



NATIONAL INSTITUTE OF TECHNOLOGY
RAIPUR – 492 010, CHHATTISGARH

Open (Advertised) Tender for Equipment and Associated Services towards Establishment of Internet of Things Laboratory in the Department of Computer Applications at NIT Raipur

Department: Computer Applications Department

Enquiry No: NITRR/MCA/OT/2022/1665

Date: 10/11/2022

Important Dates

To

Event	Date	Time
Last Date of submission of quotation	03/12/2022	Upto 18:00 Hrs
Technical bid Opening date	05/12/2022	At 16:00 Hrs
Price (financial) bid Opening	To be informed to technically successful bidders by e-mail and telephone.	

Dear Sir

We intend to purchase the commodities & services specified in this document and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly submit your offer with prices and complete terms within the time mentioned above through our e-tender portal www.tenderwizard.com/NITR. **Tender will be accepted online only & no other mode will be accepted.**

Registrar

National Institute of Technology, Raipur

Enclosed:

- (1) Bid Document - Instructions to bidders - containing detailed terms and conditions.
- (2) Bidder's Eligibility Criteria - Annexure 1
- (3) Acceptance of tender terms & conditions-Annexure 2
- (4) List of Goods and Services – Annexure 3
- (5) Scope of Work with Detailed Functional & Technical Specifications of Equipment– Annexure 4
- (6) Price Schedule for goods/ services being offered from India – Annexure 5
- (7) Deviation statement form - Annexure 6
- (8) Bidder information & check list – Annexure 7

BID DOCUMENT
INSTRUCTIONS TO BIDDERS

Please go through the enclosed "bid document" carefully for other bidding instructions.

1. **IMPORTANT NOTE:** Being a Two-Part Tender (techno-commercial and price bid), fax quotations will not be accepted. Please ensure your offers are received on or before tender due date and time. Bidders / Tenderers are requested to download the tender documents from our website (www.nitr.ac.in) & e-tendering portal i.e. www.tenderwizard.com/NITR and submit tender fee of amount 1180/- (inclusive of GST) through online mode in our e-tendering portal i.e. www.tenderwizard.com/NITR. **Kindly note that if any bidder wants to quote for more than one item in the tender then he has to pay tender fee only once at first and for later he will be exempted to pay tender fee for another items (have to select exempted option on payment page). If any vendor paid more than one tender fee in case of multiple items then the excess payment will not be reversed, so please be careful while submitting the bid. Please note that in this tender the bidder has to quote for all the items and associated services as per detailed technical specifications and scope of work.**

- **Quotations received without tender fee will not be considered.**
- No request for extension of the due tender date will be considered.
- In the event any date indicated above is declared as holiday, the next working day at Institute shall be considered as the due date for receiving & opening of tenders.
- The bids shall be opened on date and time as mentioned above. The bidders may send their authorized representatives to attend the bid opening, if they so desire.
- Bids received after the deadline of receipt indicated above, shall not be taken in to consideration.

(a) 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. In the event of simultaneous bidding by both Principal/OEM and Indian agent; the bid submitted by the Indian agent will not be considered.

(b) 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. In the event, an agent submits the bids on behalf of more than one Principal/OEM for the same item in same tender, then all such bids will not be considered.

2. The bid should remain valid for a period of **180 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation. Validity period may also be extended without change in bid prices, if required on mutually agreed basis only.
3. **Submission of bids: Bidders have to submit their bid through E-tendering mode only at website www.tenderwizard.com/NITR.**

4. Financial Bid (Microsoft Excel File) is to be downloaded from website www.tenderwizard.com/NITR and then is to be filled, saved and uploaded (through digital signature) on the same website and not to be submitted in hard copy at all.
5. The Financial Bid (after filling the rates) should neither be scanned & uploaded, nor, the hard copy of the same should be submitted to NIT Raipur office
6. **The complete Tender document can be viewed and downloaded only from the website (www.tenderwizard.com/NITR) & www.nitr.ac.in during the tender sale period. The intending bidders should submit the tender documents sale price & tender processing fee, through e-payment, at the time of making online request.**
7. Complete tender papers, duly accompanied with receipts of e-payment of tender cost, EMD shall be received online as per date and time mentioned. Tender shall be opened through E-tendering systems, in the presence of bidders or their authorized representatives.
8. Complete tender documents must be submitted as per schedule **through E-Tendering mode only at website www.tenderwizard.com/NITR.**
9. Tenderers are advised to complete all submission related work well before Time and Date for submission of tender online. Any request for modification in the time/date of submission of tender due to tenderer's failure to submit his offer, will not be accepted.
10. **To participate in the E-tender, it is mandatory for the bidders to have user ID & password, which has to be obtained by submitting an annual registration charges of Rs. 2000/- + GST @ 18% to ITI, through e-payment. Also it is mandatory for all bidders to have class 3 digital signature certificates from any of the CCA (Controller of Certifying Authority, India) or if any support required on DSC, Please contact Helpdesk No. 011-49424365.**
11. The bid along with necessary documents should be uploaded only on the www.tenderwizard.com/NITR portal as per guidelines mentioned in the portal. Tenders have to be submitted only online at <https://www.tenderwizard.com/NITR> . All documents in support of eligibility criteria and technical compliance, etc. are also to be scanned and uploaded along with the tender documents. Tender sent by any other mode will not be accepted.
12. **PRE-BID SITE SURVEY:**
The pre-bid site survey is mandatory. If the firm does not conduct the pre-bid site survey, then its bid shall not be considered. Pre-bid site survey is to be carried out on the 7th day or immediate next working day (if the 7th day happens to be a holiday) from the date of this advertisement (which is considered as 1st day).
13. **PRE-BID QUERIES:**
If a bidder has any technical queries then email can be sent to iotlab.mca@nitrr.ac.in. In case of any commercial queries, email can be sent to storenpurchase@nitrr.ac.in, asstreg.str@nitrr.ac.in. No queries will be entertained after the 15th day from the date of this advertisement (which is considered as 1st day).
14. **Amendment of Bidding Documents**
 - o Corrigendum and/or Addendum, if any, for the tender, shall form part of the Tender Document. All Corrigendum and/or Addendum will be posted on NIT Raipur website

(www.nitr.ac.in) & www.tenderwizard.com/NITR portal. Bidders/Tenderers are requested to visit NIT Raipur website regularly and note the corrigendum and/or addendum and/or other amendments to the tender without fail and submit their offer accordingly. NIT Raipur will not be responsible for ignorance of an issued corrigendum and/or addendum and/or amendment.

- o At any time prior to the deadline for submission of bids, the Institute may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder/Tenderer, modify the bidding documents by amendment. The same would also be posted on the website of the Institute and all prospective bidders/tenderers are expected to surf the website before submitting their bids to take cognizance of the amendments. Bidders/Tenderers who have submitted their bids before publishing the amendment may revise their bid incorporating the amendments before the last date of tender.
- o In order to allow prospective Bidder/Tenderers reasonable time in which to take the amendment into account in preparing their bids, the Institute, at its discretion, may extend the deadline for the submission of bids and post the revised date on the website of the Institute.

15. **Custom duty:** NIT Raipur has registration in Department of Scientific & Industrial Research (DSIR).

16. **Bid Security / Earnest Money (EMD)**

The Bidder/Tenderer shall furnish, as part of its bid, a bid security. **The EMD/Bid security should be submitted online only through e-tendering portal i.e. www.tenderwizard.com/NITR.** The EMD amount to be submitted will be INR 1,60,000/- or the bidder needs to submit a valid MSME certificate or a bid securing declaration on affidavit on INR 100 stamp paper.

In the case of foreign bidders/tenderers, the bid security shall be submitted either by the principal or by the Indian agent and in the case of indigenous bidders/tenderers, the bid security shall be submitted by the manufacturer or their specifically authorized Dealer/Bidder/Tenderer.

- The bid security shall be in Indian Rupees & should be paid only through e-payment in tenderwizard portal i.e. www.tenderwizard.com/NITR.
- The bid security should be submitted in its original form. Copies shall not be accepted.
- Any bid without EMD or bid not secured in accordance with above will be rejected by the Institute as non-responsive.
- The bid security of unsuccessful Bidder/Tenderer will be discharged/returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity or placement of order whichever is later.
- The successful Bidder/Tenderer's bid security will be released within one month of submission of PBG.
- **The firms registered with DGS&D & NSIC, MSME if any, are exempted from payment of bid security provided such registration includes the goods and services they are offering.**
- **The firm must ensure their eligibility for exemption from submission of EMD &**

Tender Fee, in case of submission of EMD & Tender Fee Exemption Certificate i.e., NSIC, MSME etc. If the exemption certificate is not found suitable for exemption then the bid will not be considered in any case.

- In place of a bid security or EMD, the bidder can sign a bid securing declaration accepting that if they withdraw or modify their bids during the period of validity, or if they are awarded the contract and they fail to sign the contract, or to submit a performance security before the deadline defined in the request for bids document, they will be suspended for two years from being eligible to submit bids for contracts with the Institute.
- **The bid security may be forfeited** if a Bidder/Tenderer withdraws or amends or impairs or derogates its bid during the period of bid validity specified by the Bidder/Tenderer on the Bid Form.

17. Sealing and Marking of Bids:

In a two-bid system All Bidders/Tenderers are requested to follow carefully the following instructions before preparing their offer.

Part I: Technical & Commercial Bid

Part - (a) Technical

- i. This part should contain detailed specifications of the items quoted by you along with technical literature, datasheets, manuals, guides, brochures, leaflets, etc.
- ii. A compliance statement showing the compliance of the item quoted by you with that of the item tendered by us should be prepared and enclosed to this.
- iii. Any other information called for in the tender related to technical and commercial specifications can also come in this part.
- iv. **Prices should not be implicitly or explicitly indicated in Part-(a) Technical.**

Part - (b) Commercial terms: (Without Price)

- i. The commercial terms applicable for the items quoted by you should be indicated in this part.
- ii. If any compliance statement is called for the commercial terms/contractual terms and conditions, the same is to be attached in this part.
- iii. ***Prices should NOT be indicated in Part-(b) Commercial. However, a copy of the price bid (without prices) must be enclosed in this part to enable to understand whether all the items required to be quoted by you have been quoted in the price bid.***
- iv. The Commercial terms such as delivery terms, delivery period, payment terms, warranty, validity of the offer, installation & commissioning, duties and taxes etc., shall come into this.
- v. The required EMD should be enclosed.
- vi. The Tenderer / Bidder need to submit the following certificates along with the Tender Documents to confirm their eligibility in this part :
 - Proof of establishment of firms/shop/business/Goods & Service Tax registration in REG-06 Format certificate should be enclosed.
 - Proof of registration with any other central government organization (if applicable)
 - Photocopies of purchase orders received from any central govt. organization to the firm if the same is applicable and if it is required.
 - The bidder should enclosed proof of turnover by way of Audited Balance Sheet/Auditor's certificate if the same is applicable and if it is required.
 - The bidder should enclosed Photocopy of PAN card issued in the name of the bidder's firm.
 - All the supporting documents as required in Annexure – 1 under Bidder's Eligibility Criteria.

Note:

- Technical Specifications and terms & conditions as above should be very clearly reflected item-wise with reference to the items called for in the tender.
- Please note that the PRICE SHOULD NOT BE indicated in this part.
- **The bidders must have to upload acceptance of tender terms & conditions duly sealed & signed in e-tendering portal (As per Annexure-2).**
- **The bidders must have to upload compliance sheets in the format mentioned under Scope of Work with Detailed Functional & Technical Specifications of Equipment (As per Annexure-4)**

Part II: Price Bid

(Format in Annexure – 5)

The prices applicable for the items, item-wise in response to the tender shall come into this part in the prescribed format only. ***Bid will be rejected if rates are not quoted in the prescribed format.***

- i. Tenderer shall indicate very clearly item-wise prices with reference to their technical offer.
18. The bidders should quote their offer / rates in clear terms without ambiguity.
19. In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
20. Each bidder shall submit only one bid. A bidder who submits more than one bid, shall be disqualified and considered non-responsive.

21. Bid Prices

- (i) The Bidder / Tenderer shall indicate **unit prices in the prescribed format only**.
- (ii) Prices indicated on the price-schedule form shall be entered separately in the following manner:

(a) For Goods being offered from India in INR

- i. The price of the goods/ services quoted should be FOR NIT RAIPUR inclusive of all taxes(GST, Custom etc), charges for inland transportation, insurance and other local services required for delivering the goods at the desired destination as specified in the price schedule form, installation, commissioning, training charges etc, if any. **(Annexure 5)**
22. Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.

23. Responsiveness of Bids

- (i) Prior to the detailed evaluation, the Institute will determine the substantial responsiveness of each bid to the bidding documents. For purposes of this clause, a substantive responsive bid is one, which conforms to all terms and condition of the bidding documents without material deviations, reservations or omissions. A material deviation, reservation or omission is one that:
 - (a) affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or

- (b) limits in any substantial way, inconsistent with the Bidding Documents, the Institute's rights or the Bidder/Tenderer's obligations under the Contract; or
 - (c) if rectified, would unfairly affect the competitive position of other bidders/tenderers presenting substantially responsive bids.
- (ii) The Institutes' determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- (iii) If a bid is not substantially responsive, it will be rejected by the Institute and will not subsequently be made responsive by the Bidder/Tenderer by correction of the material deviation, reservation or omission.

24. Evaluation and comparison of bids

- (i) The Purchaser shall evaluate each bid that has been determined, up to this stage of the evaluation, to be substantially responsive.
- (ii) To evaluate a Bid, the Purchaser shall only use all the factors, methodologies and criteria defined below. No other criteria or methodology shall be permitted.
- (iii) The bids shall be evaluated on the following basis which shall be arrived as under:

For goods being offered from India.

Goods and/or services price shall be calculated FOR NIT Raipur. The lowest bid (i.e., the L1 bid) will be decided by the price of the goods and/or services quoted FOR NIT RAIPUR inclusive of all taxes (GST & Custom Duty, etc), charges for inland transportation, installation, commissioning, training charges, insurance and other local services required if any for delivering the goods at the desired destination as specified in the price schedule / price bid format.

Note: Bidders are required to quote all-inclusive unit prices of the goods and/or services which shall include the packing, forwarding, freight, transportation, insurance charges, etc. in accordance with the price bid format / template. Government taxes need to be mentioned separately as mentioned in the price bid format / template.

25. The Institute reserves the right to conduct pre-dispatch inspection of goods and the vendor must facilitate it at NIT Raipur's cost for pre-dispatch inspection.
26. **Warranty:** The warranty for all the equipment shall be 1 year from the date of supply.
27. **Terms of Payment:** 100% payment on completion of supply and/or service. If supply or service will be done in different consignment than the payment will be done accordingly with the recommendation of the department.

Note:

- 1. The nomenclature used for the item description in the invoices(s), and the delivery challan etc. should be identical to that used in the contract.
- 2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.

28. **Performance Security:** The successful bidder has to furnish "Performance Security of 5% of the ordered value in Indian Rupee", in the form of Account Payee Demand Draft, / Fixes deposit and/or Payment withheld and / or online payment and/or unconditional Bank guarantee en-cashable on demand from the Director, NIT, Raipur, from a nationalized Bank with validity period of sixty (60) days beyond the date of completion of all contractual obligations of supplier including guarantee/ warranty obligations. The Performance Security is to be furnished in favor of the Director, National Institute of Technology, Raipur, within ten days of intimation, failing which his bid security will be forfeited.

The performance security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations.

29. **Delivery period:** Delivery of items should be made within **150 days** from the date of order of placement.

30. **Releasing request for EMD/Bid Security and Performance Bank Guarantee (PBG):-**

- (i) Request for releasing of EMD should be addressed to Store and Purchase Section at NIT Raipur and will be released after checking the required compliances for releasing.
- (ii) Request for releasing of Performance Bank Guarantee after expiry of the validity of the PBG should be addressed to the Head of concerned department with copy of Purchase order and other relevant details.

31. **Delayed delivery (Liquidated damages):**

Any delay by the contractor/bidder in the performance or the delivery obligations shall render him/her liable to any of the following penalties:

- a) In the event of contractor's failure to supply the said items of acceptable quality and specifications within the original delivery period given in the purchase order, NIT Raipur shall be at liberty to recover liquidated damages to be levied @ 0.5% of the order value per week or part thereof subject to a maximum of 10% of the total order value.
- b) Forfeiture/encashment of the performance bank guarantee/earnest money.
- c) Liquidated damages shall be calculated on the total contract value comprising of value of complete equipment and installation & commissioning charges for a site. The supply shall be taken as complete only after the last installment of supply has been made.
- d) After a delay of more than 8 weeks, NIT Raipur reserves the right to cancel the purchase order and buy the items from any other vendor, at bidder's risk and cost. Any losses caused to NIT Raipur on this account shall be recoverable from bidder.
- e) In case of delay due to site not ready condition / delay in customs etc. which cannot be reasonably attributable to the system integrator then in such condition LD shall not be imposed. However, prior information has to be provided for the same.
- f) If the payment due against a phase extends beyond 30 days for reasons which cannot be reasonably attributable to the system integrator, the period beyond this till realization of payment will not be counted towards imposition of liquidated damages.

32. **Installation time:** The system integrator must perform the supply, installation and configuration, etc. as needed within 150 days from the date of purchase order failing which order may be cancelled and EMD may be forfeited. However, necessary requirement for

installation of goods/equipment like power, network, etc. will be provided by institute.

33. **Copy Right:** The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
34. **Right to use Defective Goods:** If after delivery, acceptance, 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.
35. **Site preparation and installation:** The Purchaser is solely responsible for the construction of the equipment sites in compliance with the technical and environmental specifications defined by the Supplier. The Purchase will designate the installation sites before the scheduled installation date to allow the Supplier to perform a site inspection to verify the appropriateness of the sites before the installation of the Equipment, if required. The supplier shall inform the purchaser about the site preparation, if any, needed for installation, of the goods at the purchaser's site immediately after notification of Award / Purchase Order / Agreement.
36. **Force Majeure:**
If at any time, during the continuance of this contract, the performance in whole or in part by either party or any obligation under this contract shall be prevented or delayed by reason of any war, or hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics and pandemics, quarantine restrictions, strikes, lockouts or act of God (hereinafter referred to as events) provided notice of happenings of any such eventuality is given by either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event be entitled to terminate this contract nor shall either party have any such claim for damages against the other in respect of such nonperformance or delay in performance, and deliveries under the contract shall be resumed as soon as practicable after such event may come to an end or cease to exist and the decision of the purchaser as to whether the deliveries have been so resumed or not shall be final and conclusive provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 90 days either party may at his option, terminate the contract provided also that if the contract is terminated under this clause, the Purchaser shall be at liberty to take over from the Successful Tenderer at a price to be fixed by the purchaser with mutual consent which shall be final all unused, undamaged and acceptable materials bought out components and stores in course of manufacture in possession of the Successful Tenderer at the time of such termination of such portions thereof as the purchaser may deem fit excepting such materials bought out components and goods as the Successful Tenderer may with the concurrence of the Purchaser select to retain.
37. **Defective Equipment:**
(i) If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, unmerchantable or not in accordance with the description /specification or otherwise faulty, the institute will have the right to reject the equipment or its part. The prices of such equipment

shall be refunded by the Tenderer with 18% interest if such payments for such equipment have already been made to him.

- (ii) 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 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges.

38. Any disputes arising out of this enquiry shall be dealt in the Raipur jurisdiction.
39. Bidder has to sign all the pages of this tender and enclose it with the bid

Registrar
NIT-Raipur

List of Annexure

1. Bidder's Eligibility Criteria – Annexure 1
2. Acceptance of tender terms & conditions-Annexure 2
3. List of Goods and Services – Annexure 3
4. Scope of Work with Detailed Functional & Technical Specifications of Equipment– Annexure 4
5. Price Schedule for goods being offered from India – Annexure 5
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7. Bidder information & check list – Annexure 7

Annexure 1

1.0 BIDDER'S ELIGIBILITY CRITERIA

S. No.	Description of Parameters	Supporting Document	Compliance (Yes/No)
1	The bidding firm should be registered under the Indian Companies Act, 1956 and/or any subsequent amendment(s) thereof	Signed and Sealed Copy of Registration Certificate & GST Registration Certificate	
2	The bidding firm must provide organization details such as PAN and GST registration certificates	Signed and Sealed Copy of necessary certificates	
3	The bidding firm must be ISO 9001:2015 certified	Signed and Sealed Copy of ISO certification	
4	The bidding firm must declare that there is no lawsuit pending against the Proprietor/Partners/Directors and the company has not been blacklisted in the last 5 years or in the period of its existence, if less than 5 years	Affidavit on Rs. 100/- Stamp Paper	
5	The IoT Cloud Platform (comprising of rack mount server and storage with virtualization as mentioned in the technical specifications) quoted should not be declared End of Life at the time of delivery and the manufacturer(s) should support the products quoted for at least 5 years	A letter on manufacturer(s) letterhead to this extent should be attached	
6	The IoT Cloud Platform and Gateways should be from ISO 9000 certified manufacturers.	Documentary proof of ISO certification should be provided	
7	The manufacturers should have local TAC (Technical Assistance Centre) based in India for offering post-sales technical support	TAC addresses of manufacturers of servers and interconnection switches should be provided by the bidder	
8	The bidding firm should be authorized by the manufacturer(s) of the IoT Cloud Platform for participation in this tender	Manufacturer(s) authorization certificate containing reference to this tender on his letterhead	
9	In case End-Customer demands for an Onsite demonstration, the bidder must comply with the requirements of Proof of Concept as detailed in Scope of Work.	Undertaking for the same should be provided along with declaration that the bid shall be disqualified if the PoC fails.	

Annexure 2

Acceptance of terms & conditions of tender (Must be on Letter Head)

Date:

To,

The Registrar,

National Institute of Technology, Raipur-492010(Chhattisgarh)

Subject: Acceptance of Terms & conditions of Tender.

Tender ref.No.: NITRR/MCA/OT/2022/1665

Dated 10/11/2022

Dear Sir,

1. I/We have downloaded/obtained the tender document(s) for the above mentioned Tender enquiry no. from the website www.tenderwizard.com/NITR or www.nitr.ac.in.
2. I/We hereby certify that I/we have read entire terms & conditions of the tender documents from Page 01 to 35 (including all documents like annexure, schedules etc.) which form part of the tender document and I/we shall be abide by the terms & conditions/clauses contained therein.
3. The corrigendum(s) issued from time to time by NIT Raipur to have also been taken into consideration, while submitting this acceptance letter.
4. I/We hereby unconditionally accept the tender conditions of above mentioned tender document(s)/corrigendum(s) in totality/entirely.
5. In case any provisions of this tender are found violated, NIT Raipur shall be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely and we shall not have any claim/ right against NIT Raipur in satisfaction of this condition.
6. I/We confirm that we or our proprietor/Director/Partner have not been blacklisted or debarred or declared ineligible for corrupt/fraudulent practices either indefinitely or for a particular period of time by any Government or other agency. I/we further declare that no criminal case is registered on pending against the firm/company or its owner/partners/directors anywhere in India. Also there are no contractual restrictions or legal disqualifications or other obligations which prohibit the applicant from entering into tender process.

(Seal & Signature of the bidder)

Annexure 3

List of Goods or Services to be Procured under Tender

S. No.	Name of Goods or Services	Quantity
1.	Development and Prototyping Tools – Hardware Toolkit	5 Nos.
2.	Development and Prototyping Tools – PCB Design, Development and IDE/Cross Compilers	5 Nos.
3.	Development and Prototyping Tools – Hardware Development Boards/Kits/Single Board Computers	10 Nos.
4.	Spectrum Analyzer for IoT	2 Nos.
5.	IoT sensor kits	10 Nos.
6.	Fully equipped electronic workbench set for IoT	3 Nos.
7.	Fully functional IoT systems	1Nos.
8.	Rapid prototyping machine for IoT projects	1 Nos.
9.	Airborne platform for IoT	2 Nos.
10.	Rackmount server with virtualization for IoT based DAQ and analysis	1 No.
11.	Rackmount storage with virtualization for IoT data storage	1 No.
12.	Advanced Multipurpose Computer Systems	5 Nos.

Annexure 4

Scope of Work with Detailed Functional & Technical Specifications of Equipment

SCOPE OF WORK:

Bidder is required to establish a fully functional IoT lab which shall comprise of comprehensive setup capable of rapid prototyping to deployment for end-client use.

The bidder's eligibility criteria is mentioned in Annexure 1. Bidders shall ensure compliance with all the clauses mentioned in the bidder's eligibility criteria and submit the supporting documents accordingly.

A detailed schedule of supplies & services has been provided in Annexure 3.

The IoT lab setup shall feature electronic work benches for electronic prototyping work. Each workbench shall comprise of electronic workbench console which will be equipped with hardware toolkit, a design & engineering station (a.k.a. advanced multipurpose computer system) with necessary development and prototyping software tools for PCB design, development and IDE/cross compilers, instruments for electronic testing & validation, and complete provision of electrical, IT network and multi-display setup.

The workbench shall provide all the pre-requisites for starting a IoT product/project development independently. Bidders may note that they shall be responsible for the supply and installation of the workbenches as the lab shall be equipped with minimum 05 sets of such workbenches to support at least 5 projects simultaneously.

Bidder shall also be required to supply the latest generation of hardware development boards/kits including MCU/SBC/SoC boards and the sensor kits towards development of hardware and software/algorithms implementation for the middle-tier of IoT projects.

Bidder shall also be required to supply spectrum analyzer units which are an important test and measurement unit for IoT project design and development..

Bidders shall also be required to supply industrial grade rapid prototyping 3-Axis FDM based printer machine for swift development of various designs, models, machines parts, enclosure, and internal/external project specific components.

The scope of the implementation also includes supply of do-it-yourself kits of various projects (a.k.a. fully functional IoT systems) with support and training. The bidders are instructed to submit a summary of every project kit which shall include brief description of project, schematics, bill of components at minimum, as proof of understanding of concept.

Bidders shall be required to supply airborne platform for IoT related aerial telemetry etc.

A fully functional IoT cloud platform comprising of compute server and storage shall be provisioned for the implementation of projects on such platform. The IoT cloud platform shall support various levels of device identification, protocol integration, visualization, and reporting at the minimum.

The component wise detailed technical and functional specifications have been provided below in “**Detailed Functional & Technical Specifications of Equipment**” segment for further reference. Bidders shall ensure compliance with all the clauses mentioned in the detailed technical and functional

specifications and submit the documents including datasheets, etc. in support of their claims accordingly which can also be checked independently by the institute.

During the technical evaluation phase, the technically qualified bidders may be asked with prior notification from NIT Raipur to demonstrate the equipment/products quoted against the tender and its compliance to the technical specifications / features during the technical evaluation stage of the tender. All the required hardware / software and other infrastructure should be sourced by bidder and /or manufacturer at their own cost. Specific details of the proof of concept demonstration shall be communicated later. The successful qualification of proof of concept demonstration does not guarantee any order confirmation from NIT Raipur and the bidder shall be required to conduct the same with no time & cost implication to NIT Raipur.

DETAILED FUNCTIONAL & TECHNICAL SPECIFICATIONS OF EQUIPMENT:

1. Development and Prototyping Tools – Hardware Toolkit

S. No.	Description of Functional/Technical Parameters	Compliance (Yes/No)
1.	The bidder shall quote reputed make hardware toolkits. The detail of the toolkit is mentioned as following, each toolkit shall have a storage bag/bin.	
2.	One unit of Toolkit shall comprise of: 1. Soldering Station – 01 Nos. 2. Hot air blower – 01No. 3. Hot plate SMD soldering system – 01No. 4. Mechanical Tool Set – 01No. (Hammer, Hexsaw, Cutter, Wire Stripper, Plier, Screwdriver Set -- 01Nos). 5. Digital Microscope for SMD activities – 01 No.	
3.	The bidders must supply the Digital Microscope complying to following functional specifications. • HD resolution with local LCD/LED screen-based display, adjustable Led Lights for illumination & Metal Stand. • Min. 100xMagnification with Precision Focus • Connects with PC via USB Cable • Built-in MicroSD card Slot for storage & Rechargeable Battery	

2. Development and Prototyping Tools – PCB Design, Development and IDE/Cross Compilers

S. No.	Description of Functional/Technical Parameters	Compliance (Yes/No)
1.	The bidder shall supply the following softwares/ Design frameworks as part of PCB Design, Development package. One unit shall comprise of the following.	
2.	1 no. Annual subscription license of EagleCAD/P-CAD/Altium and Keil/Microchip Studio/STM32 Cube IDE The design station shall be supplied and installed with Arduinio IDE, Thonny IDE	

	, ESP-IDF at minimum Dual Boot Windows 10Pro - 64Bit and CentOS/Ubuntu The design station shall be supplied installed with Tensorflow, Microsoft Cognitive Toolkit, Apache MXNet	
3.	Installation and commissioning of the same is in the scope of the bidder.	

3. Development and Prototyping Tools – Hardware Development Boards/Kits/Single Board Computers {Please note, the following list of items shall comprise to constitute 1 Set of Hardware Development Boards/Kits/Single Board Computers}.

S. No	Details of Components/Items	Set Details
1.	8-Bit MCU Boards (Type-1) – 1No	1 Set of Development and Prototyping Tools – Hardware Development Boards/Kits/Single Board Computers
2.	8-Bit MCU Boards (Type-2) – 1No	
3.	8-Bit MCU Boards (Type-3) – 1No	
4.	32-Bit ARM BASED MCU Boards – 1 No	
5.	32-Bit Multi Core MCU Boards – 1no	
6.	Display Modules – Alpha-numeric LCD (16x2) - 2 Nos.	
7.	Display Modules – Alpha-numeric LCD (20x4) - 2 Nos	
8.	Display Modules – 7 Segment Numeric Display - 2 Nos.	
9.	Display Modules – Graphical OLED Display - 2 Nos	
10.	Display Modules –Intuitive Touch LCD Display - 2 Nos	
11.	Type-4 Module - 1 No.	
12.	Type-5 Module - 1 No.	
13.	Type-6 Module - 1 no.	
14.	Type-7 Module - 1 No.	
15.	Type-8 Module - 1 No.	

3.1 8-Bit MCU Boards (Type-1)

S. No	Description of Specifications			Compliance (Yes/No)
1.	Processor: 8-bit RISC-based microcontroller or better			
2.	Pins	Built-in LED Pin	13	
		Digital I/O Pins	14	
		Analog input pins	6	
		PWM pins	6	
3.	Communication	UART	Yes	
		I2C	Yes	
		SPI	Yes	
4.	Power	I/O Voltage	5V	
		Input voltage (nominal)	7-12V	
		DC Current per I/O Pin	20 mA	
		Power Supply Connector	Barrel Plug	

5.	Clock speed	Main Processor	8-Bit RISC, 16 MHz Clock Speed	
		USB-Serial Processor	with 16 MHz Clock Speed	
6.	Memory	2KB SRAM, 32KB FLASH, 1KB EEPROM		

3.2 8-Bit MCU Boards (Type-2)

S. No	Description of Specifications			Compliance (Yes/No)
1.	Processor: 8-bit RISC-based microcontroller or better			
2.	Pins	Built-in LED Pin	13	
		Digital I/O Pins	14	
		Analog input pins	8	
		PWM pins	6	
3.	Communication	UART	RX/TX	
		I2C	A4 (SDA), A5 (SCL)	
		SPI	D11 (COPI), D12 (CIPO), D13 (SCK). Use any GPIO for Chip Select (CS).	
4.	Power	I/O Voltage	5V	
		Input voltage (nominal)	7-12V	
		DC Current per I/O Pin	20 mA	
5.	Clock speed	8-Bit RISC, 16 MHz Clock Speed		
6.	Memory	2KB SRAM, 32KB flash 1KB EEPROM		

3.3 8-Bit MCU Boards (Type-3)

S. No	Description of Specifications			Compliance (Yes/No)
1.	Processor: 8-bit RISC-based microcontroller or better			
2.	Pins	Built-in LED Pin	13	
		Digital I/O Pins	54	
		Analog input pins	16	
		PWM pins	15	
3.	Communication	UART	Yes, 4	
		I2C	Yes	
		SPI	Yes	
4.	Power	I/O Voltage	5V	
		Input voltage (nominal)	7-12V	
		DC Current per I/O Pin	20 mA	
		Supported battery	9V battery	
		Power Supply Connector	Barrel Plug	
5.	Clock speed	Main Processor	8-Bit RISC, 16 MHz Clock Speed	
		USB-Serial Processor	ATmega16U2 16 MHz	
6.	Memory	8KB SRAM, 256KB FLASH, 4KB EEPROM		

3.4 32-Bit ARM BASED MCU Boards

S. No	Description of Specifications	Compliance (Yes/No)
1	32-Bit RISC MCU based on ARM Cortex M Series Processors	
2	Feature a full set of single-cycle DSP instructions.	
3	Operating Frequency: 168MHz, 210 DMIPS/1.25 DMIPS/MHz.	
4	Operating Voltage: 1.8V-3.6V.	
5	Package: LQFP100 Storage Resources: 512kB Flash, 192+4kB SRAM.	
6	Resource: 3 x SPI, 3 x USART, 2 x UART, 2 x I2S, 3 x I2C; 1 x FSMC, 1 x SDIO, 2 x CAN; 1 x USB 2.0.	
7	FS/HS Controller(with DMA); 1 x USB HS ULPI; (used for external USB HS PHY) 1 x 10/100 Ethernet.	
8	MAC; 1 x 8 to 12-bit parallel camera interface; 3 x AD(12 bit, 1us), 2 x DA(12 bit).	

3.5 32-BIT MULTI CORE MCU Boards

S. No	Description of Specifications	Compliance (Yes/No)
1.	Processor - 32Bit RISC based SoC 7-stage pipeline to support the clock frequency of up to 160/240 MHz • 16/24-bit Instruction Set provides high code-density • Support for Floating Point Unit • Support for DSP instructions, such as a 32-bit multiplier, a 32-bit divider, and a 40-bit MAC • Support for 32 interrupt vectors from about 70 interrupt sources The single-/dual-CPU interfaces include: • Xtensa RAM/ROM Interface for instructions and data • Xtensa Local Memory Interface for fast peripheral register access • External and internal interrupt sources • JTAG for debugging	
2.	Memory Details 448 KB of ROM for booting and core functions. 520 KB of on-chip SRAM for data and instructions. 8 KB of SRAM in RTC, which is called RTC FAST Memory and can be used for data storage; it is accessed by the main CPU during RTC Boot from the Deep-sleep mode.	
3.	Crystal oscillator External : 2 MHz ~ 60 MHz	
4.	Power Supply : VIN 5V, 1A	
5.	Interfaces 34 × programmable GPIOs • 12-bit SAR ADC up to 18 channels	

	• 2 × 8-bit DAC • 10 × touch sensors • 4 × SPI • 2 × I2S • 2 × I2C • 3 × UART • 1 host (SD/eMMC/SDIO) • 1 slave (SDIO/SPI) • Ethernet MAC interface with dedicated DMA and IEEE 1588 support • TWAI®, compatible with ISO 11898-1 (CAN Specification 2.0) • RMT (TX/RX) • Motor PWM • LED PWM up to 16 channels • Hall sensor	
6.	The radio module consists of the following blocks: 2.4 GHz receiver 2.4 GHz transmitter bias and regulators balun and transmit-receive switch clock generator	
7.	Operating temperature range : -40 to 100 degrees Celsius	

3.6 Display Modules – Alpha-numeric LCD (16x2)

S. No	Description of Parameters	Compliance (Yes/No)
1.	The operating voltage of this LCD is 4.7V-5.3V	
2.	It includes two rows where each row can produce 16-characters.	
3.	The utilization of current is 1mA with no backlight	
4.	Every character can be built with a 5×8 pixel box	
5.	The alphanumeric LCDs alphabets & numbers	
6.	Is display can work on two modes like 4-bit & 8-bit	
7.	These are obtainable in Blue & Green Backlight	
8.	It displays a few custom generated characters	

3.7 Display Modules – Alpha-numeric LCD (20x4)

S. No	Description of Parameters	Compliance (Yes/No)
1.	The operating voltage of this LCD is 4.7V-5.3V	
2.	20 characters wide, 4 rows	
3.	Black text on the Blue background	

4.	Single LED backlight included can be dimmed easily with a resistor or PWM.	
5.	Can be fully controlled with only 6 digital lines! (Any analog/digital pins can be used)	

3.8 Display Modules – 7 Segment Numeric Display

S. No	Description of Specifications	Compliance (Yes/No)
1.	7 segment LED Display has 4 digits which are controlled by TM1637 Driver Chip	
2.	4 Bits 7 Segment LED Display Module	
3.	Input Voltage: 3.7 to 5.3 V	
4.	Driver Chip: MAX7219	
5.	Pin Configuration : GND – GND Vcc – 5V DIO – D2 CLK – D3	

3.9 Display Modules – OLED Display

S. No	Description of Parameters	Compliance (Yes/No)
1.	0.96" OLED Display Module – SPI/I2C – 128×64 – 7 Pin	
2.	Driver IC: SSD1306	
3.	Resolution: 128 x 64	
4.	Visual Angle: >160°	
5.	Input Voltage: 3.3V ~ 6V	
6.	Only Need 2 I/O Port Control	
7.	Pixel Color: Blue	
8.	No need of the backlight	
9.	The display is self-illuminating	
10.	Power requirement is low	
11.	They are offering the large viewing angle	
12.	Full Compatible with Arduino	
13.	Factory configured for SPI protocol (can easily change to IIC)	
14.	Better performance characteristics than traditional LCD and LED displays.	
15.	Only Need 2 I/O Port Control	

3.10 Display Modules – LCD Display

S. No	Description of Parameters	Compliance (Yes/No)
1.	800x480 hardware resolution, configurable by software (up to 1920x1080).	
2.	Capacitive touch control.	

3.	Supports popular mini PCs such as Raspberry Pi, Jetson Nano, BB Black, Banana Pi, as well as general desktop computers.	
4.	When works with Raspberry Pi, supports Raspbian/Ubuntu/Kali/RetroPie/WIN10 IOT, driver free.	
5.	When working as a computer monitor, supports Windows 10/8.1/8/7, five-points touch, and driver free.	
6.	Supports popular game consoles like Microsoft XBOX360, Sony PS4, and Nintendo Switch, etc.	
7.	Multi-languages OSD menu, for power management, brightness/contrast adjustment, etc.	
8.	3.5mm audio jack, speaker connector, supports HDMI audio output.	
9.	Also supports VGA input.	

3.11 Type-4 Module

S. No	Description of Specifications	Compliance (Yes/No)
1.	Programmable versions with onboard microprocessor enable custom ZigBee application development	
2.	ZigBee Module shall utilizes EM357 transceiver with Integrated, Wire Antenna	
3.	Protocol	Zigbee®
4.	RF Standard	802.15.4
5.	Frequency (ISM Band)	2.4GHz
6.	Digital I/O	15
7.	ADC Channels	(4) 10-bit ADC inputs
8.	Data Rate	RF 250 Kbps, Serial up to 1 Mbps
9.	RATED INDOOR/URBAN RANGE	200 ft (60 m)
10.	RATED OUTDOOR/RF LINE-OF-SIGHT RANGE	4000 ft (1200 m)
11.	Transmit Power	3.1mW (+5 dBm)
12.	Channels	16
13.	Encryption	128-bit AES
14.	Input Supply Voltage (VDC)	2.1 ~ 3.6
15.	TRANSMIT CURRENT	33 mA
16.	RECEIVE CURRENT	28 mA
17.	Communication	CMOS UART, SPI

3.12 Type-5 Module

S. No	Description of Specifications	Compliance (Yes/No)
1.	32-bit RISC architecture - Wifi Controller	
2.	Wifi Controller shall operate at 80MHz / 160MHz Clock speed	
3.	32MB flash memory	
4.	64kB for instructions	
5.	96kB for data	
6.	Standard native WiFi 802.11b / g / n	
7.	Operates in AP, Station or AP + Station mode	

8.	Shall have 11 digital pins	
9.	Shall have 1 analogue pin with 10-bit resolution	
10.	Shall have Digital pins except the D0 have interrupts, PWM, I2C and one wire	
11.	Programmable through USB or WiFi (OTA)	
12.	Compatible with Arduino IDE	
13.	Compatible with modules and sensors used in Arduino	

3.13 Type-6 Module

S. No	Description of Specifications	Compliance (Yes/No)
1.	The proposed Lora shall operate on 433MHZ with integrated Wireless Transmitter and Receiver RF Module	
2.	the wireless transceiver module with LoRa shall support spread-spectrum technology and shall have long-range communication capability (Range>= 6000 Mtrs)	
3.	Half-duplex SPI communication	
4.	Programmable bit rate can reach to 300kbps	
5.	Support FSK, GFSK, MSK, GMSK, LoRa and OOKModulation Mode	
6.	127dB RSSI wave range.	
7.	Automatically detect RF signal, CAD mode, and super high-speed AFC	
8.	With CRC 256 bytes data engine	

3.14 Type-7 Module

S. No	Description of Specifications	Compliance (Yes/No)
1.	Processor: Cortex-M3	
2.	8-Channel DMA	
3.	Storage: 4MB NOR Flash on chip	
4.	System: Flexible Configuration Support 1.8/2.8/3.3V IO	
5.	Peripheral: 8 GPIO(Include TX0\RX0 AND TX1\RX1), 2 UART,2 I2C, 5 PWM, 4 Channel, 12-bit AUXADC, 1 SIM Booth	
6.	Low power consumption	
7.	Series Rate : Support 110 ~ 4608000 bps , Default9600 bps Bluetooth Non support	
8.	IO quantity : 8(contain TX0\RX0 TX1\RX1)	
9.	Antenna form: NB External SMA antenna	
10.	Spectral Range : Band3,Band5,Band8	
11.	Support interface : UART/I2C/PWM/ADC/GPIO	

3.15 Type-8 Module

S. No	Description of Specifications	Compliance (Yes/No)
1.	The Proposed Sub-GHz wireless communication module shall operate in ISM band.	
2.	Frequency : 433/ 915MHz	
3.	Power Output Capability : +20 dBm 100 mW	

4.	Sensitivity : -120 dBm at 1.2 kbps	
5.	Selectivity : 16-tap FIR Channel Filter	
6.	FSK Bit rates : 1.2kbps to 300kbps	
7.	Voltage range : 1.8V to 3.6V	

4. Spectrum Analyzer for IoT

S. No.	Description of Functional/Technical Parameters	Compliance (Yes/No)
1.	Frequency Range: 150kHz ~ 3GHz	
2.	Noise Floor: $\leq$ -100dBm	
3.	Autoset Function	
4.	RBW Range: 30kHz, 100kHz, 300kHz, 1MHz	
5.	ACPR/CHPW/OCBW Measurement	
6.	3 Traces in Different Colours	
7.	Split Window Function	
8.	Limit Line Function	
9.	Remote Control Software	
10.	Support Interface: USB Device/Host, RS-232C	
11.	Presentation Material for Training Courses	

5. IoT sensor kits

S. No.	Description of Specifications	Compliance (Yes/No)
1.	Bidder to supply Sensors Kit as listed below compatible with various DevBoards, List of Sensor to be supplied in a safe & secure container	
2.	Sensor modules shall standardize and specified buses for interfacing sensors to IoT boards.	
3.	One unit of sensor board shall comprise of 1 no. each of universal I2C sensor kit, SPI sensor kit, Modbus sensor kit along with a bunch of common sensors for the measurement of different physical parameters	
4.	1x Soil module	
5.	1x Infrared sensor receiver module	
6.	1x Laser head sensor module	
7.	1x Temperature and humidity sensor module	
8.	1x Infrared emission sensor module	
9.	1x 5V relay module	
10.	1x Gyro Module	
11.	1x For arduino finger detect heartbeat module	
12.	1x Microphone sensitivity sensor module	
13.	1x Metal touch sensor module	
14.	1x Flame sensor module	
15.	1x 3-color LED module	
16.	1x Hunt sensor module	

17.	1x Linear magnetic Hall sensors	
18.	1x Rotary encoder modules	
19.	1x Active buzzer module	
20.	1x Magic Light Cup modules	
21.	1x Small passive buzzer module	
22.	1x Digital temperature sensor module	
23.	1x Tilt switch module	
24.	1x Analogy Holzer magnetic sensor	
25.	1x Ultrasonic module	
26.	1x Mercury opening module	
27.	1x Hall magnetic sensor module	
28.	1x RGB LED SMD module	
29.	1x Forarduino Mini Reed module	
30.	1x Bicolor LED common cathode module 3MM	
31.	1x Smart car avoid obstacle sensor infrared sensor photoelectric switch	
32.	1x Key switch module	
33.	1x Photoresistor module	
34.	1x Breadboard power module	
35.	1x Forarduino hit sensor module	
36.	1x Temperature sensor module	
37.	1x Vibration switch module	
38.	1x Microphone sound sensor module	
39.	1x Large reed module	
40.	1x Two-color LED module	
41.	1x Optical breaking module	
42.	1x Temperature sensor module	
43.	1x MP1584EN buck module	
44.	1x SD card reader module	
45.	1x Forarduino PS2 Joystick game controller module	
46.	1x Automatically flashing LED module	
47.	1x DS1302 clock module (Without Battery)	
48.	1x Water level module	

6. Fully Equipped Electronic Workbench Set For IoT

S. No.	Description of Parameters/Specifications	Compliance (Yes/No)
A	General Arrangement	
A.1	The proposed Workbench shall be based on the standard requirement of engineers and technicians with flexibility to accommodate any testing setup from general to industry specific requirements.	
	The Workbench, i.e., user station, shall be ergonomically designed with instrument panel in vertical position and with sufficient space for working.	
A.2	Wheel (with locking mechanism) is provided at legs of workstation so that it can be easily moved	
A.3	MCB is provided with AC supply for safety purpose	

A.4	Handheld Fire Extinguisher shall be provisioned in the Workbench with ergonomically access for swift operations during emergency.	
A.5	The workbench shall be provided with Anti-Static Electric Discharge protection along with suitable terminals for coupling with Earthing strips	
A.6	Dimension: 1850x900x750 (LxWxH ₁) and 1650 (H ₂) with necessary cabinets for storage of instruments & tools	
A.7	Bidder shall submit the Pictorial 2D/3D details of the Workbench	
A.8	The proposed Workbench shall have proper component management system, i.e., storage and tool holders for the mentioned hardware tools with draw out cabinets	
A.9	Each Workbench shall be supplied with following hardware tools: Soldering Station - 01No Hot Air De-Soldering -01No Hot Plate SMD Soldering - 01No Cooling Fan -01No Mechanical Tool Set – 01No. (Hammer, Hexsaw, Cutter, Wire Stripper, Plyer, Screwdriver set -- 01 Nos). Digital Microscope for Electronic Work SMD activities – 01 No.	
A10	The bidders must supply the Digital Microscope complying to following functional specifications. • HD resolution with local LCD/LED screen-based display, adjustable Led Lights for illumination & Metal Stand. • Min. 100x Magnification with Precision Focus • Connects with PC via USB Cable • Built-in MicroSD card Slot for storage & Rechargeable Battery	
B	Mixed-domain Oscilloscopes	
B.1	100MHz bandwidth selections - 2 channels	
B.2	Real time sampling rate is 1GSa/s max	
B.3	10M maximum memory depth for each channel	
B.4	Waveform Update rate 50,000 w/s	
B.5	7" WVGA TFT LCD display	
B.6	256 color gradient display function to strengthen waveform performance	
B.7	1Mpts FFT frequency domain signal display	
B.8	High, low and band pass filter functions	
B.9	29,000 segmented memories and waveform search functions	
B.10	I2C/UART/CAN/LIN serial bus trigger and decoding function	
B.11	Data log function to track signal changes up to 1000 hours	
B.12	Network storage function	
B.13	Bidders to supply atleast 01 no of Mixed-domain Oscilloscope per Workbench	
C	Multimeter	
C.1	Dual measurement/Dual display	
C.2	Selectable measurement speeds, the maximum: 40 Readings/s for DCV	
C.3	DCV Basic Accuracy:1000V @ 0.02%	

C.4	11 Measurement Functions: DCV, ACV, DCI, ACI, Resistance, Frequency, Diode, Continuity, Temperature and Capacitance	
C.5	Auto/manual Ranging	
C.6	True RMS (AC, AC+DC) measurements	
C.7	Temperature Measurement Support RTD, Thermistor as Well as Thermocouple	
C.8	Standard Interfaces: USB Host/Device	
C.9	Max./Min., REL, MX+B, 1/X, Ref%, Compare, Hold, dB, dBm	
C.10	Bidders to supply atleast 01 no of MultiMeter per Workbench	
D	Arbitrary Function Generator	
D.1	0.1Hz to 3MHz, Frequency Range for Sine, Square	
D.2	0.1Hz to 1MHz, Frequency Range (For Triangle)	
D.3	High Frequency Accuracy: $\pm 20\text{ppm}$	
D.4	High Frequency Stability: $\pm 20\text{ppm}$	
D.5	Max. Frequency Resolution: 100mHz	
D.6	Low Distortion Sine Wave: -55dBc, 0.1Hz~200kHz	
D.7	Voltage Display	
D.8	Bidders to supply atleast 01 no of Function Generator per Workbench	
E	Regulated DC Power Supply	
E.1	Output Voltage Rating : CH1: 0~32V/0~3A CH2: 0~32V/0~3A CH3: 0~5V/0~1A CH4: 0~15V/0~1A	
E.2	Output Power : 360W / 720W	
E.3	Output ON/OFF	
E.4	4 Independent Isolated Output	
E.5	Select the setting digits for voltage and current (coarse/ fine control)	
E.6	Tracking series and parallel operation	
E.7	Analog Control (Remote I/O) for Output ON / OFF	
E.8	Bidders to supply atleast 01 no of Regulated DC Power Supply per Workbench	

7. Fully functional IoT systems

S. No.	Description of Parameter / Specifications for IoT Systems	Compliance (Yes/No)
A	The bidders to ensure that the project kits are supplied with all the required components like sensors, data collection boards and firmware in portable media like CD/Removal Flash drives.	
B	The bidders to conduct a basic level demonstration of the project as part of supply	
C	The IoT Systems to be supplied along with project implementation manual and on-site project supervision support	
1	IoT based surgical arm operation through Intranet / Internet	
2	IoT based heart rate meter with ECG simulator	
3	IoT mobile based home automation	
4	IoT based rover	
5	IoT mobile based irrigation system control with voice response over call	
6	IoT controlled fighter tank	
7	IoT based driverless car	

8	IoT based process control system	
9	IoT based free space optical communication	
10	IoT based grid solving robots with object detection and picking jaws	

8. Rapid prototyping machine for IoT projects

S. No.	Description of Parameters / Specifications	Compliance (Yes/No)
1.1	Print Technology: Liquefied Filament Fabrication	
1.2	Build Volume: 300 x300 x 300 mm	
1.3	Layer Resolution: 0.08/0.1/0.2/0.3/0.4	
1.4	Dimensional Tolerance: +/- 0.1mm	
1.5	Extruder Temperature: 280 Deg C	
1.6	Printbed Temperature: 120 Deg C	
1.7	Filament Diameter: 1.75mm	
1.8	Filament Combability: ABS/PLA/Flexible/PETG Carbon fused ABS/Composites	
1.9	Electrical: Power Requirements: 230V,50Hz, 240W Connectivity: USB/SD Card Lighting : Blue & White LED light	
2.0	Software: Operating System : Window, Mac Supported File Formats : STL & GCODE	
2.1	Fully Automatic Bed Level, Power Failure Protection, High Precision Linear Guideways for XY Gantry, Swappable Nozzle for Easy Change, Finest Surface Finish with Z Resolution of 100 Micron to 400 Micron, Fully Automatic Inbuilt G-code Cutting Facility to avoid Print Failure, 99% Print Success Possibility.	

9. Airborne platform for IoT

S. No	Description of Parameters / Specifications	Compliance (Yes/No)
1.1	Maximum Payload Capacity - 5Kg	
1.2	Geometry: Quad/Hexcopter	
1.3	MOC: Aluminium/Carbon Fiber/ Aviation Grade Polymer	
1.4	Dimension: 650 mm (Diagonal Without Props)	
1.5	Max Flight Time at 50% Payload: 30 Minutes	
1.6	Max Wind Speed Resistance: 16 m/s	
1.7	Max Ascent Speed: 5 m/s	
1.8	Max Descent Speed: 4 m/s	
1.9	Max Speed: 50 km/hr / 15 m/s	
2	Flight Modes: Auto / Manual	
2.1	Ground station Operating Frequency: RC (2.4 Ghz), Telemetry (433 Mhz) & 5.8G with 48 Channels for Frame Tx	
2.2	Total Payload Carrying Capacity: Upto 5 Kg	
2.3	The system shall be supplied with Datalink modules, 2-axis Gimbal for payload stabilization, Flight Controller etc.	

10. Rackmount server with virtualization for IoT based DAQ and analysis

S. No	Description of Parameter/ Specifications	Compliance (Yes/No)
A	HA Scalable Hyperconverged platform to be clustered with Storage (Ref. S.No.11)	
1.1	Support for Linux and Windows servers, 32- and 64-bit operation systems.	
1.2	Support for the latest Intel and AMD server chip sets – for great VM performance.	
1.3	Performance relative to bare metal for real-world enterprise workloads.	
1.4	Management layer containing all the capabilities to manage and monitor an open-source software-defined datacentre.	
1.5	WEB-BASED MANAGEMENT INTERFACE	
1.6	Integrated - no need to install a separate management tool or any additional management node.	
1.7	Fast and easy creation of VMs and containers	
1.8	Seamless integration and easy management of a whole cluster.	
1.9	Subscription management via GUI.	
2	Secure HTML5 console, supporting SSL.	
2.1	SOFTWARE-DEFINED STORAGE	
2.2	Shared storage such as FC, iSCSI or NFS.	
2.3	Support for Unlimited number of storage definitions (cluster wide).	
2.4	LIVE MIGRATION	
2.5	Moving VMs from one physical host to another with zero or very limited downtime	
2.6	BACKUP AND RESTORE	
2.7	Full backups of VMs and containers	
2.8	Live snapshot backups	
2.9	Multiple schedules and backup storage	
3	All jobs from all nodes can be monitored via the GUI	
3.1	VIRTUALIZED NETWORKING	
3.2	Bridged networking model	
3.3	TCP/IP configuration	
3.4	IPv4 and IPv6 support	
3.5	VLANs	
3.6	VM TEMPLATES AND CLONES	
3.7	Deploying VMs from templates is blazing fast, very comfortable, and if you use linked clones you can optimize your storage by using base images and thin-provisioning.	
3.8	HIGH-AVAILABILITY CLUSTER	
3.9	No single point of failure (no SPOF).	
4	Multi-master cluster	
4.1	Manage the HA settings for VMs and Containers via GUI.	
4.2	ROLE-BASED ADMINISTRATION	
4.3	User and permission management for all objects (VMs, storage systems, nodes, etc.)	

B	Compute Hardware Node	
	The bidder shall ensure the configuration of compute & storage to support the deployment for optimal performance, however the following recommended configuration shall be considered as minimum for supply & deployment.	
	Enterprise grade Compute hardware for 24x7x365 continuous operations with Min. hardware specifications: Dual-16Core/64GB RAM/Dual 1G Ethernet/Storage-1TB SSD.	
C	DAQ & Analysis Software	
	IoT platform shall be capable of data collection, processing, visualization, and device management	
	It shall support device connectivity via industry standard IoT protocols - MQTT, CoAP and HTTP and shall be completely on-premises.	
	It shall enable users to create and manage alerts for connected devices (e.g. in the event of a disconnect or inactivity), other assets, and customers with real-time alarm monitoring	
	IoT device management with monitoring and control mechanisms	
	Capability to Collect and store telemetry data in scalable and fault-tolerant way	
	Various methods to Visualize data with built-in or custom widgets and flexible dashboards	
	Role based user management and Support for multi-tenancy	

11. Rackmount storage with virtualization for IoT data storage

S. No.	Description of Parameter/ Specifications	Compliance (Yes/No)
A	HA Scalable Hyperconverged Storage to be clustered with Compute system (Ref. S.No. 10)	
1.1	Support for Linux and Windows servers, 32- and 64-bit operation systems.	
1.2	Support for the latest Intel and AMD server chip sets – for great VM performance.	
1.3	Performance relative to bare-metal for real-world enterprise workloads.	
1.4	Management layer containing all the capabilities to manage and monitor an open-source software-defined datacentre.	
1.5	WEB-BASED MANAGEMENT INTERFACE	
1.6	Integrated - no need to install a separate management tool or any additional management node.	
1.7	Fast and easy creation of VMs and containers	
1.8	Seamless integration and easy management of a whole cluster.	
1.9	Subscription management via GUI.	
2	Secure HTML5 console, supporting SSL.	
2.1	SOFTWARE-DEFINED STORAGE	
2.2	Shared storage such as FC, iSCSI or NFS.	
2.3	Support for Unlimited number of storage definitions (cluster wide).	
2.4	LIVE MIGRATION	
2.5	Moving VMs from one physical host to another with zero or very limited downtime	
2.6	BACKUP AND RESTORE	

2.7	Full backups of VMs and containers	
2.8	Live snapshot backups	
2.9	Multiple schedules and backup storage	
3	All jobs from all nodes can be monitored via the GUI	
3.1	VIRTUALIZED NETWORKING	
3.2	Bridged networking model	
3.3	TCP/IP configuration	
3.4	IPv4 and IPv6 support	
3.5	VLANs	
3.6	VM TEMPLATES AND CLONES	
3.7	Deploying VMs from templates is blazing fast, very comfortable, and if you use linked clones you can optimize your storage by using base images and thin-provisioning.	
3.8	HIGH-AVAILABILITY CLUSTER	
3.9	No single point of failure (no SPOF).	
4	Multi-master cluster	
4.1	Manage the HA settings for VMs and Containers via GUI.	
4.2	ROLE-BASED ADMINISTRATION	
4.3	User and permission management for all objects (VMs, storage systems, nodes, etc.)	
B	Storage Hardware Node	
	The bidder shall ensure the configuration of storage to support the deployment for optimal performance, however the following recommended configuration shall be considered as minimum for supply & deployment.	
	Enterprise grade Storage hardware for 24x7x365 continuous operations with Processor: Dual Socket-16Core/64GB RAM/Dual 1G Ethernet/Storage - 6TB.	

12. Advanced Multipurpose Computer Systems

S. No.	Description of Functional/Technical Parameters	Compliance (Yes/No)
1.	Processor: Minimum: 6 core, 2.1 GHz, 15 MB Cache	
2.	Chipset: Appropriate chipset	
3.	Memory: 16 GB DDR4 RAM	
4.	Primary Storage: 500GB internal NVMe/ M.2 SSD	
5.	Secondary Storage: 1TB PC Hard Drive 7200 RPM 6Gbps SATA	
6.	Graphics Card: 2 GB NVIDIA	
7.	Chassis: Tower Cabinet with Power supply	
8.	Pre-loaded OS: Dual Boot Windows 10Pro - 64Bit and CentOS/Ubuntu	
9.	Pre-loaded Apps:TensorFlow, Microsoft Cognitive Toolkit, Apache MXNet	
10.	Keyboard & Mouse: Standard Wired USB	
11.	Monitor: 23.8" IPS LED FHD	

Seal & Signature of Bidder

Annexure-5

Price Schedule form: Price Schedule for Goods/ Services Being Offered from India/ Abroad in INR

Name and Address of the Bidder/Tenderer:

Project Name:

Tender No.:

S. No.	Description of Material (A)	Units (B)	Quantity (C)	Unit Price in INR (D)	HSN Code (E)	Applicable GST Percentage (F)	Unit Price with Tax in INR (G)	Total Price (H) in INR
1.	Development and Prototyping Tools – Hardware Toolkit	Nos	5					
2.	Development and Prototyping Tools – PCB Design, Development and IDE/Cross Compilers	Nos	5					
3.	Development and Prototyping Tools – Hardware Development Boards/Kits/Single Board Computers	Nos	10					
4.	Spectrum Analyzer for IoT	Nos	2					
5.	IoT sensor kits	Nos	10					
6.	Fully equipped electronic workbench set for IoT	Nos	3					
7.	Fully functional IoT systems	Nos	1					
8.	Rapid prototyping machine for IoT projects	Nos	1					
9.	Airborne platform for IoT	Nos	2					
10.	Rackmount server with virtualization for IoT based DAQ and analysis	Nos	1					
11.	Rackmount storage with virtualization for IoT data storage	Nos	1					
12.	Advanced Multipurpose Computer Systems	Nos	5					
Grand Total Price in INR								
*Grand Total Price in INR (in Words):								
IMPORTANT NOTE: Among the technically qualified bids, the L1 bidder will be evaluated on the Grand Total Price in INR								

***L-1, i.e., successful bidder will be decided on the basis of Grand Total Price from those bidders whose bids are successful at the techno-commercial evaluation stage.**

Note:

(a) Price should be all inclusive F.O.R. NIT Raipur & must be quoted in above prescribed format only.

Seal & Signature of Bidder

Annexure-6

DEVIATION STATEMENT FORM

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

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

Seal & Signature of Bidder

Annexure-7 (Please put this annexure at the top of the tender document)

Bidder's information & Check list

- | | | | | |
|-----------|--|-------------------|------------------|----------------|
| 1. | Name of the Firm: | | | |
| 2. | Type of the firm: (Proprietorship, Pvt Ltd, Public Ltd, Partnership etc.) | | | |
| 3. | Address of the firm: | | | |
| 4. | Contact detail: | Phone No.: | Mob No. : | |
| | | Fax No. | E mail: | |
| 5. | Name of the authorised signatory: | | | |
| 6. | EMD detail : Instrument No. | Date : | Amount: | Issuing |
| | Bank name & branch detail: | | | |
| 7. | Bank details of the firm: | | | |
| | Account No.: | IFSC Code: | | |
| | Name of the Bank: | Branch: | | |

Check List(Please enclose the copy of the following & tick as per applicability)

- 1. Proof of registration of the firm/ GST Registration Certificate:**
- 2. PAN card in Firm's name:**
- 3. Proof of registration with any central govt organization (if required).**
- 4. Purchase orders issued by any central govt organization (if required).**
- 5. Bank details of the firm in letter head of the organization.**
- 6. Documents related Bidders Eligibility Criteria Annexure 1**

Seal & Signature of Bidder