

**TENDER (E - PROCUREMENT MODE)**

**FOR**

**SUPPLY & INSTALLATION OF POWER ELECTRONICS AND DRIVES ITEMS IN  
SCHOOL OF COMPUTING & ELECTRICAL ENGINEERING AT IIT MANDI**



**Tender No.: IITMANDI/S&P/PUR-371/2019-20/13328-29**

**Tender date: 14<sup>th</sup> January, 2020**

**Last Date of Submission: 04<sup>th</sup> February, 2020**

**Indian Institute of Technology Mandi (IIT Mandi),  
Store & Purchase Section,  
2<sup>nd</sup> Floor, A7 Building, South Campus,  
Kamand – 175 075, District – Mandi (H.P), India**

**Tel.: 01905-267039/267048**

**Email: [tummuru@iitmandi.ac.in](mailto:tummuru@iitmandi.ac.in) & [arsp@iitmandi.ac.in](mailto:arsp@iitmandi.ac.in)**

Indian Institute of Technology Mandi, Kamand invites online Bids for supply, erection, installation, commissioning, testing, demonstration and training of **“Power Electronics and Drives items”** as per specifications given in the Annexure attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the CPP Portal (<http://eprocure.gov.in/eprocure/app>) & Institute website (<http://iitmandi.ac.in/administration/tenderseoi.php>).

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, IIT Mandi, Kamand reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

### **Instruction to bidder:**

1. There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender publishing on the CPP Portal.
2. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
3. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
4. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>. In the Technical Bids, the bidders are required to upload all the documents in .pdf format. All quotation (**both Technical and Financial should be submitted in the E-procurement portal**).
5. Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <http://eprocure.gov.in/eprocure/app>. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link “Information about DSC”.

### **Instruction for Preparation & Submission of bids:**

1. Technical & Financial Bids should be submitted in PDF format.
2. **In case of Financial bids**, a standard BOQ format has been provided in Excel format. Bidders are required to download the BoQ Excel file and fill their financial offer on the same BOQ format. After filling the same, submit it online in Excel format, without changing the financial template format. However, if bidder wants to modify in its financial offer, then bidder can modify.
3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF formats. Bid documents may be scanned with 100 dpi with black and white option.
4. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
5. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
6. **Kindly add scanned PDF of all relevant documents in a single PDF file like, compliance sheet, OEM/Principle Certificate etc.**
7. Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
8. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
9. The technical and financial bids should be submitted online through portal <http://eprocure.gov.in/eprocure/app> in original. The financial bid should include the cost of main equipment/item and its accessories. If there is any separate cost for installation etc. that should be quoted separately.
10. Each bidder should be marked with the following reference on the top bids submitted online: **“IITMANDI/S&P/PUR-371/2019-20/13328-29/Power Electronics and Drives Items, dated 14<sup>th</sup> January, 2020”**.
11. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance in .pdf format.
12. The rates should be quoted in figures (typed or printed) and cutting should be avoided. The final amount should be in figures as well as in words. If there are cuttings, they should be duly initialed, failing which the bids are liable to be rejected.

**13. Tender Cost:** The bidder should submit a demand draft of **Rs. 1,180 (Tender Fee inclusive GST) in Words Rupees One Thousand One Hundred & Eighty only** towards non-refundable **tender fee, drawn in favour of “The Registrar, IIT Mandi”** payable at Mandi in a sealed envelope super-scribed as **“Tender fee & NIT No. IITMANDI/S&P/PUR-371/2019-20/13328-29/Power Electronics and Drives Items, dated 14<sup>th</sup> January, 2020”** on or before last date & time of submission of bids. **In the absence of tender fee, bids for evaluation shall not be accepted. NSIC/MSME exemption certificate shall be considered only against EMD (detail as mentioned in S.No.15).**

**14. Earnest Money Deposit (EMD):**

Bidder should furnish an EMD of a refundable amount in the shape of Demand Draft or FDR from a scheduled bank in India drawn in favour of **“The Registrar, IIT Mandi” payable at Mandi.** EMD amount should be submitted for quoted item/s and the details given are as under:-

<b>Sl. No.</b>	<b>For Item No.</b>	<b>EMD Amount</b>
1.	1.1	12000/-
2.	1.2 & 1.3	16,000/-
3.	1.4	14,000/-
4.	1.5	10,000/-
5.	1.6	6,000/-
6.	1.7	6,000/-
7.	1.8	3,000/-
8.	1.9	54,000/-
9.	2.1	1300/-
10.	2.2	5,000/-
11.	2.3	7,000/-
12.	2.4	2,000/-
13.	2.5	30,000/-
14.	2.6	16,000/-
15.	2.7	6,000/-
16.	3.1	3,000/-
17.	3.2	4,000/-
18.	3.3	5,000/-

19.	3.4	7,000/-
20.	3.5	10,000/-
21.	3.6	20,000/-
22.	3.7	16,000/-
23.	3.8	32,000/-
24.	3.9	20,000/-
25.	3.10	40,000/-
26.	3.11	32,000/-
27.	3.12	16,000/-

**The EMD amount being submitted may be for more than 01 (one) item. However, details of all the items quoted should be clearly mentioned on a separate sheet to be forwarded along with DD/FDR.**

This EMD should be submitted in sealed envelop super-scribed as EMD & NIT No. **“IITMANDI/S&P/PUR-371/2019-20/13328-29/Power Electronics and Drives Items, dated 14<sup>th</sup> January, 2020”**. The bidders should enclose a pre-receipted bill for the EMD to enable us to return the EMD of unsuccessful bidders. **Failure to deposit Earnest Money will lead to rejection of tender.** In the event of the awardee bidder backing out, EMD of that bidder will be forfeited.

- **To return FDR in original, bidder must submit its valid address as an address proof on its letterhead.**
- **Note: Both (tender fee & EMD) envelops should be placed in another sealed envelope addressed to:**

**“Assistant Registrar, Stores and Purchase”  
Indian Institute of Technology Mandi (IIT Mandi),  
S & P Section, 2<sup>nd</sup> Floor, A7 Building, South Campus,  
Kamand – 175 075, Distt. – Mandi (H.P), India”**

**The envelop having tender fee & EMD should reach on or before last date time of submission of bid.**

#### **15. EMD Exemption:**

The Institute may accept bids without EMD from those bidders who are registered with the Central Purchase Organization, National Small Industries Corporation (NSIC) or the concern Ministry or Department **as Manufacturer**. To claim the exemption, the bidder must be offering goods manufactured by

themselves. Exemption will not be granted in case the bidder is acting as an agent for some other vendor.

**General Terms & Condition:**

1. While sending rates, the firm shall give an undertaking to the effect that ***“the terms/conditions mentioned in the enquiry letter/Tender Notice against which the rates are being given are acceptable to the firm.”*** in .pdf format. In case the firms do not give this undertaking, their rates will not be considered.
2. If the supplier/firm is original equipment manufacturer (OEM)/authorized dealer/sole distributor of any item, the certificate to this effect should submit in .pdf format.
3. The quantity shown against the item is approximate and may vary as per demand of the Institute at the time of placing order.
4. Any bids received after **10:00 A.M. on 04<sup>th</sup> February, 2020**, shall not be considered
5. The Technical Bids will be opened on **05<sup>th</sup> February, 2020 at 10:00 A.M.** The date & time for opening of Financial Bids will be informed later on to the technically qualified bidders.
6. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>. All tender documents received after the specified date and time shall not be considered.

For any correspondence regarding tenders is on below address:

**“Assistant Registrar, Stores and Purchase”  
Indian Institute of Technology Mandi (IIT Mandi),  
S & P Section, 2<sup>nd</sup> Floor, A7 Building, South Campus,  
Kamand – 175 075, Distt. – Mandi (H.P), India”**

7. **Arbitration Clause:** In the event of any dispute or difference(s) between the vendee Institute (IIT Mandi) and the vendor(s) arising out of non-supply of material or supplies not found according to specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to “The Director, IIT Mandi”, Kamand who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act,1996. The decision of the arbitrator shall be final and binding on both the parties.
  - a) In 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 above. But if this is not acceptable to the supplier then

dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

- b) The venue of the arbitration shall be the place from where the order is issued.
  - c) The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.
  - d) All disputes shall be subject to Mandi Jurisdiction only.
8. All tenders in which any of the prescribed conditions is not fulfilled or any condition is put forth by the tenderer shall be summarily rejected.
  9. The bidders or their authorized representatives may also be present during the opening of the Technical Bid, if they desire so, at their own expenses.

**Note:** Price bids of only those bidders will be opened whose technical bids are found suitable by the committee appointed for the purpose. Date and time of opening of price bids will be decided after technical bids have been evaluated by the committee. Information in this regard will be intimated only to the technically qualified bidders. In exceptional situation, an authorized committee may negotiate price with the qualified bidder quoting the lowest price before awarding the contract.

10. **Clarifications:**

In case the bidders requires any clarification regarding the tender document, they are requested to submit their queries on the e-mail i.e. [tummuru@iitmandi.ac.in](mailto:tummuru@iitmandi.ac.in), & [arsp@iitmandi.ac.in](mailto:arsp@iitmandi.ac.in) on or **before 30.01.2020**.

11. **Assistance To Bidders:** Any queries relating to the tender document and the terms & conditions contained therein should be addressed to tender Inviting Authority for a tender or relevant contact person indicated in the tender.

12. **Pre – Qualification Criteria:**

- Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.
- 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.
- OEM should be internationally reputed Branded Company.

- 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.
- The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute may only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
- **In the tender, either the Indian 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.**
- **If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf another Principal/OEM in the same tender for the same item/product.**
- **Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafide/fraudulent intent.**

### 13. Prices:

- The Prices quoted should be inclusive of basic price of an item, custom duties, packing, forwarding, freight, insurance, delivery and commissioning etc. at destination site (IIT Mandi, Mandi/Kamand). IIT Mandi is registered with DSIR, Govt. of India and is exempted from Custom /GST Exemption Certificate to this effect will be issued by IIT Mandi. **Hence, Customs/Excise Duty exempted price should be quoted.** The rates shall be firm and final. Nothing extra shall be paid on any account.
- **In case of imports/foreign supplier, the price should be quoted on ex-work price/FOB/FCA basis only. Under special circumstance (e.g. perishable chemicals), when the item is imported on CIP/CIF, please indicate CIF/CIP charges separately upto Delhi indicating the mode of shipment. IIT Mandi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport.**
- In case of imported equipment(s)/item(s), the agency commission, if any, payable in Indian rupees should be mentioned separately. **IAC shall be paid after satisfactory installation & commissioning of the goods at the destination.** For imported equipment, the Letter of Credit will be opened for the amount excluding agency commission in Indian Rupees. The firm should clearly mention the address of foreign bank in the financial bid.



- **In case of indigenous item, the vendor should clearly mention the final FOR IIT Mandi, Kamand Campus Price, as applicable in their bid.**

14. **Validity:**

The bid should be valid for acceptance up to a period of 180 Days. The Bidders should be ready to extend the validity, if required without any additional financial implications.

15. **Delivery:**

The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within 4-6 weeks of the issue of purchase order unless otherwise prescribed. If the bidder fails to deliver and place any or all the Equipments or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

16. **Installation, Training & Demonstration:**

Bidders need to provide adequate training to the nominated persons of IIT Mandi at their cost. IIT Mandi will not bear any training expenditure. The supplier is required to done the installation and demonstration of the equipment within **15 days** of arrival of materials at the IIT Mandi site of installation, otherwise the penalty clause will be the same as per the supply of material.

In case of any mishappening/damage to equipment and suppliers during the carriage of suppliers from the origin of equipment to the installation site, the supplier has to replace to it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IIT Mandi will not be liable to any type of losses in any form.

17. **Insurance:** For delivery of goods at the purchaser's premises, the Insurance shall be obtained by the supplier on **"All Risk"** basis. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. **In case of order placed on FOB/FCA basis, the purchaser shall arrange insurance. If order placed on CIF/CIP basis, the insurance should be up to New Delhi, the supplier shall arrange insurance.**

18. **Warranty Declaration:**

Bidders must give the comprehensive on-site warranty as required from the date of successful installation of Equipment against any manufacturing defects and also give the warranty declaration that *"everything to be supplied by us"*

*hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document.*

Any deviation in the material, and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified form to the satisfaction/specifications specified in the order / contract and demonstrate at their own cost.

- The Purchaser Shall Promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within **Two weeks** arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie to the Purchaser for the replacement parts/goods thereafter. The period for correction of defects in the warranty period is **Two week**. If the supplier having been notified fails to remedy the defects within **Two week**, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses without prejudice to any other rights, which the purchase may have against supplier under the contract.
  - 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.
  - After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) should be started. The AMC/CMC Charges will not be included in computing the total cost of the equipment.
19. **Performance Bank Guarantee:** A performance bank guarantee from a scheduled bank in India for an amount equal to 10% of the price for duration of two months beyond the expiry of warranty period will be taken from the supplier or Indian agent.
20. **Terms of Payment:** Payment will generally be made only after delivery and satisfactory installation, testing, commissioning etc. **This must be specified in the tender/quotation.**
- In case of imported supplies, payment (excluding Indian agency commission, if any) will be made through irrecoverable Letter of Credit in two installments. 80

% of the money will be released on submission of shipping of documents. Remaining 20 % will be released after successful installation of the instrument and submission of a performance bank guarantee for 10% of the order value from scheduled bank in India, valid for 2 months beyond the expiry of the warranty. All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.

- In case of required item quoted in INR, 80% payment will be made through E-payment after receipt of material in good condition and Remaining 20% will be released on successful installation of the instrument and on submission of a performance bank guarantee for 10% of the order value from scheduled bank in India, valid for 2 months beyond the expiry of the warranty.

21. **Tender expenses and documents:** All costs incurred by the bidder in the preparation of the tender shall be at the entire expense of the bidder.

22. **Tender Evaluation Criteria:** The technical bids will be opened and evaluated by a duly constituted committee. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened.

23. **Return of EMD:**

- The earnest money of unsuccessful bidders will be returned to them without any interest within 15 working days after awarding the contract.
- The earnest money of the successful bidder will be returned to them without any interest within 15 Days after supply of material.

24. **Manual and documentation:** All the manuals necessary for operating and servicing the equipment (including details of electronic circuits) will have to be provided along with the instrument.

25. The IIT Mandi reserves the right to cancel the tender at any stage (point of time) without assigning any reason.

26. Bidders should go through the tender terms, conditions and specifications carefully and fill in the attached compliance statement accurately and unambiguously. They should ensure that all the required documents are furnished along with the bid.

Sd/-  
**Assistant Registrar**  
**Stores & Purchase**

## **BID PARTICULARS**

1. Name of the Supplier :

2. Address of the Supplier :

3. Availability of demonstration of equipment : Yes / No

4. Tender cost enclosed: : Yes/No if yes

D.D. No. \_\_\_\_\_ Bank \_\_\_\_\_ Amount \_\_\_\_\_

5. EMD enclosed : Yes / No if Yes

D.D. No. \_\_\_\_\_ Bank \_\_\_\_\_

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry.

Name :

Address :

Telephone No. :

Fax No. :

Mobile No :

e-Mail :

Web :

< Organization Letter Head >>  
DECLARATION SHEET

We, \_\_\_\_\_ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, 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 certified 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 Vendor/ Manufacturer / Agent
1 Phone	
2 Fax	
3 E - mail	
4 Contact Person Name	
5 Mobile Number	
6 TIN Number	
7 PAN Number	
8 GST No.	
9 Kindly provide bank details of the bidder in the following format:	
a) Name of the Bank	
b) Account Number	
c) Kindly attach scanned copy of one Cheque book page to enable us to return the EMD to unsuccessful bidder	

Ref:-ENQUIRYNO:- IITMANDI/S&P/PUR-371/2019-20/13328-29/Power Electronics and Drives Items, dated 14<sup>th</sup> January, 2020

**Technical Specifications of Power Electronics and Drives items details are as under.**

**Item 1: Control Kits**

**Technical Specifications:**

<b>Item 1.1: TMS320F2812 Based DSP Controller</b>	
<b>Quantity: 10</b>	
<b>On Chip Features</b>	
1	12 Motor control PWM & 4 Individual PWM output
2	16 channel, 12 bit ADC
3	56 individually programmable GPIO lines
4	2 Quadrature encoder interface / 6 capture input
5	JTAG Interface
<b>On Chip Memory</b>	
6	128K x 16 bit flash memory
7	1K x 16 bit OTP ROM
8	14K x 16 bit SARAM
9	Boot Rom (4K x 16)
<b>On Board Memory</b>	
10	256K x 16 bit RAM can be configured as program (or) Data memory
<b>On Board DAC</b>	
11	4 Channels of 12 bit Analog output using (AD5724) with 10 $\mu$ s settling time
12	$\pm$ 5V bipolar output
13	SPI Interface
<b>On- Board Isolated USB – JTAG Emulator [JTAG Emulator (xds100V1)] Debug features</b>	
14	Emulation Connect / Disconnect, Read / write memory Read Register Load Program Run Halt, step Software & Hardware Breakpoint support Real Time Mode Support for USB full speed
<b>Power Supply</b>	
15	Input: 230V AC
16	Output : +5V/3.0A, +12V/150mA +5V/0.5 Amps for serial port isolation
<b>Item 1.2: TMS320F28335 Experimenter Kit</b>	
<b>Quantity: 05</b>	
1	TMDSCNCD28335: TMS320F28335 DIMM100 based control

	CARD
2	DIMM100 Docking Station baseboard with DIMM100 control CARD female connector
3	XDS100v1 USB-to-JTAG Debug Probe
4	Header pin access to key MCU signals
5	Board power can be provided by the provided USB cable or a 5V barrel supply
6	USB Cable – A Male to B Male
<b>Item 1.3: TMS320F28335 Based DSP Controller</b>	
<b>Quantity: 05</b>	
On Chip Features	
1	Up to 150 MHz (6.67-ns Cycle Time)
2	16 x 16 and 32 x 32 MAC Operations & Up to 18 PWM Outputs
3	Up to 6 HRPWM Outputs with 150 ps MEP Resolution
4	Up to 6 Event Capture Input & Up to 2 Quadrature Encoder Interfaces
On Chip Memory	
5	512K bytes on-chip Flash Memory
6	68K bytes on-chip RAM & 256k bytes off-chip SRAM memory (External)
On-chip ADC	
7	No of ADC input : 16 Channels
8	Resolution : 12 bit
9	Conversion rate : 80ns (max)
On-Board DAC	
10	No of DAC output : 4 Channels
11	Resolution : 12 bit
12	Settling time : 8.5 micro sec (max)
13	Analog output range : +5V (max)
14	High speed serial interface, SPI compatible
On- Board Isolated USB – JTAG Emulator [JTAG Emulator (xds100V1)] Debug features	
15	Debug features: Emulation connect/Disconnect, Read/Write memory, Read registers, Load program, Run, Halt, Step, Software & Hardware Breakpoint support, Real- Time Mode. Support for USB Full Speed (12 Mbits/s)
<b>Item 1.4: FPGA Based Controller</b>	
<b>Quantity: 10</b>	
1	Altera family cyclone – IV, Device: EP4CE30
2	8 user LEDs Switches
3	20 x 4 Alpha numeric LCD display
4	One isolated USB to serial port
5	2 limit switches are provided for General purpose usage in the software Factory configured as Increment, Decrement switches) PE & Drives Compactable Signals terminated at 34 pin FRC connector
6	34 PWM outputs are terminated at 34 pin FRC connector

7	16 motor control PWM with programmable dead band signals
8	8 captures input signals
9	1 quadrature encoder interface ADC signals terminated at 26 pin FRC Connector
10	8 channel ADC inputs
11	1 MSPS sampling Rate 4 channel DAC outputs terminated at J801 Connecto
<b>Item 1.5: SPARTAN 6 FPGA Development Board (VPE-SPARTAN 6)</b> <b>Quantity: 10</b>	
Xilinx Spartan 6 FPGA	
1	XC6SLX25-2FT256
2	24,051 logic cells
3	229kB Distributed RAM
4	936Kb Block RAM
5	38 no's of DSP48A1 Slices
6	2 Clock management Tiles
7	2 Memory controller blocks
34 Pin Header	
8	16 PWM output
9	8 Capture Inputs
On Chip Features	
10	100MHz variable clock
11	26 Pin Header ADC
12	8 channel 2 msp/s ADC- 12 bit resolution, Input range: 0 to ±5 V or 0±10V
On-Board DAC	
13	4 channel 125KHz DAC
14	12 bit resolution
15	Output range: 0 to 5 V
Interfaces	
16	JTAG programming & configuration port
17	Isolated RS232 port (USB to serial)
18	One RS232/SPI port
Expansion	
19	2 no of 20 pin box type header is provided with 36 no of 3.3V compatible I/O lines
20	USB TO JTAG PROGRAMMER compatible with Xilinx Software
<b>Item 1.6: ST CORTEX-M4 Controller Board [VSCM4]</b> <b>Quantity: 10</b>	
On Chip Features	
1	High performance 32bit ARM Cortex M4 (STM32F407VGT6 microcontroller)
2	Operating upto 168MHz
3	196Kbytes of SRAM
	1MB On-Chip Flash
Interfaces	
4	USB to Serial Interface
5	16x2 LCD Interface
6	10/100MBPS Ethernet Interface



7	IPM Interface Connector- 16PWM Lines, 8 Capture lines
8	ADC Interface Connector: 8 channel ADC, Input range 0 to 3.3V, Samplingrate: 2.4MSPS,12 bit resolution, Inputs are buffered and protected
9	2 channel DAC
<b>Item 1.7: NI myRIO student Edition</b>	
<b>Quantity: 10</b>	
Processor	
1	Processor type : Xilinx Z-7010
2	Processor speed: 667 MHz
3	Processor cores:2
Memory	
4	Nonvolatile memory: 512 MB
5	DDR3 memory : 256 MB DDR3 clock frequency : 533 MHz DDR3 data bus width : 16 bits
FPGA	
6	FPGA type: Xilinx Z-7010
Wireless Characteristics	
7	Radio mode: IEEE 802.11 b,g,n
8	Frequency band: ISM 2.4 GHz
9	Channel width : 20 MHz
10	Channels: USA 1 to 11, International 1 to 13
11	TX power :+10 dBm max (10 mW)
12	Outdoor range : Up to 150 m (line of sight)
13	Antenna directivity : Omnidirectional
14	Security :WPA, WPA2, WPA2-Enterprise
USB Ports	
15	USB host port: USB 2.0 Hi-Speed
16	USB device port: USB 2.0 Hi-Speed
Analog Input	
17	Aggregate sample rate : 500 kS/s
18	Resolution: 12 bits
19	Overvoltage protection: $\pm 16$ V
20	MXP connectors Configuration: Four single-ended channels per connector
21	Input impedance $>500$ k $\Omega$ acquiring at 500 kS/s 1 M $\Omega$ powered on and idle 4.7 k $\Omega$ powered off
22	Recommended source impedance:3 k $\Omega$ or less
23	Nominal range: 0 V to +5 V
24	Absolute accuracy: $\pm 50$ mV
25	Bandwidth: $>300$ kHz
26	MSP connector Configuration: Two differential channels Input impedance: Up to 100 nA leakage powered on; 4.7 k $\Omega$ powered off
27	Nominal range: $\pm 10$ V
28	Working voltage (signal + common mode):. $\pm 10$ V of AGND
29	Absolute accuracy: $\pm 200$ mV
30	Bandwidth: 20 kHz minimum, $>50$ kHz typical

31	Audio input Configuration: One stereo input consisting of two AC-coupled, single-ended channels
32	Input impedance: 10 k $\Omega$ at DC
33	Nominal range : $\pm 2.5$ V
34	Bandwidth: 2 Hz to >20 kHz
Digital I/O	
35	Number of lines: MXP connectors: 2 ports of 16 DIO lines (one port per connector); one UART.RX and one UART.TX line per connector MSP connector: 1 port of 8 DIO lines
Accelerometer	
36	Number of axes: 3
37	Range: $\pm 8$ g
38	Resolution: 12 bits
39	Sample rate: 800 S/s
40	Noise: 3.9 mgrms typical at 25 $^{\circ}$ C
Power Output	
41	+5 V power output: Output voltage: 4.75 V to 5.25 V Maximum current on each connector: 100 mA
42	+3.3 V power output: Output voltage: 3.0 V to 3.6 V Maximum current on each connector: 150 mA
43	+15 V power output: Output voltage: +15 V to +16 V Maximum current : 32 mA (16 mA during startup)
44	-15 V power output Output voltage: -15 V to -16 V Maximum current : 32 mA (16 mA during startup)
Power Requirements	
45	Power supply voltage range: 6 to 16 VDC
46	Maximum power consumption: 14 W
47	Typical idle power consumption: 2.6 W
Safety Standards & Electromagnetic Compatibility	
<b>Item 1.8: NI my DAQ</b> <b>Quantity: 10</b>	
Analog Input	
1	Number of channels 2 differential or 1 stereo audio input
2	ADC resolution 16 bits
3	Maximum sampling rate 200 kS/s
4	Timing accuracy 100 ppm of sample rate
5	Timing resolution 10 ns
6	Range : Analog input $\pm 10$ V, $\pm 2$ V, DC-coupled Audio input $\pm 2$ V, AC-coupled
7	Passband (-3 dB) Analog input DC to 400 kHz Audio input 1.5 Hz to 400 kHz

8	Connector type Analog input Screw terminals Audio input 3.5 mm stereo jack
9	Input type (audio input) Line-in or microphone
10	Microphone excitation (audio input) 5.25 V through 10 k $\Omega$
11	Input FIFO size 4,095 samples, shared among channels used
12	Maximum working voltage for analog inputs (signal + common mode) $\pm 10.5$ V to AGND
13	Common-mode rejection ratio (CMRR) (DC to 60 Hz) 70 dB
14	Overvoltage protection AI+ or AI- to AGND $\pm 16$ V Audio input left and right None
Analog Output	
15	Number of channels 2 ground-referenced or 1 stereo audio output
16	DAC resolution 16 bits
17	Maximum update rate 200 kS/s
18	Range1 Analog output $\pm 10$ V, $\pm 2$ V, DC-coupled Audio output $\pm 2$ V, AC-coupled
19	Connector type Analog output Screw terminals
20	Audio output 3.5 mm stereo jack AC-coupling high-pass frequency (audio output with 32 $\Omega$ load)
21	Output FIFO size 8,191 samples, shared among channels used
Digital I/O	
22	Number of lines 8;
23	DIO Direction control Each line individually programmable as input or output
24	Update mode Software-timed
25	Pull-down resistor 75 k $\Omega$ Logic level 5 V compatible LVTTL input; 3.3 V LVTTL output VIH min 2.0 V
26	VIL max 0.8 V
27	Maximum output current per line4 4 mA
General Purpose Counter/Timer	
28	Number of counter/timers 1
29	Resolution 32 bits
30	Internal base clocks 100 MHz
31	Base clock accuracy 100 ppm
32	Maximum counting and pulse generation update rate 1 MS/s
33	Default routing CTR 0 SOURCE PFI 0 routed through DIO 0 CTR 0 GATE PFI 1 routed through DIO 1 CTR 0 AUX PFI 2 routed through DIO 2 CTR 0 OUT PFI 3 routed through DIO 3 FREQ OUT PFI 4 routed through DIO 4
34	Data transfers Programmed I/O
35	Update mode Software-timed
Digital Multimeter	
36	Functions: DC voltage, AC voltage, DC current, AC current, resistance, diode, continuity
37	Isolation level 60 VDC/20 Vrms, Measurement Category I
38	Connectivity Banana jacks

39	Resolution 3.5 digits
40	Input coupling DC (DC Voltage, DC Current, Resistance, Diode, Continuity); AC (AC Voltage, AC Current)
Voltage Measurement	
41	DC ranges 200 mV, 2 V, 20 V, 60 V
42	AC ranges 200 mVrms, 2 Vrms, 20 Vrms
Current Measurement	
43	DC ranges 20 mA, 200 mA, 1 A
44	AC ranges 20 mA rms, 200 mA rms, 1 A rms
Resistance Measurement	
45	Ranges 200 $\Omega$ , 2 k $\Omega$ , 20 k $\Omega$ , 200 k $\Omega$ , 2 M $\Omega$ , 20 M $\Omega$
Diode Measurement	
46	Range 2 V
Power Supplies	
47	+15V Supply Output voltage Typical (no load) 15.0 V Maximum voltage (no load) 15.3 V Minimum voltage (full load) 14.0 Maximum output current 32 mA
48	-15V Supply Output voltage Typical (no load) -15.0 V Maximum voltage (no load) -15.3 V Minimum voltage (full load) -14.0 Maximum output current 32 mA
49	+5V Supply Output voltage Typical (no load) 4.9 V Maximum voltage (no load) 5.2 V Minimum voltage (full load) 4.0 Maximum output current 100 mA
Communication	
50	Bus interface USB 2.0 Hi-Speed
Safety Standards & Electromagnetic Compatibility	
<b>Item 1.9: High speed power Electronics Controller system</b>	
<b>Quantity: 01 each</b>	
PE-Expert 4 DSP Board (MWPE4-C6657)	
PE-Expert 4 PEV Board (MWPE4-PEV)	
PE-Expert 4 Rack (MWPE4-RACK12)	
Integrated Developed Environment (MWPE-VIEW-X)	
Optical Interface Board (MWPE-IFRX4-PRO)	
PE-Inverter 5.0kVA MWINV-5R022	

**ITEM 2: Measuring instruments**  
**Technical Specifications:**

<b>Item 2.1: Current Transducer</b>		
Quantity: 80 Nos		
<b>Sr. No</b>	<b>Parameter</b>	<b>Specification</b>
1	Primary nominal RMS current(I <sub>pn</sub> )	50A
2	Primary current measuring range(I <sub>pm</sub> )	0 to ± 70A
3	Measuring Resistance (R <sub>m</sub> )with ± 15 V	@±50A – (R <sub>m</sub> (min)-50Ω, R <sub>m</sub> (max)-160Ω)@T <sub>a</sub> =70 °C  @±70A – (R <sub>m</sub> (min)-50Ω, R <sub>m</sub> (max)-90Ω)@T <sub>a</sub> =70 °C
4	Secondary nominal RMS current(I <sub>sn</sub> )	50mA
5	Turns Ratio	1:1000
6	Supply voltage(U <sub>c</sub> )(±5%)	±12 to 15V
7	Current consumption(±2)	10(@±15V)+I <sub>s</sub> mA
8	Linearity Error	<0.15%
9	Offset current@I <sub>p</sub> =0,T <sub>a</sub> =25 °C	±0.2mA
10	Delay time@10% of I <sub>pn</sub>	<500ns
11	Delay time to 90% of I <sub>pn</sub>	<1μs
12	Frequency Bandwidth(-1dB)	DC....200kHz
<b>Item 2.2: Voltage Transducer</b>		
Quantity: 80 Nos.		
1.	Primary nominal RMS current(I <sub>pn</sub> )	10mA
2.	Primary current, measuring range(I <sub>p</sub> )	0 to ±14mA
3.	Secondary nominal RMS current(I <sub>sn</sub> )	25mA
4.	Conversion ratio	2500:1000
5.	Supply voltage(V <sub>c</sub> )(±5%)	±12 to 15V
6.	Current consumption(I <sub>c</sub> )	10(@±15V)+I <sub>s</sub> mA
7.	RMS voltage for AC isolation test,50 Hz	2.5kV
8.	Linearity	<0.2%
9.	Ambient operating temperature	0 to 70 °C
<b>Item 2.3: True RMS Digital multimeter</b>		
Quantity: 15 Nos.		
<b>Sr. No</b>	<b>Parameter</b>	<b>Specification</b>

		Max. resolution 0.01 Hz Maximum :100 kHz
8	Temperature	Accuracy $1 \pm (1.0 \% + 10)$ Max. resolution 0.1 °C Maximum :40 °C / 400 °C
9	Overvoltage category	EN 61010-1 to 1000 V CAT III EN 61010-1 to 600 V CAT IV
10	Battery life	Alkaline ~200 hours typical, without backlight

**Item 2.4: Digital multimeter**

Quantity: 14 Nos.

Sr. No	Parameter	Specification
1	AC volts (40 Hz to 500Hz)	1000V
2	DC volts	1000 V
3	AC millivolts	400.0 mV
4	DC millivolts	400.0 mV
5	Resistance (Ohms)	40.00 MΩ
6	Capacitance	1000 μF
7	Frequency	100.0 kHz
8.	Safety	IEC 61010-1, IEC61010-2-030 CAT III 600 V, CAT II 1000 V, Pollution Degree 2
	Fuse protection for current inputs	440 mA, 1000 V Fast Fuse, 11A, 1000V Fast Fuse.
8	Display (LCD)	4000 counts, updates 3/sec

**Item 2.5: Digital storage oscilloscope**

Quantity: 4 Nos.

Sr. No	Parameter	Specification
1	Channels	4 Fully Isolated & Floating Channels with External Trigger
2	Bandwidth	200MHz
3	Rise Time	≤ 2.1 ns
4	Sample Rate per Channel simultaneously	2GS/s
5	Vertical Zoom	Vertically expand or compress a live or stopped waveform
6	Max Input Voltage (1 MΩ)	300 VRMS CAT II
7	Float Voltage	600 VRMS CAT II
8	Time Base Range	2.5 ns to 50 s/div
9	Input Coupling	AC, DC, GND
10	Acquisition Modes	Peak Detect, Sample, Average, Sequence, Scan/Roll Mode
11	Trigger Modes	Auto, Normal, Single Sequence
12	Automatic Waveform	Period, Frequency, +Width, -Width, Rise

	Measurements	Time, Fall Time, Max, Min, Peak-to-Peak, Mean, Cycle RMS
13	FFT	Windows: Hanning, Flat Top, Rectangular; 2048 sample points
14	Power Measurements (Optional)	True real power in watts, Reactive Power in VAR, Power Factor, Crest Factor, RMS Measurements, Frequency Measurements, Phase Angles, Harmonics Measurements, THD, Switching-loss Measurements - Turn-on loss, Turn-off loss, Conduction Loss, total switch loss.
15	Cursors (Type, Measurements)	Voltage, Time ( $\Delta T$ , $1/\Delta T$ (frequency), $\Delta V$ , $dv/dt$ , $di/dt$ )
16	Non-Volatile Storage	Up to 2GB Flash card with Reader
17	Power	Instrument should have battery pack for 4 Hours power backup, Option should be available for 8 Hours, Instrument should work on with AC supply also with AC adaptor
18	I/O interface	RS232
19	Display	TFT Color LCD display
20	Safety	UL61010-1: 2004. CAN/CSA22.2 No. 1010.1: 2004. EN61010-1: 2001
21	Other accessories	RS-232 to USB interface cable, PC Communication software, AC Power Adaptor, Calibration Certificate and user manual
22	Warranty	Minimum 3 Years for Oscilloscope & one year for Accessories
23	Others	Vendor should be authorized distributor of the quoted model. OEM should have NABL Accredited calibration lab facility and service center in India.
<b>Item 2.6: Programmable DC Power Supply with Solar Array Simulation</b> Quantity: 1 Nos.		
1	Type	19" rack mount unit possible, Also Bench type
2	AC input	3-Phase, 400V AC, 47-63Hz
3	PV Panel Simulation DC output	Voltage: 600VDC, Current: 8.5ADC, Power: 5KW
4	PV Simulator unit should be able to program via software and hardware independently.	
5	PV Simulator unit is able to save and recall program through front panel manually.	
6	The system should have the ability to program IV Curves through software, which should be support loading of IV Curve characteristic	

	and follow the sandia lab database. It should also support custom input data including “multiple hump” Characteristics to create Complex IV Curves using series and parallel panel database characteristics.
7	Minimum 16-bit linear interpolation to generate the required IV Curve accurately. Real time analysis of PV inverters MPPT tracking and data records.
8	System should have ability to import and replay dynamic irradiance and temperature profiles for various conditions such as clear sky, partially sky, and mostly clouding conditions.
9	System should have ability to program irradiance and temperature level
10	System should have ability to program irradiance level up to 3000 w/m <sup>2</sup>
11	Built in facility for static and dynamic MPPT efficiency testing of EN50530/CGC-GF004/Sandia
12	Real world weather simulation & fast IV curve update rate up to 1 sec
13	Efficiency : 87%, Slew rate: 20V/ms, Voltage ripples: 650mVrms, Current ripples: 150mArms
14	At least 5- existing IITs or Govt. organization customer reference list with P.O copy
15	All Technical specifications should be mention in Data sheet
16	After Sales, Should have service support Center In India

**Item 2.7: Three Phase Power Analyzer.**

Quantity: 1 Nos

<b>Sr. No</b>	<b>Parameter</b>	<b>Specification</b>
1	Basic power measurement accuracy (50/60 Hz)	0.1% of reading + 0.05% of range
2	Influence of Common mode Voltage	600 V, 50/60 Hz, applied between input terminals and case: -80 dB or more (±0.01% of range or less)
3	Influence of power factor	±0.1% of apparent power for 45 Hz ≤ f ≤ 66 Hz
4	Frequency bandwidth	DC, 0.1 Hz to 100 kHz
5	Direct input Current range	6 ranges/0.5 to 20 A DIRECT INPUT
6	External current input	50/100/200/500mv/1/2V
7	Expansion of effective input range for voltage	1% to 130%



	& current (CF = 3)	
8	Simultaneous measurement of RMS, Voltage MEAN & DC	Yes
9	Frequency measurement	2 channels (voltage and current)
10	Number of display item	4 items
11	Sampling rate	100 kS/s
12	Data Update rate	100 m/250 m/500 m/1/2/5/10/20 sec, Auto
13	Harmonic measurement	Yes
14	THD calculation maximum order setting	Yes (1 to 50th)
15	General Specifications	<ul style="list-style-type: none"> <li>• Power analyzer to measure Active, reactive, apparent Power, Current, Voltage, Power Factor, Phase angle with lag / lead indication, Harmonics, THD in a single phase and three phase systems (connected either in Star / Delta) without changing the connection</li> <li>• 3 Elements with Direct input of Voltage upto 600v and Current upto 20A in minimum 5 ranges each</li> </ul> RS232 interface, USB interface, Cal. Certificate from NABL accredited laboratory <ul style="list-style-type: none"> <li>• Date update Rate minimum 100ms/250ms/500ms/1/2/5/10/20 sec, Auto.,</li> <li>• Flexible data update rate feature</li> <li>• Automatic zero adjustment for any drift in the zero level by automatically performing a zero adjustment when the input ranges are changed in less than 100 ms and without disconnecting wiring</li> <li>• Accessories:</li> </ul> Voltage (a) Measurement leads X 3 Set (b) Alligator Adapter X 3 Set Fork terminal adaptor X 3 Set

### Item 3: Power Stage Converter

#### Technical Specifications:

<b>Item 3.1: IGBT Based 2 level VSC converter stack</b>	
<b>Quantity: 2</b>	
Input AC Voltage (VAC)	415 volt
DC Voltage (VDC)	600 (Max.) volt
Output AC Voltage (VAC)	415 volt
Output Current (IAC)	30 (Max.) Amp
Output Frequency	50 Hz
Ambient Temperature (Tamb)	40 Deg C
Cooling Method	Force Air Cooled
Thermal trip	80 Deg C
<b>Item 3.2: 2 level Modified converter stack</b>	
<b>Quantity: 2 (IGBT Based-1, SiC/GaN Based -1)</b>	
Input AC Voltage (VAC)	415 volt
DC Voltage (VDC)	600 (Max.) volt
Output AC Voltage (VAC)	415 volt
Output Current (IAC)	30 (Max.) Amp
Output Frequency	50 Hz
Ambient Temperature (Tamb)	40 Deg C
Cooling Method	Force Air Cooled
Thermal trip	80 Deg C
<b>Item 3.3: Current Source Inverters</b>	
<b>Quantity: 2 (IGBT Based-1, SiC/GaN Based -1)</b>	
Input DC Voltage	750 V
Output AC Voltage	415 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.4: SiC/GaN Based Voltage source converters</b>	
<b>Quantity: 2</b>	
Input AC Voltage (VAC)	415 volt
DC Voltage (VDC)	600 (Max.) volt
Output AC Voltage (VAC)	415 volt
Output Current (IAC)	30 (Max.) Amp
Output Frequency	50 Hz
Ambient Temperature	40 Deg C

(Tamb)	
Cooling Method	Force Air Cooled
Thermal trip	80 Deg C
<b>Item 3.5: 3 level NPC Voltage source converter</b>	
<b>Quantity: 2 (IGBT Based-1, SiC/GaN Based -1)</b>	
Input DC Voltage	600 V
Output AC Voltage	415 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.6: 3 Phase 5 level cascaded inverter with isolation transformer and bridge rectifier</b>	
<b>Quantity: 2</b>	
Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.7: 3 Phase 5 level cascaded inverter with bridge rectifier</b>	
<b>Quantity: 2</b>	
Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.8: 3 Phase 7 level cascaded inverter with isolation transformer</b>	
<b>Quantity: 2</b>	
Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.9: 3 Phase 7 level cascaded inverter</b>	
<b>Quantity: 2</b>	
Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.10: 3 Phase 11 level cascaded inverter with isolation transformer</b>	
<b>Quantity: 2</b>	

Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.11: 3 Phase 11 level cascaded inverter</b>	
<b>Quantity: 2</b>	
Input DC Voltage	200 V
Output AC Voltage	130 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Thermal trip	80 Deg C
<b>Item 3.12: Matrix Converter</b>	
<b>Quantity: 2</b>	
Input AC Voltage	415 V
Output AC Voltage	415 V
Output Current (IAC)	35 Amps
Ambient Temperature	40 deg C.
Cooling Method	Forced Air
Switching Devices	IGBT

**COMPLIANCE STATEMENT FOR THE TENDER SPECIFICATION  
INDIAN INSTITUTE OF TECHNOLOGY MANDI  
SOUTH CAMPUS, Kamand – 175 075 HIMACHAL PRADESH**

**Ref:- ENQUIRYNO:- IITMANDI/S&P/PUR-371/2019-20/13328-29/Power Electronics and Drives Items, dated 14<sup>th</sup> January, 2020**

<b>Sr. No.</b>	<b>Check list of documents/ Undertakings?</b>	<b>YES/ NO</b>	<b>Remarks (Give explanation if answer is No)</b>
1	Is Tender fees attached?		
2	Is EMD attached? (if applicable)		
3	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
4	If authorised dealer, recent dated Certificate to this effect from OEM, attached or not?		
5	Undertaking from OEM regarding technical support & extended warranty period		
6	Validity of 180 days or not?		
7	Undertaking from bidder regarding acceptance of tender terms & conditions		
8	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached.		
9	Whether special educational discount for Indian Institute of Technology (IIT) Mandi (H.P) given.		
10	Whether training of operator and research students without any charges offered.		
11	<b>Does the instrument comply with all the required specifications as per annexure 1.</b>  <b>IMPORTANT: Attach a separate sheet highlighting compliances with the specifications and explanations thereto if the equipments vary from the requested specifications.</b>		
12	Whether free Installation, Commissioning and Application Training offered.		
13	Whether warranty as per requirement offered		
14	Whether Annual maintenance after expiry of comprehensive onsite warranty quoted separately as optional.		