SVSU

श्री विश्वकर्मा कौशल विश्वविद्यालय

(हरियाणा सरकार, एक्ट संख्या 25, 2016 के तहत)

Shri Vishwakarma Skill University

Plot 147, Sector 44, Gurugram, Haryana

Tender Document for

(Supply and Installation of Advance Electrical Lab)

Tender No: SVSU/2020/DA/T002 **Dated: 12/02/2020**

1. Notice Inviting Quotation

Sub: Notice Inviting Tenders for Supply & Installation of Advance Electrical Lab.

Shri Vishwakarma Skill University, Haryana invites online Tender: **"Supply & Installation of Advance Electrical Lab"** through e-procurement on portal https://etenders.hry.nic.in from reputed Manufacturers/Authorized Dealers/ Distributors/Agent as per TENDER document. The TENDER documents may also be downloaded from website (http://www.svsu.ac.in) of Shri Vishwakarma Skill University, Haryana for reference only. A minimum eligibility criterion has been given in TENDER document.

Apart from uploading e-tender on website, bidder has to deposit EMD and Tender Fee + E-service fees along-with other documents.

1.1. SCHEDULE

1.	**(Tender Fee + E-Service Fee) + GST**	
	(1) For Haryana based manufacturing Micro and Small Enterprises (MSEs) & Khadi Village Industries Unit eligible as per the "Haryana State Public Procurement Policy for MSME -2016" notified vide G.O. No. 2/2/2016-4I BII(1) dated 20-10-2016/ for Startups as notified vide G.O. No.2/2/2016-4IBII dated 03.01.2019.	**NIL**
	(2) For remaining bidders both from the Haryana and Non Haryana (Tender Fee + E-Service Fee) + GST	**(5000/- + 1000/-) + 1080/- = 7080/- (Rupees Seven Thousand Eighty only)**
2.	**EMD Amount**	
	(1) For Haryana based manufacturing Micro and Small Enterprises (MSEs) & Khadi Village Industries Unit eligible as per the "Haryana State Public Procurement Policy for MSME -2016" notified vide G.O. No. 2/2/2016-4I BII(1) dated 20-10-2016/ for Startups as notified vide G.O. No.2/2/2016-4IBII dated 03.01.2019.	**NIL**
	(2) For remaining bidders both from the Haryana and Non Haryana	**Rs. 200000/- (Rupees Two lakh only)**
3.	Performance Security	**10% of the Purchase order Value**
4.	Product Warranty Period	**3 Years**
5.	Issue of Tender Document	**12/02/2020**
6.	Online Tender Purchase Start Date	**12/02/2020**
7.	Online Tender Purchase End Date	**Up to 11:00 Hrs. on 06/03/2020**
8.	Last date for receipt of queries	**18/02/2020**

9.	Date of pre bid meeting	**19/02/2020 at 10:00AM**
10.	Online proposal Submission Start Date	**25/02/2020 at 11:00AM**
11.	Online proposal Submission End Date	**Up to 11:00 Hrs. on 06/03/2020**
12.	Opening of Technical Bid	**11:30 Hrs. on 06/03/2020**
13.	Technical Presentation	**Subsequent date to be informed later.**
14.	Financial Bid	**Subsequent date to be informed later.**
15.	Validity period of Proposal	180 Days
16.	Address of Communication	**Registrar** **Shri Vishwakarma Skill University,** Plot 147, Sector 44, Gurugram Haryana
17.	Contact Phone Numbers	**0124-2746800**
18.	E-mail Address	**Registrar.hvsu@gmail.com**

- Tender document can also be downloaded from University Website www.svsu.ac.in

University reserved the right to change any Date, Time and condition of Tendering without assigning any reasons and reserve all the rights.

➢ Amendments to TENDER, if any, would be published on e-procurement website https://etenders.hry.nic.in only and not in newspaper. The Shri Vishwakarma Skill University, Haryana reserves all the rights to accept or reject any or all tenders without assigning any reasons.

1.2. DISCLAIMER

The information contained in this Tender document or subsequently provided to the bidders, whether verbally or in documentary or any other form by or on behalf of Shri Vishwakarma Skill University, Haryana is provided to bidder on the terms and conditions set out in this TENDER and such other terms and conditions subject to which such information is provided.

Information provided in this TENDER to the bidders is on a wide range of matters, some of which depends upon interpretation of law. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Shri Vishwakarma Skill University, Haryana accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein.

Shri Vishwakarma Skill University, Haryana also accepts no liability of any nature whether resulting from negligence or otherwise however caused arising from reliance or any bidder upon the statements contained in this TENDER.

Shri Vishwakarma Skill University, Haryana may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this TENDER.

The issue of this TENDER does not imply that Shri Vishwakarma Skill University, Haryana is bound to select a bidder or to appoint the Selected Bidder, as the case may be, for the Consultancy and Shri Vishwakarma Skill University, Haryana reserves the rights to reject all or any of the Proposals without assigning any reasons whatsoever.

The bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by Shri Vishwakarma Skill University, Haryana or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the bidder and Shri Vishwakarma Skill University, Haryana shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a bidder in preparation or submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

2. Instructions to Bidders

2.1. Subject: Invitation for Supply and Installation of Advance Electrical Lab

Shri Vishwakarma Skill University, invites online Bids (Technical bid and Financial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer/Distributors/Agent for **Supply and Installation of Advance Electrical Lab** with warranty period as stated at "Schedule "on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document.

Bidders can access tender documents on the website of the University and fill them with all relevant information and submit the completed tender document with Tender Fee and EMD amount online as per the schedule to https://etenders.hry.nic.in.

2.2. INSTRUCTION TO BIDDER FOR E-TENDERING

Note: *Following conditions will over-rule the conditions stated in the tender documents, wherever relevant and applicable.*

2.2.1. E-Tendering:

2.2.1.1. For participation in e-tendering module of Shri Vishwakarma Skill University, Haryana it is mandatory for prospective bidders to get registration on website https://etenders.hry.nic.in, Therefore, it is advised to all prospective bidders to get registration by making on line registration fees payment at the earliest.

2.2.1.2. Tender documents can be downloaded from website http://www.svsu.ac.in. However, the bidders have to upload complete tender document online along-with deposit of EMD amount and Tender Document Fee + E-service fee and without EMD amount and Tender Document Fee + E-service fee bids will not be accepted.

2.2.1.3. E-service/gateway charges shall be borne by the bidders.

2.2.1.4. As per the directions of the Controller of Certifying Authorities, Ministry of Communication and Information Technology, Government of India, a **Class II Digital Certificate** shall be required to bid for all tenders solicited electronically. If the bidder does not have such a certificate, it may be obtained from any of the registering authorities or certification authorities. Kindly note that it may take at least three-five business days for the issue of a digital certificate. Bidders are advised to plan their time accordingly. Shri Vishwakarma Skill University, Haryana shall bear no responsibility for accepting bids which are delayed due to non-issuance or delay in issuance of such digital certificate.

2.2.1.5. If bidder is bidding first time for e-tendering, then it is

obligatory on the part of bidder to fulfil all formalities such as registration, obtaining Digital Signature Certificate etc. well in advance.

2.2.1.6. Bidders are requested to visit our e-tendering website regularly for any clarifications and/or due date extension or corrigendum.

2.2.1.7. Bidder must positively complete online e-tendering procedure at https://etenders.hry.nic.in

2.2.1.8. Shri Vishwakarma Skill University, Haryana shall not be responsible in any way for delay / difficulties / inaccessibility of the downloading facility from the website for any reason whatsoever.

2.2.1.9. For any type of clarifications bidders/contractors can visit https://etenders.hry.nic.in and http://www.svsu.ac.in.

2.2.1.10. The bidder whosoever is submitting the tender by his Digital Signature Certificate shall invariably upload the scanned copy of the authority letter.

2.2.1.10.1. TENDER cost + E-service Fee and EMD Amount.

2.2.1.10.2. Affidavits.

2.2.1.10.3. Authority Letter to Sign on behalf of Consultant.

2.2.1.10.4. Authority Letter for use of Digital Signature.

2.2.1.10.5. Technical Bid with all relevant enclosures.

2.2.1.10.6. All documents to be submitted by the firms should be duly attested by gazetted officer/ notary public in case these are copies of the original documents. No unattested documents will be entertained.

The prospective bidders will upload scanned self-certified copies of requisite documents as required in e-tendering process.

2.2.1.11. The Tender document cost+ E-Service Fee is to be deposited online by bidder.

2.2.1.12. The tenders uploaded without/incomplete/partial EMD and tender fee + E-service fees shall be disqualified.

2.2.1.13. The EMD amount is to be deposited online by bidder.

2.2.1.14. The tender documents fees shall not be refunded.

2.2.1.15. If the tenders are cancelled or recalled on any grounds, the Tender Document Fee and e-Service Fee will not be refunded to the bidder.

2.2.1.16. No Proposal will be accepted without valid TENDER cost and Earnest Money Deposit.

2.2.2. Technical bid: -

Bidders must positively complete online e-tendering procedure at https://etenders.hry.nic.in. They shall have to submit the documents as prescribed in the TENDER online in the website. The website/e-portal may accept a file sizing upto 10 MB, however, the bidders may

submit their complete bids (with all the requisite documents) in multiple files.

2.2.3. Financial bid: -

Bidder must submit the Price/Financial bid document as per the format given in TENDER/available online and uploaded as per instructions therein. **Physical submission of price bid will not be considered.** The financial bids of technically qualified bidders shall be opened online at the notified date. The bidder can view the financial bid opening date by logging into web-site.

2.2.4.1. On the due date of e-tender opening, the technical bids of bidders will be opened online. Shri Vishwakarma Skill University, Haryana reserves the right for extension of due date of opening of technical bid.

2.2.4.2. Shri Vishwakarma Skill University, Haryana reserves the right to accept or reject any or all tenders without assigning any reason what so ever.

2.2.4.3. In case, due date for opening of tender happens to be a holiday, the due date shall be shifted to the next working day for which no prior intimation will be given.

2.2.4.4. Any change/modifications/alteration in the TENDER by the Bidder shall not be allowed and such tender shall be liable for rejection.

For amendment, if any, please visit https://etenders.hry.nic.in web site regularly. In case of any bid amendment and clarification, the responsibility lies with the bidders to note the same from web site. The **Shri Vishwakarma Skill University, Haryana** shall have no responsibility for any delay/omission on part of the bidder.

ANNEXURE - I

<< Organization Letter Head >>

3. TERMS and CONDITIONS

3.1 **Due date**: The tender has to be submitted online on or before the due date. The offers received after the due date and time will not be considered. No application will be received through e-mail/fax. The University would not be responsible for any delay.

3.2 **Tender Fee (Non-Refundable):** The Bidder should submit a non-refundable tender fee online. The Technical Bid without Tender fee would be considered as UNRESPONSIVE and will not be accepted. The tender fee will not be returned/refunded to any Bidder in any circumstances. If the tenders are cancelled or recalled on any grounds, the Tender Document Fee and e-Service Fee will not be refunded to the bidder.

3.3 **Preparation of Bids**: The Technical and financial offer/bid should be submitted online. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid.

All documents to be submitted by the firms should be duly attested by gazetted officer/ notary public in case these are copies of the original documents. No unattested documents will be entertained.

3.4 **Earnest Money Deposit (EMD) (if applicable):** While submitting bid, the BIDDER shall deposit an amount mentioned in tender document as Earnest Money, with the Institute through the following instruments:

3.4.1 The Bidder should submit an EMD amount online. The Technical Bid without EMD would be considered as UNRESPONSIVE and will not be accepted. The EMD will be refunded without any interest to the unsuccessful Bidder after the award of the Purchase Order. The Earnest Money Deposit (EMD) in other form viz., Pay Order/Cheque etc. shall not be accepted.

3.4.2 No interest shall be payable by the BUYER to the BIDDER on Earnest Money for the period of its currency.

3.5 **Refund of EMD:** The EMD will be returned to unsuccessful Bidders only after the award of Purchase Order. In case of successful Bidder, EMD will be returned after the submission of Performance Bank Guarantee.

EMD will not be refunded, if the order is not accepted. In case, the offer is accepted, but not honoured by the Bidder, the EMD will be forfeited. The EMD will also be forfeited, if wrong information is furnished or any vital information is concealed in the tender document.

If the tenders are cancelled or recalled on any grounds, the EMD will be returned to the bidder.

3.6 **Opening of the tender:** The bid will be opened by a committee duly constituted for this purpose in presence of Bidder's representative if available. Only one representative will be allowed to participate in the tender opening. Bid received without or incomplete Tender Fee or EMD will be rejected outrightly. The technical bid will be opened first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which are technically qualified as per the specification, and will be opened in the presence of the bidder's representatives subsequently for further evaluation. The Bidder if interested may participate on the tender opening Date and Time. The Bidder should produce authorization letter from their company to participate in the tender opening. The University may call bidders for demonstration and presentation of the equipment during technical evaluation. The cost for the demonstration will be borne by the supplier and University will not pay any TA/DA for presentation/ demonstration. If any firm fails to successfully demonstrate the system quoted by them, the Bid of that firm will not be considered.

3.7 **Acceptance/ Rejection of bids: The Committee reserves the right to reject any bid not fulfilling the eligibility criteria.**

Eligibility Criteria:

3.7.1 Bidder should be the manufacturer/authorized dealer/ distributors/agent. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed (Annexure – IX).

3.7.2 An undertaking from the OEM is required stating that they would facilitate the Bidder on a regular basis with technology/product updates and extend support for the warranty as well. (Annexure - IV)

3.7.3 OEM should be Nationally/Internationally reputed Company.

3.7.4 Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between Bidder specification and supporting documents etc. may lead to rejection of the bid.

3.7.5 In the tender, either the agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

3.7.6 If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.

3.7.7 Sample for offered items may be asked from tender during technical evaluation.

3.7.8 The Agency should not have incurred any loss for the last 3 financial years which is mandatory. Bidders should submit audited statement and Financial assessment copy/Income Tax Return Copy showing their net balance / Profit for last three financial years

3.8 Performance Security:

3.8.1 Performance Bank Guarantee is mandatory.

3.8.2 The Successful Bidder shall require to submit the performance security/Guarantee in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is stated at the "Schedule" of the tender document within 21 days from the date of receipt of the purchase order and should be kept valid for a period of 60 days beyond the date of completion of warranty period. The Performance security in other form viz., FD/Term Deposit Receipt etc. shall not be accepted.

3.8.3 The Successful Bidder should submit performance security/Guarantee as prescribed above to be received in the office Registrar, Stores & Purchase Section on or before 21 days from the date of issue of order acknowledgement. The performance bank guarantee to be furnished in the form of Bank Guarantee as per Annexure-VII of the tender documents, for an amount covering 10% of the purchase order value.

3.8.4 The Performance Bank Guarantee should be established in favour of Shri Vishwakarma Skill University," through any Bank situated at Gurugram or outstation with a clause to enforced the same on their local branch at Gurugram. Performance Bank Guarantee shall be for the due and faithfully performance of the contract and shall remain binding, notwithstanding such variations, alterations for extensions of time as may be made, given, conceded or agreed to between the successful Bidder and the purchaser under the terms and conditions of acceptance to tender.

3.8.5 If the supplier shall not submit the performance security within 21 days from the date of receipt of purchase order and if there is delay in submission of performance security, purchase order may be cancelled. The competent authority may accept the performance security after the above mention deadline of 21 days subject to submission of justification by the Bidder, however the decision of the competent authority is final in this regards.

3.8.6 The successful Bidder is entirely responsible for due performance of the contract in all respects according to the speed, intent and meaning of the terms and conditions and specification and all other documents referred to in the acceptance of tender.

3.8.7 The performance bank guarantee shall be kept valid during the period of contract.

3.9 Force Majeure: The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

3.9.1 For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual

capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

3.9.2 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. 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.

3.10 Risk Purchase Clause: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.

3.11 Packing Instructions: Each package will be marked on three sides with proper paint/indelible ink, the following:

3.11.1 Item Nomenclature
3.11.2 Order/Contract No.
3.11.3 Country of Origin of Goods
3.11.4 Supplier's Name and Address
3.11.5 Consignee details
3.11.6 Packing list reference number

3.12 Delivery and Documents: Delivery of the goods should be made within a maximum of 06 weeks from the date of placement of purchase order at Shri Vishwakarma Skill University, Transit Office: Plot No. 147, Sector 44, Gurugram or at that place to be informed by the SVSU. The delivery period can be extended by the Registrar, Shri Vishwakarma skill university, Gurugram, only in exceptional cases on written request of the Supplier giving reason/explaining circumstances due to which delivery period could not be adhere to. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by cable/telex/fax/e mail the full details of the shipment including contract number, railway receipt number/ AAP etc. and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company:

3.12.1 4 Copies of the Supplier invoice showing contract number, goods description, quantity
3.12.2 unit price, total amount;
3.12.3 Insurance Certificate if applicable;
3.12.4 Manufacturer's/Supplier's warranty certificate;
3.12.5 Inspection Certificate issued by the nominated inspection agency, if any
3.12.6 Supplier's factory inspection report; and
3.12.7 Certificate of Origin (if possible, by the beneficiary);
3.12.8 Two copies of the packing list identifying the contents of each package.
3.12.9 The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered

directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.

3.13 **Liquidated Damages (L.D)/Penalty for Non-execution of Order:** If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 1% (one percent) of the total cost of the material/contract per week or such other amount as the Registrar, SVSU, Gurugram may decide till the supply/work remains incomplete, provide that the total amount of the compensation shall not exceed 10% (ten percent) of the total cost of the material/contract. After the lapse of 15 days beyond the stipulated/extended period, it will be the discretion of the University to cancel the supply/work execution order at the risk and the cost of the Supplier/contractor. Besides, forfeiture of the Earnest Money, the University shall be at liberty to take such action as recovery of compensation to the extent of 10% of the amount of the supply/contract order, blacklisting, etc. An appeal against this penalty shall, however, lie with the Hon'ble Vice-Chancellor (VC), Shri Vishwakarma Skill University, Gurugram, whose decision shall be final.

3.14 **Prices:** The price should be quoted in net per unit (after breakup) and must include all packing, forwarding, freight, insurance charges, loading, unloading and delivery charges etc. may be quantified in terms of amount. These charges may not be payable against such vague statement as "packing, forwarding, freight, insurance charges, loading, unloading and delivery charges etc. extra". The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However, the percentage of taxes & duties shall be clearly indicated. **Charges not mentioned in the quotation/tender shall not be paid.**

3.15 **Rate contract with GEM or DS&D (Haryana):** If the bidder or their Principals are on rate contract with **GEM or DS&D (Haryana)**, this shall be mentioned specifically in the offer and a photocopy of the same, duly attested, may be appended.

3.16 **Progress of Supply:** Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:

3.16.1 Quantity offered for inspection and date

3.16.2 Quantity accepted/rejected by inspecting agency and date

3.16.3 Quantity dispatched/delivered to consignees and date

3.16.4 Quantity where incidental services have been satisfactorily completed with date

3.16.5 Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date

3.16.6 Date of completion of entire Contract including incidental services, if any

3.16.7 Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).

3.17 Resolution of Disputes: The dispute resolution mechanism would be as follows:

3.17.1 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 Vice Chancellor, Shri Vishwakarma Skill University and if he is unable or unwilling to act, 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.

3.17.2 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 (i) 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.

3.17.3 The venue of the arbitration shall be the place from where the order is issued.

3.18 Applicable Law: The place of jurisdiction would be Gurugram/Palwal Haryana.

3.19 Right to Use Defective Goods: 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.

3.20 Transfer and Subletting: The supplier shall not sublet, transfer, assign or otherwise part with the acceptance to the tender or any part thereof, either directly or indirectly, without the prior written permission of the Purchaser.

3.21 Supplier Integrity: The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.

3.22 Installation & Demonstration: The supplier is required to do the installation and demonstration of the equipment within one week of the arrival of materials at the SVSU, Gurugram, site of installation, otherwise the penalty clause will be the same as per the supply of materials. In case of any damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his

claim with the insurance company as per his convenience. SVSU will not be liable to any type of losses in any form.

3.23 Insurance: For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. In case of orders placed on FOB/FCA basis, the purchaser shall arrange Insurance. If orders placed on CIF/CIP basis, the insurance should be up to SVSU, Gurugram Campus.

3.24 Warranty:

3.24.1 Warranty period shall be (as stated at "Schedule "of this tender) from date of installation of Goods and acceptance at SVSU. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall at its discretion make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests. The warranty should be comprehensive on site.

3.24.2 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall arrange to repair or replace the defective goods or parts within 10 days free of cost in SVSU Gurugram Campus. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for correction of defects in the warranty period is 10 days. If the supplier having been notified fails to remedy the defects within 10 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract.

3.24.3 The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.

3.25 Governing Language: The contract shall be written in English language. English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.

3.26 Applicable Law: 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.

3.27 Notices:

3.27.1 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 or e mail and confirmed in writing to the other party's address.

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

3.28 Taxes: Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, GST in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.

3.29 Payment: For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at SVSU, Gurugram Campus in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 3.7 of tender terms and conditions.

3.30 User list: Brochure detailing technical specifications and performance, list of industrial and Government educational establishments where the items enquired has been supplied by the Bidder has undertaken such work during last three years must be provided. (Annexure-V).

3.31 Manuals and Drawings:

3.31.1 Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.

3.31.2 The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.

3.31.3 Unless and otherwise agreed, the goods 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.

3.32 Application Specialist: The Bidder should mention in the Techno-Commercial bid the availability and names of Application Specialist and Service Engineers in the nearest regional office. (Ref. to Annexure-VI)

3.33 Site Preparation: The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete

details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.

The supplier may visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.

3.34 **Spare Parts:** The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier. 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 In the event of termination of production of the spare parts; Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested. Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.

3.35 **Defective Equipment:** If any of the equipment supplied by the Supplier is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the faculty/expert committee (constituted by The Registrar/Dean Academic) will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Supplier with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 7 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, SVSU may consider "Banning" the supplier.

No payment shall be made for rejected material nor would the Supplier be entitled to claim for such items. Rejected items would be removed by the Supplier from the site within two weeks of the date of rejection at his own cost. In case they are not removed they will be auctioned at the risk and responsibilities of the Supplier without any further notice.

3.36 **Termination for Default:**

3.36.1 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:

3.36.1.1. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser.

3.36.1.2. If the Supplier fails to perform any other obligation(s) under the Contract.

3.36.1.3. If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

3.36.2 For the purpose of this Clause:

3.36.2.1. "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

3.36.2.2. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidder (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

3.36.3 In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.

3.37 Shifting: Once our new Academic Block will be ready, the supplier has to shift and reinstall the instrument free of cost to that new Academic Block.

3.38 Reservation of Rights: University reserved the right to enhance or mitigate the quantity without any notice.

3.39 Training of Personnel: The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment as per Annexure-X

3.40 Compliancy certificate: This certificate must be provided indicating conformity to the technical specifications. (Annexure-II)

3.41 Evaluation of Offer:

3.41.1 L1 will be decided on the basis of the total as quoted in the price bid.

3.41.2 Offer which deviates from the vital conditions (as illustrated below) of the tender shall be rejected:

3.41.2.1. Non submission of complete offers.

3.41.2.2. Receipt of offers after due date and time and or by email / fax (unless specified other-wise).

3.41.3 In case any BIDDER is silent on any clauses mentioned in this tender document, the Institute shall construe that the BIDDER had accepted the clauses as per the invitation to tender.

3.41.4 No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.

3.42 **Negotiation of Rates:** Regarding negotiations of rates, policy issued by the State Government vide G.O. No.2/2/2010-4-IB-II dated 18.06.2013, G.O. No.2/2/2010-4-IB-II dated 16.06.2014, G.O. No.2/2/2010-4-IB-II dated 09.02.2015 will be applicable. The policy guidelines are available at https://haryanaeprocurement.gov.in on home page under section as Tender Forms."

3.43 The Financial bids of only those bidders will be opened who qualify on the basis of their Technical Bids. The date & time of opening of the Financial bids will be intimated in the due course.

3.44 The offer without prescribed earnest Money, tender Fee & E-Service fee is liable to be summarily rejected. The deficiency in the remaining documents and tender requirement can be made subject to the decision by the competent authority of the university.

3.45 Any company/firm/dealer/manufacturer black listed by Central/State Government/Autonomous organization are not entitled to submit the tender. If it is submitted, it will be rejected and Earnest Money Deposit or/and Performance security will be seized and legal action will be taken against them.

3.46 Any or all tenders can be rejected by the Registrar, SVSU on the recommendation of tender committee without assigning any reason at any stage. It cannot be challenged in any court.

3.47 Tenders which do not fulfil any or all of the above conditions or incomplete, are liable for rejection.

3.48 Bidder should abide to all terms and conditions stipulated in tender document for which he has to submit the affidavit.

3.49 The foreign manufacturer or their Indian representative will ensure a proper after sales service as per requirement from time to time, against the guarantee/warrantee clause as per the terms and conditions agreed. Any negligence on this account shall be the sole responsibility of foreign bidder and liability for compensation will be fixed up by the Department.

3.50 Legal action may be initiated against such Bidder in case any of the information submitted by the Bidder is found to be false at any stage of the contract.

ANNEXURE - II

<< Organization Letter Head >>

4. Technical Specification and Compliance Sheet

Tender Criterion: The Purpose of buying the lab/equipment is for proper education of students & make them employable in Industry. Hence the equipment availability & reliability should be in high order with latest version. In order to ensure flaw less service back up and 100% Equipment availability without any down time is necessary.

1. The offered Model of OEM must be working in Indian Conditions, without any Problems. Minimum 2 performance reports to be submitted.
2. Company should have Experience in installation, Service and Training of such lab/equipment in Indian Environment. Detailed list to be submitted.
3. OEM should have service branch in the nearest possible locations to the University; and the OEM should also have spares etc. stored in India (nearest possible location).
4. The Bidder should be able to provide support for hardware components (spares, accessories and consumables) and the software for a minimum period of 10 years from the date of commissioning.
5. The bidder should provide free updates for the software installed time to time.
6. The Bidder should provide Instruction Manuals, Operation Manuals, Safety Manuals, Training Modules, Relevant manuals, Problems with solutions, literature and standard Programme tutorials both hard and soft copy and also provide the display boards.
7. Supplier has to give full warranty of the system for Three Year.
8. All accessories (Connecting pipes/tubes/ electrical cables, etc.) will be supplied by the vendor for each unit for smooth running of Lab.
9. Purchase team may visit the OEM premise before dispatch of machine.
10. Incomplete or partial bidding will not be accepted; in such case the bid will not be considered. Supplier should supply all the equipments mentioned in the tender document on turnkey basis.
11. The systems should be complete in all respect including spares, Consumables and accessories including for 3 years but not limitation to following. The warranty period will be three years duration for each item on comprehensive basis.

Specification and Requirements: -

Equipments and Instruments for Advanced Electrical Lab

1. Three Phase Semi Controlled Phase Control Rectifier

Three Phase Semi Controlled Phase Controlled Rectifier should be capable of operating in three phase mode.

The power electronic converter of the system should be capable to convert the 3-phase AC Power in to Controllable/Adjustable DC power in semi controlled manner. It should also control the flow of DC power from source to the dynamic load/resistive load/inductive load in steady state as well as in transient situations.

The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.
• Output Current Rating:100 Amp RMS (AC) or higher.
• Input Voltage (fixed at any value between): 0-415 V RMS (AC) (maximum up to 1600V)
• Adjustable Output Voltage Range (adjustable at any value which is less than the RMS value of the input voltage): 250-415 VDC (Firing Angle 0 to 180 degree).
• Switch Type: SCR.
• L-C Filter should be incorporated for harmonic reduction analysis in output current of supply.
• The Three Phase Semi Controlled Phase Control Rectifier should have soft start feature.
• Three Phase Semi Controlled Phase Control Rectifier must be capable of driving Dynamic load, R-L, Resistive& Battery Charging Load.
• Access points for all input and output variable must be available on the front panel to register the transient changes in the system during the sudden load changes and dynamic situations.
The encloser of test setup should be fully transparent with metal base for better academic value addition and for better understanding of the students about the system.
• output voltage control settings nobs must be available on the front panel of the Three Phase Semi controlled Phase Control Rectifier system.
• Proper isolation between control and power circuit must be provided in the system.
• Proper load and source side protection must be provided in the system.
• The meters for displaying real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be provided on the panel board.

2. Single Phase PWM AC power controller setup

Single Phase PWM AC power controller test setup, capable of operating in adjustable switching frequency from 1kHz to 15 kHz using PWM technique with adjustable duty Ratio of 0.1 to 0.9 and the controller should be capable to feed an adjustable AC power to 1 phase AC loads, The flow of power should be controlled using the pulse width modulation control technique.
• Output Current Rating:35 Amp RMS (AC)
• Input Voltage (fixed at any value between): 0-230 V RMS (AC) (maximum up to 1600V)
• Adjustable Output Voltage Range (adjustable at any designed value which is less than the input voltage): 0-230 V DC
• Switch Type: Fully-Controlled type IGBT Switching
• All power electronic switches (IGBTs) of the power converter of the Three Phase PWM AC power controller test setup should operate up to 15 kHz.
• Single Phase PWM AC power controller test setup should be capable of driving Dynamic, R-L & Resistive Loads.
• Single Phase PWM AC power controller test setup must have appropriate snubber protection of Switching Devices.

• The output voltage control nob must be available on the front panel of the test setup.
• Proper isolation between control and power circuit must be provided in the single Phase PWM AC power controller test setup.
• The real time experimental values of the output voltage, input voltage must be displayed on the panel board using suitable meters.

3. Three Phase Fully controlled AC power Controller

Three Phase Fully controlled AC power Controller should be capable of operating in three phase mode. The power electronic converter of the system should be capable to control the flow of 3 phase AC power from source to the 3 phase star connected with floating Neutral/ star connected with Neutral in fully controlled manner connected/Delta Connected dynamic/resistive loads. The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.
• Output Current Rating : 100 Amp/phase RMS (AC), • Input Voltage (fixed at any value between) : 250-415 V RMS (AC) for 3 phase mode of operation (maximum up to 1000V)
• Adjustable Output Voltage Range (adjustable at any value which is less than the input voltage): 250-415 V RMS (AC) for 3 phase mode of operation.
• Switch Type: SCR.
• L-C Filter should be incorporated for harmonic reduction analysis in output current of supply.
• The Three Phase Fully controlled AC power Controller should have soft start feature.
• Three Phase Fully controlled AC power Controller must be capable of driving Dynamic, R-L, Resistive & Battery charging loads.
• Output voltage control settings must be available on the front panel of the Three Phase Fully controlled AC power Controller system.
• Proper isolation between control and power circuit must be provided in the system.
• The real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be displayed on the panel board using suitable meters.

4. Single Phase Fully Controlled Phase Control Rectifier

Single Phase Fully Controlled Phase Control Rectifier should be capable of operating in fundamental switching frequency using phase control technique. The power electronic converter of the system should be capable to convert the 1 phase AC Power in to Controllable DC output power& voltage fully controlled manner.
It should also control the flow of DC power from AC source to the DC dynamic load/resistive load/inductive load systems in steady state and transient situations. The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.
• Output Current Rating: 100 Amp/phase RMS (AC),

• Input Voltage (fixed at any value between) : 0-230 V RMS (AC) (1-phase)(maximum up to 1600V)
• Adjustable Output Voltage Range (adjustable at any designed value which is less than the RMS value of the input voltage): 0-230V DC.
• Switch Type: SCR.
• L-C Filter should be incorporated.
• The Single Phase Fully controlled Phase Control Rectifier should have soft start feature.
• Single Phase Fully controlled Phase Control Rectifier must be capable of driving Dynamic load, R-L, Resistive Load & Battery Charging loads.
• Output voltage control nob must be available on the front panel of the Single Phase Fully Controlled Phase Control Rectifier system. Additional Testing Points on the main Control Panel taken from the Single Phase Fully Controlled Phase Control Rectifier circuit may be added by the technical members of the committee. Converter will also be used for Research Purpose in laboratory so during finalization of tender technical experts may ask to provide additional testing points on the panel. No additional cost will be given for it.
• Proper isolation between control and power circuit must be provided in the system.
• The real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be displayed on the panel board using suitable meters.

5. Three Phase PWM AC power controller setup

Three Phase PWM AC power controller test setup, capable of operating three phase mode of operations and the controller should be capable to control the flow of AC power from 3 phase source to3 phase star connected with floating Neutral/ star connected with Neutral connected/Delta Connected dynamic/resistive loads using PWM techniques. The test system should also be capable of feeding to single phase loads. The flow of power should be controlled using the pulse width modulation control technique.
• Output Current Rating :35 Amp/phase RMS (AC)• Input Voltage (fixed at any value between): 200-415 V RMS (AC)
• Adjustable Output Voltage Range (adjustable at any designed value which is less than the input voltage): 200-415 V RMS (AC)
• Switch Type: Fully-Controlled type IGBT Switching
• L-C Filter should be incorporated.
• All power electronic switches (IGBTs) of the power converter of the Three Phase PWM AC power controller test setup should operate up to 10 kHz.
• Three Phase PWM AC power controller test setup must be capable of driving Dynamic, R-L, Resistive Load.
• Three Phase PWM AC power controller test setup must have appropriate snubber protection of Switching Devices.
• Output voltage control nob must be available on the front panel of the test setup.
• Proper isolation between control and power circuit must be provided in the Three Phase PWM AC power controller test setup.

6. Single Phase Fully controlled AC power Controller

Single Phase Fully controlled AC power Controller should be capable of operating in fundamental switching frequency using phase control technique. The power electronic converter of the system should be capable to control the flow of AC power from source to the 1 phase dynamic load/resistive load/inductive load systems in steady state and transient situations. The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.

• Output Current Rating : 100 Amp RMS (AC),
• Input Voltage (fixed at any value between): 0-230V V RMS (AC) (maximum up to 1600V)
• Adjustable Output Voltage Range (adjustable at any value which is less than the input voltage): 0-230V V RMS (AC).
• Switch Type: SCR.
• L-C Filter should be incorporated.
• The Single Phase Fully controlled AC power Controller should have soft start feature.
• Single Phase Fully controlled AC power Controller must be capable of driving Dynamic, R-L , Resistive Load.
• Input and output voltage control nobs must be available on the front panel of the Single Phase Fully controlled AC power Controller system.
• Proper isolation between control and power circuit must be provided in the system.
• The real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be displayed on the panel board using suitable meters.

7. 12 Pulse Uncontrolled Phase Control Rectifier

12 Pulses uncontrolled Rectifier consist of a transformer required to convert three phase AC supply into six phase AC power supply with required 30 degree phase shifting along with required control circuitry.

The transformer should consist of a three phase delta connected primary winding with 415V (Line to Line) and two secondary windings one in star connection another one in delta connection both with 30V (Line to Line) output in each secondary winding. The power rating of the transformer should be more than 5 kVA capacity.

The power electronic converter of the system should be capable to convert the 3 phase AC power into 6 phase AC power than 6 phase AC Power in to 12 pulse controllable DC power/voltage in uncontrolled manner.

It should also control the flow of DC power from source to the dynamic load/resistive load/inductive load systems in steady state and transient situations.

• Power converter Output Current Rating :60 Amp RMS (AC)/phase,
• Input Voltage (fixed at any value between): 0-415 V RMS (AC)
• Switch Type: SCR.
• L-C Filter should be incorporated.
• 12 Pulses Controlled Rectifier must be capable of driving Dynamic load, R-L & Resistive Load.

• Output voltage control settings must be available on the front panel of the 12 Pulses Uncontrolled Rectifier system.

8. Single Phase Single Pulse PWM Inverter Test setup

Single Phase Single Pulse PWM Inverter Test setup, capable of converting AC voltage in to adjustable DC voltage for DC bus than convert this DC Voltage into Single Pulse PWM AC voltage using adjustable single pulse PWM technique. The system should be capable of operating in adjustable switching frequency from 45Hz to 200 Hz using PWM technique with adjustable duty Ratio of 0.1 to 0.9 and the controller should be capable to feed an adjustable AC power to 1 phase AC loads, the flow of Single Pulse PWM AC power should be controlled using the single pulse width modulation control technique with practical evidence of selective harmonic elimination.

• Output Current Rating :50 Amp RMS (AC)

• Input Voltage (fixed at any value between) to the system: 230 V RMS (AC)

DC bus voltage: - Adjustable Between 20V to 230V DC (Range of the variation in DC bus voltage depends on input AC voltage fed to the input side of single phase controlled rectifier)

• Adjustable Output Voltage Range (adjustable at any value which is less than the input voltage): 20-220 V AC with selective harmonic elimination.

• Switch Type: Fully-Controlled type IGBT Switching

• All power electronic switches (IGBTs) of the power converter of the **Single Phase Single Pulse PWM Inverter Test setup** should operate up to 10 kHz.

• **Single Phase Single Pulse PWM Inverter Test setup** must be capable of different types of single phase Loads.

• **Single Phase Single Pulse PWM Inverter Test setup** must have appropriate snubber protection of Switching Devices.

• Access points should be available for Intermediate signaling points of the control and power circuit of the **Single Phase Single Pulse PWM Inverter Test setup**, for the analysis purpose as per the requirement of the lab authorities.

• Access points must be available on the front panel to register the transient changes in the system during the sudden load changes and dynamic situations.

• The output voltage control settings nobs must be available on the front panel of the test setup.

• Proper isolation between control and power circuit must be provided in the **Single Phase Single Pulse PWM Inverter Test setup**.

• The real time experimental values of the output voltage, input voltage must be displayed on the panel board using suitable meters.

9. Single Phase Multi-Pulse PWM Inverter Test setup

Single Phase Multi-Pulse PWM Inverter Test setup, capable of converting AC voltage in to adjustable DC voltage for DC bus than convert this DC Voltage into Multi-Pulse PWM AC voltage using adjustable Multi-Pulse PWM technique. The system should be capable of operating in adjustable switching frequency from 45Hz to 200 Hz using PWM technique with adjustable duty Ratio of 0.1 to 0.9 and the controller should be capable to feed an adjustable AC power to 1 phase AC loads,

the flow of power should be controlled using the Multi-Pulse width modulation control technique.
• Output Current Rating: 50 Amp RMS (AC)
• Input Voltage (fixed at any value between) to the system: 230 V RMS (AC)
DC bus voltage: - Adjustable Between 20V to 300V DC (Range of the variation in DC bus voltage depends on input AC voltage fed to the input side of single phase controlled rectifier)
• Adjustable Output Voltage Range (adjustable at any value which is less than the input voltage): 10-220 V AC
• Switch Type: Fully-Controlled type IGBT Switching
• All power electronic switches (IGBTs) of the power converter of the **Single Phase Multi-Pulse PWM Inverter Test setup** should operate up to 10 kHz.
• **Single Phase Multi-Pulse PWM Inverter Test setup** must be capable of driving different types of Loads.
• **Single Phase Multi-Pulse PWM Inverter Test setup** must have appropriate snubber protection of Switching Devices.
• The output voltage control settings nobs must be available on the front panel of the test setup.
• Additional Testing Points on the main Control Panel taken from the **Single Phase Multi-Pulse PWM Inverter Test setup** may be added by the technical members of the committee. Converter will also used for Research Purpose in laboratory therefore during the finalization of tender technical experts may ask to provide additional testing points on the panel. No addition payment/cost will be given for it.
• Proper isolation between control and power circuit must be provided in the **Single Phase Multi-Pulse PWM Inverter Test setup**.
• The real time experimental values of the output voltage, input voltage must be displayed on the panel board using suitable meters.

10. Three Phase Fully controlled Adjustable Nonlinear Loading System
"Three Phase Fully controlled Adjustable Nonlinear Loading system " with adjustable nonlinearity. The **"Three Phase Fully controlled Adjustable Nonlinear Loading system "** should be capable of drawing 3 phase power from the 3 phase source of any nature (standalone AC generator or utility AC grid) with an adjustable amount of harmonic currents in the system.
" Three Phase Fully controlled Adjustable Nonlinear Loading system " should be capable of drawing an adjustable amount of harmonic currents from 3 phase source, with floating and without floating star dynamic load conditions and delta dynamic loading conditions in steady state and transient situations. The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.
• Maximum Line Current Rating: 100 Amp RMS (AC) per line, total maximum output power 30kW.
• Input Voltage (fixed at any value between) :0-415 V RMS (AC) for 3 phase mode of operation

• Adjustable Output Voltage Range (adjustable at any value which is less than the input voltage): 0-415 V RMS (AC) for 3 phase mode of operation.
• Switch Type: SCR.
• The Three Phase Fully controlled Adjustable Nonlinear Loading system should have soft start feature.
• Three Phase Fully controlled Adjustable Nonlinear Loading system must have suitable protection System.
• Input and output voltage control settings nobs must be available on the front panel of the Three Phase Fully controlled AC power Controller system.
• Proper isolation between control and power circuit must be provided in the system.
• The real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be displayed on the panel board using suitable meters.

11. Three Phase 4 Leg Voltage Source Inverter

Max. Input DC Voltage: 800Vwith Common DC Bus Voltage for all four Legs of IGBTs
Max. Output AC Voltage: 415 V
Max. Output AC Current: 35A
Max. KVA rating: 25kVA at max. AC voltage and current ratings
Max. Switching Frequency: 20 kHz or more
Type of cooling (Forced Air cooled / Water cooled / Natural cooled): Forced Air cooled
Dutyclass / Overload: 100% Continuous, 150% for 1 minute or higher
Gate Drivers of Semikron make skyper 32A or equivalent
The regulated DC Power Supply should be inbuilt in the system for Gate Drivers

12. Three Phase 4 Leg IGBT converter with separate DC Bus Voltage for DC-DC converters

Max. Input DC Voltage: 800Vwith separate DC Bus Voltage for each of four Legs of IGBTs
Max. Output AC Voltage: 415 V
Max. Output AC Current: 35A or higher
Max. KVA rating: 25kVA at max. AC voltage and current ratings
Max. Switching Frequency: 20 kHz or more
Type of cooling (Forced Air cooled / Water cooled / Natural cooled): Forced Air cooled
Duty-class / Overload: 100% Continuous, 150% for 1 minute or higher.
Single stack / Parallel stack: Single stack
Gate Drivers of Semikron make skyper 32A or equivalent
The regulated DC Power Supply should be inbuilt in the system for Gate Drivers

13. Adjustable Regulated DC Voltage High Power DC supply

Adjustable Regulated DC Voltage High Power DC supply should be capable of operating in fundamental switching frequency using phase control technique. The power electronic converter of the system should be capable to convert the 1-phase AC Power in to Adjustable/Controllable& regulated output DC voltage.

It should feed the Adjustable/Controllable & regulated output DC voltage to the dynamic load/resistive load/inductive load systems in steady state and transient operating conditions. The power electronic switches should operate on fundamental frequency and power flow should be controlled using phase control technique.

• Max. Output Current Rating: 100 Amp DC,
• Input Voltage (fixed at any value between): 230 V RMS (AC)
• Adjustable/Controllable & regulated output DC voltage Range: 100-230V DC.
• Switch Type: SCR.
• L-C Filter should be incorporated for ripple reduction in output side of supply.
• **Adjustable Regulated DC Voltage High Power DC supply** should have soft start feature.
• Output voltage control settings nobs must be available on the front panel of the **Adjustable Regulated DC Voltage High Power DC supply** system.
• Firm must submit the design of the outer panel with tender document.
• The real time experimental values of the output voltage, input voltage & output current must be displayed on the panel board using suitable meters.

14. Power Analyzer
Specifications

Vertical		
Frequency response - dc coupled Frequency response - ac coupled (lf roll off) Rise time, excluding probes, test leads Input impedance Sensitivity Analog bandwidth limiter Display modes Max. input voltage A and B Max. floating voltage, from any terminal to ground **Horizontal** Scope modes Ranges (Normal) Sampling rate (for both channels simultaneously)	without probes and test	dc to 40 MHz (-3 dB)
with 1:1 shielded test leads	DC to 12.5 MHz (-3 dB) / dc to 20 MHz (-6 dB)	
with 10:1 Probe without probes and test leads	dc to 40 MHz (-3 dB) <10 Hz (-3 dB)	

with 1:1 shielded test leads	<10 Hz (-3 dB)	
with 120	1 MΩ//24 pF	
with 1:1 shielded test leads	1 MΩ//230 pF	
with 10:1 Probe 5 MΩ//15.5 pF 5 mV to 200 V/div 10 kHz A, -A, B, -B direct, with test leads, or with VP41 Probe 600 Vrms CAT IV, 750 Vrms maximum voltage.		
with 600 Vrms 600 Vrms CAT IV, 750 Vrms up to 400Hz Normal, Single, Roll Equivalent sampling 10 ns to 500 ns/div		
Real time sampling	1 µs to 5 s/div	
Single (real time)	1 µs to 5 s/div	
Roll (real time) Equivalent sampling (repetitive signals)	1s to 60 s/div up to 4 GS/s	
Real time sampling 1 µs to 60 s/div	40 MS/s	

Trigger

Screen update

Free run, on trigger A, B @ DC to 5 MHz 0.5 divisions or 5 mV	
@ 40 MHz	
1.5 divisions	
@ 60 MHz	
4 divisions	Positive, negative

Source Sensitivity A and B Slope **Advanced scope functions**

Display modes

Normal	Captures up to 25 ns glitches and displays analog-like persistence waveform.
Smooth	Suppresses noise from a waveform.
Glitch off	Does not capture glitches between samples
Envelope Records and displays the minimum and maximum of waveforms over time. Continuous fully automatic adjustments of amplitude, time base, trigger levels, trigger gap, and hold-off. Manual override by user adjustment of amplitude, time base, or trigger level.	

Auto set Dual **input meter**
The accuracy of all measurements is within ± (% of reading + number of counts) from 18 °C to 28 °C.
Add 0.1x (specific accuracy) for each °C below 18 °C or above 28 °C. For voltage measurements with 10:1 probe, add probe
uncertainty +1 %. More than one waveform period must be visible on the screen.
Input A and input B
DC voltage (VDC)
Ranges 500 mV, 5 V, 50 V, 500 V, 750 V
Accuracy ± (0.5 % +5 counts)
Common mode rejection (CMRR) >100 dB @ dc, >60 dB @ 50, 60, or 400 Hz
Full scale reading 5000 counts
True-rms voltages (V ac and V ac+dc)

Ranges Accuracy for 5 % to 100 % of range (DC coupled) Accuracy for 5 % to 100 % of range (AC or dc coupled) DC rejection (only VAC) Common mode rejection (CMRR) Full scale reading **Peak** Modes Ranges Accuracy Full scale reading **Frequency (Hz)** Ranges Frequency range Accuracy @1 Hz to 1 MHz Full scale reading **RPM** Max reading Accuracy **Duty cycle (PULSE)** Range Frequency range	500 mV, 5 V, 50 V, 500 V, 750 V DC to 60 Hz (V ac+dc) ± (1 % +10 counts)
1 Hz to 60 Hz (V ac) ± (1 % +10 counts) 60 Hz to 20 kHz ± (2.5 % +15 counts)>50 dB>100 dB @ dc	
>60 dB @ 50, 60, or 400 Hz 5000 counts, reading is independent of any signal crest factor. Max peak, Min peak, or pk-to-pk 500 mV, 5 V, 50 V, 500 V, 2200 V	

Accuracy Max peak or Min peak 5 % of full scale	
Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz, 10 MHz, and 70 MHz 15 Hz (1 Hz) to 50 MHz in continuous autoset ± (0.5 % +2 counts) 10 000 counts 50.00 kRPM ± (0.5 % +2 counts) 2 % to 98 % 15 Hz (1 Hz) to 30 MHz in continuous autoset	

Pulse width (PULSE)

Frequency range Full scale reading **Amperes (AMP)**	15 Hz (1 Hz) to 30 MHz in continuous auto set 1000 counts	
With current clamp	Ranges	same as V dc, V ac, V ac+dc, or PEAK
Scale factors	0.1 mV/A, 1 mV/A, 10 mV/A, 100 mV/A, 400 mV/A, 1 V/A, 10 mV/mA	
Accuracy	same as V dc, V ac, V ac+dc, or PEAK (add current clamp uncertainty)	

Industrial Scope Meter® Hand-Held Oscilloscopes

Temperature (TEMP) with optional temperature probe

Range 200 °C/div (200 °F/div)
Scale factor 1 mV/°C and 1 mV/°F
Accuracy as V dc (add temp. probe uncertainty)

Decibel (dB)

0 dBV 1 V
0 dBm (600 Ω /50 Ω) 1 mW referenced to 600 Ω or 50 Ω
dB on V dc, V ac, or Vac+dc
Full scale reading 1000 counts

Crest factor (CREST)

Range 1 to 10
Full scale reading 90 Counts

Phase

Modes

A to B, B to A 0 to 359 degrees 1 degree 1 phase / 3 phase 3 conductor balanced loads (3 phase: fundamental component only, AUTOSET mode

only) Ratio between watts and VA range - 0.00 to 1.00 RMS reading of multiplying corresponding samples of input A (volts) and input B (amperes)
Full scale reading 999 counts Vrms x Arms
Full scale reading 999 counts √((VA)2-W2)
Full scale reading 999 counts to measure on pulse width modulated signals, like motor drive inverter outputs readings show the effective voltage based on the average value of samples over a whole number of periods of the fundamental frequency as Vrms for sine wave signals

Range Resolution **Power (B only)**
Configurations Power factor (PF) Watt VA VA reactive (var) **Vpwm**
Purpose Principle Accuracy **Input A to common**
Ohm (Ω)
Ranges

50 Ω to 5 MΩ - 5000 counts, 30 MΩ - 3000 counts 0.5 mA to 50 nA, decreases with increasing ranges<4 V<(30 Ω ± 5 Ω) in 50 Ω range 0.5 mA ≥1 ms	

50 Ω, 500 Ω , 5 kΩ, 50 kΩ, 500 kΩ, 5 MΩ, 30 MΩ
Accuracy ± (0.6 % + 5 counts) 50 Ω ±(2 % + 20 counts)
Full scale reading Measurement current Open circuit voltage **Continuity (Cont)**
Beep Measurement current Detection of shorts of **Diode**
Measurement voltage

@0.5 mA	>2.8 V
@open circuit <4 V 0.5 mA + on input A, - on COM	

Measurement current Polarity **Capacitance (CAP)**
Ranges 50 nF, 500 nF, 5 µF, 50 µF, 500 µF
Full scale reading 5000 counts
Measurement current 500 nA to 0.5 mA, increases with increasing ranges
Advanced meter functions
Zero Set: Set actual value to reference
AutoHold (on A) Captures and freezes a stable measurement result. Beeps when stable. AutoHold works on the main
meter reading, with thresholds of 1 Vpp for AC signals and 100 mV for DC signals.
Fixed decimal point Activated by using attenuation keys.
Cursor Readout
Sources

A, B Average, min and max readout
Average, min, max and time from start of readout (in ROLL mode; instrument in HOLD)
Min, max and time from start of readout (in RECORDER mode; instrument in HOLD)
Harmonics values in POWER QUALITY mode. Peak-peak, time distance and reciprocal time distance readout
Average, min, max and time distance readout (in ROLL mode; instrument in HOLD) High, low and peak-peak readout Transition time, 0 %-level and 100 %-level readout (manual or auto levelling; auto levelling only possible in single channel mode) As oscilloscope accuracy

Single vertical line Dual vertical lines Dual horizontal lines Rise or fall time Accuracy **Recorder**

The results are displayed as Chart recorder display that plots a graph of min and max values of Meter measurements over time or as a
waveform recorder display that plots all the captured samples.

Meter readings

Measurement Speed Record Size (min, max, average) Recorded Time Span Maximum number of events **Waveform record** Maximum sample rate Size Internal memory Span internal memory Record Size SD card Recorded Time Span SD card Maximum number of events Readings Watt, VA, var ranges (auto)	 Maximum 2 measurements/s 2 M readings for 1 channel 2 weeks 1024
400 K sample/s 400 M samples Recorded Time 15 minutes at 500 µs/div 1.5 G samples 11 hours at 500 µs/div 64	
11 hours at 20 ms/div	
14 days at 20 ms/div	

Watt, VA, var, PF, DPF, Hz 250 W to 250 MW, 625 MW, 1.56 GW	
when selected: total (%r)	± (2 % + 6 counts)
when selected: fundamental (%f) ± (4 % + 4 counts) 0.00 to 1.00	

DPF
PF 0.00 to 1.00, ± 0.04
Frequency range 10.0 Hz to 15.0 kHz 40.0 Hz to 70.0 Hz
Number of Harmonics DC to 51
Readings / Cursor readings
(fundamental 40 Hz to 70 Hz)
V rms / A rms /Watt each harmonic from fundamental maybe selected
for individual readings
Includes frequency of fundamental, phase Angle and K-factor (in Amp and Watt)
type

Subtype Protocol NEN-EN50295 ISO-11898 RS-422 EIA-422 RS-232 RS-232/EIA-232	
RS-485 H1 DP	RS-485/EIA-485 61158 type 1, 31.25 kBit EIA-485
PA 61158 type 1 EIA-232 EIA-485	

AS-i CAN Interbus S Modbus Foundation Field Bus Profile bus RS-232 RS-485
Miscellaneous
Display

Type	5.7-inch color active matrix TFT
Resolution Vertical	640 x 480 pixels 10 div of 40 pixels
Horizontal External	12 div of 40 pixels via Power Adapter BC430
Input voltage	10 V DC to 21 V DC
Power consumption	5 W typical
Input connector	5 mm jack
Internal	via Battery Pack BP290
Battery power	Rechargeable Li-Ion 10.8 V
Operating time	7 hours with 50 % backlight brightness
Charging time	4 hours with test tool off, 7 hours with test tool on

Allowable ambient temp Internal memory can store 20 data sets (screen waveform and setup) Size	0 to 40 °C (32 to 104 °F) during charging Micro SD card slot with optional SD card (max size of 32 GB) 259 mm x 132 mm x 55 mm (10.2 in x5.2 in x 2.15 in)
Weight Optically isolated	1.4 kg (3.2 lb) including battery pack Transfer screen copies (bitmaps), settings and data
USB to PC/laptop	OC4USB optically isolated USB adapter/cable, (optional), using applicable software for Windows®.
Optional WiFi adapter	Fast transfer of screen copies (bitmaps), settings and data to PC/laptop, tablet, smartphone, etc. A USB port is provided for attaching the WiFi dongle. Do not use the USB port with a cable for safety reasons.

Waveform Display Power Memory Mechanical Interface **Environmental**
Environmental MIL-PRF-28800F, Class 2

Temperature

Battery Operation	0 to 40 °C (32 to 104 °F)
Power Adapter Operation	0 to 50 °C (32 to 122 °F)
Storage @ 0 to 10 °C (32 to 50 °F)	-20 to 60 °C (-4 to 140 °F) noncondensing
@ 10 to 30 °C (50 to 86 °F)	95 %
@ 30 to 40 °C (86 to 104 °F)	75 %
@ 40 to 50 °C (104 to 122 °F) @ -20 to 60 °C (-4 to 140 °F) Operating at 3 km (10 000 feet)	45 % noncondensing CAT III 600 V
Operating at 2 km (6 600 feet)	CAT IV 600 V
Storage International	12 km (40 000 feet) IEC 61326-1: Industrial, CISPR 11: Group 1, Class A
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment)

USA (FCC) Frequency range	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103. 2412 MHz to 2462 MHz
Output power IP51, ref: EN/IEC60529 General	<100 mW IEC 61010-1: Pollution Degree 2
Measurement Direct on input or with leads	IEC 61010-2-033: CAT IV 600 V/CAT III 750 V 600 Vrms CAT IV for derating
With Banana-to BNC Adapter BB120	600 Vrms for derating
Max. floating voltage from any terminal to ground	600 Vrms CAT IV, 750 Vrms up to 400 Hz

Humidity (Operating) Storage Altitude EMC electromagnetic compatibility
10:1 voltage probe
AC Current Clamp

15. Current probes

AC/DC current probe, input 0-70A, RMS/100A, Peak AC/DC, Frequency DC to 100 kHz (@3dB), output 10mV/A, 100mV/A, CAT 3, working voltage 600V, Battery 9V.

16. Inductive load bank

60-600 mH (with adjustable at any value using a rotating mechanical arrangement using variable reluctance method), the inductor arrangement should be properly housed in a metallic tank, the output terminals should be mounted at top or front of the inductor load bank on a Bakelite sheet, saturation current rating 25A, rated current rating 25A, CRGO laminations Core, properly wounded with Copper wire, properly insulated winding layers using proper insulating material.

17. 3-Phase Induction motor coupled with DC Generator

7.5 kW VFD operated 3-Phase Induction Motor (of 5 H.P., 415V) Coupled with a DC generator of 5- H.P., 230V DC) properly mounted on a iron channel. The whole arrangement should be placed on vibration tolerant insulated sheet.

18. Single phase induction motor coupled with DC machine

3.7kW VFD drive operated Single Phase Induction Motor (of 3 H.P., 230V AC) Coupled with a DC generator of 3- H.P., 230V DC) properly mounted on an iron channel. The whole arrangement should be placed on vibration tolerant insulated sheet.

19. Inductors

0-25 mH (with tapings at 2-4-8-12-16-20-25 mH) taping terminals should be mounted at top of the inductor on a Bakelite sheet, saturation current rating 25A, rated current rating 25A, CRGO laminations Core, properly wounded with Copper wire, properly insulated winding layers using proper insulating material.

20. Machine-generator set and nonlinear loading systems

S. No.	Specifications
a.	**(i) The Technical Details of "Single Phase Self Excited Induction Generator coupled with Induction Motor Drive System" should be as follows.** The a customized **Single Phase Self Excited Induction Generator** should be of following technical details. **Single Phase Self Excited Induction Generator** should be capable of generating single phase AC power and should be wound on 36 slot frame size with four pole double layer winding. Specially designed Two Winding Single Phase Self Excited Induction Generator should have following winding and other technical details: - 3.7 kW, 230V, 25A. Two Windings M- Main Winding (should act as a Power Winding) A- Auxiliary Winding (should act as an Excitation Winding) The Specially designed Two Winding Single Phase Self Excited Induction Generator with above said technical details should be properly Mechanically Coupled with a prime mover made of 3 phase Induction motor of 7.5 H.P., 440V controlled by a VFD Drive system on a Iron Channel. The whole arrangement should be placed on vibration tolerant insulated sheet. **(ii) The Technical Details of "BLDC Generator coupled with Induction Motor Drive System" should be as follows.** The Technical Details of BLDC Generator are as follows. 3 phase, 4 pole, Rated DC link voltage 200V, Rated Torque 1.4 N-m, 3000rpm. The "BLDC Generator" with above said technical details should be properly Mechanically Coupled with a prime mover made of 3 phase Induction motor of 7.5 H.P., 415V, 3000rpm controlled by a VFD Drive system on an Iron Channel. The whole arrangement should be placed on vibration tolerant insulated sheet.
b.	**Solar PV and Battery Bank system** Battery bank of 480V (With provision of tapping's at 96V, 108V, 180V, 360V, 396V and 480V along with proper isolator systems) consists of 40 number of battery of 12V each placed in a metal sheet housing of appropriate size along with battery charging system. Solar PV (4 Nos.) each of

	325W, Voc=45V, Isc=9A

21 Capacitive and Resistive Load Banks

(a) Resistive Load bank (1 Phase): - 1kW, 230V --10 steps each of 100W
(b) Resistive Load bank (1 Phase): - 2kW, 230V --8 steps each of 250W
(c) Resistive Load bank (1 Phase): - 5kW, 230V --10 steps each of 500W
(d) Resistive Load bank (3 Phase): - 1kW, 415V-- 6 equal steps
(e) Resistive Load bank (3 Phase): - 3kW, 415V -- 6 equal steps
(f) Resistive Load bank (3 Phase): - 5kW, 415V -- 6 equal steps
(g) Single Phase Capacitive Load Bank - 230V, 1MFD (5 steps) + 10MFD (5 steps) + 50MFD (5 steps) + 100MFD (4 steps)
(h) 3 Phase Capacitive Load Bank - 415V, 1MFD (5 steps) + 10MFD (5 steps) + 50MFD (5 steps) + 100MFD (4 steps).

22 (a). True RMS Digital Multimeter: -

Specifications
Accuracy Specifications
DC millivolts Range/resolution 600.0 mV / 0.1 mV
Accuracy ± ([% of reading] + [counts]): 0.5% + 2
DC volts Range/resolution 6.000 V / 0.001 V
60.00 V / 0.01 V
600.00 V / 0.1 V
Accuracy ± ([% of reading] + [counts]): 0.5% + 2
AC millivolts1 True RMS Range/resolution 600.0 mV / 0.1 mV
Accuracy 1.0% + 3 (DC, 45 Hz to 500 Hz)
2.0% + 3 (500 Hz to 1 kHz)
AC volts1 True RMS Range/resolution 6.000 V / 0.001 V
60.00 V / 0.01 V
600.0 V / 0.1 V
Accuracy 1.0% + 3 (DC, 45 Hz to 500 Hz)
2.0% + 3 (500 Hz to 1 kHz)
Continuity Range/resolution 600 Ω / 1 Ω
Accuracy Beeper on < 20 Ω, off > 250 Ω detects opens or shorts of 500 µs or longer.
Ohms Range/resolution 600.0 Ω / 0.1 Ω
6.000 kΩ / 0.001 kΩ
60.00 kΩ / 0.01 kΩ
600.0 kΩ / 0.1 kΩ
6.000 MΩ / 0.001 MΩ
Accuracy 0.9% + 1
Range/resolution 40.00 MΩ / 0.01 MΩ
Accuracy 5% + 2
Diode test Range/resolution 2.00 V / 0.001 V
Accuracy 0.9% + 2
Capacitance Range/resolution 1000 nF / 1 nF
10.00 µF / 0.01 µF

100.0 µF / 0.1 µF
9999 µF / 1 µF
100 µF to 1000 µF
Accuracy 1.9% + 2
Range/resolution > 1000 µF
Accuracy 5% + 20%
Lo-Z Capacitance Range 1 nF to 500 µF
Accuracy 10% + 2 typical
AC amps True RMS
(45 Hz to 500Hz) Range/resolution 6.000 A / 0.001 A
10.00 A / 0.01 A
Accuracy 1.5% + 3
20 A overload for 30-seconds max
DC amps Range/resolution 6.000 A / 0.001 A
10.00 A / 0.01 A
Accuracy 1.0% + 3
20 A overload for 30-seconds max
Hz (V or An input)2 Range/resolution 99.99 Hz / 0.01 Hz
999.9 Hz / 0.01 Hz
9.999 kHz / 0.001 kHz
50.00 kHz / 0.01 kHz
Accuracy 0.1% + 2
1. All AC voltage ranges except Auto-V/LoZ are specified from 1% to 100% of range. Auto-V/LoZ is specified from 0.0 V.
2. Frequency is AC coupled, 5Hz to 30 kHz for AC voltage.
3. Temperature uncertainty (accuracy) does not include the error of the thermocouple probe.
4. Frequency is AC coupled, 5 Hz to 50 kHz for AC voltage. Frequency is DC coupled, 45 Hz to 5 kHz for AC current.
5. Temperature Range/Resolution: -40°F to 752°F / 0.2°F.
General Specifications
Maximum voltage between any terminal and earth ground 600 V
Surge protection 6 kV peak per IEC 61010–1 600 VCAT III, Pollution Degree 2
Display Digital: 6,000 counts, updates 4 per second
Bar graph 33 segments, updates 32 per second
Operating temperature -10°C to + 50°C
Storage temperature -40°C to + 60°C
Battery type 9 volt Alkaline, NEDA 1604A/ IEC 6LR61
Battery life 400 hours typical

22 (b). Hand held Digital Multimeter: -

Digits of Resolution	4 digits
Display Type	7-segment LCD
Max. Reading Speed	40 readings/s
Basic 1-Year DCV Accuracy	0.09%

Measurement Functions	• DCV and ACV • DCI and ACI • 2-wire Resistance • Frequency • Capacitance • Diode test • Continuity test • Temperature
Internal Memory	2,000
LED Flashlight	Yes
Battery Life	400 hours
Connectivity	IR to USB or Bluetooth
Software	Handheld Meter Logger
IP Rating	IP 67

22 (c). DSO (Digital Storage oscilloscope)

Bandwidth 1 (–3 dB)	100 MHz

Input channels -2

Maximum memory depth	Standard 4 Mpts, Standard segmented memory
Display size and type	8.5-inch capacitive touch gesture-enabled display
Waveform update rate	> 1,000,000 waveforms per second
Vertical system analog channels	
Hardware bandwidth limits	Approximately 20 MHz (selectable)
Input coupling	AC, DC
Input impedance	Selectable: 1 MΩ ± 1% (14 pF), 50 Ω ± 1.5%
Input sensitivity range	100 MHz ~ 500 MHz models: 1 mV/div to 5 V/div 2 (1 MΩ and 50 Ω)
1 GHz models: 1 mV/div to 5 V/div 2 (1 MΩ), 1 mV/div to 1 V/div (50 Ω)	
Vertical resolution	8 bits (measurement resolution is 12 bits with averaging)
Maximum input voltage	300 Vrms, 400 Vpk; transient overvoltage 1.6 kVpk

With N2843A 10:1 probe: 300 Vrms	
Frequency de-rating (assumes sine wave input): 400 Vpk until 40 kHz. Then de-rates at 20 db/dec until 6 Vpk	
DC vertical accuracy	± [DC vertical gain accuracy + DC vertical offset accuracy + 0.25% full scale] 2
DC vertical gain accuracy 1	± 2.0% full scale 2
DC vertical offset accuracy	± 0.1 div ± 2 mV ± 1% of offset setting
Channel-to-channel isolation	> 100:1 from DC to maximum specified bandwidth of each model (measured with same V/div and coupling on channels)
Offset range	± 2 V (1 mV/div to 200 mV/div)
± 50 V (> 200 mV/div to 5 V/div)	
Vertical system digital channels	
Digital input channels	16 digital (D0 to D15. pod 1: D7 ~ D0, Pod 2: D15 ~ D8)
Thresholds	Threshold per pod
Threshold selections	TTL (+1.4 V), 5 V CMOS (+2.5 V), ECL (–1.3 V), user-defined (selectable by pod)
User-defined threshold range	± 8.0 V in 10 mV steps
Maximum input voltage	± 40 V peak CAT I
Threshold accuracy 1	± (100 mV + 3% of threshold setting)
Maximum input dynamic range	± 10 V about threshold
Minimum voltage swing	500 mVpp
Input impedance	100 kΩ ± 2% at probe tip
Input capacitance	~8 pF
Vertical resolution	1 bit
Horizontal resolution	2.5 ps
Time base accuracy 1	± 1.6 ppm + aging factor (1st year: ± 0.5 ppm, 2nd year: ± 0.7 ppm, 5 years: ± 1.5 ppm, 10 years: ± 2.0 ppm)

Time base delay time range	Pre-trigger	Greater of 1 screen width or 250 µs
Post-trigger	1 s to 500 s	
Channel-to-channel deskew range	± 100 ns	
Δ Time accuracy (using cursors)	± (time base acc. x reading) ± (0.0016 x screen width) ± 100 ps	
Modes	Main, zoom, roll, XY	
XY	On channels 1 and 2 only. Z Blanking on Ext Trigger Input, 1.4 V threshold	
Bandwidth: Maximum bandwidth. Phase error at 1 MHz: < 0.5 degree		
Horizontal system digital channels		
Minimum detectable pulse width	5 ns	
Channel-to-channel skew	2 ns (typical); 3 ns (maximum)	
Acquisition system		
Maximum analog channels sample rate	5 GSa/s half channel interleaved, 2.5 GSa/s all channel	
Maximum analog channels record length	4 Mpts half channel interleaved, 2 Mpts all channel	
Maximum digital channels sample rate	1.25 GSa/s all pods	
Maximum digital channels record length	2 Mpts (with digital channels only)	
Acquisition mode	Normal	Default mode
Peak detect	Capture glitches as narrow as 250 ps at all time base settings	
Averaging	Selectable from 2, 4, 8, 16, 64, ... to 65,536	
High resolution	Real time boxcar averaging reduces random noise and effectively increases vertical resolution 12 bits of resolution when ≥ 10 µs/div at 5 GSa/s or ≥ 20-µs/div at 2.5 GSa/s	

Segmented	Segmented memory optimizes available memory for data streams that have long dead times between activity. Maximum segments = 1000. Re-arm time = 1 µs (minimum time between trigger events)	
Time mode	Normal	Default mode
Roll	Displays the waveform moving across the screen from right to left. Available at the time base 50 ms/div or slower	
XY	Displays the volts-versus-volts display. Time base can be set from 200 ns/div to 50 ms/div	
Trigger modes	Normal (triggered): Requires trigger event for scope to trigger	
Auto: Triggers automatically in absence of trigger event		
Single: Triggers only once on a trigger event, press **[Single]** again for scope to find another trigger event, or press **[Run]** to trigger continuously in either Auto or Normal mode		
Force: front panel button that forces a trigger		
Trigger coupling	DC: DC coupled trigger	
AC: AC coupled trigger, cutoff frequency: < 10 Hz (internal); <50 Hz (external)		
HF reject: High frequency reject, cutoff frequency ~ 50 kHz		
LF reject: Low frequency reject, cutoff frequency ~ 50 kHz		
Noise reject: Selectable OFF or ON, decreases sensitivity 2x		
Trigger holdoff range	40 ns to 10.00 s	
Trigger sensitivity		

Internal 1	< 10 mV/div: Greater of 1 div or 5 mV; ≥ 10 mV/div: 0.6 div
External 1	200 mVpp from DC to 100 MHz
350 mVpp 100 MHz to 200 MHz	
Trigger level range	
Any channel	± 6 div from center screen
External	± 8 V
Trigger type selections	
Zone (HW zone qualifier)	Trigger on user-defined zones drawn on the display. Applies to one analog channel at a time. Specify zones as either "must intersect" or "must not intersect." Up to two zones. > 200,000 scans/sec update rate
Supported modes: normal, peak detect, high resolution	
Also works simultaneously with the serial trigger and mask/limit test	
Edge	Trigger on a rising, falling, alternating or either edge of any source
Edge then edge (B trigger)	Arm on a selected edge, wait a specified time, then trigger on a specified count of another selected edge
Pulse width	Trigger on a pulse on a selected channel, whose time duration is less than a value, greater than a value, or inside a time range
Minimum duration setting: 2 ns (500 MHz, 1 GHz), 4 ns (350 MHz), 6 ns (200 MHz), 10 ns (100 MHz)	
Maximum duration setting: 10 s	
Range minimum: 10 ns	
Runt	Trigger on a position runt pulse that fails to exceed a high level threshold. Trigger on a negative runt pulse that

	fails to exceed a low level threshold. Trigger on either polarity runt pulse based on two threshold settings. Runt triggering can also be time-qualified (< or >) with a minimum time setting of 2 ~ 10 ns and maximum time setting of 10 s
Minimum time setting: 2 ns (500 MHz, 1 GHz), 4 ns (350 MHz), 6 ns (200 MHz)	
10 ns (100 MHz)	
Setup and hold	Trigger and clock/data setup and/or hold time violation. Setup time can be set from –7 to 10 s. Hold time can be set from 0 s to 10 ns
Rise/fall time	Trigger on rise-time or fall-time edge speed violations (< or >) based on user-selectable threshold
Select from (< or >) and time settings range between	
Minimum: 1 ns (500 MHz, 1 GHz), 2 ns (350 MHz), 3 ns (200 MHz), 5 ns (100 MHz)	
Maximum: 10 s	
Waveform measurements	
Cursors 2	Single cursor accuracy: ± [DC vertical gain accuracy + DC vertical offset accuracy + 0.25% full scale]
Dual cursor accuracy: ± [DC vertical gain accuracy + 0.5% full scale] 1	
Units: Seconds(s), Hz (1/s), phase (degrees), ratio (%)	
Automatic measurements	Measurements continuously updated with statistics. Cursors track last selected measurement. Select up to eight measurements from the list below:

Snapshot All: Measure all single waveform measurements (31)	
Voltage: Peak-to-peak, maximum, minimum, amplitude, top, base, overshoot, pre-shoot, average- N cycles, average-full screen, DC RMS- N cycles, DC RMS- full screen, AC RMS- N cycles, AC RMS- full screen (std deviation), ratio- N cycle, ratio- full screen	
Time: Period, frequency, counter, + width, - width, burst width, +duty cycle, -duty cycle, bit rate, rise time, fall time, delay, phase, X at min Y, X at max Y	
Count: Positive pulse count, negative pulse count, rising edge count, falling edge count	
Mixed: Area- N cycles, area-full screen	
Automatic measurement logging	Available via BenchVue
Counter	Built-in frequency counter
Source: On any analog or digital channel	
Resolution: 5 digits	
Maximum frequency: Bandwidth of scope	

Performance Characteristics (Continued)

Display characteristics	
Display	8.5-inch capacitive touch/gesture enabled TFT LCD
Resolution	800 (H) x 480 (V) pixel format (screen area)
Graticules	8 vertical divisions by 10 horizontal divisions with intensity controls

Format	YT, XY, and Roll
Maximum waveform update rate	> 1,000,000 wfms/s
Persistence	Off, infinite, variable persistence (100 ms to 60 s)
Intensity gradation	64 intensity levels

1. Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and ± 10 °C from firmware calibration temperature.

2. 1 mV/div and 2 mV/div is a magnification of 4 mV/div setting. For vertical accuracy calculations, use full scale of 32 mV for 1 mV/div and 2 mV/div sensitivity setting.

Waveform math		
Number of math functions	Two, displays FFT and one math simultaneously. Can be cascaded	
Arithmetic	Add, subtract, multiply, divide, differentiate, integrate, FFT, Ax + B, squared, square root, absolute value, common logarithm, natural logarithm, exponential, base 10 exponential, low pass filter, high pass filter, averaged value, smoothing, envelope, magnify, max hold, min hold, measurement trend, chart logic bus (Timing or State)	
Enhanced FFT	Record size	Up to 64 kpts resolution
Window types	Hanning, Flat Top, Rectangular, Blackman-Harris, Bartlett	
Time gated FFT	Gate the time range of data for FFT analysis in the zoom view. For time and frequency domain correlated analysis.	
Waveforms	FFT, max hold, min hold, average	
Peak search	Max 11 peaks, threshold and excursion control	
Search, navigate, and lister		
Type	Edge, pulse width, rise/fall, runt, frequency peak, serial bus 1, serial bus 2	

Copy	Copy to trigger, copy from trigger	
Frequency peak	Source	Math functions
Max # of peaks	11	
Control	Results order in frequency or amplitude	
Result display	Event lister or navigation. Manual or auto scroll via navigation or touch event lister entry to jump to a specific event	
WaveGen – Built-in function/arbitrary waveform generator (specifications are typical)		
WaveGen out	Front-panel BNC connector	
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, Sine Cardinal (Sinc), Exponential Rise, Exponential Fall, Cardiac, Gaussian Pulse, and Arbitrary	
Modulation	Modulation types: AM, FM, FSK Carrier waveforms: sine, ramp, sine cardinal, exponential rise, exponential fall, and cardiac Modulation source: internal (no external modulation capability) AM: Modulation: sine, square, ramp Modulation frequency: 1 Hz to 20 kHz Depth: 0% to 100% FM: Modulation: sine, square, ramp Modulation frequency: 1 Hz to 20 kHz Minimum carrier frequency: 10 Hz Deviation: 1 Hz to carrier frequency or (2e12 / carrier frequency), whichever is smaller FSK: Modulation: 50% duty cycle	

	square wave FSK rate: 1 Hz to 20 kHz Hop frequency: 2 x FSK rate to 10 MHz
Sine	Frequency range: 0.1 Hz to 20 MHz
Amplitude flatness: ± 0.5 dB (relative to 1 kHz)	
Harmonic distortion: –40 dBc	
Spurious (non harmonics): –40 dBc	
Total harmonic distortion: 1%	
SNR (50 Ω load, 500 MHz BW): 40 dB (Vpp > = 0.1 V); 30 dB (Vpp < 0.1V)	
Square wave /pulse	Frequency range: 0.1 Hz to 10 MHz
Duty cycle: 20 to 80%	
Duty cycle resolution: Larger of 1% or 10 ns	
Pulse width: 20 ns minimum	
Rise/fall time: 18 ns (10 to 90%)	
Pulse width resolution: 10 ns or 5 digits, whichever is larger	
Overshoot: < 2%	
Asymmetry (at 50% DC): ± 1% ± 5 ns	
Jitter (TIE RMS): 500 ps	
Ramp/triangle wave	Frequency range: 0.1 Hz to 200 kHz
Linearity: 1%	
Variable symmetry: 0 to 100%	
Symmetry resolution: 1%	
Noise	Bandwidth: 20 MHz typical
Sine Cardinal (Sinc)	Frequency range: 0.1 Hz to 1.0 MHz
Exponential Rise/Fall	Frequency range: 0.1 Hz to 5.0 MHz
Cardiac	Frequency range: 0.1 Hz to 200.0 kHz

Gaussian Pulse	Frequency range: 0.1 Hz to 5.0 MHz
Arbitrary	Waveform length: 1 to 8k points
Amplitude resolution: 10 bits (including sign bit) 1	
Repetition rate: 0.1 Hz to 12 MHz	
Sample rate: 100 MSa/s	
Filter bandwidth: 20 MHz	

23. BLDC Drive System: - 1kW, 3000rpm, BLDC motor with controller coupled with 1kW suitable separately excited DC machine both should be properly mechanically coupled and mounted on a vibration free iron channels. The whole arrangement should be placed on vibration tolerant insulated sheet.

General Terms & Conditions for item numbers 1-23

- Incomplete or partial bidding will not be accepted; in such case the bid will not be considered. Supplier should supply all the equipments mentioned in the tender (item numbers 1 to 23)

Essential Terms & Conditions for item numbers 1-13

- Access points (technical possible) should be available for Intermediate signaling points of the control and power circuit, if any, for the analysis purpose.
- Access points must be available on the front panel to register the transient changes in the system during the sudden load changes and dynamic situations.
- The enclosure of test setup should be fully transparent with metal base for better academic value addition and for better understanding of the students about the system.
- Incomplete or partial bidding will not be accepted; in such case the bid will not be considered.
- Supplier has to give full warranty of the system for Three Years.
- Some Additional Testing Points on the main Control Panel may be added by the technical members of the committee. No additional cost will be given for it.
- Firm must submitted the design of the outer panel.
- The detailed brochure of the quoted item with complete technical details/specification along with make & model number must be attached with the Bid-document otherwise Bid-document will not be considered.
- The technical members of the purchase committee may also ask any firm for the demonstration before finalization of the Bid, within 10 working days after opening of the tender. The cost for the demonstration will be borne by the supplier. If any firm fails to successfully demonstrate the system quoted by them, the Bid of that firm will not be considered.
- The real time experimental values of the output voltage, input voltage & firing angle (delay angle) must be displayed on the panel board using suitable meters in case of item numbers 1, 3, 4, 6, 10 and 13.

● Scanned Copies of the entire experimental test reports as mentioned in the Technical Specification must be uploaded/attached otherwise Bid will not be considered.
● The Firm has to provide the detailed lab manual (in Hard as well as in soft Copy).
● Proper Training of 2 weeks (full day) has to be given by the qualified engineer of the firm to the university staff and students without any additional cost.
● **Following Technical Report should be attached for item numbers 1, 3, 4, 6, 10 and 13.**

The experimental test reports of the test Setup including waveforms of voltage & currents (at source side and load side) at different firing angles along with the tabulated values of voltage, current, power, PF, Crest factor , active power, reactive power, THD in output voltage, THD in output current, THD in Source Current at different firing angles (at least at five different firing angles at suitable interval of at least 20 degree and 40 degree for item no 7) must be attached along with the Bid-documents. The experimental waveforms validating the soft start feature of the system should also be attached with the Bid-documents. If the above said experimental reports of the setup will not be found attached along with the Bid-documents of any party/firm/company/vendor (participating in tendering process), the Bid-document of that firm will not considered.

● **Following Technical Report should be attached for item No.2, 5, 8, 9**

The experimental test reports (hardware results recorded on power analyzer) of the test setup including waveforms (source and load side) of voltage & currents at different values of duty cycle along with the tabulated values of voltage, current, power, PF, Crest factor , active power, reactive power, THD in output voltage, THD in output current, THD in Source Current at different values of duty cycle (at least at five different duty cycle at suitable intervals) must be attached along with the Bid-documents. If the above said experimental reports of the setup will not be found attached along with the Bid-documents of any party/firm/company/vendor (participating in tendering process), the Bid-document of that firm will not considered.

<u>Terms & Conditions for item numbers 14-23</u>

● Supplier has to give full warranty of the system minimum for three Years.
● The detailed brochure of the quoted item with complete technical details/specification along with make & model number must be attached with the Bid-document otherwise Bid-document will not be considered.
● The technical members of the purchase committee may also ask any firm for the demonstration before finalization of the Bid, within 10 working days after opening of the tender. The cost for the demonstration will be borne by the supplier. If any firm fails to successfully demonstrate the system quoted by them, the Bid of that firm will not be considered.
● Scanned Copies of the entire test reports as mentioned in the Technical Specification must be uploaded/attached otherwise Bid will not be considered.
● The Firm has to provide the detailed lab manual (in Hard as well as in soft Copy).
● Proper Training of 2 weeks (full day) has to be given by the qualified engineer of the firm to the university staff and students without any additional cost.

S. No.	Name of Items (Full Specifications are given above)	Quantity Required	Compliance as per Specification (Y/N)
1.	Three Phase Semi controlled Phase Control Rectifier	2	
2.	Single Phase PWM AC power controller setup	2	
3.	Three Phase Fully controlled AC power Controller	1	
4.	Single Phase Fully controlled Phase Control Rectifier	2	
5.	Three Phase PWM AC power controller setup	2	
6.	Single Phase Fully controlled AC power Controller	2	
7.	12 Pulse Uncontrolled Phase Control Rectifier	2	
8.	Single Phase Single Pulse PWM Inverter Test setup	2	
9.	Single Phase Multi-Pulse PWM Inverter Test setup	2	
10.	Three Phase Fully controlled Adjustable Nonlinear Loading System	2	
11.	Three Phase 4 Leg Voltage Source Inverter	3	
12.	Three Phase 4 Leg IGBT converter with separate DC Bus Voltage for DC-DC converters	2	
13.	Adjustable Regulated DC Voltage High Power DC supply	1	
14.	Power Analyzer	4	
15.	Current probes	6	
16.	Inductive load bank	4	
17.	3-Phase Induction motor coupled with DC Generator	2	
18.	Single phase induction motor coupled with DC machine	2	
19.	Inductors	10	
20.	**Machine-generator sets and nonlinear loading systems**		
20(a(i))	Single Phase Self Excited Induction Generator coupled with Induction Motor Drive System	3	
20(a(ii))	BLDC Generator coupled with Induction Motor Drive System	2	
20(b)	Solar PV and Battery Bank system	1	
21.	**Capacitive and Resistive Load Banks**		
21(a)	Resistive Load Bank, 1-phase, 230 V, 1kW	2	
21(b)	Resistive Load Bank, 1-phase, 230 V, 2kw	2	
21(c)	Resistive Load Bank, 1-phase, 230 V, 5kW	2	
21(d)	Resistive Load Bank, 3-phase, 415 V, 1kW	2	

21(e)	Resistive Load Bank, 3-phase, 415 V, 2kW	2	
21(f)	Resistive Load Bank, 3-phase, 415 V, 5kW	2	
21(g)	Single Phase Capacitive Load Bank - 230V, 1MFD (5 steps)+ 10MFD (5 steps)+ 50MFD (5 steps)+ 100MFD (4 steps)	1	
21(h)	3 Phase Capacitive Load Bank - 415V, 1MFD (5 steps)+ 10MFD (5 steps)+ 50MFD (5 steps)+ 100MFD (4 steps)	1	
22(a)	Multimeter (True RMS Digital Multimeter)	5	
22(b)	Multimeter (Hand held Digital Multimeter)	5	
22(c)	DSO (Digital Storage oscilloscope)	5	
23	BLDC Drive System	1	

University reserved the right to enhance or mitigate the quantity without any notice.

Note: All the accessories (in all respect) which shall be required to run the machine has to be supplied along with the machine.

OTHER REQUIREMENTS: The bidders will have to fulfil the following general requirements:

1. Bidder shall ensure that the routine work should not hamper during installation and commissioning.
2. Monitoring and inspection: Monitoring and inspection shall be done by Representative of SVSU at site.
3. Supplier should ensure that all the safety measures has to be installed as per the existing statutory compliances while designing the lab.

The bidder will have to sign with seal of firm on each & every page of this tender as a token of acceptance to our terms & conditions & submit along with technical bid.

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

Signature of Bidder

Name: ……

Designation: ……

Organization Name: ……

Contact No.: ……

ANNEXURE – III

<< Organization Letter Head >>

BID SUBMISSION

Online Bid Submission:

Online system shall be followed, i.e.

(i) Please note that in any case if price-bid/Financial Offer submitted manually then bid shall not be accepted.

(ii) Only those proposals will be considered for opening, who have submitted their BID online by due date/time (as specified in Bid Data Sheet).

The Online bid complete in all respect. The following checklist is for the convenience of the bidders. Kindly check the following points before submitting the bids.

Sr. No.	Content	Document Submitted (Yes/No)	Page Number as per numbering given to the technical bid documents uploaded on the portal (If Applicable)
1.	Whether the all pages of the proposal has been signed with seal of firm by bidder/authorized signatory?		
2.	Have submitted the Scanned copy (PDF format) of the technical proposals on e-Procurement Portal?		
3.	Have submitted the Company Registration & associated Documents on e-Procurement Portal?		
4.	Have submitted copy of PAN, GST, TAN Registration etc. on e-Procurement Portal?		
5.	Have submitted EMD and TENDER+ E-Service charges on e-Procurement Portal?		
6.	Have all the pages of proposal (Technical Proposal) been properly numbered and signed by authority/ authorized person only?		
7.	Have you checked the eligibility Criteria and Submitted the relevant documents as proof on e-Procurement Portal?		
8.	Have submitted the authority letter for signing the proposal on behalf bidder on e-Procurement Portal?		
9.	Have submitted the authority letter for use of digital signature on e-Procurement Portal?		
10.	Have submitted the Notice Inviting Quotation with schedule and disclaimer		
11.	Have submitted the Instructions to Bidders		
12.	Have submitted the Terms and Condition as per Annexure - I		

Sr. No.	Content	Document Submitted (Yes/No)	Page Number as per numbering given to the technical bid documents uploaded on the portal (If Applicable)
13.	Have submitted the Technical Specification and Compliance Sheet as per Annexure – II		
14.	Have submitted the Details of Bid Submission as per Annexure - III		
15.	Have submitted the Organization Declaration Sheet as per Annexure – IV		
16.	Have submitted the List of Government organizations/ Department/PSU and Private Organizations where the same products have been supplied (in last three years) along with their contact number(s) as per Annexure-V Note: The bidder(s) are required to submit proper proof (like Purchase Order/Work Order and Performance Report) duly attested by Gazetted Officer or Notary and client to support/ proving the claim.		
17.	Have submitted the offered Model of OEM must be working in Indian Conditions, without any Problems. Minimum 2 performance reports with Purchase Order/Work Order duly attested by Gazetted Officer or Notary to be submitted as per Annexure-V		
18.	Have submitted the List of application specialist / Supporting / Service Engineer and Nearest Address of service branch who have the technical competency to handle and support the quoted product during the warranty period as per Annexure - VI.		
19.	Have submitted the Details of Electronic Fund Transfer/RTGS Transfer (Annexure VIII)		
20.	Have submitted the Manufacturer's Authorization Form (Annexure-IX)		
21.	Have submitted the Training Requirement (Annexure –X)		
22.	Financial Proposal Document (Annexure-XI)		
23.	Have submitted the Affidavit regarding Authenticity and correctness of information/documents as per Annexure - XII		
24.	Have submitted the Affidavit regarding delisting/blacklisting, demobilization etc. as per Annexure - XIII		

Sr. No.	Content	Document Submitted (Yes/No)	Page Number as per numbering given to the technical bid documents uploaded on the portal (If Applicable)
25.	Have submitted the Affidavit regarding completion of supply and installation & commissioning of Machine/Lab Equipments etc. in running condition within stipulated time frame as per Annexure - XIV		
26.	Have submitted the Technical supporting documents in support of all claims made at Annexure-II		
27.	Whether the TENDER document has been signed by bidder/authorized signatory and submitted on e-Procurement Portal?		
28.	Whether the TENDER corrigendum (if any) has been signed by bidder/authorized signatory and submitted on e-Procurement Portal?		
29.	Have submitted the audited statement and Financial Assessment Copy/Income Tax Return Copy showing their net balance / Profit for last three financial years for financial eligibility.		
30.	All documents to be submitted by the firms should be duly attested by gazetted officer/ notary public in case these are copies of the original documents. No unattested documents will be entertained.		
31.	Have submitted the financial bid as per BOQ.		--------

(Signature with Seal of the Bidder)

Name: ……..

Designation: ……..

Organization Name: ……..

Contact No.: ……..

ANNEXURE - IV

<< Organization Letter Head >>
DECLARATION SHEET

We, _____ hereby declare that all the information and statements made in this Proposal are true and accept that any misleading information contained in it may lead to our disqualification. I have gone through the specifications, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We further certify that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.

Name & Address of the Bidder/ Manufacturer /authorized dealer/ distributors/agent	
Phone	
Fax	
E-mail	
Contact Person Name	
Mobile Number	
GST Number	
TIN Number	
PAN Number	
(On-line payment of Tender Fees) UTR No. (For Tender Fee)	
(On-line payment of EMD) UTR No. (For EMD)	

Attachments:

1. Power of Attorney in the name of authorized representative to be enclosed.
2. Affidavit(s).

(Signature with Seal of the Bidder)

Name: ……..

Designation: ……..

Organization Name: ……..

Contact No.: ……..

ANNEXURE - V

<< Organization Letter Head >>

LIST OF GOVERNMENT ORGANIZATION/DEPARTMENT/PSU

List of Government Organizations/Department/PSU for whom the Bidder has under-taken such work during last three years (must be supported with work orders) **Note: The bidder(s) are required to submit proper proof (like Purchase Order/Work Order) duly attested by Gazetted Officer or Notary and client to support/ proving the claim.**			
Sr. No.	**Name of the organization**	**Name of Contact Person**	**Contact No.**

Signature of Bidder

Name: ……

Designation: ……

Organization Name: ……

Contact No.: ……

<< Organization Letter Head >>

LIST OF PRIVATE ORGANIZATION

List of Private Organizations for whom the Bidder has under-taken such work during last three years (must be supported with work orders)

Note: The bidder(s) are required to submit proper proof (like Purchase Order/Work Order) duly attested by Gazetted Officer or Notary and client to support/ proving the claim.

Sr. No.	Name of the organization	Name of Contact Person	Contact No.

Signature of Bidder

Name: ……

Designation: ……

Organization Name: ……

Contact No.: ……

<< Organization Letter Head >>

LIST OF PERFORMANCE REPORT

List of Performance Report for whom the Bidder has under-taken such work in Indian Conditions, without any Problems during last three years (must be supported with work orders)

Note: The bidder(s) are required to submit proper proof (like Purchase Order/Work Order) duly attested by Gazetted Officer or Notary and client to support/ proving the claim.

Sr. No.	Name of the organization	Name of Contact Person	Contact No.

Signature of Bidder

Name: ……

Designation: ……

Organization Name: ……..

Contact No.: ……..

ANNEXURE - VI

<< Organization Letter Head >>

LIST of application specialist / supporting / Service Engineer

Name of application specialist / Service Engineer who have the technical competency to handle and support the quoted product during the warranty period.		
Name and Address of the organization	**Name of Contact Person**	**Contact No.**

S. No.	**Nearest Address of service branch**	**Nearest Address of spares branch**

Signature of Bidder

Name: ……

Designation: ……

Organization Name: ……

Contact No.: ……

ANNEXURE - VII

FORMAT FOR PERFORMANCE BANK GUARANTEE

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred) (TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT GURUGRAM OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT GURUGRAM OR ANY SCHEDULED BANK (OTHER THAN NATIONALISED BANK) SITUATED AT GURUGRAM. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT AC-CEPTED.)

To,
The Registrar
Shri Vishwakarma Skill University,
Gurugram, Haryana
India

LETTER OF GUARANTEE

WHEREAS Shri Vishwakarma Skill University, Gurugram (Buyer) have invited Tenders vide

Tender No.: …….. dated: ……

For purchase of .....

and whereas the said tender document requires that any eligible successful Bidder (seller) wishing to supply the equipment /machinery etc. in response thereto shall establish an irrevocable Performance Guarantee Bond in favour of **"Shri Vishwakarma Skill University"** in the form of Bank

Guarantee for Rupees .....

and valid till **Three Year Six Months** from the date of issue of Performance Bank Guarantee that may be submitted within 21 (Twenty-One) days from the date of acceptance as a successful Bidder.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said Bidder (seller) failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / machinery, etc. this bank shall pay to Shri Vishwakarma Skill University, Gurugram on demand and without protest or demur Rupees .....

This bank further agrees that the decision of SVSU, Gurugram (Buyer) as to whether the said Bidder (Seller) has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.

We, ... (name of the bank & branch) hereby further agree that the guarantee herein contained shall not be affected by any change in the constitution of the Bidder (Seller) and/ or Shri Vishwakarma Skill University, Gurugram (Buyer).

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed Rupees. ..... (Indian Rupees only).
2. This Bank Guarantee shall be valid up to ..... (date).

3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee
   only and only if Institute serve upon us a written claim or demand on or before .....(date).

This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at ..... situated at ..... (Address of local branch).

Yours truly,

Signature and seal of the guarantor:

Name of Bank:

Address:

Date:

Instruction to Bank: Bank should note that on expiry of Guarantee Period, the Original Guarantee will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period.

ANNEXURE - VIII

<< Organization Letter Head >>

MANDATE FORM FOR ELECTRONIC FUND TRANSFER/RTGS TRANSFER

Date: / /

The Registrar
Shri Vishwakarma Skill University,
Gurugram.

Sub: Authorization for release of payment / dues from Shri Vishwakarma Skill University, through Electronic Fund Transfer/RTGS Transfer.

1. Name of the Party/Firm/Company/Institute:
2. Address of the Party:

   Line 1: ……

   Line 2: ……

   City: ……..

   Pin Code: ……..

   E-Mail ID: ……

   Mob No: ……..

   Permanent Account Number (PAN NO.): ……..

3. Particulars of Bank

Bank Name		Branch Name	
Branch Place		Branch City	
Pin Code		Branch Code	
MICR No.			
(9 Digit number appearing on the MICR Bank of the Cheque supplied by the Bank, please attach a Xerox copy of a cheque of your bank for ensuring accuracy of the bank name, branch name and code number)			
IFS Code:(11-digit alphanumeric code)			
Account Type	Saving ☐	Current ☐	Cash Credit ☐
Account Number			

DECLARATION

I hereby declare that the particulars given above are correct and complete. If any transaction delayed and not effected for reasons of incomplete or incorrect information I shall not hold Registrar, Shri Vishwakarma Skill University, responsible. I also undertake to advise any change in the particulars of my account to facilitate updating of records for purpose of credit of amount through NEFT/RTGS Transfer.

Place: ……..

Date: ……..

Signature & Seal of the Authorized Signatory of the Party

Certified that particulars furnished above are correct as per our records

Bankers Stamp: Date:

……

Signature of the Authorized Official from the Bank

N.B: Please fill in the information in CAPITAL LETTERS, computer typed; please TICK wherever it is applicable.

ANNEXURE - IX

<< Manufacturer Letter Head >>

MANUFACTURERS' AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.
Date: [insert date (as day, month and year) of Bid Submission]

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

To: [insert complete name and address of Purchaser]

WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Terms and Conditions, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Bidder]

Dated on …….. day of …… [insert date of signing]

Annexure – X

<< Organization Letter Head >>

Training Requirement

1.	Product Description	**……(Tender Name)**
2.	No. of Attendees	Faculty of University
3.	No. of Days	2 Weeks
4.	Type of Training	Operational Training and Maintenance Training

Proper Training of 2 weeks (full day) has to be given by the qualified engineer of the firm to the university staff and students without any additional cost.

Signature of Bidder

Name: ……

Designation: ……..

Organization Name: ……..

Contact No.: ……..

Annexure – XI

<< Organization Letter Head >>

Financial Proposal (to be submitted online only)

Financial Proposal

To
The Registrar,
Shri Vishwakarma Skill University, Haryana,
Transit office: Plot No. 147, Sector 44,
Gurugram (Haryana).

Sub: Financial Bid /proposal for "_____"

Dear Sir,

We are pleased to quote/submit our financial proposal for the "_____".

I/We _____ organization here with enclose the Financial Proposal for selection of my/our firm for that tender. For TENDER, **our Financial Proposal submitted in BOQ on online procurement portal**.

Our financial proposal shall be binding upon us subject to the modifications resulting from contract negotiations, up to expiration of the validity period of the Proposal, i.e. 180 days from the last date notified for submission of the proposal.

1. Delivery Mode: - Delivery at University, at site or at that place to be informed by the SVSU.
2. Delivery Period: Within maximum of 06 weeks from the date of placement of purchase order.
3. Terms of payment: For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at SVSU, Gurugram Campus in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in tender terms and conditions.

NOTE: Financial Proposal must be submitted online in BOQ format only. If financial bid submitted manually than bid shall not be accepted in any circumstances.

Signature: ……

Name: ……

Business Address: ……

……

Affix Rubber Stamp: ……

Place: ……

Date: ……

Annexure – XII

Affidavit regarding Authenticity and correctness of information/documents

||SPECIMEN AFFIDAVIT||

(On Non Judicial Stamp of Rs. 100/-)

To
The Registrar,
Shri Vishwakarma Skill University, Haryana,
Transit office: Plot No. 147, Sector 44,
Gurugram (Haryana).

ln response to the Tender No. …… for …….. (Name of the Tender) dated …… for quoting against the Tender as an owner/Director/Proprietor of M/s ……..

I/we …….. who is/are …….. (status in the firm/company) and competent for submissions of the affidavit on behalf of M/S …… (Organization/Manufacturer/authorized dealer/ distributors/agent) do hereby solemnly affirm an oath and state that:

I/we am/are fully satisfied for the correctness of the certificates/records submitted in support of the following information in bid documents which are being submitted in response to notice inviting e-tender No. ……..

We also agreed to buyer for Integrity Pact terms and conditions as applicable from time to time as per government rules.

I/we am/are fully responsible for the correctness of following self-certified Information/ documents and certificates:

1. That the self-certified information given in the bid document is fully true and authentic.
2. That:
    1. The proof of online deposit of EMD and cost of TENDER/bid document + E-service charges and other relevant documents provided are authentic.
    2. Information regarding financial qualification and annual turnover is correct.
    3. Information regarding various technical qualifications is correct.

Signature with Seal of the Deponent (Bidder)

I/we, _____ above deponent do hereby certify that the facts mentioned in above are correct to the best of my knowledge and belief. Verified today_____ (dated) at _____ (place).

Signature with Seal of the Deponent (Bidder)

Note: Affidavit duly notarized in original shall submit in the Office of Shri Vishwakarma Skill University, Haryana, Transit office: Plot No. 147, Sector 44, Gurugram (Haryana) on Technical Presentation day/date.

Annexure – XIII

Affidavit regarding delisting/blacklisting, demobilization etc.

||SPECIMEN AFFIDAVIT||

(On Non Judicial Stamp of Rs. 100/-)

To
The Registrar,
Shri Vishwakarma Skill University, Haryana,
Transit office: Plot No. 147, Sector 44,
Gurugram (Haryana).

ln response to the Tender No. …… for …….. (Name of the Tender) dated …… for quoting against the Tender as an owner/Director/Proprietor of M/s ……..

I/we _____ who is/are_____ (status in the firm/company) and competent for submissions of the affidavit on behalf of M/S_____ (Organization/Manufacturer/authorized dealer/ distributors/agent) do hereby solemnly affirm an oath and state that:

The firm/agency should not be black-listed/de-listed/debarred/ demobilized for poor or unsatisfactory performance from any project by Govt. of India/Any other State Govt./Haryana Govt. or its Departments/agencies etc.

Signature with Seal of the Deponent (Bidder)

I/we, _____ above deponent do hereby certify that the facts mentioned in above are correct to the best of my knowledge and belief. Verified today_____ (dated) at _____ (place).

Signature with Seal of the Deponent (Bidder)

Note: Affidavit duly notarized in original shall submit in the Office of Shri Vishwakarma Skill University, Haryana, Transit office: Plot No. 147, Sector 44, Gurugram (Haryana) on Technical Presentation day/date.

Annexure – XIV

Affidavit regarding completion of supply and installation & commissioning of Machine/Lab Equipments etc. in running condition within stipulated time frame

||SPECIMEN AFFIDAVIT||

(On Non Judicial Stamp of Rs. 100/-)

To
The Registrar,
Shri Vishwakarma Skill University, Haryana,
Transit office: Plot No. 147, Sector 44,
Gurugram (Haryana).

ln response to the Tender No. …… for …….. (Name of the Tender) dated …… for quoting against the Tender as an owner/Director/Proprietor of M/s ……..

I/we _____ who is/are_____ (status in the firm/company) and competent for submissions of the affidavit on behalf of M/S_____ (Organization/Manufacturer/authorized dealer/ distributors/agent) do hereby solemnly affirm an oath and state that:

We further certify that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

We hereby declare that our firm will supply the Machine/Lab Equipments etc. as per Technical Specification and installation & commissioning of the Machine/Lab Equipments in respective lab(s) in working condition within the time frame as enumerated in the tender document.

we/l further declare that if any delay is found in delivery/installation and the offer is not accepted partially or fully by our firm(s) the performance security or EMD furnished as per the tender document is liable to be forfeited and no objection of being blacklisted in these circumstances.

Signature with Seal of the Deponent (Bidder)

I/we, _____ above deponent do hereby certify that the facts mentioned in above are correct to the best of my knowledge and belief. Verified today_____ (dated) at _____ (place).

Signature with Seal of the Deponent (Bidder)

Note: Affidavit duly notarized in original shall submit in the Office of Shri Vishwakarma Skill University, Haryana, Transit office: Plot No. 147, Sector 44, Gurugram (Haryana) on Technical Presentation day/date.

ANNEXURE – XV

(AN AGREEMENT BETWEEN SHRI VISHWAKARMA SKILL UNIVERSITY AND THE SUPPLIER) *

Shri Vishwakarma Skill University (SVSU), Enacted under Government of Haryana Act No.25 of 2016 having its transit office at Plot No-147, Sector-44, Gurugram, Haryana represented through its authorized signatory **…….. (Name of Registrar)**, Registrar (which expression shall unless repugnant to the context or meaning there off includes its successors and assigns) here in after referred to as **SVSU** or Owner or the **First Party**.

And

Firm Name…….. having its office at ……., through its authorized signatory **…….. (Name &** Post), (which expression shall unless repugnant to the context or meaning there off includes its successors and assigns) here in after referred to as execution Manufacturers/Authorized Dealers/ Distributors/Agent or the **Second Party.**

Whereas SVSU has invited Tender No. ……. for …….. (Name of the Tender) dated ……. and M/s ……. (Firm Name) submitted its proposal in this regard. SVSU after considering its negotiation offer has decided to engage ……..... (Firm Name) as executing agency for Tender No. ……. for ……... (Name of the Tender) dated …… ……

Firm Name…….. (execution **Agency**) is hereby agreed to take the Tender No. ……. for …….... (Name of the Tender) at the quoted negotiation rates, terms and conditions contained the TENDER, Work Order/Purchase Order and duly communications of the above said work.

Now, therefore, in consideration of the mutual covenants herein contained, it is hereby agreed between the parties as follows: -

The agreement shall come into force immediately and shall remain valid until the final completion of the job or cancelled by the Bidder (The Registrar, Shri Vishwakarma Skill University, Haryana) as per the time schedule described in the tender document.

All the terms and conditions and Technical specifications contained in the Tender No. ……. for …….. (Name of the Tender) dated ……. shall be the part of this agreement.

Firm Name…….. (execution **Agency**) hereby declare that I shall remain bound and abide by the rates, terms and conditions and technical specifications of the aforesaid as well as TENDER, Work Order/Purchase Order and due communications of the above said work.

In Witness Whereof, the parties here to have caused this agreement to be signed in their respective names as of this day and year first above written.

Signed by

Buyer: SVSU, Gurugram	**Bidder:**
Signature with seal	**Signature with seal**
Date & Place	**Date & Place**

In presence of (Witnesses)

1.	**1.**
2.	**2.**

***Note-This Contract is to be Signed on Rs. l00/- Non Judicial Stamp paper within 15 days after receiving purchase Order/Work Order from buyer.**

(Please put the initials at each page)