefore.
5. Please note that, As per GoI notification, EMD exemption will be conceded for (a) Micro and small Enterprises if registered with any government bodies specified by Ministry of Micro, Small & Medium Enterprises (M/o MSME) with valid certificate duly issued by GOI are exempted for submitting the tender fee and earnest money deposit (EMD). **It will be applicable for those bidders who shall produce their own goods or provide their own services, and not applicable for trading purpose.** No entrepreneur or memorandum of application form is acceptable. Kindly provide the valid Udyam MSME Certificate in order to avail EMD Exception otherwise you have to pay the EMD Money.
6. **Currency of Bidding:** For Imported Goods/Services if supplied directly from abroad, prices shall be quoted in respective foreign currencies like US Dollar or Euro or Pound Sterling or Yen etc., Bidders supplying indigenous goods shall be quoted in INR only.
7. Indication of Price in Technical Bid in any manner directly or indirectly may lead to disqualification of the respective tender.

SUPPLY, INSTALLATION, COMMISSIONING AND TESTING OF 10kN (1000 kgf) ELECTRO DYNAMIC VIBRATION SHAKER SYSTEM AND ENVIRONMENTAL CHAMBER

BID REFERENCE	CMTI/PUR/06/2023-24/BS/SMPM
PRE-BID CONFERENCE WAS HELD ON	06-10-2023 @ 11.00 hrs
DEADLINE FOR RECEIPT OF BIDS	25.01.2024 – 14.30 hrs
DATE AND TIME OF OPENING OF BIDS (TECHNICAL BID ONLY)	25.01.2024 – 15.00 hrs
DATE AND TIME OF OPENING OF PRICE BIDS	Will be intimated to Technically Qualified Bidders only
VENUE FOR BID OPENING	E-Tender online opening
ADDRESS FOR COMMUNICATION	Group Head, (Purchase & Stores) Central Manufacturing Technology Institute, Tumkur Road, Bengaluru-560022, Karnataka, India Email ID: purchase@cmti.res.in

N.B.:

1. All the pages of the Bidding Document should be signed, stamped and submitted with the offer.
2. This Bidding Document is non-transferable.
3. Bidding Document can be downloaded free of cost from our website <https://cmti.res.in/all-tender/>

CHAPTER - 1

INSTRUCTIONS TO BIDDER

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A-Introduction

1.1 Eligible Bidders

1.1.1 (a) Vendor shall be 100% subsidiary of the parent manufacturing company (OEM) in India, (b) vendor should have service center with trained service engineers in India preferably in Bangalore (c) vendor should have supplied and installed at least 1 similar equipment and (d) who fulfill the eligibility criteria mentioned in the Chapter-4 is eligible to participate in this tender.

1.1.2 Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting Services for the preparation of the design, specifications, and other documents to be used for the procurement of the Goods to be purchased under this Invitation For Bids.

1.2 Cost of Bidding

1.2.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser, will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

1.3 Fraud and corruption

1.3.1 The Purchaser requires that the Bidders, Suppliers and Contractors observe the highest standard of Ethics during the procurement process and execution of such contracts. In pursuit of this policy, the following are defined:

“Corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;

“Fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;

“Collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Purchaser, designed to establish bid prices at artificial, non- competitive levels; and

“Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

1.3.2 The Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.

B - The Bidding Documents

1.4 Cost of Bidding Documents

1.4.1 The Bidding Documents can be downloaded from Purchaser's website as indicate in the Invitation for Bids [IFB] free of cost.

1.5 Content of Bidding Documents

1.5.1 The Goods required, bidding procedures and contract terms are prescribed in the Bidding Documents which should be read in conjunction. The Bidding Documents, apart from the Invitation For Bids have been divided into 8 chapters as under:

Chapter 1:	Instructions to Bidder (ITB)
Chapter 2:	General Conditions of Contract (GCC) and Special Conditions of Contract (SCC)
Chapter 3:	Schedule of Requirements
Chapter 4:	Specifications and Allied Technical Details PART A: Technical Specifications PART B: Acceptance Criteria
Chapter 5	Price Schedule Forms
Chapter 6	Contract Form
Chapter 7:	Other Standard Forms comprising: (a) Integrity Pact; (b) Bidder Information Form; (c) Bid Security Form; (d) Performance Statement Form; (e) Deviation Statement Form; (f) Service Support details Form; (g) Bid Form; (h) Performance Security Form; (i) Acceptance Certificate Form; (j) Eligibility Certificate Form; (k) Non-Black-Listed Self Certification Form

1.5.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all information required by the Bidding Documents or submission of a bid not substantially responsive to the Bidding Documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

1.6 Clarification of Bidding Documents

1.6.1 A prospective Bidder requiring any clarification of the Bidding Documents shall contact the Purchaser in writing at the Purchaser's address specified in the Special Conditions of Contract (SCC). The Purchaser will respond in writing to request for clarification, provided that such request is received not later than ten (10) days prior to the deadline for submission of Bids. The Purchaser shall forward copies of its response to all those who have acquired the Bidding Documents directly from it, including a description of the inquiry but without identifying its source. Should the Purchaser deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so following the procedure under clause relating to amendment of Bidding Documents and Clause relating to Deadline for Submission of Bids. The clarifications

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System and amendments issued would also be hosted on the website of the Purchaser for the benefit of the other prospective Bidders.

1.7 Amendment of Bidding Documents

- 1.7.1 At any time prior to the deadline for submission of Bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by an amendment.
- 1.7.2 All prospective Bidders who have received the Bidding Documents will be notified of the amendment in writing or by cable or by fax, or by e mail and the said amendment will be binding on them. The same would also be hosted on the website of the Purchaser and all prospective Bidders are expected to surf the website before submitting their Bids to take cognizance of the amendments.
- 1.7.3 In order to allow prospective Bidders reasonable time to take the amendment into account, while preparing their Bids, the Purchaser, at its discretion, may extend the deadline for the submission of Bids and host the changes on the website of the Purchaser.

C - Preparation of Bids

1.8 Language of Bid

- 1.8.1 The Bidder shall bear all costs of translation, if any, to the English language and all risks of the accuracy of such translation, for documents provided by the Bidder.

1.9 Documents Comprising the Bid

- 1.9.1 The Offer is to be submitted in two parts. One part will be the Un-Priced Techno-Commercial Bid and the other shall be the Priced Bid in the manner described at ITB Clause 1.18.
- 1.9.2 The Un-Priced Techno-Commercial Bid prepared by the Bidder shall include, among other Documents [like Technical Literature, brochures, drawings, all relevant commercial terms, data sheets etc.] the following:
- (a) Bidder Information Form;
 - (b) Bid Security as specified in the Invitation For Bids;
 - (c) Service support details form;
 - (d) Deviation Statement Form;
 - (e) Performance Statement Form;
 - (f) Documentary evidence establishing that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted;
 - (g) Documents establishing Good eligibility and conformity to Bidding Documents;
 - (h) Current solvency certificate
 - (i) Eligibility Certificate
 - (j) Non-Blacklisted self-certificate
- 1.9.3 The Price Bid prepared by the Bidder shall include, among other Documents the following:
- (a) Bid form.
 - (b) Applicable Price Schedule Form (this forms shall be mandatorily be uploaded in the price bid)

1.10 Bid Form and Price Schedule Form

- 1.10.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule Form furnished in the Bidding Documents. These forms must be completed without any alterations to its format

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

1.11 Bid Prices

1.11.1 The Bidder shall indicate on the appropriate Price Schedule Form, the unit prices and total bid prices of the Goods it proposes to supply under the contract.

1.11.2 Prices indicated on the Price Schedule Form shall be entered separately in the following manner:

(a) For Goods manufactured within India

- (i) The price of the Goods quoted ex - works including taxes already paid.
- (ii) GST and other taxes & duties which will be payable on the Goods if the contract is awarded.
- (iii) The charges for inland transportation, insurance and other local Services required for delivering the Goods at the desired destination.
- (iv) The installation, commissioning and training charges including any incidental Services, if any.

(b) For Goods manufactured abroad

- (i) The price of the Goods, quoted on EXW/ FCA (named place of delivery abroad) or FOB (named port of shipment), as specified in the Price Schedule Form.
- (ii) The charges for insurance and transportation of the Goods to the port/place of destination. The agency commission charges, if any.
- (iii) The installation, commissioning and training charges including any incidental Services, if any

1.11.3 The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the INCOTERMS published-by the International Chambers of Commerce, Paris.

1.11.4 Where there is no mention of packing, forwarding, freight, insurance charges, taxes etc. such offer shall be rejected as incomplete.

1.11.5 The price quoted shall remain fixed during the contract period and shall not vary on any account.

1.11.6 All lots and items must be listed and priced separately in the Price Schedules. If a Price Schedule shows items listed but not priced, their prices shall be assumed to be included in the prices of other items. Lots or items not listed in the Price Schedule shall be assumed to be not included in the bid.

1.11.7 The purchases made by the Purchaser for scientific purpose are exempt from Customs Duty at a concessional rate is livable [Government of India Notification No. 51/96 - Customs dated 22/07/1996].

1.11.8 The Purchaser shall not issue Exemption Certificates [Customs Duty Exemption Certificate / GST Exemption Certificate] for any raw materials / intermediary products that go into the manufacture of the Goods offered by Bidder.

1.12 Bid Currencies

1.12.1 Prices shall be quoted in **Indian Rupees** for offers received for supply within India and in freely convertible foreign currency in case of offers received for supply from foreign countries.

1.13 Documents Establishing Bidder's Eligibility and Qualifications

1.13.1 The Bidder shall furnish as part of its bid, documents establishing the Bidder's eligibility to bid

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System and its qualification to perform the contract if its bid is accepted.

1.13.2 The documentary evidence of the Bidder's qualification to perform the contract if the bid is accepted shall establish to the Purchaser's satisfaction that; Bidder meets the qualification/eligibility Criteria listed in Bidding Documents, if any.

1.13.3 Conditional tenders shall not be accepted.

1.14 Documents Establishing Goods Eligibility and Conformity to Bidding Documents

1.14.1 To establish the Goods eligibility, the documentary evidence of the Goods and Services eligibility shall consist of a statement on the country of origin of the Goods and Services offered which shall be confirmed by a certificate of origin issued by a local chamber of commerce at the time of shipment.

1.14.2 To establish the conformity of the Goods and Services to the specifications and schedule of requirements of the Bidding Documents, the documentary evidence of conformity of the Goods and Services to the Bidding Documents may be in the form of literature, drawings and data, and shall consist of:

- (a) A detailed description of the essential technical and performance characteristics of the Goods;
- (b) A list giving full particulars, including available sources and current prices, of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods following commencement of the use of the Goods by the Purchaser in the Priced - bid; and
- (c) An item-by- item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the Goods and Services to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.

1.14.3 For purposes of the commentary to be furnished pursuant to above, the Bidder shall note that standard workmanship, material and equipment, designated by the Purchaser in its Technical Specifications are intended to be descriptive only not restrictive The Bidder may substitute these in its bid, provided that it demonstrates to the Purchaser's satisfaction that the Substitutions ensure substantial equivalence to those designated in the Technical Specifications.

1.15 Bid Security (BS) / Earnest Money Deposit (EMD)

1.15.1 The Bidder shall furnish, as part of its bid, a Bid Security (BS) / Earnest Money Deposit [EMD] for an amount as specified in the Invitation for Bids.

1.15.2 The Bid Security is required to protect the Purchaser against the risk of Bidder's conduct, which would warrant the security's forfeiture.

1.15.3 The Bid Security shall be in Indian Rupees for offers received for supply within India and denominated in the currency of the bid or in any freely convertible foreign exchange in the case of offers received for supplies from foreign countries in equivalent Indian Rupees. The Bid Security shall be in one of the following forms at the Bidder's option:

- (a) A Bank Guarantee [BG] issued by a Nationalized/Scheduled bank in the form provided in the Bidding Documents and valid for 45 days beyond the validity of the bid. In case a Bidder desires to submit a BG issued from a foreign bank, then the same should be confirmed by a Nationalized/Scheduled Indian bank, with all confirmation charges to Bidder's account. Purchaser reserves the right to verify the authenticity of the Bank Guarantees from the issuing/confirming/controlling bank; or

(b) Fixed Deposit Receipt pledged in favour of the Purchaser ; or

(c) Online payment in favour of the Purchaser.

1.15.4 The Bid Security shall be payable promptly upon written demand by the Purchaser in case the conditions listed in the ITB Sub-Clause 1.15.8 are invoked.

1.15.5 The Bid Security should be submitted in its original form. Copies shall not be accepted.

1.15.6 The Bid Security of unsuccessful Bidder will be discharged / returned as promptly as possible positively within a period of 30 days after the expiration of the period of bid validity or placement of order whichever is later, without any interest.

1.15.7 The successful Bidder's Bid Security will be discharged upon the Bidder furnishing the Performance Security, without any interest. Alternatively, the BS could also be adjusted against PS, if it is paid through DD/BC.

1.15.8 The Bid Security may be forfeited:

(a) If a Bidder withdraws or amends or impairs or derogates its bid during the period of bid validity specified by the Bidder on the Bid Form; or

(b) In case of a successful Bidder, if the Bidder fails to furnish Order Acknowledgement within 15 days of the order or fails to sign the contract and/or fails to furnish Performance Security within 21 days from the date of contract/ order.

1.16 Period of Validity of Bids

1.16.1 Bids shall remain valid for a minimum period of 180 days after the date of bid opening prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non- responsive.

1.16.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by cable, telex, fax or e- mail). The Bid Security provided shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request will not be required nor permitted to modify its bid.

1.16.3 Bid evaluation will be based on the bid prices without taking into consideration the above corrections.

1.17 Format and Signing of Bid

1.17.1 Bids are invited on two-bid system, the Bidder shall submit the Bids in two separate parts. One part will be the Un-Priced Techno - Commercial Bid and the other shall be the Price Bid.

D – Submission of Bids

1.18 Submission of Bids

1.18.1 The Bidders may submit their Bids in Tender Wizard portal as two separate bids.

E - Opening and Evaluation of Bids

1.19 Opening of Bids by the Purchaser

1.19.1 The Purchaser will open all Bids at a time in Tender portal. The Price Bid shall be opened only after technical evaluation.

1.20 Confidentiality

1.20.1 Information relating to the examination, evaluation, comparison, and post qualification of Bids, and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until publication of the Contract Award.

1.20.2 Any effort by a Bidder to influence the Purchaser in the examination, evaluation, comparison, and post qualification of the Bids or contract award decisions may result in the rejection of its Bid.

1.21 Clarification of Bids

1.21.1 To assist in the examination, evaluation, comparison and post qualification of the Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. However, no negotiation shall be held except with the lowest Bidder, at the discretion of the Purchaser. Any clarification submitted by a Bidder in respect to its bid which is not in response to a request by the Purchaser shall not be considered.

1.22 Preliminary Examination

1.22.1 The Purchaser shall examine the Bids to confirm that all documents and technical documentation requested in ITB Clause 1.9 have been provided, and to determine the completeness of each document submitted.

1.22.2 The Purchaser shall confirm that the following documents and information have been provided in the Bid. If any of these documents or information is missing, the offer shall be rejected.

- (a) Bid Form and Price Schedule Form, in accordance with ITB Clause 1.10. This condition pertains to opening of Price Bid only;
- (b) All the Bids received will first be scrutinized to see whether the Bids meet the basic requirements as incorporated in the Invitation for Bids [IFB]. The Bids, which do not meet the basic requirements, are to be treated as unresponsive and ignored. The following are some of the important points, for which a tender may be declared as unresponsive and to be ignored, during the initial scrutiny:
 - (i) The Bid is unsigned.
 - (ii) Bid Security/ Earnest Money Deposit has not been furnished
 - (iii) The Bidder is not eligible.
 - (iv) The Bid validity is shorter than the required period.
 - (v) The Bidder has quoted for Goods manufactured by a different firm without the required authority letter from the proposed Manufacturer.
 - (vi) Bidder has not agreed to give the required Performance Security.
 - (vii) The Goods quoted are sub-standard, not meeting the required specification etc.
 - (viii) Against the schedule of Requirement (incorporated in the tender enquiry), the Bidder has not quoted for the entire requirement as specified in that schedule.
 - (ix) The Bidder has not agreed to some essential condition(s) incorporated in the tender enquiry.
 - (x) Bidder has not mentioned charges related to packing, forwarding, freight, insurance charges, taxes etc. as required under Instructions to Bidders Clause 1.11 thus rendering such offers as incomplete.

1.23 Responsiveness of Bids

1.23.1 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System of each bid to the Bidding Documents. For purposes of this clause, a substantive responsive bid is one, which conforms to all terms and condition of the Bidding Documents without material deviations, reservations or omissions. A material deviation, reservation or omission is one that:

- (a) Affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
- (b) Limits in any substantial way, inconsistent with the bidding documents, the purchase's rights or the bidder's obligations under the contract; or
- (c) If rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

1.23.2 The purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

1.23.3 If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation or omission.

1.24 Non-Conformity, Error and Omission

1.24.1 Provided that a Bid is substantially responsive, the Purchaser may waive any non-conformities or omissions in the Bid that do not constitute a material deviation.

1.24.2 Provided that a bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

1.24.3 Provided that the Bid is substantially responsive, the Purchaser shall correct arithmetical errors on the following basis:

- (a) If there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

1.24.4 Provided that a bid is substantially responsive, the Purchaser may request that a Bidder may confirm the correctness of arithmetic errors as done by the Purchaser within a target date. In case, no reply is received then the bid submitted shall be ignored and its Bid Security may be forfeited.

1.25 Examination of Terms & Conditions, Technical Evaluation

1.25.1 The Purchaser shall examine the Bid to confirm that all terms and conditions specified in the GCC and the SCC have been accepted by the Bidder without any material deviation or reservation.

1.25.2 The Purchaser shall evaluate the technical aspects of the Bid submitted in accordance with ITB Clause 1.14, to confirm that all requirements specified in Schedule of Requirements of the Bidding Documents have been met without any material deviation or reservation.

1.25.3 If, after the examination of the terms and conditions and the technical evaluation, the Purchaser determines that the Bid is not substantially responsive in accordance with ITB Clause 1.23, it shall reject the Bid.

1.26 Conversion to Single Currency

1.26.1 To facilitate evaluation and comparison, the Purchaser will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable to Indian Rupees at the selling exchange rate established by any bank in India as notified in the Newspapers on the date of bid opening in the case of single part bidding and the rates prevalent on the date of opening of the Price Bids in the case of two - part bidding. For this purpose, exchange rate notified in www.xe.com or www.rbi.org or any other website could also be used by the Purchaser.

1.27 Evaluation and comparison of Bids

1.27.1 The Purchaser shall evaluate each bid that has been determined, up to this stage of the evaluation, to be substantially responsive.

1.27.2 To evaluate a Bid, the Purchaser shall only use all the factors, methodologies and criteria defined below. No other criteria or methodology shall be permitted.

1.27.3 The Bids shall be evaluated on the basis of final landing cost which shall be arrived as under:
For Goods manufactured in India.

- a. The price of the Goods quoted ex -works including all taxes already paid.
- b. GST and other taxes & duties like excise duty etc. which will be payable on the Goods if the contract is awarded.
- c. Charges for inland transportation, insurance and other local Services required for delivering the Goods the desired destination.
- d. The installation, commissioning and training charges including incidental Services, if any.

For Goods manufactured abroad

- a. The price of the Goods, quoted on EXW [duly packed] / FCA (named place of delivery abroad) or FOB (named port of shipment), as specified in the Bidding Documents.
- b. The charges for insurance and transportation of the Goods to the port/place of destination.
- c. The agency commission etc., if any.
- d. The installation, commissioning and training charges including incidental Services, if any.

1.27.4 The comparison between the indigenous and the foreign offers shall be made on FOR destination basis and CIF/ CIP basis respectively. However, the CIF/CIP prices quoted by any foreign Bidder shall be loaded further as under:

- a. Towards customs duty and other statutory levies as per applicable rates.
- b. Towards custom clearance, inland transportation etc.

Note: Where there is no mention of packing, forwarding, freight, insurance charges, taxes etc. such offers shall be rejected as incomplete.

- 1.27.5 In the case of Purchase of many items against one tender, which are not inter-dependent or, where compatibility is not a problem, normally the comparison would be made on ex works, (in case of indigenous items) and on FOB / FCA (in the case of imports) prices quoted by the firms for identifying the lowest quoting firm for each item.
- 1.27.6 Orders for imported stores need not necessarily be on FOB/FCA basis. Rather it can be on the basis of any of the INCOTERMS specified in ICC INCOTERMS 2020 as may be amended from time to time by the ICC
- 1.27.7 Wherever the price quoted on FOB/FCA and CIF/CIP basis are the same, the Contract would be made on CIF / CIP basis only.
- 1.27.8 The GCC and the SCC shall specify the mode of transport i.e. whether by air/road/rail.
- 1.27.9 In case optional items are specified in the tendered specifications, the Purchaser reserves the right to buy or not to buy the optional items. In case the option is exercised to buy the optional items after Bid opening, then the cost of optional items would be included to ascertain the Lowest Evaluated Responsive Bid. In case, the option is exercised not to buy the optional items, then the cost of the optional items would not be included in ascertaining the Lowest Evaluated Responsive Bid.

NOTE: Bidders not quoting the optional items entail the risk of their offer being summarily ignored in the event of the Purchaser deciding to buy the optional items after Bid opening.

1.28 Comparison of Bids

- 1.28.1 The Purchaser shall compare all substantially responsive Bids to determine the lowest-evaluated responsive bid, in accordance with ITB Clause 1.27.

1.29 Contacting the Purchaser

- 1.29.1 Subject to ITB Clause 1.21, no Bidder shall contact the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.
- 1.29.2 Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison or contract award may result in rejection of the Bidder's bid.

1.30 Post qualification

- 1.30.1 In the absence of pre - qualification, the Purchaser will determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in ITB Clause 1.13.
- 1.30.2 The determination will take into account the eligibility criteria listed in the Bidding Documents and will be based up on Examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, as well as such other information as the Purchaser deems necessary and appropriate.
- 1.30.3 An affirmative determination will be a prerequisite for award of the contract to the Bidder. A negative determination will result in rejection of the bidder's bid.

F- Award of Contract

1.31 Negotiations

- 1.31.1 There shall not be any negotiation normally. Negotiations, if at all, shall be an exception and only in the case of items with limited source of supply. Negotiations shall be held with the lowest evaluated responsive Bidder. Counter offers tantamount to negotiations and shall be

1.32 Award Criteria

1.32.1 Subject to ITB Clause 1.34 the Purchaser will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined to be the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

1.33 Purchaser's right to vary Quantities at Time of Award

1.33.1 The Purchaser reserves the right at the time of Contract award to increase or decrease the quantity of Goods and Services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions. Further, at the discretion of the Purchaser, the quantities in the contract may be enhanced by 30% within the delivery period.

1.34 Purchaser's right to accept any Bid and to reject any or All Bids

1.34.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders.

1.35 Notification of Award

1.35.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the successful Bidder in writing by registered letter or by cable or telex or fax or e-mail that the bid has been accepted and a separate Purchase Order shall follow through post.

1.35.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding contract.

1.35.3 Upon the successful bidder's furnishing of the signed contract form and performance security pursuant to ITB clause 1.38, the purchaser will promptly notify each unsuccessful bidder and will discharge its bid security

1.36 Signing of Contract

1.36.1 Promptly after notification, the Purchaser shall send the successful Bidder the Agreement/Purchase Order.

1.36.2 Within twenty - one (21) days of date of the Agreement / Purchase Order, the successful Bidder shall sign, date, and return it to the Purchaser.

1.37 Order Acknowledgement

1.37.1 The successful Bidder should submit Order Acknowledgement within 15 days from the date of issue of the Purchase Order / Contract, failing which it shall be presumed that the Supplier is not interested and his Bid Security is liable to be forfeited pursuant to clause 1.15.11 of ITB.

1.37.2 The Order Acknowledgement must be received within 15 days. However, the Purchaser has the powers to extend the time frame for submission of Order Acknowledgement and submission of Performance Security (PS). Even after extension of time, if the Order Acknowledgement /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value shall be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable, provided there is no change in specifications. In such cases the defaulting firm shall not be considered again for re-tendering in the particular case.

1.38 Performance Security

- 1.38.1 Within 21 days of receipt of the notification of award/PO, the Supplier shall furnish Performance Security in the amount specified in SCC, valid till 60 days after the warranty period. Alternatively, the PS may also be submitted at the time of release of final payment in cases where part payment is made against delivery & part on installation. The PS, where applicable, shall be submitted in advance for orders where full payment is to be made on Letter of Credit (LC) or on delivery. In this case, submission of PS at the time of negotiation of documents through Bank would be stipulated as a condition in the LC and the BS should be kept valid till such time the PS is submitted.
- 1.38.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 1.38.3 The Performance Security shall be denominated in Indian Rupees for the offers received for supplies within India and denominated in the currency of the contract in the case of offers received for supply from foreign countries.
- 1.38.4 In the case of imports, the PS may be submitted either by the Principal or by the Indian agent and, in the case of purchases from indigenous sources, the PS may be submitted by either the Manufacturer or their authorized dealer/Bidder.
- 1.38.5 The Performance Security shall be in one of the following forms:
- a. A Bank Guarantee [BG] or Stand- by Letter of Credit [SLC] issued by a Nationalized/Scheduled bank located in India or a Foreign bank [i.e. a bank located outside India] with preferably its operating branch in India. The BG shall be issued in the form provided with the Bidding Documents. In case of Performance Security being furnished in the shape of Bank Guarantee or Stand - by Letter of Credit issued by any foreign bank, the said BG/SLC shall have to be confirmed. All confirmation and other bank charges in this respect shall be borne by the Supplier. Purchaser shall independently verify the authenticity of the BGs from the issuing / confirming / controlling banks. Or;
 - b. Online payment in favour of the purchaser, or;
 - c. A Fixed Deposit Receipt pledged in favour of the Purchaser.
- 1.38.6 The Performance Security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, unless specified otherwise in SCC, without levy of any interest.
- 1.38.7 In the event of any contract amendment, the Supplier shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter.
- 1.38.8 The Order Acknowledgement should be received within 15 days from the date of notification of award. However, the Purchaser has the powers to extend the time frame for submission of Order Acknowledgement and submission of Performance Security (PS). Even after extension of time, if the Order Acknowledgement /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value would be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable provided there is no change in specifications. In such cases the defaulting firm would not be considered again for re-tendering in the particular case.

CHAPTER – 2

CONDITIONS OF CONTRACT

A. GENERAL CONDITIONS OF CONTRACT (GCC)

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2.1. Definitions

2.1.1. The following words and expressions shall have the meanings hereby assigned to them:

- (a) "Contract" means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.
- (b) "Contract Documents" means the documents listed in the Contract Agreement, including any amendments thereto.
- (c) "Contract Price" means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments
- (d) "Day Means" calendar day
- (e) "Completion" means the fulfillment of the related services by the Supplier in accordance with the terms and conditions set forth in the Contract.
- (f) "GCC" means the General Conditions of Contract
- (g) "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
- (h) "Related Service", means the services incidental to the supply of the Goods, such as transportation, insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.
- (i) "SCC" means the Special Conditions of Contract.
- (j) "Subcontractor" means any natural person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.
- (k) "Supplier" means the natural person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.
- (l) The "Institute" means CMTI, Central Manufacturing Technology Institute registered under the Societies Registration Act, 1860 of Govt. Of India having its registered office at Tumkur Road, Bengaluru - 560022, Karnataka, India and the "Purchaser" also means the above Institute situated at the above address in India as specified in SCC.
- (m) "Final Destination", where applicable, means the place named in the SCC.

2.2. Contract Documents

Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.

2.3. Fraud and Corruption

2.3.1. The Purchaser requires that Bidders, Suppliers, contractors and consultants, if any, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy,

- (a) The terms set forth below are defined as follows:
 - (i) "**Corrupt practice**" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;
 - (ii) "**Fraudulent practice**" means a misrepresentation or omission of facts in order

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System
to influence a procurement process or the execution of a contract;

(iii) **“Collusive practice”** Means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, noncompetitive levels; and

(iv) **“Coercive practice”** means harming or threatening to harm, directly or indirectly, persons or their Property to influence their participation in the procurement process or affect the execution of a contract;

(b) The Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.

2.4. Joint Venture, Consortium or Association

2.4.1. If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser.

2.5. Scope of Supply

2.5.1. The Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements.

2.6. Suppliers’ Responsibility

2.6.1. The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with Scope of Supply Clause of the GCC, and the Delivery and Completion Schedule, as per GCC Clause relating to delivery and document.

2.7. Contract price

2.7.1. Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.

2.8. Copyright

2.8.1. The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including Suppliers of materials, the copyright in such materials shall remain vested in such third party

2.9. Application

2.9.1. These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

2.10. Standards

2.10.1. The Goods supplied and Services rendered under this Contract shall conform to the standards mentioned in the Technical Specifications and Schedule of requirements, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods’ country of origin and such standards shall be the latest issued by the concerned institution.

2.11. Use of Contract Documents and Information

- 2.11.1. The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far, as may be necessary for purposes of such performance.
- 2.11.2. The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated above except for purposes of performing the Contract.
- 2.11.3. Any document, other than the Contract itself, enumerated above shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract, if so required by the Purchaser.

2.12. Patent Indemnity

- 2.12.1. The Supplier shall, subject to the Purchaser's compliance with GCC Sub-Clause 2.12.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:
 - (a) The installation of the Goods by the Supplier or the use of the Goods in India; and
 - (b) The sale in any country of the products produced by the Goods.
- 2.12.2. If any proceedings are brought or any claim is made against the Purchaser, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may as its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claims.

2.13. Performance Security

- 2.13.1. Within 21 days of receipt of the notification of award / PO, the Supplier shall furnish Performance Security in the amount specified in SCC, valid till 60 days after the warranty period. Alternatively, the PS may also be submitted at the time of release of final payment in cases where part payment is made against delivery & part on installation. The PS, where applicable, shall be submitted in advance for orders where full payment is to be made on Letter of Credit (LC) or on delivery. In this case, submission of PS at the time of negotiation of documents through Bank would be stipulated as a condition in the LC and the BS should be kept valid till such time the PS is submitted.
- 2.13.2. The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 2.13.3. The Performance Security shall be denominated in Indian Rupees for the offers received for supplies within India and denominated in the currency of the contract in the case of

2.13.4. In the case of imports, the PS may be submitted either by the principal or by the Indian agent and, in the case of purchases from indigenous sources, the PS may be submitted by either the Manufacturer or their authorized dealer/Bidder.

2.13.5. The Performance Security shall be in one of the following forms:

- (a) A Bank Guarantee [BG] or Stand - by Letter of Credit [SLC] issued by a Nationalized/Scheduled bank located in India or a Foreign bank with preferably its operating branch in India. The BG shall be issued in the form provided with the Bidding Documents. In case of Performance Security being furnished in the shape of Bank Guarantee or Stand - by Letter of Credit issued by any foreign bank, the said BG/SLC shall have to be confirmed by any nationalized bank of India. All confirmation and other bank charges in this respect shall be borne by the Supplier. Purchaser shall independently verify the authenticity of the BGs from the issuing / confirming / controlling banks. Or;
- (b) Online payment in favour of the Purchaser. Or;
- (c) A Fixed Deposit Receipt pledged in favour of the Purchaser.

2.13.6. The Performance Security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, unless specified otherwise in SCC, without levy of any interest.

2.13.7. In the event of any contract amendment, the Supplier shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter.

2.13.8. The order confirmation should be received within 15 days from the date of notification of award. However, the Purchaser has the powers to extend the time frame for submission of order confirmation and submission of Performance Security (PS). Even after extension of time, if the order confirmation /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value would be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable provided there is no change in specifications. In such cases the defaulting firm would not be considered again for re- tendering in the particular case.

2.14. Inspections and Tests

2.14.1. The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the SCC or as discussed and agreed to during the course of finalization of contract.

2.14.2. The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. The Technical Specifications and SCC shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing in a timely manner of the identity of any representatives retained for these purposes.

2.14.3. The inspections and tests may be conducted on the premises of the Supplier or its subcontract or(s), at the point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System facilities and assistance, including access to drawings and production data - shall be furnished to the inspectors at no charge to the Purchaser.

- 2.14.4. Whenever the Supplier is ready to carry out any such test and inspection, it shall give reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or Manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
- 2.14.5. Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the Goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.
- 2.14.6. The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.
- 2.14.7. The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.
- 2.14.8. With a view to ensure that claims on insurance companies, if any, are lodged in time, the Bidders and /or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the Bidder/ Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the Purchaser on the event of the delay.

2.15. Packing

- 2.15.1. The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
- 2.15.2. The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in SCC and in any subsequent instructions ordered by the Purchaser.

2.16. Delivery and Documents

- 2.16.1. Delivery of the Goods and completion and related Services shall be made by the Supplier in accordance with the terms specified by the Purchaser in the contract. The details of shipping and/ or other documents to be furnished by the Supplier are specified in SCC.
- 2.16.2. The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the INCOTERMS published by the International Chambers of Commerce, Paris.
- 2.16.3. The mode of transportation shall be as specified in SCC.

2.17. Insurance

- 2.17.1. Should the Purchaser elect to buy on CIF/CIP basis, the Goods supplied under the Contract shall be fully insured in Indian Rupees against any loss or damage incidental to manufacture or acquisition, transportation, Storage and delivery in the manner specified in SCC.
- 2.17.2. Where delivery of the Goods is required by the Purchaser on CIF or CIP basis the Supplier shall arrange and pay for Cargo Insurance, naming the Purchaser as beneficiary and initiate & pursue claims till settlement, on the event of any loss or damage.
- 2.17.3. Where delivery is on FOB or FCA basis, insurance would be the responsibility of the Purchaser.
- 2.17.4. With a view to ensure that claims on insurance companies, if any, are lodged in time, the Bidders and /or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the Bidder/Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the Purchaser on the event of the delay.

2.18. Transportation

- 2.18.1. Where the Supplier is required under the Contract to deliver the Goods FOB, transport of the Goods, up to and including the point of putting the Goods on board the vessel at the specified port of loading, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract price. Where the Supplier is required under the Contract to deliver the Goods FCA, transport of the Goods and delivery into the custody of the carrier at the place named by the Purchaser or other agreed point shall be arranged and paid for by the supplier, and the cost thereof shall be included in the Contract price.
- 2.18.2. Where the Supplier is required under the Contract to deliver the Goods CIF or CIP, transport of the Goods to the port of destination or such other named place of destination in the Purchaser's country, as shall be specified in the Contract shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.
- 2.18.3. In the case of supplies from within India, where the Supplier is required under the Contract to transport the Goods to a specified destination in India, defined as the Final Destination, transport to such destination, including insurance and storage, as specified in the Contract, shall be arranged by the Supplier, and the related costs shall be included in the Contract Price.

2.19. Incidental Services

- 2.19.1. The Supplier may be required to provide any or all of the Services, if any, specified in SCC.

2.20. Spare Parts

- 2.20.1. The Supplier shall be required to provide any or all of the following materials,

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System
notifications, and information pertaining to spare parts manufactured or distributed by
the Supplier:

- (a) Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) In the event of termination of production of the spare parts:
 - (i) Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
 - (ii) Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.
- (c) In case of OEM Supplier companies merges, amalgamation, take over or bifurcation etc., it is the responsibility of the Original Supplier to maintain the spare parts requirements for 10 years with the new Entity. Failing which Performance Security will be forfeited.

2.21. Warranty

- 2.21.1. The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
- 2.21.2. The Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in India.
- 2.21.3. Unless otherwise specified in the SCC or technical specifications, the warranty shall remain valid as specified in the contract.
- 2.21.4. The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
- 2.21.5. Upon receipt of such notice, the Supplier shall, within a reasonable period of time, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.
- 2.21.6. If having been notified, the Supplier fails to remedy the defect within the reasonable period of time, the Purchaser expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.
- 2.21.7. Goods requiring warranty replacements must be replaced on free of cost basis to the Purchaser at Purchaser site.

2.22. Terms of Payment

- 2.22.1. The method and conditions of payment to be made to the Supplier under this Contract shall be as specified in the SCC.
- 2.22.2. The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to Delivery and document Clause of the GCC and upon fulfillment of other obligations stipulated in the contract.
- 2.22.3. Payments shall be made promptly by the Purchaser within a reasonable time after

2.22.4. Payment shall be made in currency as indicated in the contract.

2.23. Change Orders and Contract Amendments.

2.23.1. The Purchaser may at any time, by written order given to the Supplier pursuant to Clause on Notices of the GCC make changes within the general scope of the Contract in any one or more of the following:

- (a) Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
- (b) The method of shipping or packing;
- (c) The place of delivery; and/or
- (d) The Services to be provided by the Supplier.
- (e) The delivery schedule.

2.23.2. If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within fifteen (15) days from the date of the Supplier's receipt of the Purchaser's change order.

2.23.3. No variation or modification in the terms of the contract shall be made except by written amendment signed by the parties.

2.24. Assignment

2.24.1. The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

2.25. Sub contracts

2.25.1. The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the Supplier from any liability or duties or obligation under the Contract.

2.26. Extension of time

2.26.1. Delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser.

2.26.2. If at any time during performance of the Contract, the Supplier or its sub-contractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may, at its discretion, extend the suppliers time for performance with or without penalty, in which case the extension shall be ratified by the parties by amendment of the Contract.

2.26.3. Except as provided under the Force Majeure clause of the GCC, a delay by the Supplier in the performance of its delivery Obligations shall render the Supplier liable to the imposition of penalty pursuant to Penalty Clause of the GCC unless an extension of time is agreed upon pursuant to above clause without the application of penalty clause.

2.27. Penalty clause

2.27.1. Subject to GCC Clause on Force Majeure, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services or contract value for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the Percentage specified in SCC. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause on Termination for Default. The SCC shall also indicate the basis for ascertaining the value on which the penalty shall be applicable.

2.28. Termination for Default

2.28.1. The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part

- (a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause on Extension of Time; or
- (b) If the Supplier fails to perform any other obligation(s) under the Contract; or
- (c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent or collusive or coercive practices as defined in GCC Clause on Fraud or Corrupt ion in competing for or in executing the Contract.

2.28.2. In the event the Purchaser terminates the contract in whole or in part, he may take recourse to any one or more of the following action:

- (a) The Performance Security is to be forfeited;
- (b) The Purchaser may procure, upon such terms and in such manner as it deems appropriate, stores similar to those undelivered, and the Supplier shall be liable for all available actions against it in terms of the contract.
- (c) However, the Supplier shall continue to perform the contract to the extent not terminated.

2.29. Force Majeure

2.29.1. Notwithstanding the provisions of GCC Clauses relating to extension of time, penalty and Termination for Default the Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

2.29.2. For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

2.29.3. If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within 21 days of its occurrence. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

2.29.4. If the performance in whole or in part or any obligations under the contract is prevented or delayed by any reason of force majeure for a period exceeding 60 days, either party may at its option terminate the contract without any financial repercussions on either side.

2.30. Termination for Insolvency

2.30.1. The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

2.31. Termination for Convenience

2.31.1. The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

2.31.2. The Goods that are complete and ready for shipment within 30 days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:

- (a) To have any portion completed and delivered at the Contract terms and prices
- (b) To cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and for materials and parts previously procured by the Supplier.

2.32. Settlement of Disputes

2.32.1. The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

2.32.2. If, after twenty - one (21) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

2.32.3. The dispute settlement mechanism/arbitration proceedings shall be concluded as under:

- (a) In case of Dispute or difference arising between the Purchaser and a domestic Supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re - enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Central Manufacturing Technology Institute and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
- (b) In the case of a dispute between the Purchaser and a Foreign Supplier, the dispute

shall be settled by arbitration In accordance with provision of sub - clause (a) above.

But if this is not acceptable to the Supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

2.32.4. The venue of the arbitration shall be the place from where the purchase order or contract is issued.

2.32.5. Notwithstanding any reference to arbitration herein,

- (a) The parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- (b) The Purchaser shall pay the Supplier any monies due the Supplier.

2.33. Governing Language

2.33.1. The contract shall be written in English language which shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the English language only.

2.34. Applicable Law

2.34.1. The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction as specified in SCC.

2.35. Notices

2.35.1. Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX, e-mail or and confirmed in writing to the other party's address specified in the SCC.

2.35.2. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

2.36. Taxes and Duties

2.36.1. For Goods manufactured outside India, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside India.

2.36.2. For Goods Manufactured within India, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred till its final manufacture/production.

2.36.3. If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in India, the Purchaser shall make its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.

2.37. Right to use Defective Goods

2.37.1. If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the Goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such Goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the purchaser's operation.

2.38. Protection against Damage

2.38.1. The system shall not be prone to damage during power failures and trip outs. The normal voltage and frequency conditions available at site as under:

- a) Voltage 230 -V Single phase/ 415 V Three phase ($\pm 10\%$)
- b) Frequency 50 Hz.

2.39. Integrity Pact

As per directive of CVC all organizations have to adopt an Integrity Pact(IP) to ensure transparency, equity and competitiveness in major Public procurement activities. The integrity Pact envisages an agreement between the prospective Bidders/Vendors with the buyer committing the persons/officials of both the parties with the aim not to exercise any corrupt influence on any aspect of the contract. Only these Bidders/Vendors who are willing to enter into such an Integrity Pact with the buyer i.e, CMTI would be competent to participate in the bidding.

B. SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

GCC 2.1(l)	The <i>Purchaser</i> is: CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India
GCC 2.1 (m)	The <i>Final Destination</i> is: CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India,
GCC 2.14.1	<p><i>Inspection and Acceptance Tests at Final Destination:</i></p> <p><i>The Inspection and Tests prior to shipment of Goods and at final acceptance are as follows:</i></p> <p>After the Goods are manufactured and assembled, Pre-dispatch Equipment Audit and testing of the Goods shall be carried out at the Supplier's plant by the Supplier in the Presence of purchaser, prior to shipment to check whether the goods are in conformity with the technical specifications and acceptance criteria. Manufacturer's Test Certificates, test plots with data sheet shall be issued to this effect and submitted along with the delivery documents. The Technical Specifications shall specify whether any Pre-dispatch Equipment Audit is required and the nature of such inspection.</p> <p><i>The Inspection and Acceptance Tests at Buyer's site (Final Destination) are as follows:</i></p> <p>The acceptance test will be conducted after the equipment is installed at Purchaser's site by Supplier's representatives to check conformity with the technical specifications and acceptance criteria. The acceptance will involve trouble free operation. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified. In the event of the ordered item failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which, the Purchaser reserves the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser. Successful conduct and conclusion of the acceptance test for the installed Goods and equipments shall also be the responsibility and at the cost of the Supplier. Before the Goods and equipments are taken over by the Purchaser, the Supplier shall supply operation and maintenance Manuals together with Drawings of the Goods and equipments built. These shall be in such details as will enable the Purchase to operate, maintain, adjust and repair all parts of the works as stated in the specifications. The Manuals and Drawings shall be in the ruling language (English) and in such form and numbers as stated in the Contract. Unless and otherwise agreed, the Goods and equipment shall not be considered to be completed for the purposes of taking over until such Manuals and Drawing have been supplied to the Purchaser. On successful completion of acceptability test, receipt of deliverables, etc. and after the Purchaser is satisfied with the working of the equipment, the acceptance certificate signed by the Supplier and the representative of the Purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the equipment.</p>
GCC 2.15.2	<p><i>Packing</i></p> <p>The marking and documentation within and outside the packages shall be: Each package should have a packing list within it detailing the part No.(s), description, quantity etc.</p>

	<p>Outside each package, the contract No., the name and address of the Purchaser and the final destination should be indicated on all sides and top.</p> <p>Each package should be marked as 1/x, 2/x, 3/x.....x/x, where “x” is the total no of packages contained in the consignment.</p> <p>All the sides and top of each package should carry an appropriate indication / label / stickers indicating the precautions to be taken while handling / storage</p>
<p>GCC 2.16.1</p>	<p><i>Shipping/Dispatch documents</i></p> <p>Details of Shipping and other Documents to be furnished by the Supplier are</p> <p><u>A. For Goods manufactured within India</u></p> <p>Within 24 hours of dispatch, the Supplier shall notify the Purchaser the complete details of dispatch and also supply following documents by registered post /speed post and copies thereof by FAX/ E-mail.</p> <p>(a) Two copies of Supplier’s Invoice indicating, inter - alia description and specification of the Goods, quantity, unit price, total value;</p> <p>(b) Packing list;</p> <p>(c) Certificate of country of origin;</p> <p>(d) Insurance certificate, if required under the contract;</p> <p>(e) Railway receipt/Consignment note;</p> <p>(f) Manufacturer’s guarantee certificate and in- house inspection certificate;</p> <p>(g) Inspection Certificate issued by Purchaser’s inspector, if any and</p> <p>(h) Any other document(s) as and when required in terms of the contract.</p> <p>Note: 1. The nomenclature used for the item description in the invoices(s), packing list(s) and the delivery note(s) etc. Should be identical to that used in the contract. The dispatch particulars including the name of the transporter should also be mentioned in the Invoice(s)</p> <p>Note: 2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses</p> <p><u>[B] For Goods manufactured abroad</u></p> <p>Within 24 hours of dispatch, the Supplier shall notify the Purchaser the complete details of dispatch and also supply following documents by Registered Post/courier and copies thereof by FAX.</p> <p>(a) Two copies of Supplier’s Invoice giving full details of the Goods including quantity, value, etc.;</p> <p>(b) Packing list;</p> <p>(c) Certificate of country of origin issued by a local chamber of commerce;</p> <p>(d) Manufacturer’s guarantee and Inspection Certificate;</p> <p>(e) Inspection certificate issued by the Purchaser’s Inspector, if any;</p> <p>(f) Insurance Certificate, if required under the contract;</p> <p>(g) Name of the Vessel/Carrier</p> <p>(h) Port of Loading;</p>
	<p>(i) Date of Shipment;</p> <p>(j) Port of Discharge & expected date of arrival of Goods and</p> <p>(k) Any other document(s) as and when required in terms of the contract</p>

	<p>Note: 1.The nomenclature used for the item description in the invoices(s), packing list(s) and the delivery note(s) etc. should be identical to that used in the contract. The dispatch particulars including the name of the transporter should also be mentioned in the Invoice(s)</p> <p>Note: 2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses</p>
GCC 2.16.3	<p>Transportation/ Dispatch</p> <p>In case of supplies from within India, the mode of transportation shall be by Air/Rail/Road. In case of supplies from abroad, the mode of transportation shall be by Air. For supplies from abroad, Supplier shall ensure that the Goods are transported through the authorized freight forwarder of Purchaser, whose name and other contact details shall be made available to Purchaser.</p> <p>Purchaser shall not accept dispatch / transportation of Goods through any other forwarder. Payment by L/C shall only be released against presentation of the House Air Way Bill issued by the authorized freight for warder of Purchaser.</p>
GCC 2.17.1	<p>Insurance</p> <p>The Insurance shall be for an amount equal to the 110% of the CIF or CIP value of the contract from within “warehouse to warehouse (final destination)” on “ALL- RISKS basis including strikes, riots and civil commotion”</p>
GCC 2.19.1	<p>Incidental Services</p> <p>The Incidental Services to be provided are:</p> <ol style="list-style-type: none"> 1. Pre-dispatch Equipment Audit. 2. Installation and Commissioning of Goods / Equipment. 3. Training on use/application. 4. Warranty Support [to be effective from the date of final acceptance at site, [CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru, Karnataka, India-560022] <p>The Cost of the above incidental services shall be included in the Contract Price and a Price Break-up shall also be given</p>
GCC 2.21.3	<p>Warranty</p> <p>The period of validity of Warranty shall be effective from the date of acceptance of the Goods to the entire satisfaction of the Purchaser. The Warranty shall be Comprehensive in nature. The warranty period shall be for the period as stipulated in the Technical Specifications</p>
GCC 2.22.1	<p>Payment</p> <p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:</p> <p>Payment for Goods supplied from abroad:</p> <p>Payment of foreign currency portion shall be made in the currency of the contract in the following manner:</p> <p>(i) On Shipment: <i>80%(Eighty) percent</i> of the Contract Price of the Goods shipped shall be paid through irrevocable letter of credit opened in favour of the Supplier in a bank in its country, upon submission of shipping documents specified in GCC Clause 2.16.1</p>
	<p>(ii) On Acceptance: <i>20% (Twenty) percent</i> of the Contract Price of Goods received shall be paid after successful installation & commissioning at CMTI upon submission of acceptance certificate.</p>

GCC 2.22.1	<p>The L/C will be confirmed at the Suppliers cost, if requested specifically by the Supplier. All bank charges abroad shall be to the account of the beneficiary i.e. Supplier and all bank charges in India shall be to the account of the opener i.e. Purchaser. If L/C is requested to be extended/ reinstated for reasons not attributable to the Purchaser, the charges thereof would be to extended/ reinstated for reasons not attributable to the Purchaser; the charges thereof would be to the Suppliers' account. Payment of local currency portion shall be made in Indian Rupees within thirty (30) days of presentation of claim supported by a certificate from the Purchaser declaring that the Goods have been delivered and that all other contracted Services have been performed. The LC for 100% value of the contract shall be established after deducting the agency commission payable if any, to the Indian agent from the FOB/FCA/CIF value.</p> <p><u>[B] Payment for Goods and Services supplied from India:</u></p> <p>Payment for Goods and Services supplied from within India shall be made in Indian Rupees, as follows:</p> <p>On shipment: 80% (Eighty) percent of the Contract Price shall be paid on receipt of the Goods and upon submission of the documents specified in GCC Clause 2.16.1</p> <p>On Acceptance: The remaining 20% (Twenty) percent of the Contract value shall be paid to the Supplier upon submission of the acceptance certificate.</p>
GCC 2.27.1	<p>Liquidated Damages</p> <p>(i) The penalty shall be: [0.5%] Percent per week or part of a week towards late delivery and towards delay in installation and commissioning.</p> <p>(ii) The maximum amount of liquidated damages shall be: [10 %] TEN Percent. The liquidated damages shall be levied on the delivered price of the delayed Goods or unperformed Services or contract value.</p>
GCC 2.34.1	<p>The place of jurisdiction is BENGALURU [KARNATAKA]</p>
GCC 2.35.1	<p>For notices, the Purchaser's address is:</p> <p>Attention: Group Head (Purchase & Stores)</p> <p>CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India</p> <p>Email : purchase@cmti.res.in</p>

CHAPTER - 3

SCHEDULE OF REQUIREMENTS

TO BE FILLED BY BIDDER AND ENCLOSED WITH THE TECHNO- COMMERCIAL BID

Brief Description of Goods and Services	Quantity
Procurement of SUPPLY, INSTALLATION, COMMISSIONING AND TESTING OF 10kN (1000 kgf) ELECTRO DYNAMIC VIBRATION SHAKER SYSTEM AND ENVIRONMENTAL CHAMBER [Technical Specifications and Other Details as per Chapter 4 of this Bidding Documents]	One Set
Final Destination	CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India
Period of Delivery shall count from	< TO BE FILLED BY BIDDER >
Time period by which the goods shall be ready at manufacturer's site for pre-dispatch Equipment Audit	< TO BE FILLED BY BIDDER >
Delivery Period [Goods to be delivered in one lot at final destination CMTI-Central Manufacturing Technology Institute, Tumkur Road, Bengaluru, Karnataka, India-560022]	< TO BE FILLED BY BIDDER >
Time frame required for conducting installation, commissioning of the Goods etc. after arrival of the Goods at Final destination	< TO BE FILLED BY BIDDER >

NOTE: The party has to offer their product/equipment strictly based on the specifications asked in the Bidding Documents.

CHAPTER - 4**Part-A****Technical Specifications**

Make and Model Number:

Country of Origin: Certificate of origin should be supplied. Details should be provided along with the offer.

Vibration Shaker Rating: 10kN (1000 kgf) Electro Dynamic Vibration Shaker System

General features: Electrodynamic Shaker, Head Expander, Slip Table on a common base with air isolation configurations, Power Supply Amplifier, Vibration Controller. Armature Cooling Blower with Silencer and other standard accessories. Environmental Chamber and its sub systems.

Offers are invited from the reputed suppliers who have supplied similar systems, which have established heritage for testing aerospace systems, engineering systems, electronic systems, capital goods/products etc.,

Suppliers Experience: The supplier should have at least 9 years of experience in supplying electro dynamic vibration shaker of 1.0 Ton (1000 kgf) capacity or higher capacity to GoI, PSU, R&D institutions, Defense, reputed private industries. Details of such system should be given along with the quote.

Heritage of the offered System:

The supplier should have supplied at least 10 Nos of shaker system in the preceding 5 years with similar configuration to the GoI, PSU, R&D institutions, Defense. with **minimum of one installation in Bangalore**. Test results and performance plots of such systems are to be provided. The supplied shaker system should have completed at least 12 months of satisfactory performance.

The supplier should provide the details of the shaker system supplied with contract/purchase order copies, model number, year of supply and copy of the installation/acceptance report along with the details of the such customers including name of the organizations, end user division/group and contact details of the end user.

It should be noted that this is the criteria will be used for evaluation of the quoted system for technical suitability and offers without this information will be rejected without any further reference.

Local Service Support:

Supplier should have service center or authorized service center with trained service engineers in India. Service center address, contact person details, phone/fax numbers, email should be provided along with the offer.

Original Manufacturer:

The supplier should be original manufacturer of the system. Offers from original manufacturer or their authorized representative only will be accepted. Representative should submit authorization certificate along with the offer.

Duty Cycle:

The shaker system should be rated for One-hour continuous operation at full rated output force.

Merely stating, "comply" does not constitute sufficient information. Exact numerical values are to be specified wherever applicable. Specified technical data should be supported by product catalogues, manuals, test procedures, and test plots etc. In case of insufficient technical data, the quote will be summarily rejected without seeking any clarifications.

Sl. No.	Parameters	CMTI Requirement	Supplier to Specify
1	Shaker Type	Electro Dynamic	Essential (Specify)
2	Sine Force Rating (peak)	≥ 1000 kgf	Essential (Specify)
3	Random Force Rating (rms.)	≥ 1000 kgf.	Essential (Specify)
4	Shock force	≥ 2250 kgf	Essential (Specify)
5	Displacement (continuous)	≥ 50 mm (peak to peak, sine)	Essential (Specify)
6	Type of Cooling	Air cooled	Essential (Specify)
7	Static Loading capacity	≥ 150 kg	Essential (Specify)
8	Useful frequency range	DC to 3000 Hz	Essential (Specify)

9	Body Suspension Resonance Frequency	Air suspension. <5Hz	Essential (Specify)
10	Sine acceleration (peak)	≥ 75 g	Essential (Specify)
11	Random acceleration (rms)	≥ 60 g	Essential (Specify)
12	Velocity of bare table (Sine)	≥ 2 m/sec. peak	Essential (Specify)
13	Armature Diameter	335± 10 mm and armature casting to be radiographed as per ASTM E94. Certificate to be provided from authorized agency.	Essential (Specify)
14	Total armature moving mass	<13 kg	Essential (Specify)
15	Fundamental Armature Resonance Frequency	>2250 Hz	Essential (Specify)
16	Suspension Cross Axial Stiffness	≥5.2kN/mm	Essential (Specify)
17	Suspension Rotational Stiffness	≥ 41 kN.m/rad	Essential (Specify)
18	Offset Moment	≥ 28 Nm	
19	Auto centering of armature	Auto centering of the armature for the rated static load should be provided. Please share the mechanism or technology used.	Essential (Specify)
20	Stray Magnetic field with the degaussing coil ON	≤ 0.60 mT at 150mm above the armature table.	Essential (Specify)
21	Armature overtravel interlock	Armature overtravel should be sensed using non-contact type sensor. Armature overtravel interlock should trip the power amplifier.	Essential (Specify)
22	Geared shaker rotation	<ul style="list-style-type: none"> a. Easy rotation of the shaker to 90° using manual effort rotation. b. Electrical cables, flexible hoses and hydraulic hoses are to be properly guided and secured during shaker rotation. 	Essential (Specify)
23	Armature Inserts	Metric coarse threaded, M8 type with center, 3",6",12", PCDs. Inserts should be equispaced.	Essential (Specify)
24	Armature Suspension	Rolling strut assembly or copper beryllium or carbon-carbon flexures. Fatigue life of the flexures will be bare table should be estimated experimentally and certificate to be provided.	Essential (Specify)
25	Air Isolation Trunnion	Required	Essential (Specify)
26	Armature Guidance	Required. To be communicated by the supplier	Essential (Specify)
Slip table			
27	Type	<ul style="list-style-type: none"> a. Common base type: Shaker trunnion and guiding system and slip table, mounted on a common steel structure providing permanent alignment with shaker 	Essential (Specify)

		<p>and slip table</p> <p>b. Combo Base Isolation: The shaker unit along with common base should be isolated from floor by the use of air mounts of appropriate capacity.</p> <p>c. Oil film guided type</p> <p>d. Slip plate supported by granite base with oil film and hydrostatic journal bearings.</p>	
28	Slip Table Dimension	600mm (L) x 600mm (W) x 35±5mm (T)	Essential (Specify)
29	Slip Plate Material	Magnesium alloy (AZ31) tool plate	Essential (Specify)
30	No of hydrostatic bearings	Minimum 2 or more	Essential (Specify)
31	Surface Finish	Roughness average ≤ 0.4 micron	Essential (Specify)
32	Parallelism	≤ 0.025 mm per meter	Essential (Specify)
33	Pitch	≥ 5.0 kN-m	Essential (Specify)
34	Yaw	≥ 0.46kN-m	Essential (Specify)
35	Roll	≥ 5.0 kN-m	Essential (Specify)
36	Flatness	< 0.02mm per meter	Essential (Specify)
37	Maximum Stroke	≥ 50 mm	Essential (Specify)
38	Maximum Static Payload Capacity	≥ 500kg	Essential (Specify)
39	Bare Table resonance	≥ 2250 Hz	Essential (Specify)
40	Slip table moving mass	< 30kg	Essential (Specify)
41	Driver Bar	<p>a. Tension bolt type</p> <p>b. All Welded construction</p> <p>c. Magnesium alloy material</p>	Essential (Specify)
42	Slip table inserts	Metric, coarse threaded M8 type flush with surface PCDs: 3",6",12" and 100mm square grid around.	Essential (Specify)
43	Mounting hole pattern	100mm x 100mm square grid.	Essential (Specify)
44	Length of pressure and return hose	> 5 meters	Essential (Specify) Maximum length of hose required is under the supplier scope
45	Combined useful frequency range of shaker and slip table	To be communicated by the supplier	Essential (Specify)
46	Slip plate overtravel switch	Slip plate overtravel switch interlocked to power amplifier	Essential (Specify)
47	Slip plate surface temperature	Maximum stabilized slip plate temperature should not exceed 45°C under the laboratory ambient of 28°C	Essential (Specify)
48	Thermal barrier	Thermal barrier for the slip table is required. It should withstand -80 deg C to +200 deg C	Essential (Specify)
Hydraulic Power Pack			
49	Hydraulic Power Pack (Reputed Make)	Suitable for the bearing slip table.	Essential (Specify)
50	Sound Pressure level of Hydraulic Power Pack	≤ 70 dBA at a distance of 1m from the outer periphery of the HPP.	Essential (Specify)
51	Hydraulic Power Supply	Suitable for the slip table operating at 415V AC ±10%, 50Hz, 3 Phase	Essential (Specify)

Head Expander			
52	Head Expander Dimensions	600mm x 600mm	Essential (Specify)
53	Material	Light Weight Magnesium alloy	Essential (Specify)
54	Useful frequency range	5Hz to 2000Hz	Essential (Specify)
55	Mounting hole pattern	Stainless steel thread inserts shall be provided at 100mm x 100mm matrix	Essential (Specify)
56	Thermal barrier	Thermal barrier for the head expander is required. It should withstand -80 deg C to +200 deg C	Essential (Specify)
57	Radiographic inspection of casting from which head expander is to be made (ASTM E 94) and the certificate is to be provided from a certified agency for head expander and armature.		Essential (Specify)
58	Head expander bottom dia. should be suitable to armature dia.		Essential (Specify)
Power Amplifier			
59	Type of Amplifier	a) IGBT based switching amplifier of Class D (Digitally Modulated Power Amplifier) b) Modular in construction c) Scalable architecture	Essential (Specify)
60	Amplifier Efficiency	>90%	Essential (Specify)
61	Signal to Noise Ratio	>68 dB	Essential (Specify)
62	Input Impedance	≥ 10 kΩ	Essential (Specify)
63	Switching Frequency	>145 kHz	Essential (Specify)
64	Input Sensitivity	1 Vrms input for 100Vrms output. Shall be compatible with all reputed make controllers.	Essential (Specify)
65	Total Harmonic Distortion	<0.15% when measured with matched resistive load at rated output	Essential (Specify)
66	Length of the cable between power amplifier and shaker	15 meters	Essential (Specify)
67	EMI/EMC protection to be provided to the power amplifier unit.		Essential (Specify)
68	Power loss protection	The amplifier should have synchronized loss protection facility to have a smooth shutdown in the event of power failure	Essential (Specify)
69	Power module protection for power blackout	The power devices/modules should be protected from failure during abrupt main power blackout during operation.	Essential (Specify)
70	Modulation Range	DC to 10kHz	Essential (Specify)
71	Full power bandwidth	DC to 4 kHz or better	Essential (Specify)
72	Amplifier Capacity	a) Total capacity shall be suitable to the rated capacity of the shaker b) Number of power modules required for rated capacity to be specified.	Essential (Specify)
73	Individual power module capacity	a) Approximately in 8kVA increments b) Maximum sine current rating to be specified. c) Maximum voltage rating to be specified.	Essential (Specify)

74	Peak current handling	Approximately 3 times or more than the continuous sine current rating for a period of 100ms	Essential (Specify)
75	Amplifier Gain Control	Amplifier gain control should be available in continuous mode or in steps (if in steps, the minimum 10 steps should be provided)	Essential (Specify)
76	Soft start and stop	Soft start and stop to avoid transients due to switching ON & OFF of the amplifier.	Essential (Specify)
77	Output voltage	Should be compatible with shaker	Essential (Specify)
78	Electrical wiring & Mains power	a) All tropicalized wiring suitable for 415VAC \pm 10%, 50Hz. 3 Phase. b) Lower tapping's for operation at 380VAC to be provided.	Essential (Specify)
79	Variable Field Control	Amplifier should accommodate the field power supply transformer and related circuits. Field power supply system should incorporate easily variable controller field supply.	Essential (Specify)
80	Field Protection	Filed power supply should be provided against short circuit	Essential (Specify)
81	MTBF value for the power amplifier in hours	To be communicated by the supplier	Essential (Specify)
82	System interface	The amplifier should have microprocessor-based user interfaces which improves reliability and fault diagnosis of the system	Essential (Specify)
83	Operating Environment	+5 to 30°C or better	Essential (Specify)
84	Power amplifier acoustic noise level	\leq 70dBA at 1 meter distance from the amplifier and at a height of 1.6m above the floor level in enclosed cell / lab.	Essential (Specify)
Protection			
85	Control and protection circuits	Microprocessor based system	Essential (Specify)
86	Controls to be provided	ON/OFF controls from amplifier, local and remote panels for the following. a) Field power supply b) Cooling unit c) Hydraulic Oil Supply Unit d) Amplifier Gain.	Essential (Specify)
87	Metering	a) Amplifier output voltage b) Amplifier output current c) Field voltage and current.	Essential (Specify)
88	Monitoring outputs for recording purpose	a) Scaled down output for armature voltage b) Scaled down output for armature current.	Essential (Specify)
89	Interlocks	a) Field Coil Over temperature b) Armature coil over temperature c) Shaker vertical/horizontal interlock d) Low voltage supply fault e) Power amplifier overload f) Hydraulic oil pressure fault g) Slip table overtravel	Essential (Specify)

		<ul style="list-style-type: none"> h) Emergency abort i) Amplifier Cooling j) Vibrator Cooling k) Vibrator Overtravel l) Field failure m) Module over current n) Cabinet door open o) External trip-2 p) HT Minimum q) HT Maximum 	
90	Hydraulic Power Pack interlocks	<ul style="list-style-type: none"> a) Hydraulic system interlocks to be provided with the amplifier b) Provision to be provided in the shaker for automatically bypassing this interlock during vertical axis operation. 	Essential (Specify)
Indications			
91	Amplifier interlocks and status display at local and remote-control panels	<ul style="list-style-type: none"> a) Auxiliary power supplies ON b) Mains supply low/high voltage c) Low voltage supply fault d) HT under voltage/overvoltage e) Output overcurrent f) Output overvoltage g) Vibrator cooling fault h) Vibrator overtravel i) Field failure 	Essential (Specify)
92	Remote Control Panel	<ul style="list-style-type: none"> a) Cable length 10 meters b) Auxiliary ON/OFF control c) Amplifier ON/OFF control d) Gain Control e) All indications f) Metering display of output voltage g) Metering display of output current 	Essential (Specify)
93	Overload Settings	Provision at front panel or remote units for limit settings of amplifier output current and voltage.	Essential (Specify)
94	Construction	<ul style="list-style-type: none"> a) Construction should be such that physical addition or removal of power modules should be easily carried out and whole amplifier system should be mounted on integrated 19" racks with wheels and jacks. b) Openings should be sealed to make it rodent free. 	Essential (Specify)
Field Power Supply			
95	Power rating	Should be suitable to deliver the full rated load	Essential (Specify)
96	Field Protection	The field power supply should be protected against short circuit and should be provided with freewheeling diodes.	Essential (Specify)
97	Interlocks	Should be provided with suitable interlock with amplifier for auto start and filed	Essential (Specify)

		failure indication.	
Cooling System of Shaker			
98	Type of Cooling	Forced air cooling blower with silencer.	Essential (Specify)
99	Capacity of the blower	Suitable to the shaker to remove the heat generated efficiently.	Essential (Specify)
100	Hose/Pipe	Appropriate length from shaker to the blower location.	Essential (Specify) Supplying the appropriate length is in supplier scope.
101	Electrical power cable	Appropriate length from blower to the input power supply point at installation site.	Essential (Specify) Supplying the appropriate length of power cable is in supplier scope.
102	System Safety	System should be designed in accordance with EN 61010-1:2010 and should comply with Health and Safety Requirements of the machinery directive 2006/42/EC, Low voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.	Essential (Specify)
Digital Vibration Controller			
103	Make	Siemens (LMS)/M+P/DP/B&K/VRC/CI.	Essential (Specify)
104	Controller and control software version & year of launch.	The controller has to be latest model/version, launched after 2022. Mention the controller model version and year of launch.	Specify
105	Input Section		
106	No of input channels	8 channels. All simultaneous input	Essential (Specify)
107	Input Voltage range	± 10 V (p-p), with input impedance >500 kΩ	Essential (Specify)
108	Control signal checks	Input over load, open loop, loss of control signal etc.	Essential (Specify)
109	Input Sensitivity	Programable from 10mV/g to 1000mV/g	Essential (Specify)
110	Input Signal Type/Coupling	AC/DC/IEPE/ICP/ICP+TEDS/GND/Float	Essential (Specify)
111	TEDS Standards	IEEE 1451.4.2001 or latest version	Essential (Specify)
112	ICP Power Supply	1mA to 18mA	Essential (Specify)
113	Input Connector Type	BNC	Essential (Specify)
114	Signal to noise ratio	>100 dB	Essential (Specify)
115	Cross channel talk	< -100dB	Essential (Specify)
116	Harmonic distortion (Input)	< -105 dB	Essential (Specify)
117	Resolution	➤ 24 bit (individual ADC for each input channel)	Essential (Specify)
118	Frequency Range	DC to 4 kHz.	Essential (Specify)
Output section			
119	Number of analog outputs	One for drive, One for COLA	Essential (Specify)
120	Output impedance	< 100Ω	
121	Harmonic distortion	< -95 dB	Essential (Specify)

122	Resolution	24 bit Digital to Analog converter (DAC)	
123	Vibration Controller Signal Types	The controller should have following signals. a) Sine vibration b) Random Vibration c) Sine on Random (SoR) d) Random on Random (RoR) e) Sine and Random on Random (SRoR) f) Classical Shock g) Resonance Search, Track & Dwell h) Field Data Replication i) Shock Response Spectrum j) Transient Time History (TTH) k) Sine Tracking, Analysis and Generation l) Self-Calibration Software	Essential (Specify)
Random vibration control			
124	Frequency range	100Hz, 200, 400, 800, 1000, 2000, 4000Hz.	Essential (Specify)
125	Frequency bins (lines)	100, 200, 400, 800 lines	Essential (Specify)
126	Dynamic range	≥ 95 dB	Essential (Specify)
127	Loop time	≤ 100msec (at 2kHz, 100 lines, 156 DOF)	Essential (Specify)
128	No of degrees of freedom	2 to 1000	Essential (Specify)
129	Control accuracy	± 1dB at 200 DOF	Essential (Specify)
130	Control strategy	Single channel, multiple channel	Essential (Specify)
131	Test level	Pre-tests and level scheduling	Essential (Specify)
132	No of test profiles to be stored	> 1000	Essential (Specify)
133	Profile (spectrum) inputs	User must be able to enter the profile in the form of break point for acceleration, displacements and velocity and it should be displayed graphically. Values like RMS peak acceleration, velocity and displacement must be displayed when the break point table is being updated.	Essential (Specify)
134	Number of break points	More than 100, with right and left slopes (dB/Octave)	Essential (Specify)
135	Signal display	Real time display of control spectrum/ drive spectrum/ drive signal/ control signal	Essential (Specify)
136	Number of windows	The user must be allowed to open a number of windows and monitor the desired signal	Essential (Specify)
137	Test status display	Parameters like target grms, actual grms, dB ratio of full test level, total test time, elapsed test time etc. should be displayed during the test	Essential (Specify)
138	Compliance	ISO, DIN and MIL- STD 810 standards	Essential (Specify)
Swept Sine Vibration Control			
139	Frequency range	0.5 to 10000Hz	Essential (Specify)
140	Dynamic range	≥ 100 dB	Essential (Specify)
141	Control accuracy	± 1dB through a peak notch of 50, at one	Essential (Specify)

		octave/min	
142	Control strategy	Single channel and multiple channel	Essential (Specify)
143	Sweep type and rate	Linear from 0 to 6000Hz/min or Logarithmic from 0 to 100 octaves/min	Essential (Specify)
144	Profile inputs	User must be able to enter the spectrum in the form of break point tables. Values like RMS, acceleration velocity and displacement must be displayed when break point table is being updated. (Number of break points > 100)	Essential (Specify)
145	Abort	Upper and lower abort level (Programmable for different sectors)	Essential (Specify)
146	Signal display	During the test, the user must be able to see the real time display of the signal (Acc, Vel and Disp)	Essential (Specify)
147	Sine mode Sweep (single, cycle, dwell)	<ol style="list-style-type: none"> 1. Linear/ log sweep 2. COLA (a fixed output at test frequency) 3. TIP (test in progress signal) 4. Level programmability's for acceleration, velocity, displacement and sloped acceleration. 	Essential (Specify)
Resonance Search, Track & Dwell (RSTD) Vibration Control			
Resonance Search			
148	Transmissibility	Measurement shall be between any pair of inputs or an input and the control signals	Essential (Specify)
149	Search range	User shall select Start and end frequencies within the frequency range defined by the Reference profile	Essential (Specify)
150	Sweep rate	Default to the sweep rate for the reference profile or user shall specify special sweep rate.	Essential (Specify)
151	Detection criteria	Identification of resonance shall be based on Q and transmissibility amplitude thresholds	Essential (Specify)
Resonance Dwell and Tracked Dwell			
152	Test modes	<ol style="list-style-type: none"> 1. Search and dwell as each resonance is detected during the sweep. 2. Search then automatically dwell using the generated dwell list 3. Search, pause for users review and editing of the dwell list, then automatically dwell using the edited Dwell list 	Essential (Specify)
153	Dwell modes	Fixed frequency or tracked resonance dwell. Tracked dwell shall adjust the drive frequency to track the resonance as its frequency changes during dwelling.	Essential (Specify)
154	Dwell duration	Time or cycles using true cycle counting	Essential (Specify)
155	Dwell criteria	Programmed end to resonance track on a frequency drift exceeding a specified	Essential (Specify)

		percentage of the initial resonant frequency, a specified shift in frequency over a specified time interval, or a specified change in amplitude ratio	
Signal displays			
156	Search log	Shall provide a time stamped list of all activities including search start/end, resonance frequencies found, resonance tracking status	Essential (Specify)
157	Dwell list	Shall show the frequency, amplitude, phase, Q and elapsed time for each resonance found. Interactive editing via Add and Remove buttons; Add inserts a resonant frequency value, Remove delete resonances based on screening by list entry number, Q or amplitude	Essential (Specify)
158	Amplitude plot	Plot of transmissibility magnitude versus frequency	Essential (Specify)
159	Phase plot	Plot of transmissibility phase angle versus frequency	Essential (Specify)
160	Dwell histories	Control acceleration versus time and drive frequency versus time	Essential (Specify)
161	Frequency signals	Control acceleration, derived velocity, or derived displacement versus frequency.	Essential (Specify)
Classical Shock Transient Control			
162	Frequency range	0 to 22 kHz	Essential (Specify)
163	Frame size	128 to 16384 points or automatically optimized. Linear filter design minimizes distortion and preserves the true waveform shape.	Essential (Specify)
164	Transfer function	Measure during pre-test or, for quickest test start-up, recall a function from disk	Essential (Specify)
165	Averaging	User-specified coefficient from 1 to 500	Essential (Specify)
166	Filtering	User specifies cut-off frequency for low pass filtering applied to the reference waveform, drive, and all input channels.	Essential (Specify)
167	Pulse delay	User-specified delay between pulses from 0 to 1000sec	Essential (Specify)
168	Reference waveform	Convenient pulse selection from a waveform library. User-specified duration and peak acceleration	Essential (Specify)
169	Pulse types	Half sine, haversine, initial and terminal peak sawtooth, triangle, rectangle and trapezoid	Essential (Specify)
170	Pulse duration	From 0.5 to 3000ms or better	Essential (Specify)
171	Compensation	Pre-and post-pulse, post-pulse only or pre-pulse only. Single-or double-sided for minimum acceleration and full use of shaker stroke. Choice of displacement optimum, half-sine, rectangular, rounded rectangular or triangular compensation pulses. Pre-pulse and post-pulse amplitudes definable in percentage of	Essential (Specify)

		reference peak acceleration	
172	Abort limits	Set to MIL-STD810, DIN guidelines or customized by user in percentage of reference waveform amplitude and percentage of pre-pulse and post pulse amplitude.	Essential (Specify)
173	Validation tools	Waveform displayed and updated as it is created. Automatic display of profile acceleration, velocity and displacement waveform together with shaker limits. Shock profile is validated against shaker parameter table.	Essential (Specify)
174	Engineering units	English, SI, Metric, Mixed	Essential (Specify)
175	User-defined external data file import	User-defined external data file import including custom pulse editor. The pulse graphical editor helps conditioning field measured pulses to be able to run on a laboratory shaker	Essential (Specify)
176	Earthquake simulation mode	According to Bell Core Specifications	Specify
177	Time history recording to throughput disc	Required	Essential (Specify)
178	Test schedule Option for the user to create a schedule of events to perform during test. Looping and nested looping logic speed and simplify programming	Required	Essential (Specify)
179	Events	Level and number of pulses, digital output trigger, abort enable/disable and loop open/close, save results, pause, and invert pulse.	Essential (Specify)
180	Test management Control panel toggle buttons and toolbar icons provide easy access to test controls. Commonly used commands are also accessible via keyboard function keys. Text messages and numerical readouts on the control panel enhance test status monitoring	Required	Essential (Specify)
181	Buttons	Start/stop, pause/continue, enable/disable, abort check, loop close/open, schedule clock on/off.	Essential (Specify)

182	Icons	Test level set/increase/decrease, reset average, move to next event/profile, save signals.	Essential (Specify)
183	Status displays	Control and demand rms acceleration, demand velocity and displacement, test %/dB/ratio level, peak drive volts, full level and total test time elapsed, time remaining, activity status, and a red alert message box	Essential (Specify)
184	Signal displays Unlimited number of display windows in tile or cascade format with click & drag zoom, user annotation, and cursors	Required	Essential (Specify)
185	Window format	Per window choice of single, dual, or four pane formats. Each pane can display single or multiple signals overlaid in either time or frequency. Independent choice of color and texture for signals, grids, tick marks, labels, titles, etc.	Essential (Specify)
186	Scale format	Linear or logarithmic scales of X and Y axes with automatic or manual scaling. Dimensions: A, V or D.	Essential (Specify)
187	Cursors	Single or dual with X, Y, ΔX, ΔY, ΔRMS, and Q value readouts; manual peak marks; automatic peak/valley detection and marks; harmonic and sidebands cursors.	Essential (Specify)
188	Time signals	Control, drive, any input, profile, aborts, composite (control, profile, aborts)	Essential (Specify)
189	Frequency signals	Control, any input, transfer function (amplitude and phase), coherence, drive, profile, alarms, and aborts.	Essential (Specify)
190	Strip chart plots	Scrolling record (data point per frame) of input channel rms, max, min, or mean values.	Essential (Specify)
191	SRS Analysis	Up to 14 octave range (maxi-max, negative maximum, and positive maximum). User specifies high and low frequency, Centre frequency, damping ratio or Q value, and resolution (1/1, 1/3, 1/6, 1/12, 1/24, or 1/48).	Essential (Specify)
Post Test Documentation			
192	General Features	Documentation and reports of both setup parameters and signals in Microsoft world as doc file.	Essential (Specify)
193	Run Log	Time and test frequency (Hz) stamped list of all test operations including test start/end, schedule actions, operator commands, and error or abort conditions.	Essential (Specify)
194	Resonance List	Tabulated list of resonance frequencies and corresponding amplitude, phase, Q, dwell status and dwell duration.	Essential (Specify)

195	Data Plots	Transmissibility functions, control acceleration versus time, drive frequency versus time, shall save either automatically or manually.	Essential (Specify)
Vibration Controller: Software: Notching (Sine & Random)			
196	Notching (limiting) profiles	may be defined for each watchdog channel individually	Essential (Specify)
197	Minimal notch profile overshoot		Essential (Specify)
198	Sine displacement and velocity control is used with sine tests starting at very low frequencies	Required	Essential (Specify)
Vibration Controller: Software: Throughput			
199	Continuous time domain data recording for Sine, Random, Classical shock & replaying and create data files for post-test analysis or post processing.		Essential (Specify)
200	Vibration Controller Signal/Software License type-Professional Version, Perpetual license type.	Required	Essential (Specify)
201	Vibration Controller Signal/Software Version	Latest Version. Mention the Version and Date of release.	Essential (Specify)
Desktop: 1 No.			
202	Preferred Make	HP or Dell	Essential (Specify)
203	Processor	Intel Core i9 10900X 3.7GHz 2933MHz 10C 165W CPU	Essential (Specify)
204	Chipset	Intel X299	Essential (Specify)
205	RAM	32 GB nECC, DDR4 2933MHz memory support to 256GB; Total 8 DIMM Slots	Essential (Specify)
206	BIOS	BIOS of the Workstation to have tool for Enhanced security features like self-healing, regular checks.	Essential (Specify)
207	Drive Controllers	Onboard 6-Channel SATA @ 6Gbps (RAID 0,1,5,10)	Essential (Specify)
208	Hard Disk	1TB M.2 2280 PCIe NVMe TLC Solid State Drive & 1 TB SATA 7200 RPM HDD Option for future expansion of additional up to 4 SATA/SSD Hard drives.	Essential (Specify)
209	Optical Drive	9.5mm Slim Super Multi DVD Writer	Essential (Specify)
210	Graphics Card	NVIDIA Quadro P2200 (5 GB GDDRS dedicated or Radeon™ Pro W5500 or better	Essential (Specify)
211	Bays	2 x External 5.25" 2 x Internal 3.5" 1 x M.2 PCIe x 4 Gen3 Slot for SSDs	Essential (Specify)

		Slim Optical Drive bay	
212	Slots	1 x PCIe x 16 Gen3 2 x PCIe x 8 Gen3 2 x PCIe x 4 Gen3 All PCI Express slots should be open ended	Essential (Specify)
213	Security	BIOS controlled electro-mechanical internal chassis lock for the system	Essential (Specify)
214	Ports	Front: 4USB 3.1, 1 Headphone, 1 Microphone Rear: 4USB 3.1, Rj-45 integrated Gigabit LAN (1xsupporting Intel AMT), 2PS/2, 1 Audio Line-Out, 1 Microphone	Essential (Specify)
215	Keyboard and Mouse	Minimum 104 keys USB Keyboard and USB Optical Scroll Mouse-Same make as that of the workstation of Make HP	Essential (Specify)
216	Audio	High-Definition Integrated Audio with Internal Speaker	Essential (Specify)
217	Power Supply	Active Power Factor Correction, 90% Efficient Power supply EPEAT Silver certification for the system model. Power supply should support standalone self test.	Essential (Specify)
218	Chassis	Tool less chassis with easy access. Provision for Kensington lock and Panel lock required. Integrated handles on the chassis. System should be rack-mountable	Essential (Specify)
219	Operating System	Windows 10 Professional for workstation. System should be certified for running RHEL and SLED.	Essential (Specify)
220	Additional Software	1. The hardware vendor should supply an automatic system performance tuning and monitoring software on Windows. 2. The tuning software should have modules for resource monitoring over a long period of time, and should be capable of showing GPU utilization (GPU, Graphics memory and Codec activity) for both Graphics and GPU Compute cards. A complete Offline Diagnostics and Asset Discovery software suite should be supplied along with the system.	Essential (Specify)
221	Warranty for Desktop	5 years onsite parts and labor warranty for system and monitor	Essential (Specify)
222	Vendor Status	The hardware vendor should be a reputed concern, having global presence in multiple countries. Vendor should have ISO certifications.	Essential (Specify)
223	Dust Filter	OEM should provide serviceable dust filter for avoid workstation failures due to dust and it should be connected into the workstation	Specify
224	Display	27 inch FHD Monitor IPS with LED backlight	Essential (Specify)

		of make HP/DELL	
Environmental Chamber			
225	Make:	Weiss, CSZ, CME, Envisys (Mention the Make and Model No)	Essential (Specify)
226	The environmental chamber has to be integrated with the vibration shaker	Required. It is the responsibility of the supplier to integrate with the vibration shaker system.	Essential (Specify)
227	Parameters	Temperature, Humidity	Essential (Specify)
228	Inside chamber Dimensions	800mmx800mmx1200mm and the dimensions should compatible with slip table and head expander.	Essential (Specify)
229	Temperature Range	-70 to 180 deg C	Essential (Specify)
230	Rate of change of heating	3 deg C per minute (Linear). Compliance to IEC 60068-3-5 Without load and IEC 60068-3-7 With load	Essential (Specify)
231	Rate of change of cooling	3 deg C per minute (Linear). Compliance to IEC 60068-3-5, Without load and IEC 60068-3-7, With load.	Essential (Specify)
232	Humidity Range	5% to 95% RH	Essential (Specify)
233	Humidity fluctuation	1% to 3% RH	Essential (Specify)
234	Multichannel Temperature/Humidity datalogging system	Required	Essential (Specify)
235	Remote access/control of the controller from the software for temperature/humidity inputs and changes	Required. It is responsibility of the supplier.	Essential (Specify)
236	Control over the specimen power supply/pneumatic line etc.,	Required.	Essential (Specify)
237	Instrumentation & Control	<ul style="list-style-type: none"> • Flame retardant cables shall be used for main and control unit. • USB provision for fast downloads, Data logging information, • Internal memory for data logging (> 50 GB or better) • Real Time trend graph to be viewed on the screen (temperature, Humidity versus time) • IP65 protected touch panel/touchscreen • PLC based system • User friendly test programming and test sequence • Instant program profile preview in graphical format • Internal Fault alerts to be displayed on the monitor with HELP menu 	Essential (Specify)

		<ul style="list-style-type: none"> Fault diagnostics with history <p>Low water indication for humidity system on the monitor</p>	
238	Condenser type	Water cooled	Essential (Specify)
239	Type of Refrigerant	CFC free; Eco Friendly (R-404a & R23 or equivalent)	Essential (Specify)
240	Refrigeration System	<ul style="list-style-type: none"> Air cooled refrigeration unit, suitable for continuous performance. O-ODP Eco-Friendly refrigerants are to be used in a Refrigeration cycle. Low Noise type Rotary Compressor Electronic expansion Valve <p>Anti-corrosive components should be used.</p> <ul style="list-style-type: none"> High-Capacity ultra-low temperature Semi-Hermetic compressor. The compressor shall be mounted on anti-vibration pads. Eco friendly Non-CFC refrigerant. The heat exchanger coils with Inner grooved copper tubes, finned for maximum heat transfer. Hot gases bypass systems for protection against No-Load condition and superior stability and control in temperature. <p>Oil return system for protection against oil migration from the compressor</p>	Essential (Specify)
241	Remote Conditioning Unit (RCU)	Required.	Essential (Specify)
242	Heating System	<ul style="list-style-type: none"> Stainless steel sheathed air heaters to achieve the desired positive set temperature. The heaters shall be placed in the conditioning plenum such that there is no direct radiation from the heaters onto the test specimen. <p>Heater outputs shall be controlled for superior stability and control in temperature.</p>	Essential (Specify)
243	Humidification	<ul style="list-style-type: none"> A low-pressure droplet free vapor boiler using direct vaporization system. <p>Reservoir shall be provided at the side of the chamber with a PU tube quick connector and water level is automatically controlled through a water-in solenoid valve.</p>	Essential (Specify)
244	Dehumidification	<ul style="list-style-type: none"> Refrigeration based de-humidification coils. The desired level of lower humidity shall be achieved by 	Essential (Specify)

		<p>maintaining the precise dew point temperature.</p> <p>The output shall automatically be activated based on the set point as well as in ramp up mode after a low temperature cycle.</p>	
245	Door	<ul style="list-style-type: none"> • Single Door. • Electronic Key pad locks & Bio metric locks <p>A micro switch for interlocking between the conditioning fan and the door opening.</p>	Essential (Specify)
246	Test Profiles	<ul style="list-style-type: none"> • Temperature cycling: Possible to set different temperature profile/cycle. • Humidity Testing: Possible to set different humidity profile/cycle. 	Essential (Specify)
247	Test Standards	<p>To meet all relevant internal standards like MIL, JSS, RTCA related to environmental testing and vibration testing.</p> <p>We have listed few of them like MIL-STD-810F, MIL-STD-2164, JSS 55555, JSS 6625, RTCA-DO-160E etc.,</p>	Essential (Specify)
248	Inner Area	Polished Stainless Steel	Essential (Specify)
249	Inner Surface Material	Stainless Steel grade 304	Essential (Specify)
250	Provisions	<p>Entry ports/Port holes.</p> <p>1 Nos on LHS, Diameter: 150 mm.</p> <p>1 Nos on RHS, Diameter: 150 mm.</p>	Essential (Specify)
251	Adjustable Stainless-Steel Tray with Max 100 kgs UDL	3 Nos. (each having 3 shelves)	Essential (Specify)
252	Thickness of insulated material	75 mm to 125mm	Essential (Specify)
253	Thickness of Inner stainless-steel sheet	1.2 mm	Essential (Specify)
254	Thickness of outside coated sheet	1.5 mm	Essential (Specify)
255	Thickness of Outer stainless steel	1.2 mm	Essential (Specify)
256	Net weight of the unit (empty) (kg)	The supplier to specify	Essential (Specify)
257	Permitted load (kg)	The supplier to specify	Essential (Specify)
258	Load per rack (kg)	The supplier to specify	Essential (Specify)
259	Noise level	< 70 dBA	Essential (Specify)
260	Safety and Protection devices	<ul style="list-style-type: none"> • Fault Diagnostics system with history. • Complete or circuit relevant protection based on fault with audio-visual alarm • Independent temperature protection for test specimen (T max & Tmin) • Software temperature limiter for min./max. test chamber temperature. 	

		<ul style="list-style-type: none"> • Protection for excess pressure in refrigeration circuit. Automatic oil return for safety of compressor • Bypass protection at No-Load conditions. • Under Voltage, Over Voltage, Single Phase protection and phase reversal at input. • Protection for overloaded motor of test space fan and compressors (Thermal Overload Relay) • The control and monitoring system will be protected against input electrical surge and spike. • Common Earth point will be provided. <p>Low water level protection will be provided with an electrical float switch.</p>	
261	External Surface Finish	All exposed parts shall be painted with corrosion-resistant paint	Essential (Specify)
262	Inner Test Space Finish	SS Matte Finish	Essential (Specify)
263	Input Power Supply	415 ± 10%, 3 Phase, 50 Hz	Essential (Specify)
264	Housing	<ul style="list-style-type: none"> • 2mm Thick Cold rolled mild steel for all panels. • 3mm Thick Cold rolled mild steel for all frames and chassis. 	Essential (Specify)
265	Insulation	<ul style="list-style-type: none"> • Low 'k' factor, high density and non-hygroscopic nature. • Asbestos free mineral fiber insulation. 	Essential (Specify)
266	Test Space Conditioning	<ul style="list-style-type: none"> • The air circulation within the chamber shall be as close to laminar ensuring uniform airflow all across the workspace. • Standard frame TEFC motors shall be used with a detachable extended shaft • Only the co-axial fan blades shall be exposed in the conditioning plenum ensuring the drive motor will be placed outside. • The conditioning plenum shall be covered with a removable sheet providing easy access for maintenance. 	Essential (Specify)
267	Test Space	<ul style="list-style-type: none"> • Pre-polished stainless steel. • 18swg stainless steel with reinforced bottom floor to withstand a distributed load up to 500kg/m². (for standalone applications) • TIG welded seams to ensure vapor tight enclosure. <p>Double continuous seal rings of silicone rubber shall be mounted on a thermal breaker strip as the gasket to ensure</p>	

		complete sealing and zero conduction from the test space to the exterior.	
268	Viewing Window	<ul style="list-style-type: none"> • Dimensions (400mmx400mm), 1 Nos. on Front Door. • A multi pane insulated window for inspection on the door. • The multi pane window shall consists of toughened glasses sealed with silicon and separated by spacers to form completely vacuumized window. • Halogen lighting shall be provided to view the specimen under test. 	Essential (Specify)
269	Specimen being tested	Flexibility to accommodate all types of specimens	Essential (Specify)
270	Specimen made of/material composition	Specimen can be made of ferrous, non-ferrous, composite material, ceramic, polymer & plastics	Essential (Specify)
271	Specimen under test consume air	Yes. Consider this in chamber design	Essential (Specify)
272	Specimen under test exhaust air	Yes. Consider this in chamber design	Essential (Specify)
273	Safety and Maintenance Features	All necessary safeties for electrical, vacuum, hydraulic systems (if any) are to be incorporated to ensure protection to both system & operator against malfunction. The system must be designed for easy maintenance and accessibility to electrical, electronic & other components.	Essential (Specify)
274	Included Accessories	<ul style="list-style-type: none"> • Adjustable and removable shelves to accommodate various specimens. • O & M (Operation & Maintenance) manual. • Detailed Service manual. • Any special tools required for routine/preventive & Breakdown maintenance. • All Relevant Software with manuals for control, operation and maintenance. • Necessary cables and connectors for interfacing with PC. • Chamber calibration certificate and detailed procedure for recommended routine calibration. 	Essential (Specify)
275	Accessories	<ul style="list-style-type: none"> • It is the responsibility of the supplier/vendor/OEM to include all the essential accessories required for proper functioning of the environmental chamber at CMTI. <p>List out the accessories (give the list of accessories)</p>	Essential (Specify)
276	DM water tank with water level indicator	1000 liters capacity.	Essential (Specify)
277	Water lines, tubing,	All are in the vendors scope of supply.	Essential (Specify)

	erection of lines, refrigeration lines/tubing/erection, electrical cable/cabling, erection of lines. Refrigeration tanks, any storage tanks. Trolley/Racks, Desiccant humidifier, GN2/LN2/CO2		
278	Trolley or guideways to the environmental chamber, to move from head expander to slip table. Rigid stand with height adjustable feature/provision, so that environmental chamber can be mounted on head expander and on slip table.	Required. It is in vendors scope of supply.	Essential (Specify)
279	Installation, Commissioning, Start-up & training (Environmental Chamber)	<ul style="list-style-type: none"> • Vendor shall include installation, commissioning, start-up, pre-dispatch inspection and training as part of the supply. • All the accessories required for installation and commissioning is in the vendor scope of supply. CMTI will provide only the power supply points and place for installation. Even the miscellaneous parts are in the vendors scope of supply. • The training shall include operation and maintenance of the equipment at CMTI for 5 engineers for 10 days. 	Essential (Specify)
280	Warranty for Environmental Chamber and its sub systems	<ul style="list-style-type: none"> • One-year comprehensive on-site warranty for the environmental chamber from the date of acceptance of the system. • All spare parts required for the trouble-free operation of the Environmental Chamber and its accessories during standard warranty period, needs to be supplied by the vendor, without extra cost. • Fault should be resolved on-site withing 2 working days of fault reporting. 	Essential (Specify)
Tri Axial Accelerometers. Quantity: 5 Nos			
281	Make: Kistler/B&K/PCB	Mention the Make and Model No	Essential (Specify)
282	Type	ICP/IEPE	Essential (Specify)
283	Measuring Type	Tri Axial (3-axis)	Essential (Specify)
284	Frequency Range (minimum) ± 5%	0.5Hz to 6000Hz	Essential (Specify)

285	Resonance Frequency	>25kHz	Essential (Specify)
286	Sensitivity $\pm 5\%$	$\geq 100\text{mV/g}$	Essential (Specify)
287	Measuring Range	$\pm 50\text{g}$	Essential (Specify)
288	Connector Type	Specify	Essential (Specify)
289	Connecting Cable (5 Nos)	10m length, Low noise, Shielded cable, BNC output connector	Essential (Specify)
290	Mounting (desirable)	Tapped Hole and Adhesive	Essential (Specify)
291	Mounting Magnet (5 Nos)	Compatible with accelerometer mounting thread	Essential (Specify)
292	Operating Temp range	-20°C to +150°C or better	Essential (Specify)
293	Ground Isolation	Internally Ground Isolated	Essential (Specify)
294	Non-Linearity	$\leq 1\%$	Essential (Specify)
295	Transverse Sensitivity	$\leq 2\%$	Essential (Specify)
296	Sealing	Hermetic	Essential (Specify)
297	Maximum Shock	5000 g	Essential (Specify)
298	Weight (desirable)	< 10g	Essential (Specify)
299	Size	10mmx10mmx10mm	Essential (Specify)
300	TEDS	Latest Version is required	Essential (Specify)
301	Calibration Certificate and Report with traceability to NIST, PTB, NPL-UK	Required.	Essential (Specify)
302	Performance warranty (Tri-axial accelerometer)	For 12 months from the date of acceptance at CMTI.	Essential (Specify)
303	Acceptance Criteria (Tri-axial accelerometer)	The equipment shall be tested for its functionality and performance at CMTI as per the technical specifications.	Essential (Specify)
Single Axis Accelerometer. Quantity: 5 Nos			
304	Make: Kistler/B&K/PCB	Mention the Make and Model No	Essential (Specify)
305	Type	ICP/IEPE	Essential (Specify)
306	Measuring Type	Single Axial	Essential (Specify)
307	Frequency Range (minimum) $\pm 5\%$	1Hz to 10000Hz	Essential (Specify)
308	Resonance Frequency	$\geq 50\text{kHz}$	Essential (Specify)
309	Sensitivity $\pm 5\%$	$\geq 10\text{mV/g}$	Essential (Specify)
310	Measurement Range	$\pm 500\text{g}$	Essential (Specify)
311	Shock Limit (1 ms pulse)	$\geq 5000 \text{g}_{pk}$	Essential (Specify)
312	Connector Type	Top Connector, 10-32 UNF thread coaxial connector neg.	Essential (Specify)
313	Connecting Cable (5 Nos)	10m length, Low noise, Shielded cable, BNC output connector	Essential (Specify)
314	Mounting (desirable)	10-32 UNF-2B threaded tapped Hole	Essential (Specify)
315	Operating Temp range	-20°C to +150°C or better	Essential (Specify)
316	Mounting Magnet (5 Nos)	Compatible with accelerometer mounting thread	Essential (Specify)
317	Sealing	Hermetic	Essential (Specify)
318	Ground Isolation	Internally Ground Isolated	Essential (Specify)
319	TEDS	Latest Version is required	Essential (Specify)
320	Weight (desirable)	< 10g	Essential (Specify)
321	Calibration Certificate and Report with traceability to NIST, PTB, NPL-UK	Required.	Essential (Specify)

322	Performance warranty (Single axis accelerometer)	For 12 months from the date of acceptance at CMTI.	Essential (Specify)
323	Acceptance Criteria (Single axis accelerometer)	The equipment shall be tested for its functionality and performance at CMTI as per the technical specifications.	Essential (Specify)
Modal exciter with necessary accessories 20 Kgf. Quantity: 1 No.			
Make: B&K, TIRA, Modal Shop.			
324	Mention the Country of Origin, Make & Model No.	To be communicated by the supplier	Essential (Specify)
325	Rated force (without forced air cooling)	Sine: ≥ 100 N peak Random: ≥ 70 N rms	Essential (Specify)
326	Rated force (with forced air cooling)	Sine: ≥ 210 N peak Random: ≥ 140 N rms	Essential (Specify)
327	Useful frequency range	DC-5kHz	Essential (Specify)
328	Operational frequency range	DC to 4000 Hz (min)	Essential (Specify)
329	Main resonance frequency	≥ 6000 Hz	Essential (Specify)
330	Velocity	≥ 1.5 m/sec.	Essential (Specify)
331	Displacement	≥ 25 mm	Essential (Specify)
332	Acceleration	Sine: ≥ 80 g peak (min) Random: ≥ 70 g rms (min)	Essential (Specify)
333	Effective moving mass	≤ 0.25 kg	Essential (Specify)
334	Rated Current	11.2A	Essential (Specify)
335	Suspension Stiffness	≥ 4 N/mm	Essential (Specify)
336	Stinger kit	Push-pull type (3 sets)	Essential (Specify)
337	The through hole at the center to attach the stinger with the exciters. The hardware should have the chuck nut assembly (for use with tension wire stingers) or with an M6/M8 to 10-32 UNF threaded insert (for use with push-pull type stingers)		
Amplifier			
338	Type	Suitable for the amplifier for modal exciter	Essential (Specify)
339	Rated power output	500 VA	Essential (Specify)
340	Frequency range	Full Capacity: Minimum 40Hz to 15kHz Reduced Capacity: DC to 150 kHz (-20dB)	Essential (Specify)
341	Frequency Response	Typical Small signal response (-20dB) in low-impedance mode: <ul style="list-style-type: none"> DC input: DC to 15kHz ± 0.5dB; DC to 150kHz ± 3dB. AC input: 15Hz to 15kHz ± 0.5dB 	Essential (Specify)
342	Input impedance	≥ 10 k Ω	Essential (Specify)
343	Total Harmonic distortion (THD) at full output capacity	Low Impedance mode: $< 0.1\%$ (40Hz to 5kHz) $< 0.2\%$ (5kHz to 15 kHz) High Impedance mode: $< 0.2\%$ (40Hz to 2kHz) $< 0.8\%$ (2kHz to 15kHz)	Essential (Specify)
344	Protection	Amplifier should have all standard safety interlocks and monitoring with onboard display indicators	Essential (Specify)
345	Indicator Lamps (LED) for	Clipping, Temperature overload, current overload, distortion etc.,	Essential (Specify)
346	Electrical wiring & input	230 VAC, 50Hz	Essential (Specify)

	supply		
347	Monitor Output	Voltage: 0.1V/V ±3%, 5Hz to 15kHz. Current: 0.1 V/A ± 3%, 5Hz to 15kHz	Essential (Specify)
Air Blower			
348	Air blower of sufficient capacity compatible with the supplied modal exciter		
349	Calibration Certificate and Report with traceability to NIST, PTB, NPL-UK	Required.	Essential (Specify)
350	Performance warranty (Modal exciter 20kgf with amplifier, Air Blower)	For 12 months from the date of acceptance at CMTI.	Essential (Specify)
351	Acceptance Criteria (Modal exciter 20kgf with amplifier, Air Blower)	The equipment shall be tested for its functionality and performance at CMTI as per the technical specifications.	Essential (Specify)
ME Scope Modal Analysis Software. Quantity: 1 License.			
352	Modal analysis software for <ul style="list-style-type: none"> • Experimental/classical modal analysis • Operational Defection shapes, • Operational modal analysis • Video Based ODS. 	Structural dynamics modifications, Acoustics, Signal processing, Advanced Signal Processing, Basic Modal Analysis, Advanced Modal Analysis, Multi reference modal analysis, Finite Element Analysis, FEA Modal Updating, FE Test correlation, Multi Shaker Signal Output, Video ODS pro.	Essential (Specify)
353	License Type	Professional version and Perpetual License	Essential (Specify)
354	License Version	Latest Version. Mention the Version and Date of release.	Essential (Specify)
355	Interface driver for OR 3 series Analyzer.	Required	Essential (Specify)
Work Station Laptop. Preferred Make: Dell/HP. Quantity: 2 Nos.			
356	Processor	Intel® Core™ i7-12700H (up to 4.7 GHz with Intel® Turbo Boost Technology, 24 MB L3 cache, 14 cores, 20 threads)	Essential (Specify)
357	Operating System	Windows 10 or 11 Pro 64 with MS Office 2021 standard edition with media recovery	Essential (Specify)
358	Processor Family	12th Generation Intel® Core™ i7 Processor	Essential (Specify)
359	Processor chipset	Intel	Essential (Specify)
360	Memory	16 GB DDR5-4800 MHz RAM (2 x 8 GB)	Essential (Specify)
361	Hard Drive Description	1 TB PCIe® NVMe™ TLC SSD	Essential (Specify)
362	Display	40.6 cm (16") diagonal, WQUXGA (3840 x 2400), IPS, anti-glare, micro-edge, 500 nits, 100% DCI-P3, Dream Colour	Essential (Specify)
363	Graphics	Intel® Iris® Xe Graphics NVIDIA® GeForce RTX™ 3070 Ti Laptop GPU (8 GB GDDR6 dedicated) NVIDIA® Max-Q technology	Essential (Specify)
364	Ports	1 power connector; 1 headphone/microphone combo; 2	Essential (Specify)

		Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signalling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge)	
365	Memory Card Device	1 microSD 7.1 media card reader	Essential (Specify)
366	Webcam	HD IR Camera 720p with face authentication	Essential (Specify)
367	Pointing Device	Touchpad with multi-touch gesture support and 26 key Rollover Anti-Ghosting Key Technology	Essential (Specify)
368	Keyboard	Premium Quiet Keyboard – spill-resistant, full-size, backlit keyboard with programmable key	Essential (Specify)
369	Optical Mouse	Wireless	Essential (Specify)
370	Network interface	Integrated 10/100/1000 GbE LAN	Essential (Specify)
371	Wireless	Intel® Wi-Fi 6E AX211 (2x2) and Bluetooth® 5.3 wireless card (supporting gigabit data rate)	Essential (Specify)
372	Wireless Note	MU-MIMO supported; Miracast compatible	Essential (Specify)
373	Fingerprint Reader	Finger Print Sensor	Essential (Specify)
374	Power Supply Type	200 W Slim Smart external AC power adapter	Essential (Specify)
375	Battery Type	Lithium Polymer Battery	Essential (Specify)
376	Energy Efficiency Compliance	TCO Certified	Essential (Specify)
377	Power Adopter	Suitable same brand shall be included	Essential (Specify)
378	Carry Case/Bag pack	Same brand shall be included	Essential (Specify)
379	Warranty for Laptop	3 years unconditional onsite warranty.	Essential (Specify)
Other clauses			
380	List of deliverables	List of deliverables to meet the functional requirements should be given along with the techno commercial quote (Part-A of the offer)	Essential (Specify)
381	Quality of finish (Vibration shaker system & Environmental chamber)	All equipment's should have good finish with anti-corrosive protection	Essential (Specify)
382	Utility requirements	Vendor should provide details of the utilities required for operation of the shaker system & environmental chamber like power requirements, compressed air requirements, place requirements	Essential (Specify)
383	Documentation (Two sets of Hard Copies in English). Backup copies of all software's and O.S should be supplied in CDROM / pen drive.	<ul style="list-style-type: none"> a) Operation Manuel b) Service Manuel c) Electrical wiring and mechanical schematics, dimensional drawings d) Parts list e) System specifications including 	Essential (Specify)

		subsystems, subsystems data sheets, interface requirements, calibration requirements and procedures. f) Factory acceptance test results.	
384	Installation and commissioning (Vibration shaker system and Environmental Chamber)	The supplier or their representative should take full responsibility for unloading, unpacking, installation, commissioning, carrying out site acceptance tests and handing over the system to CMTI. Bangalore.	Essential (Specify)
385	Integration of Vibration Shaker Controller and the Environmental Chamber	The supplier or their representative should take full responsibility of integrating vibration shaker controller with the environmental chamber at CMTI. Bangalore.	Essential (Specify)
386	Training at CMTI	Supplier should provide mandatory training on operation and routine maintenance of the system for 15 days to CMTI Bangalore engineers as part of installation and commissioning.	Essential (Specify)
387	Performance Bank Guarantee (PBG)	Performance Bank Guarantee (PBG) of 10% of order value should be provided during the warranty period (including the extended warranty period of 6 years)	Essential (Specify)
388	Installation, Commissioning and Integration (All the supplied hardware and software)	Vendor to take full responsibility for carrying out the installation, commissioning of the supplied Hardware's and software's at CMTI.	Essential (Specify)
389	Delivery Period	15-16 weeks from the date of issuing the purchase order.	Essential (Specify) Early delivery is highly preferred
390	Warranty for Vibration Shaker System and its sub systems, accessories including its third party items/products.	<ul style="list-style-type: none"> One-year comprehensive on-site warranty for the Vibration Shaker System, its sub systems, accessories from the date of acceptance of the system. All spare parts required for the trouble-free operation of the Vibration Shaker System and its accessories during standard warranty period, needs to be supplied by the vendor, without extra cost. Fault should be resolved on-site withing 2 working days of fault reporting. 	Essential (Specify)
391	Comprehensive On-site performance Extended Warranty for Vibration shaker system, Environmental Chamber and its accessories including its third party items/products	<p>Complete system including hardware, software's, third party items, components shall carry 6 years comprehensive extended warranty.</p> <p>This warranty starts after completion of one-year comprehensive standard warranty at CMTI.</p> <p>All the spare parts required for the trouble-free operation of the vibration shaker</p>	Essential (Specify)

		system, Environmental Chamber and its accessories during the extended warranty period needs to be supplied by the vendor, without any extra cost. Fault should be resolved on-site within 2 working days of fault reporting.	
392	Spare parts and service support	The quoted system should have minimum product life cycle of 15 years. The OEM has to inform the CMTI, one year before discontinuing the model/product. The OEM has to provide spare parts and service support for 7 years from the date of discontinuing the model/system.	Essential (Specify)

Other Terms and Conditions:

1. All the listed software and hardware items in tender, that vendor/supplier quotes should be preferably be a catalogue product and proven.
2. If the vendor is not OEM, the OEM authorization certificate has to be submitted along with bidding documents.
3. The vendor should meet all the technical specifications to qualify the bid. The vendor/supplier has to furnish the values/units/parameters against each CMTI requirement in the compliance sheet. Offer without this information will be rejected without any further reference.
4. The bidder has to submit all necessary technical information documents/data sheets & compliance sheet as per the technical specifications.
5. The vendor/supplier has to sign and stamp (company seal) on all the pages of technical compliance sheet. Offer without this information will be rejected without any further reference.
6. The vendor/supplier has commissioned more than ten numbers of "Vibration Shaker System with Environmental Chamber of similar specification in govt institutes/research organization in india, with minimum two installations in Bangalore.
7. The vendor/supplier should submit a list of these installations giving the date of supply and contact details along with the quote, so that CMTI engineers may visit these installations and evaluate the system as part of tender evaluation. Offer without this information will be rejected without any further reference.
8. Merely stating, "comply" does not constitute sufficient information. Exact numerical values are to be specified wherever applicable. Specified technical data should be supported by product catalogues, manuals, test procedures, and test plots etc. In case of insufficient technical data, the quote will be summarily rejected without further intimation.

PART-B**Price Bid format for 10kN (1000 kgf) Electro Dynamic Vibration Shaker System with Environmental Chamber**

(A) Price Quotations-The quotations shall clearly mention the unit price and quantity required.				
SL. No	Item	Unit Price	Quantity	Total
1	10kN (1000 kgf), 50mm displacement Shaker with Head Expander, Slip table, Power Amplifier & Field Power Supply, Hydraulic Power Pack, Blower and other associated accessories.			
2	Vibration Controller and Software			
3	Alignment and maintenance tool kit. 1 set of toolbox to be supplied to operate and maintain the shaker. Toolkit comprising of the necessary tools for alignment and maintenance of the shaker system.			
4	Tri Axial Accelerometer			
5	Single Axis Accelerometer			
6	Modal Exciter (20kgf)			
7	ME Scope Modal Analysis Software.			
8	Environmental Chamber & its sub systems			
9	Desktop Computer			
10	Work station laptop			
11	Any other items not covered above			
(B) Price Quotations for Warranty etc.				
SL. No	Item	Unit Price	Quantity	Total
12	<ul style="list-style-type: none"> Warranty Period: Comprehensive on-site warranty for a period of 1 years (minimum) for all the items quoted in (A). The warranty period shall start from the date of acceptance of the shaker system & environmental chamber in all respect at CMTI. Bangalore. All spare parts required for the trouble-free operation of the Vibration Shaker System, its sub systems, Environmental Chamber and its accessories during standard warranty period, needs to be supplied by the vendor, without extra cost. 	Inclusive		

13	<p>Extended warranty: Extended 6 years of Comprehensive onsite warranty (after completion of standard warranty) for all the items i.e. complete Vibration shaker system & its sub systems, Environmental chamber and its sub systems (including for the 3rd party items).</p> <p>All spare parts required for the trouble-free operation of the Vibration Shaker System, its sub systems, Environmental Chamber and its accessories during standard warranty period, needs to be supplied by the vendor, without extra cost.</p>			
(C) Service Manuals				
14	Operation and Service Manuals- 2 Nos Hard copy and Soft copy	Inclusive		
Grand Total				

- Complete details as per specific requirement giving suppliers experience, heritage of the quoted system and customer list for 10kN (1000 kgf) capacity or higher with contact details, local service support, certificate of origin is to be provided as part of techno commercial offer. **Offers without this information or offers with incomplete or inaccurate or false information will be rejected without any further reference.**
- **Offers from traders / resellers will not be considered.**
- Table of compliance statement (as per the format given in Part-A: Technical Specifications) giving exact numerical values with tolerance or range of values should be supplied along the quote will not be considered. Merely stating, “comply” does not constitute sufficient technical data. In case of insufficient technical data, the quote will be summarily rejected without seeking any clarifications.
- Specified technical data should be supported by product catalogs, manuals, test procedures and test plots or results.
- Specified **options** will be exercised at the time of order and hence should be **quoted separately.**
- All other **options** and **spares** should be quoted separately.
- **Utilities:** The supplier to specify the various requirements of operation & installation of the shaker system.
 1. Electrical Power requirements.
 2. Civil requirements like footprint of various systems, minimum area required for entire system like field power supply etc.
 3. Cooling system requirements.
 4. AC requirements like heat dissipation factor for each subsystem.
 5. Foundation requirement for installation, trench requirement, etc.
- Additional features if any may be indicated separately and quoted as optional.
- Supplier shall be ready to give technical presentation/demonstrations if required.
- The performance certificate should be supplied along with the product.
- Minor modifications that are necessary to meet CMTI Bangalore interface requirements should be accommodated while executing the order.

PART-C

Acceptance Criteria

Scope of Work:

The scope of work and responsibility of supplier include Design, Manufacture, handling at site, integration (vibration shaker system and environmental chamber & its sub systems), and demonstration of total system performance of 10kN (1000 kgf) electro dynamic shaker system and Environmental chamber as per specifications.

General Requirements: Vendor will be responsible for the following:

1. Quality

- a. The system should be tested prior to shipment as per Factory Acceptance Tests (FAT) plan given in Part-D and the same will be witnessed by CMTI, Bangalore at its discretion. Vendor shall give 30 days advance notice for witnessing the Factory Acceptance Tests (FAT) at their premises. Vendor shall make available the following,
 - i. Calibration records, wherever applicable, with traceability
 - ii. Quality certificates for all deliverables and
 - iii. Reports of all the Tests carried out on the equipment

2. Shipping and Installation

- a. The system shall be installed at CMTI Bangalore-560 022, India.
- b. The Vendor shall place the Shaker system and auxiliary units in the areas already identified in the building. The shaker shall be placed on the floor level.
- c. Handling of containers at CMTI Bangalore, unpacking, handling of supplied items at installation site should be taken care by the vendor.
- d. Electrical wiring from the panel, cooling unit and hydraulic connections should be taken care by the vendor.
- e. The vendor shall have responsibility of providing required connecting cables, hoses, water and pneumatic lines. Utility outlets for power, air and water will be provided by CMTI, Bangalore, at locations identified by vendor.

3. Acceptance Test Procedure

- a. The vibration shaker system and environmental chamber system (shaker, power amplifier, and field power supply and slip table) shall be as tested as per Factory Acceptance Tests (FAT) plan given in "Part-D" at factory. Vendor shall demonstrate following among others.
 - i. Full force rating, Displacement, Velocity and Acceleration levels.
 - ii. Over turning moment capabilities on shaker by testing or by analysis. Vendor shall provide details of Flexure stiffness of Shaker, Air Isolator stiffness and other details.
 - iii. Moment capabilities on slip table by tests or analysis. Individual bearing performance details.
 - iv. Environmental chamber full temperature range and humidity
- b. After installation at CMTI, Bangalore, the system should be tested as per the site acceptance test plan as given in "Part-E" at CMTI, Bangalore. The site acceptance test results will be the criteria for acceptance of the system.
4. Vendor shall provide health monitoring details for bearings and other critical items which would be useful for maintenance/ Operation of the system.
5. Vendor shall provide the list of sub-contractors supplying critical items for the system.
6. Warranty and Services:

- a. The standard 12 months comprehensive warranty will start from the date of acceptance of the system at CMTI.
- b. The system shall be warranted against all design, manufacturing defects, assembly faults and sub-standard quality

7. Scope of CMTI, Bangalore:

The Scope of supplies from CMTI, Bangalore will include the following:

- a. Site preparation for the system with general utilities.
- b. Power, water and compressed air outlet points will be provided.

PART- D

Factory Acceptance Test (FAT) Plan at factory prior to dispatch

SHAKER
BARE TABLE
<p>1. Resonance test (Pre signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>2. Max displacement, Max Velocity and Max Acceleration With frequency 5 Hz to 2000 Hz at sweep rate of 1 Oct/min. Multi point maximal Control at armature top</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>3. Resonance test (Post signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>4. Diaphragming and Cross axis response test 5g Constant control from 5 to 2000 Hz with required slopes for Displacement and velocity, with sweep rate of 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>5. Noise measurement on armature top With amplifier Set to 100% gain and zero input signal</p> <ul style="list-style-type: none"> • Measure accelerometer output at the armature top for 5 Hz to 20kHz analysis range. (Expected level < 0.2g)
<p>6. Low g sine test Constant input acceleration level of 0.3g Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
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<p>9. Shock Test 50 g, 10 ms half sine with 10% pre and post pulse Control at center</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.

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<p>13. Sine test With 2 times weight of armature (Vender should provide the mass) max displacement, max velocity Acceleration to achieve max sine force rating of the shaker. Multi point maximal Control Frequency 5 Hz to 2000 Hz at 1 Oct/ min. Plot Drive, O/P current, and O/P voltage. Check waveform distortion of accelerometer output and Amplifier output using Digital data acquisition system. Acceleration limited to maximum force rating of shaker.</p>
<p>14. Random test With mass 2 times weight of armature 20-100Hz: 6dB/Oct, 100-2000Hz: flat PSD for full random force rating. Multi point maximal Control</p> <ul style="list-style-type: none"> • Plot acceleration, Drive, O/P current and O/P voltage.
<p>15. Endurance test Shaker should run continuously for 1 hour with the following specification. With mass 2 times weight of armature maximum displacement, maximum velocity, Acceleration limited to maximum force rating of shaker. Multi point maximal Control Frequency 5 Hz to 2000 Hz at 1 Oct/ min.</p> <ul style="list-style-type: none"> • Plot acceleration, Drive, O/P current and O/P voltage.
<p>16. Resonance test (Post signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature</p>
<p>SLIP-TABLE</p>
<p>17. Resonance test (Pre signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/ min. Control at slip table end along shaker axis (10-32 helicoil for accelerometer mounting provision to be provided)</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.

<p>18. Max Displacement, Max Velocity and Max acceleration With Frequency 5 Hz to 2000 Hz at 1 Oct/ min sweep rate. Control at slip table end along shaker axis</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current and O/P voltage.
<p>19. Cross axis response test 5g Constant control from 5 to 2000 Hz with required slopes for Displacement and velocity Control at slip table end along shaker axis.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations.
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<p>21. Noise measurement Bare table With amplifier Set to 100% gain and zero input signal Measurement of output voltage and current with input shorted and amplifier set to 100% gain</p>
<p>22. Wave form distortion tests</p> <ul style="list-style-type: none"> • Test-A With an acceleration of 1g on armature bare table top between 5 Hz to 100Hz record output voltage and current wave forms. • Test-B Record output voltage and current waveforms for • Maximum displacement sine dwell • Maximum velocity sine dwell • Maximum acceleration sine dwell
<p>23. Shaker system interlocks Over travel limit by test Cooling unit flow switch Temperature switch Field power supply Emergency Abort switches</p>
<p>24. Environmental Chamber</p> <ul style="list-style-type: none"> • Tolerance: Check has to done to know whether the environmental chamber achieve and maintain the required condition. • The aim of knowing the uncertainty in a chamber's performance is to decide whether a tolerance is met. • Humidity and temperature measurement. (-70°C to +180°C & 5% to 95% RH) • Typical load: Calibration of chamber with typical load is ideal where very similar tests are repeated. • Measurement repeatability • Measurement of conditions (temperature and humidity) in the chamber during the test

PART- E

Site Acceptance Test (SAT) Plan at CMTI, Bangalore after Installation

SHAKER
BARE TABLE
<p>1. Resonance test (Pre signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>2. Max displacement, Max Velocity and Max Acceleration With frequency 5 Hz to 2000 Hz at sweep rate of 1 Oct/min. Multi point maximal Control at armature top</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>3. Resonance test (Post signature) 1g Constant control. Frequency 5 Hz to 2000 Hz at 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
<p>4. Diaphragming and Cross axis response test 5g Constant control from 5 to 2000 Hz with required slopes for Displacement and velocity, with sweep rate of 1 Oct/min. Control at center of armature.</p> <ul style="list-style-type: none"> • Plot response accelerations for all three axes at locations. • Plot Drive, O/P current, and O/P voltage.
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<p>26. The vibration shaker system and environmental chamber shall be tested for its functionality and performance at CMTI as per our technical specifications (Part-A of this tender document, for all the parameters) and also detailed specifications given in the supplier data sheets.</p>

CHAPTER - 5

CONTRACT FORM

Contract No. _____ Date: _____

THIS CONTRACT AGREEMENT is made
the [] day of [] month of, [] year

BETWEEN

The Central Manufacturing Technology Institute (CMTI), a registered Government of India Society under the administrative control of the Ministry of Heavy Industry and Public Enterprises, Government of India having its registered office at Tumkur Road, Bengaluru - 560022, Karnataka, India represented by _____ [Insert complete name and address of Purchaser (hereinafter called "the Purchaser"), and

[Insert name of Supplier], a corporation incorporated under the laws of [insert: country of Supplier] and having its principal place of business at [insert: address of Supplier] (hereinafter called "the Supplier").

WHEREAS the Purchaser invited Bids for certain Goods and ancillary Services, viz., [insert brief description of Goods and Services] and has accepted a Bid by the Supplier for the supply of those Goods and Services in the sum of [insert Contract Price in words and figures, expressed in the Contract currency (ies)] (hereinafter called "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract:
 - (a) This Contract Agreement
 - (b) Special Conditions of Contract
 - (c) General Conditions of Contract
 - (d) Technical Requirements (including Schedule of Requirements and Technical specifications)
 - (e) The Supplier's Bid and original Price Schedules
 - (f) The Purchaser's Notification of Award
 - (g) [Add here any other document(s)]
- 3 This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.
- 4 In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
- 5 The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the

Bidding Document for Supply, Installation, Commissioning & Testing of 10kN (1000 kgf) Electro Dynamic Vibration Shaker System
manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Union of India on the day, month and year indicated above.

For and on behalf of the Central Manufacturing Technology Institute

Signed: [insert signature]

in the capacity of [insert title or other appropriate designation] in

the presence of [insert identification of official witness]

Signed: [insert signature]

in the capacity of [insert title or other appropriate designation]

in the presence of [insert identification of official witness]

For and on behalf of the Supplier

Signed: [insert signature of authorized representative(s) of the Supplier] in the capacity of [insert title or other appropriate designation] in the presence of [insert identification of official witness]

CHAPTER - 6

OTHER STANDARD FORM

Table of Contents

SL. No.	Name
1.	Integrity Pact
2.	Bidder Information form
3.	Bid Security Form
4.	Performance Statement Form
5.	Deviation Statement form
6.	Bid form
7.	Performance Security Form
8.	Acceptance certificate form
9.	Eligibility certificate form
10.	Non Black-listed Self certificate form

INTEGRITY PACT

Tender Ref. No .& Date:.....

1. This Integrity pact Agreement is made at..... on this.....day of.....20.....
BETWEEN **Central Manufacturing Technology Institute(CMTI)** represented by its **Purchase Officer/ Executive Engineering Services/ Chief Administrative Officer**, Hereinafter referred as the Buyer/ Owner, which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns) AND **M/s** hereinafter referred to as the (Details of duly authorized signatory) “Bidder/Contractor” and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

2. Preamble
WHEREAS the Owner/ Buyer has floated the Tender under organizational procedures (hereinafter referred to as “Tender/Bid”) and intends to procure/ award contract for..... hereinafter referred to as the Goods/ Services/ works/ Contract. AND WHEREAS the Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s). AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as “Integrity Pact” or “Pact”), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties. NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

3. **Commitment of the Buyer/ Owner**
 - 3.1 The Buyer/ Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - a. No employee of the Buyer/ Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - b. The Buyer/ Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Buyer/ Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - c. The Buyer/ Owner shall endeavour to exclude from the Tender process all known prejudiced persons or any person, whose conduct in the past has been of biased nature.
 - 3.2 If the Buyer/ Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or if there be a substantive suspicion in this regard, the Buyer/ Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

4. **Commitment of the Bidder(s)/ seller(s)/ Contractor(s)**
 - 4.1 It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to CMTI all suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.

4.2 The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution.

- a. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Buyer/ Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
- b. The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
- c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act Indian Legislation, Prevention of Corruption Act 1988 as amended from time to time. Further the Bidder(s)/ Contractor(s) will not use improperly, for the purpose of competition or personal gain, or pass on to others, any information or documents provided by the Buyer/ Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/ representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign principals/ agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.
- e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- f. The Bidder(s)/Contractor(s) have not sold and will not sell the same material/equipment at prices lower than the bid price.

4.3 The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

4.4 The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice (means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of CMTI's t interests).

4.5 The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

4.6 The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Subcontractors/sub-vendors.

- a. The Buyer/ Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.

- b. The Buyer/ Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Buyer/ Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process

5. Previous Transgression

- a. The Bidder declares that no previous transgressions occurred in the last 3 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process. The date of such transgression, for the purpose of disclosure by the bidders in this regard, would be the date on which cognizance of the said transgression was taken by the competent authority. The transgression(s), for which cognizance was taken even before the said period of 3 years, but are pending conclusion, shall also be reported by the bidders.
- b. If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Buyer/ Owner.
- c. If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Buyer/ Owner may, at its own discretion, revoke the exclusion prematurely.

6. Consequences of Breach

Without prejudice to any rights that may be available to the Buyer/ Owner under law or the Contract or its established policies and laid down procedures, the Buyer/ Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Buyer/ Owner's absolute right:

- a. If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Clause 4 & Clause 5 above, or in any other form such as to put his reliability or credibility in question, the Buyer/ Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Buyer/ Owner. Such exclusion may be forever or for a limited period as decided by the Buyer/ Owner.
- b. Forfeiture of EMD/Performance Guarantee/Security Deposit: If the Buyer/ Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.
- c. Criminal Liability: If the Buyer/ Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Buyer/ Owner has substantive suspicion in this regard, the Buyer/ Owner will inform the same to law enforcing agencies for further investigation.

7. Compensation for Damages

- a. If the Buyer/ Owner has disqualified the Bidder(s) / Seller(s) from the tender process prior to the award according to Clause 8, the Buyer/ Owner is entitled to demand and recover the damages equivalent to Earnest Money Deposit in case of open tendering.
- b. If the Buyer/ Owner has terminated the contract according to Clause 6, or if the Buyer/ Owner is entitled to terminate the contract according to Clause 6, the Buyer/ Owner shall be entitled to encash the advance bank guarantee and performance bond/ warranty bond, if furnished by the Bidder(s)/Seller(s), in order to recover the payments, already made by the Buyer/ Owner for undelivered Goods and / or Services and / or Works.
- c. The Bidder(s)/Seller(s) shall also be liable to refund to the Buyer/ Owner, the Agency Commission / payments made by the Seller(s) / Bidder(s) along with interest at the rate of 2% per annum above LIBOR (London Inter Bank Offer Rate) (for foreign vendors) and Base Rate of SBI (State Bank of India) plus 2% (for Indian vendors).

8. Independent External Monitor(s)

- a. The Buyer/ Owner has appointed Independent External Monitor(s) for this Integrity Pact after approval by the Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- b. For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- c. The IEM is not subject to instructions by the representatives of the parties and performs his/ her functions neutrally and independently. The IEM would be provided access to all documents/ records pertaining to the contract for which a complaint or issue is raised before them, as and when warranted. However, the documents/ records/ information having national Security Implications and those documents which have been classified as Secret/ Top Secret are not to be disclosed. He/ she reports to the Director, CMTI.
- d. If any complaint with regard to violation of the IP is received by the Buyer/ Owner in a procurement case, the Buyer/ Owner shall refer the complaint to the Independent External Monitor(s) for their report. Contact details of IEMs are given in the bid/ tender documents as well as in the website of CMTI <https://cmti.res.in>
- e. The Bidder(s)/Contractor(s) accepts that the IEM has the right to access without restriction to all Project documentation of the Buyer/ Owner including that provided by the Contractor. The Contractor will also grant the IEM, upon his/her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.
- f. The IEM is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/ Sub-contractor(s) with confidentiality. The IEM has also signed declarations on 'Non-Disclosure of Confidential Information' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Director, CMTI and recuse himself / herself from that case.
- g. The Buyer/ Owner will provide to the IEM sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Buyer/ Owner and the Contractor. The parties offer to the IEM the option to participate in such meetings.
- h. As soon as the IEM notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Buyer/ Owner and request the Management to discontinue or take corrective action, or to take other relevant action. The IEM can in this regard submit non-binding recommendations. Beyond this, the IEM has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

- i. The IEM will submit a written report to the Director, CMTI, within 4 weeks from the date of reference or intimation to him by the Buyer/ Owner and, should the occasion arise, submit proposals for correcting problematic situations
- j. If the IEM has reported to the Director, CMTI, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Director, CMTI has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the IEM may also transmit this information directly to the Central Vigilance Commissioner.
- k. The word 'Monitor' would include both singular and plural.

9. Duration of the Pact

- a. This Pact will be effective from the date of issue of tender (NIT).It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other unsuccessful bidders, within 6 months from date of placement of order / finalization of contract against this tender till the Contract has been awarded.
- b. If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Director, CMTI.
- c. Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10. Other Provisions

- a. Changes and supplements need to be made in writing. Side agreements have not been made.
- b. After award of work, the IEMs shall look into any issues relating to execution of contract, if specifically raised before them.
- c. The Bidder(s)/Seller(s) signing this IP shall not initiate any Legal action or approach any court of law during the examination of any allegations/complaint by IEM and until the IEM delivers the report.
- d. In the event of any dispute between the management and the Bidder(s)/Seller(s), relating to those contracts where Integrity Pact is applicable, the same will be settled through mediation before the panel of IEMs within 4 weeks. In case the dispute remains unsolved even after mediation by the panel of IEMs, CMTI will take further action as per the terms and conditions of the contract in respect of dispute resolution/ arbitration.
- e. Nothing contained in this Integrity Pact shall be deemed to assure the Bidder(s)/ Seller(s) of any success or otherwise in the tendering process.
- f. If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- g. Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- h. This Integrity pact is subject to Indian Laws, and exclusive Jurisdiction of Courts at Bangalore, India.
- i. The Parties hereby sign this Integrity Pact at _____ on _____ (Bidder(s)/contractor) and at _____ on _____ (Buyer/ Owner)

11. LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following

witnesses:

(For and on behalf of Buyer/ Owner)

(For and on behalf of Bidder/Contractor)

WITNESSES: 1.....
(signature, name and address)

2.....
(signature, name and address)

Place:

Date

BIDDER'S INFORMATION FORM

- a) [The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted. This should be done of the letter head of the firm]

Date: [insert date (as day, month and year) of Bid Submission] Tender No.: [insert number from Invitation for Bids]

Page 1 of _____ pages

1. Bidder's Legal Name [insert Bidder's legal name]
2. In case of JV, legal name of each party: [insert legal name of each party in JV]
3. Bidder's actual or intended Country of Registration: [insert actual or intended Country of Registration]
4. Bidder's Year of Registration: [insert Bidder's year of registration]
5. Bidder's Legal Address in Country of Registration: [insert Bidder's legal address in country of registration]
6. Bidder's Authorized Representative Information Name: [insert Authorized Representative's name] Address: [insert Authorized Representative's Address] Telephone/Fax numbers: [insert Authorized Representative's telephone/fax numbers] Email Address: [insert Authorized Representative's email address]
7. Attached are copies of original documents of: [check the box(es) of the attached original documents] Articles of Incorporation or Registration of firm named in 1, above.

Signature of Bidder _____ Name _____

Business Address

BID SECURITY FORM

Whereas..... (hereinafter called the tenderer") has submitted their offer dated for the supply of (Hereinafter called the tender")

Against the Purchaser's tender enquiry no..... Know all men by these Presents that we of having our registered office at are bound unto (hereinafter called the "Purchaser")

In the sum of
For which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this day of20.....

THE CONDITIONS OF THIS OBLIGATION ARE:

- (1) If the tenderer withdraws or amends, impairs or derogates from the Tender in any respect within the period of validity of this tender.
- (2) If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:
 - (a) If the tenderer fails to furnish the Performance Security for the due Performance of the contract.
 - (b) Fails or refuses to accept/execute the contract.

WE undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including 45 days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date. _____

(Signature of the authorized officer of the Bank)

Name and designation of the officer Seal, name & address of the Bank and address of the Branch

PERFORMANCE STATEMENT FORM (For a Period of last 3 years)

Name of the Firm: _____

Order placed by (full address of purchaser)	Order No and date	Description and quantity of ordered equipment	Value of order	Date of completion of delivery as per contract	Date of actual completion of delivery	Remarks indicating reasons for late delivery, if any	Has the equipment been installed Satisfactory? (Attach a certificate from the purchaser/consignee)	Contact person along with telephone No: Fax No: And e-mail address

Signature and Seal of the Manufacturer/Bidder_____

Place:

Date:

DEVIATION STATEMENT FORM

The following are the particulars of deviations from the requirements of the tender specifications:

CLAUSE DEVIATION REMARKS (INCLUDING JUSTIFICATION)

Place:

Date:

Signature and seal of the
Manufacturer/Bidder

NOTE:

1. Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "No Deviations".

BID FORM

[The Bidder shall fill in this Form in accordance with the instructions indicated No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

Invitation for Bid No.: [insert No of IFB]

To: [insert complete name of Purchaser]

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda No.: [insert the number and issuing date of each Addenda];
- (b) We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules Specified in the Schedule of requirements the following Goods and Related Services [insert a brief description of the Goods and Related Services];
- (c) The total price of our Bid, excluding any discounts offered in item (d) below, is: [insert the total bid price in words and figures, indicating the various amounts and the respective currencies];
- (d) The discounts offered and the methodologies for their application are:
Discounts. If our bid is accepted, the following discounts shall apply. [Specify in detail each discount offered and the specific item of the Schedule of Requirements to which it applies.]
- (e) Our bid shall be valid for the period of time specified in ITB Sub-Clause 1.16.1, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a Performance Security in accordance with ITB Clause 1.38 and GCC Clause 2.13 for the due performance of the Contract;
- (g) The following commissions, gratuities, or fees have been paid or are to be paid with respect to the bidding process or execution of the Contract: [insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]

Name of Recipient	Address	Reason	Amount
_____	_____	_____	_____

(If none has been paid or is to be paid, indicate "none.")

- (h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Signed: [insert signature of person whose name and capacity are shown]

In the capacity of [insert legal capacity of person signing the Bid Submission Form]

Name: [insert complete name of person signing the Bid Submission Form]

Duly authorized to sign the bid for and on behalf of: [insert complete name of Bidder]

Dated on _____ day of _____

_____ [Insert date of signing]

PERFORMANCE SECURITY FORM

To: _____ (Name of Purchaser)

WHEREAS _____ (Name of Supplier) hereinafter called "the Supplier" has undertaken, in pursuance of ContractNo _____ dated, 20 _____ to supply (Description of Goods and Services) hereinafter called "the order".

AND WHEREAS it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order

AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of (Amount of the Guarantee in Words and Figures and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument, any sum or sums within the limit of (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until theday of20.

Signature and Seal of Guarantors

.....
.....
.....

Date20

Address:.....

.....
.....

All correspondence with reference to this guarantee shall be made at the following address:

(Name & address of the Purchaser)

ACCEPTANCE CERTIFICATE FORM

No.

Dated:

M/s

Sub: Certificate of commissioning of equipment

1. This is to certify that the equipment as detailed below has/have been received in good condition along with all the Standard and special accessories (subject to remarks in Para 2). The same has been installed and commissioned.

(a) Contract No. _____ Date _____

(b) Description of the equipment _____

(c) Name of the consignee _____

(d) Scheduled date of delivery of the consignment to the Institute _____

(e) Actual date of receipt of consignment by the Institute _____

(f) _____ Scheduled date for completion of installation/commissioning _____

(g) Actual date of completion of installation/commissioning _____

(h) Penalty for late delivery Rs. _____

(i) Penalty for late installation at Institute Rs. _____

2. Details of accessories/items not yet supplied and recoveries to be made on that account: Sl. No. Description Amount to be recovered

3. The acceptance test has been done to our entire satisfaction. The Supplier has fulfilled his contractual obligations satisfactorily or The Supplier has failed to fulfill his contractual obligations with regard to the following:

(a) _____

(b) _____

(c) _____

(d) _____

The amount of recovery on account of failure of the Supplier to meet his contractual obligations is as indicated above.

For supplier signature _____ Name _____ Designation _____ Name of Firm _____ Date _____

For purchase signature _____ Name _____ Designation _____ Name of the Institute _____ Date _____

ELIGIBILITY CERTIFICATE FORM

[To be provided on the letterhead of the Bidder and should be signed by a person with the proper authority to sign documents that are binding on the Bidder]

This is to certify that we are not associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting Services for the preparation of the design, specifications, and other documents to be used for the procurement of the Goods to be purchased under this Invitation of Bids/Tender No.

_____ Dated _____

Authorized Signatory

Name:

Designation: _

NON-BLACK LISTED SELF CERTIFICATION FORM

[To be provided on the letterhead of the Bidder and should be signed by a person with the proper authority to sign documents that are binding on the Bidder]

This is to certify that M/s. _____ [Name of Bidder] has not been blacklisted by any Indian Central / State Government Department / any other Purchasing authority /organization in last 3 years.

Authorized Signatory

Name: _

Designation: _
