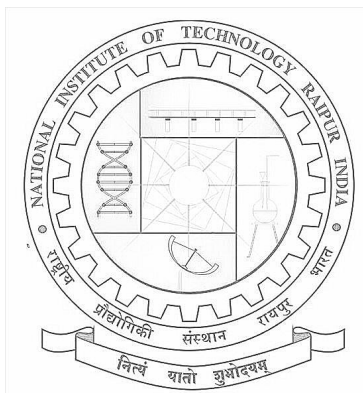
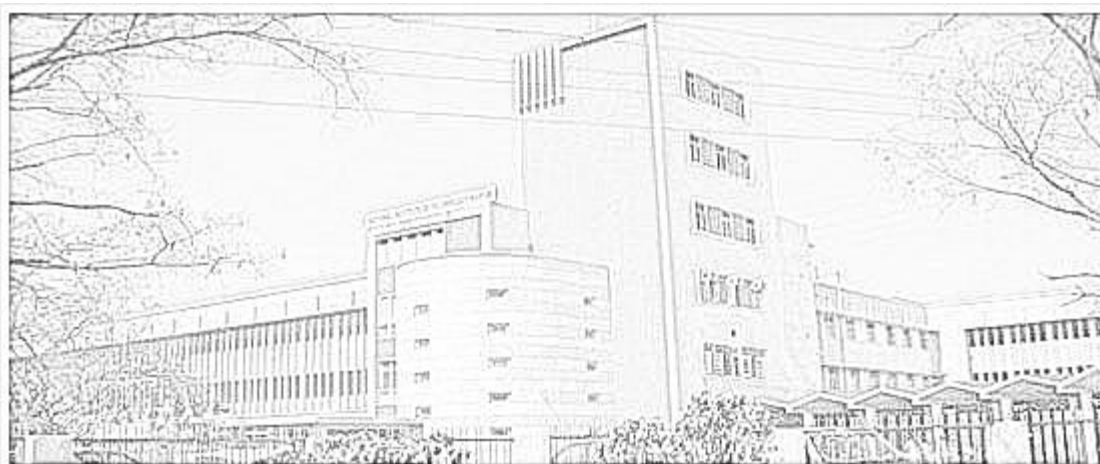




NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR

CHHATTISGARH, INDIA

<http://www.nitr.ac.in>



NOTICE INVITING TENDER

National Institute of Technology, Raipur invites bids in two-bid format for “DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND MAINTENANCE OF DATA CENTRE PHYSICAL INFRASTRUCTURE” for the Central Computer Centre at its G.E. Road Campus.

Detailed information to the bidders including Instructions, Terms and Conditions, Schedule of Requirements, Specifications and Allied Technical Details, Price Schedule, Contract Form, and some other forms are available in the tender document which may be downloaded from the Institute Website <http://www.nitr.ac.in/>

IMPORTANT INFORMATION

1	Name of Work	DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING AND MAINTENANCE OF DATA CENTRE PHYSICAL INFRASTRUCTURE
2	Notice Inviting Tender Reference	NITRR/Central Store/CCC/OT/2017/3468 Dated 16/03/2017
3	Tender Processing Fee, Non-refundable	INR 10,000/-
4	Earnest Money Deposit (EMD), Refundable	The bidder should furnish, as part of its bid, an Earnest Money Deposit (EMD) of INR 9,00,000/-
5	Time Period for sending pre-bid queries	04/04/2017 to 11/04/2017 upto 12:00 P.M.
6	Site survey and pre-bid meeting	11/04/2017 from 3:00 P.M. to 5:00 P.M.
7	Last date and time for submission of bids	20/04/2017 upto 3:00 P.M.
8	Date & Time of opening of Techno-commercial Bid Part-A	20/04/2017 at 3:30 P.M.
9	Date and Time of opening of Techno-commercial Bid Part-B	To be informed to technically successful bidder later
10	Venue of Opening Bids	Central Store National Institute of Technology, G.E. Road, Raipur 492010, Chhattisgarh
11	E-mail ID for tender related queries	cccde@nitr.ac.in

Important Note: Bidders shall visit the website regularly for updates till the date of submission

CHAPTER – I: INSTRUCTIONS TO BIDDERS

1. This is an open tender enquiry. The bidder has to execute the project on turn-key basis and provide end-to-end solutions to the scope of work of this Tender. The requirements, necessary design inputs and baseline technical specifications have been provided by the institute in this document. The implementation shall be subject to the supervision and quality control of the institute.
2. The Bidders are advised to read and understand the tender document carefully.
3. Submission of tender shall be deemed to have been done after careful study and examination of the tender documents with full understanding of the implications thereof.
4. Contracts made under this tender will be governed by the conditions specified in this document.
5. Bids should be submitted in two parts: techno-commercial bid and price bid. The techno-commercial bid is further classified into the following two parts: Techno-commercial bid: Part-A", and "Techno-commercial bid: Part-B"
6. The techno-commercial part consists of the eligibility criteria of the bidder along with necessary documents in support etc. and technical compliance mentioned later in this chapter. No part of the Techno-commercial bid should contain any price or price related information, either explicit or implicit; otherwise the bid will be summarily disqualified.
7. The price bid or the financial bid, indicates item-wise price for all the items as mentioned later in this chapter/document.
8. Techno-commercial bid cover shall contain two covers super scribed "Techno-commercial bid: Part-A", and "Techno-commercial bid: Part-B"
9. Techno-commercial bid Part-A shall contain eligibility related documents and the forms of Chapter VI.
10. Techno-commercial bid Part-B shall contain duly filled in technical compliance sheets, hardcopy of the datasheets, hardcopies and softcopies of other technical literature as mentioned later in this chapter / documents.
11. The techno-commercial and price bids should be placed in separate sealed covers and the two covers should be placed in a single sealed bigger cover.
12. Techno-commercial cover should be super scribed " TECHNO-COMMERCIAL BID FOR <<MENTION TENDER NAME AND ENQUIRY NUMBER HERE>>".
13. Price bid cover should be super scribed "PRICE BID FOR <<MENTION TENDER NAME AND ENQUIRY NUMBER HERE>>"
14. The single sealed bigger cover containing the techno-commercial and price bid covers should be super scribed "BID FOR <<MENTION TENDER NAME AND ENQUIRY NUMBER HERE>>". The bid envelop must be addressed to "The Registrar, National Institute of Technology, G.E. Road, Raipur 492010, Chhattisgarh" and should also include the name and address of the bidding firm.

15. Bids should be submitted by dropping them in a Tender-box kept specifically for this tender in the Institute by the Bidder or its representative.
16. Bids should be complete in all respects.
17. All the required forms should be submitted with the bids in the prescribed formats.
18. All pages in a cover should be neatly tied up / tagged / stapled / filed / bound and there should not be any loose pages.
19. All pages submitted with a bid should be signed by an authorized signatory and bear the company's stamp.
20. All signatures should be done in blue colour using ball point pen.
21. All stamps should be in blue colour ink.
22. Entries should be made neatly and legibly by typewriter or computer printing.
23. Corrections, if any, should be done by striking out the entry to be corrected with a single line, encircling it and should bear the initials of an authorized signatory.
24. Use of white fluid is not permitted.
25. Overwriting is not permitted.
26. Pre-bid clarifications should be sent within the date and time mentioned in the notice inviting tender via e-mail to cccdc@nitrr.ac.in in the required format given in Form - 7 . Clarifications sought later or not in proper format shall not be considered.
27. Subject line of the e-mail should be "Pre-bid clarification" along with Tender Ref No. and Date.
28. Scanned copy of the duly filled pre-bid clarification form and an editable copy of the table therein in MS Excel © format containing the pre-bid queries and other details should be attached with the mail.
29. Replies to pre-bid clarifications shall be given within 05 working days of the last date for pre-bid clarifications by e-mail or in person during site survey cum pre-bid. Bidders are advised to submit their bids after this.
- ~~30.~~ Blank
- ~~31.~~ Only one duly authorized employee of the bidding firm carrying the proper identification, etc. can attend the site survey cum pre-bid. Site survey cum pre-bid is for the bidders to apprise themselves and get a first-hand idea of the site conditions before bidding.
32. Revisions / amendments / corrections / corrigenda to the tender, if any, due to pre-bid clarifications or at the institute's own decision shall be posted on the institute website.

33. Information / notices of interest to all bidders and revisions / amendments / corrections / corrigenda to the tender, besides those due to pre-bid clarifications shall also be posted from time to time on the institute website <http://www.nitr.ac.in>.
34. Bidders are advised to check the institute website regularly for updates on this tender.
35. Ignorance of information posted on the website shall not be accepted as valid reason for non-compliance with tender terms and conditions or technical specifications, etc.
36. Each bidder should submit only one bid. Multiple bids submitted by a bidder will result in disqualification of the bidder.
37. Bidders are advised in their own interest to carry out a proper site survey for an estimation of the quantities and work involved before submitting their bids.
38. Bids submitted along with all documents and media shall remain with NIT Raipur and not be returned to the bidder.
39. NIT Raipur shall not bear any costs associated with the preparation of the tenders including site survey by bidder, if any.
40. The price bid should contain the price quoted by the bidder in the format specified in the Price Schedule.
41. Price quoted should be all-inclusive price F.O.R. NIT Raipur.
42. Actual quantities of items and jobs work are subject to variation on either side for all components, subject however to a maximum price impact of 10% on the work order value. However, only the indicative ballpark quantities mentioned in the price schedule shall be considered by the bidders for preparing their price bids and by NIT Raipur for award of work. The bidding firms shall not be reassessed due to change in quantities.
43. Payment shall be made strictly on the basis of the actual quantities utilized. For the payments, unit prices shall be multiplied by the actual quantities.
44. Prices should be quoted in Indian Rupees only.
45. In the Price bid, the quoted price shall include all duties and taxes like VAT / sales / service tax, entry tax, octroi, terminal tax, etc. whichever are applicable. Bidder shall separately mention all the government duty and tax percentages included in the prices so that any variation can be accounted for later. In case of an upward variation in the tax/duty percentages between the date of submission of bid and the date of actual supply, the difference will be paid by NIT Raipur. Likewise, in case of a downward variation in these percentages, the bidder must agree to supply the items at the lower prices. Institute has Customs and Excise Duty Exemption Certificate. Same will be provided to the successful bidder at the time of the work order.
46. Packing and forwarding, freight and insurance are in the contractor's scope i.e., included in the quoted price.
47. Warranty required on different items should also be included in quoted price.

48. Bidder should extend and include the advantage of discounted pricing for education in the quoted price, if such a discount is being offered by the manufacturer of a certain product.
49. The price quoted shall remain fixed till three months of successful operation of the equipment supplied and installed.
50. The following should be enclosed in a single separate cover within the technical bid cover super scribed "Techno-commercial Bid: Part-A".
- (i) Tender processing fee instrument shall be submitted along with Technical Bid
 - (ii) Bid security (EMD) in one of the accepted formats or attested true copy of current DGS&D / NSIC registration
 - (iii) All documents related to bidder's eligibility including but not limited to
 - 1. Attested true copies of the audited financial statement / auditor's certificate.
 - 2. Copies of purchase orders and work completion certificates
 - (iv) Copy of tender with sign of authorized signatory and company stamp on all pages
 - (v) Income tax returns for the last three years and copy of the PAN card of the applicant firms and partners / Directors thereof
 - (vi) Following forms:
 - (a) Form for bidder's self information
 - (b) Form for submission of bids
 - (c) Form for submission of similar works executed by bidder as proof of eligibility
 - (d) Form for Manufacturers' authorization given to bidder
 - (e) Form for information on after sales service centres
 - (f) Form for warranty
 - (g) Form for statement of deviations from tender conditions
 - (h) Performance Guarantee Bond
51. The following should be enclosed in a single separate cover within the technical bid cover super scribed "Techno-commercial: Part-B".
- (i) technical compliance booklet (all product compliance tables filled)
 - (ii) technical literature
 - (a) Datasheets (hard copy of datasheets of all items mentioned in technical compliance sheets is mandatory).
 - (b) Unpriced price schedule with make, and model numbers without mentioning the prices (in the format as shown in Chapter-IV).
- Softcopy of all technical literature e.g., Datasheet.pdf, AdminGuide.pdf, UserGuide.pdf etc., which shall establish compliance (arranged in appropriately named folders for each line item, e.g., Switches, UTP Cables, FOC Cables, Racks, Servers, etc.).
- Include a README file containing the index (Item Name, S.No., Relevant Specification No., Document File Name, and Page No.) for quick reference (so that it is easy for determining compliance).
52. It is advised in his own interest that the softcopies be submitted by the bidder in three copies in different media types for reliability: CD, DVD, pen-drive, SD card, magnetic tape and in the common file formats for handling situations where the media becomes corrupt for some reason.
53. The copy of the tender with sign of authorized signatory and company stamp on all pages implies acceptance of all terms and conditions of this tender by the bidder.

54. Bidders should note that if the date of tender opening is declared a closed holiday by the Government, the tender shall be opened on the next working date.
55. Non-refundable tender processing fee of value mentioned in the Notice Inviting Tender has to be submitted as Demand Draft in favour of Director, NIT Raipur payable at Raipur along with Techno-commercial bid: Part-A.
56. Last date & time for submission of bids: As mentioned in the Notice Inviting Tender.
57. Bidders should not send any part / complete bid through post/courier/e-mail / fax.
58. Due Date & Time For Opening:
 - a. Part 1: Techno-Commercial Bid: As mentioned in the Notice Inviting Tender
 - b. Part 2: Price/ Financial Bid: Date, time and venue will be informed through email/fax to those bidders only whose technical bids are found qualified.
59. Place of opening of tenders shall normally be as mentioned in the Notice Inviting Tender.
60. Refundable bid security of value mentioned in the Notice Inviting Tender has to be submitted as account payee demand draft / fixed deposit receipt/Bank Guarantee of a nationalized bank drawn in favour of "Director, NIT Raipur" payable at Raipur along with Techno-commercial Bid: Part-A.
61. Bid security (EMD) exemption is applicable to bidders registered with DGS&D and NSIC provided all the products quoted are manufactured by them.
62. The bid security should be submitted in its original form and copies shall not be accepted.
63. The bid security should remain valid for a period of forty-five days beyond the bid validity period (180 days from the last day of bid submission).
64. The bid validity should be for a minimum of 180 days from the last day of bid submission.
65. Bid securities of the unsuccessful bidders shall be returned without interest to them at the earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the contract.
66. Bids without tender processing fee and /or bid security shall be summarily rejected.
67. During the process of evaluation of tenders, no queries shall be entertained from the bidders with regard to its status.
68. If the bidder submits false information his bid shall be rejected.
69. The submission of the bid shall be deemed to imply that the bidder fully understands the scope of work involved.
70. Incomplete or technically deviated or commercially deviated or conditional bids shall be rejected.
71. The names and complete postal addresses of the bidding organization should be mentioned on all covers.

72. Evaluation Process: Contract shall be awarded to the lowest evaluated bidder whose bid is found to meet the technical and commercial criteria and who is eligible and qualified to perform the contract satisfactorily as per the terms and conditions of this tender.
73. Following shall be the steps followed for evaluation of the tenders:
- (i) Techno-commercial bid: Part-A shall be opened first to check the bidder's eligibility which must be submitted as per the format given in condition of contract duly filled in by the bidder.
 - (ii) If bidder is found eligible in (i) above, then Techno-commercial bid: Part-B shall be opened and the compliances shown in the technical compliance booklet shall be verified against the datasheets and supporting technical documents submitted by the bidder.
 - (iii) If bidder is found eligible in (i) and (ii), then his price bid shall be opened and contract will be awarded to the bidder with the overall lowest quoted grand total price for complete end-to-end solution including all supplies, installation and services.
74. Bids received shall be evaluated only in terms of the conditions already incorporated in the bidding documents; no new condition which is not contained in the bidding documents shall be brought in or considered for the evaluation of the bids. Determination of a bid's responsiveness shall be based on the contents of the bid itself without recourse to extrinsic evidence.

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CHAPTER II: CONDITIONS OF CONTRACT

1. DEFINITIONS AND INTERPRETATION

In the Contract, unless the context otherwise requires:

- (a) "NIT" or "NIT Raipur" would mean the National Institute of Technology, Raipur.
- (b) "CCC" or "CCC NIT Raipur" would mean the Central Computer Centre, NIT Raipur comprising of all its members.
- (c) "Letter of Intent" means the letter / telex / telegram / fax or any memorandum communicating to the bidder the acceptance of his bid and includes an advance acceptance of his bid.
- (d) "Contract" means and includes the Notice Inviting Tender, Instructions to Bidders, Acceptance of Bid, Conditions of Contract and other conditions (if any) specified in the "Letter of Intent" and includes a formal agreement, if executed.
- (e) The "Contractor" means the person, firm, bidder or company with whom the purchase order is placed and shall be deemed to include the contractor's successors (approved by the Purchaser), representatives, heirs, executors, administrators and permitted assignees, as the case may be, unless excluded by the terms of the contract. The terms "Contractor" and "Successful Bidder" have been used interchangeably in this bid document.
- (f) "Purchasing Officer" means the officer signing the Letter of Intent and includes any officer who has the authority to execute the relevant contract on behalf of NIT Raipur.
- (g) The "Purchaser" means the National Institute of Technology, Raipur.
- (h) The "Bidder" shall mean a company/firm in its individual right.
- (i) The CCC, NIT Raipur is authorized to take decisions on behalf of NIT Raipur in respect of the implementation of this project and to handle communications and clarifications in respect of this project.
- (j) "Project Manager" in the case of bidder means a designated representative of the Bidder, who is empowered by the authorized signatory of the bidder for delivering the contractual obligations under this contract. He will be the one point interface with NIT Raipur for the technical implementation of the project. The Senior Technical Officer (IT), or the System Administrator, NIT Raipur shall be the "Project Manager" from the Institute side. The project engineers deputed on the site by the bidder shall consult him from time to time for technical and other clarifications related to the project to ensure smooth and timely technical implementation.
- (k) "Service" means all the services to be rendered by the contractor as stated in the contract details
 - (i) In relation to the supply, transportation to the work site, installation, system integration, commissioning, making operational and testing the equipment
 - (ii) In relation to the installation of any accessories like electric wiring, electric boards etc. required to make operational any equipment
 - (iii) In relation to manpower and annual maintenance contract
 - (iv) In relation to system / application software supplied by the bidder
 - (v) Documentation
 - (vi) Training
 - (vii) Development and support

- (l) "Personnel" means Staff, employees, agents, contractors and sub-contractors of either party and also includes the staff, employees, agents and contractors of those subcontractors with qualification, experience and certification.
- (m) "Software" means system/ application software to be supplied by the contractor, as stated in the contact details.
- (n) "Specifications" means all the functional, operational, performance or other characteristics required of a Product or Service found in tender document Chapter-IV or any of the annexure or addendum or corrigendum to the tender document.

2. AUTHORIZED SIGNATORY AND ADDRESS OF THE CONTRACTOR

The Authorized Signatory of the Bidder shall be:

- (a) The proprietor in case of "Sole Proprietor" firm or constituted attorney of such sole proprietor.
- (b) One of the partners in the case of a "Partnership" firm, in which case he must have authority to refer to arbitration disputes concerning the business of the partnership either by virtue of the partnership agreement or a power of attorney. In the absence of such authority all partners shall be authorized signatories and will be required to sign the tender.
- (c) A director or the regional head or person of equivalent designation and rank in case of a limited company or in the case of a government organization an official having requisite authority duly authorized for the purpose by a resolution of the board of directors.
- (d) For all purpose of the contract, including arbitration thereafter, the address of the Bidder mentioned in the tender shall be the address to which all communications shall be the addressed.

The contract shall be for the items mentioned in the price bid.

3. BIDDERS ELIGIBILITY CRITERIA (COMMERCIAL)

The bids of the bidders meeting all of the following eligibility criteria shall only be considered

S. No.	Clause	Documents required
01	System Integrators of Datacenter Physical Infrastructure are eligible to bid.	Authorization letter from manufacturer's to bid / negotiate / conclude the order against this tender must be enclosed with the technical bid, as per format enclosed. Such letter must be provided for Racks, PAC, UPS, DG, LAN and Fire Detection & Alarm Systems.
02	Refundable Earnest Money Deposit (EMD) and Non-refundable tender processing fee for the amount mentioned in the Notice Inviting Tender	The tenderer shall be required to submit the Earnest Money Deposit (EMD) in the form of Banker's cheque / Demand Draft / Bank Guarantee which is refundable and a non-refundable tender processing fee by way of Demand Draft/ Banker's Cheque only. The Banker's Cheque / Demand Drafts shall be drawn in favour of the Director, NIT Raipur, payable at Raipur, from any Scheduled Bank. The

		earnest money deposit & tender processing fee must be enclosed in a separate envelope and submitted along with the Techno-commercial bid Part - A.
03	The bidder should be an Indian Company registered under Companies Act and in the IT Business for more than five (05) years.	Certificate of Incorporation / Memorandum of Association.
04	The bidder should possess the following : Trade License VAT / TIN Registration CST Registration Permanent Account Number (PAN) Service Tax Registration	Bidder must submit self-attested copies of each of the following License / Registrations along with the technical bid.
05	PF & ESIC registration	Bidder must submit self-attested copies of PF & ESIC registration along with proof of payment (challans)
06	Professional Tax Registration	Bidder must submit self-attested copies of Professional Tax registration along with proof of payment.
07	Income Tax return for last three financial years.	Bidder must submit self attested copies of IT returns for the last three financial years.
08	Annual Turnover and Profitability for last three years.	The average annual turnover of the bidder for last three financial years should not be less than Rs. 20.0 Crores (Rupees Twenty Crores). The bidder must be profitable with a positive networth for last three years. The bidder must submit a certificate from the Auditor / Chartered Accountant in this respect.
09	Experience of the bidder in executing similar Datacenter Physical Infrastructure Projects in India: The bidder should have completed similar turnkey projects within the preceding 7 calendar years ending last day of month previous to the one in which this tender has been published: a. One project costing not less than 300 lakhs, or, b. Two projects costing not less than 187.5 lakhs, or, c. Three projects costing not less than 150 lakhs Similar projects should include Civil, Furniture, Electrical, UPS, Cooling, Fire & Security, Racks, Access Control, Surveillance System, Networking and Monitoring Software systems.	Bidder to submit detailed self attested order copies conforming the year and areas of activity, along with successful completion certificate.

10	Power of Attorney	All the documents submitted by the bidder must be signed by Authorized Signatory having valid Power of Attorney.
11	Bidder's Undertaking	The bidder must submit a Notarised Undertaking that the bidder is not blacklisted, barred from taking part in any tender, as on date of this bid submission. In the last 10 years, the bidder must also not be referred or under BIFR. (This affidavit should be done in Rs. 100/- Stamp Paper)
12	Bidder's Technical Manpower	a) The bidder must have ONE Certified Data Center Professional (CDCP) or THREE qualified engineers on their pay roll or he shall engage the services of a CDCP professional during the implementation of this project. These professionals should require to visit the site initially once and two times later to monitor the progress of the project. The CDCP certificate must be valid as on date of bid submission. b) The bidder or its contractor must have a valid Electrical License from any of the State Electrical Licensing Boards. c) Total employee strength of the company should be 20 or more. Self attested certificates of the respective employees certified by the HR Department should be submitted, stamped and signed by an HR official.
13	Technical Compliance	The bidder must submit a line-item-wise compliance of the technical specifications, as per the compliance tables with reference in the data sheet or any other authentic document of the respective manufacturer.
14	Bidders Acceptance of the tender Clauses	Bidder should submit the tender document, signed and stamped, as a token of acceptance of the tender clauses.
15	Site Survey cum pre-bid Meeting	Bids shall be accepted for evaluation only from bidders who have attended the site survey cum pre-bid meeting to assess the site conditions and requirements in detail. The date and time of site survey cum pre-bid meeting is mentioned in the notice inviting tender.

4. EARNEST MONEY DEPOSIT (BID SECURITY)

- (a) The firms registered with DGS&D and NSIC, if any, are exempted from payment of Earnest Money Deposit provided such registration is for the quoted items being manufactured by them.
- (b) All bidders, except those in point (a) above are required to submit EMD along with their bids for this tender.
- (c) EMD may be in the form of Account Payee Demand Draft / Fixed Deposit Receipt/ Bank Guarantee (Format enclosed) issued by any nationalised bank drawn in favour of "Director, NIT Raipur" payable at Raipur and valid for a period of forty-five days beyond the final bid validity period. The EMD shall be submitted in its original form. Copies will not be accepted.
- (d) The names and complete postal addresses of the bidding organization should be mentioned on the other side of the DD / FDR.

EMD is liable to be forfeited if the bidder withdraws or amends or impairs or derogates from the bid in any respect within the validity of the bid and is open for acceptance whether originally fixed or extended.

- (f) EMD shall also be forfeited if the successful bidder fails to execute performance cum warranty guarantee bond within stipulated time after acceptance of bid is communicated to him. Any bid not accompanied by EMD is liable to be summarily rejected.
- (g) The EMD shall be returned to the successful bidder on submission of the performance cum warranty guarantee bond of the order value in the prescribed format.
- (h) No interest shall be payable by the Purchaser on the Earnest Money/Bid Guarantee to the Bidder.
- (i) The Earnest Money shall remain deposited with the Purchaser for the validity period as mentioned, from the last date of bid submission. If the validity of the offer is extended, for some reasons, the Earnest Money Deposit extension shall also be furnished failing which the bid after the expiry of the aforesaid period shall not be considered by the Purchaser.
- (j) The Earnest Money of all unsuccessful bidders shall be returned without interest to them at the earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the contract.

5. PRE-BID CLARIFICATIONS, OMISSIONS AND DISCREPANCIES, IF ANY, IN THE TENDER DOCUMENT:

- (a) Bidders are expected to go through the tender document thoroughly and carefully. In case a bidder finds any discrepancy or omission in any part of the tender document / has doubts to the meaning / interpretation thereof, or otherwise wishes to seek further clarity on some aspects, he shall seek clarification from NIT Raipur by sending e-mail with the subject line "Pre-Bid Clarification" and attaching a scanned copy of the duly filled-in Pre-Bid Clarification Form and an editable copy of the table therein in MS Excel (c) format to the following e-mail id: cccdc@nitrr.ac.in in the period mentioned in the Notice Inviting Tender. The potential bidder shall also bring a copy of these queries with him when he / she

comes for attending the site survey cum pre-bid meeting. The reply to these queries shall be given through reply mail or taken up in person during the pre-bid meeting. No other mode of communication after publication of the tender is allowed.

If any clarification is of interest to all bidders, NIT Raipur shall post them on the institute website and further any amendments / revisions / corrections / corrigendum etc. shall be issued 05 working days from the last date of seeking pre-bid clarifications. Bidders are advised to submit their bids after this date.

- (b) It shall be understood that while every endeavour has been made to avoid any error which can materially affect the basis of the bid, the successful bidder shall take upon himself and provide for the risk of any error which may subsequently be discovered and shall make no subsequent claim on account thereof.
- (c) The submission of the tender will be deemed to imply that the bidder fully understands the scope of work involved and has read and understood all conditions of the tender document and his liabilities and responsibilities in respect of the tender.

While some building drawings / sketches can be provided, on request and may serve as useful guides, potential bidders must attend the site survey cum pre-bid meeting and are advised to seek to get a detailed first hand understanding of the extent and scope of the work that is involved and to arrive at their own estimates.

6. AMENDMENTS TO BID INVITATION

- (a) Amendments / Revisions / Corrections / Corrigenda, if any, is issued for the tender, shall form part of the tender document and will be posted on NIT Raipur's website (<http://www.nitr.ac.in>) Bidders are therefore advised to visit NIT Raipur's website regularly without fail. NIT Raipur will not be responsible for ignorance of any information posted on the website in respect of this tender.
- (b) 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, modify the bidding documents by amendment. The same would also be hosted on the website of the institute and all prospective bidders are expected to surf the website before submitting their bids to take cognizance of all possible amendments. Bidders who have submitted the bids before publishing the amendments may revise their bids incorporating the amendments before the last date of the tender.
- (c) In order to allow prospective bidders reasonable time in which to take Amendments / Revisions / Corrections / Corrigenda into account in preparing their bids, the institute, at its discretion, may host the changes on the website of the institute and extend the deadline for the submission of bids by such a number of days not less than five as in the opinion of NIT Raipur will enable the bidders to revise their bids.

7. PROCESS TO BE CONFIDENTIAL

- (a) After the public opening of the bids, information related to the examination, clarification, evaluation and comparison of bids, and recommendations concerning the award of the purchase order shall be treated

strictly confidential and not disclosed to the bidders or other persons not officially concerned and connected with such process.

- (b) Any effort by the Bidder to influence the purchaser in the process of examination, clarification, evaluation and comparison of bids, and in the decision concerning the award of contract, may result in outright rejection of his bid.

8. BID OPENING

The sealed bids shall be opened in the presence of such of the bidders or their authorized representatives who may like to be present at the date and time fixed. The representative shall bring the original form of bidder's authorization, the ID card issued by the bidder organization, any photo identity card issued by the Central Government of India. In the absence of any of these documents, the representative may not be allowed to attend bid opening.

NIT Raipur shall have the right to change the date and time of opening of the bid. The changed date and time shall be notified through the website. In the event the bid opening date / last date for tender submission etc. mentioned in the tender document is declared as a holiday the next working day at the institute will be considered as the due date for receiving and opening of tenders. The time shall remain the same.

9. CLARIFICATIONS BY NIT RAIPUR

- (a) To assist in the examination, evaluation and comparison of bids, NIT Raipur may ask the bidder individually for a clarification on his bid including breakdown of unit rates. The request for clarification and the responses shall be in writing / email / fax but no change in price or substance shall be sought, offered or permitted except as required to confirm the correction of arithmetical errors discovered by NIT Raipur during the evaluation of bids. Such reply shall be given within the time limit mentioned in the intimation issued by NIT Raipur, failing which NIT Raipur will be at liberty to conclude that nothing further is to be submitted by the bidder on this matter.
- (b) Bidder shall have to arrange for a demonstration of any product if NIT Raipur determines it is in its best interests to do so, during evaluation of the bids.

10. VALIDITY OF THE BID

The validity of the bid must be for a minimum of 180 days from the last day of bid submission. Any subsequent extension of validity shall be for a minimum of 30 days. In this case the bid security will need to be extended by the bidder.

11. RIGHT OF ACCEPTANCE

NIT Raipur reserves the right to reject any or all tenders without assigning any reason to the bidders subject to the relevant guidelines in this context.

12. COMPLIANCE WITH STATUTORY PROVISIONS IN RESPECT OF WORKERS / LABOURERS ENGAGED

- (a) It shall be the sole responsibility of the contractor to abide by the provisions of all relevant labour laws or legislation for the employment of contract labourers / employees which will govern the nature of the contract.
- (b) NIT Raipur shall not be responsible for the payment of wages and or any other emoluments to the personnel / workers deployed by the contractor. It shall be the sole responsibility of the contractor to make payment to the said personnel / workers in time as per the Minimum Wage Act and the contractor shall at all time keep NIT Raipur indemnified against any claim from its personnel / workers in this regard.
- (c) The contractor shall be solely responsible for any cost and consequences on account of any breach and / or non-compliance of any of the provisions of the Labour Laws. The contractor shall indemnify NIT Raipur against any claims / costs / damages and penalties in respect of breach of any of the provisions of the laws in force.
- (d) It shall be the sole responsibility of the contractor to obtain license under different labour laws from the concerned authority(ies).
- (e) The compliance of all statutory laws with respect to the workers or employees engaged by the contractor and their welfare will be the sole responsibility of the contractor.
- (f) It shall be the responsibility of the contractor to comply with all the liabilities arising out of any provisions of Labour Acts / Enactments hitherto in force or enacted from time to time during the execution of this Service Contract.
- (g) All records, documents under various statutory provisions maintained by the contractor shall be open for inspection by an authorized representative of NIT Raipur / 3rd party authorized by NIT Raipur / to any law abiding Government Agency and the contractor shall produce the same as and when required for inspection.
- (h) It shall be the responsibility of the contractor to provide Canteen, Medical and/or Transport Facility to his personnel if required by any enactments.
- (i) It shall be the responsibility of the contractor to pay any compensation or damage for the injury sustained by any contract labour or employee during the performance of their duties. This also applies to any damage or compensation due to any dispute between them.
- (j) Any expenditure incurred by NIT Raipur to handle such situations or those arising out of the conduct of deployed personnel or otherwise shall be deducted from the bills / performance guarantee of the contractor.

13. LOCAL CONDITIONS

It will be the sole responsibility of each bidder to fully acquaint him with all the local conditions and factors, which could have any effect on the performance of the contract and/or the cost.

14. INDEMNITIES AND LIABILITIES

- (a) The contractor shall indemnify and protect the purchaser from and against all actions, suits, proceedings, losses, costs, damages, charges, claims and demands of every nature and description brought against or recovered from NIT Raipur by reasons of any act or omission of the contractor/his agents or employees, in the execution of the works or in the guarding of the same.
- (b) The contractor shall indemnify NIT Raipur against any claims, damages, loss or penalty including costs thereof in case of liability arising out of any accident/incident/theft involving manpower deployed by him.
- (c) NIT Raipur will not be responsible in any way for any injury sustained by contractor's personnel during the performance of its/their duties and also any damage or compensation due to any dispute between the contractor and his employees.

- (d) Any expenditure incurred by NIT Raipur to handle the situation arising out of injury of contractor's personnel during work or the conduct of the personnel deployed by the contractor will be deducted from Security Deposit/Performance Guarantee/Bills of the contractor/Service Provider.
- (e) Contractor shall also indemnify NIT Raipur against enforcement of any acts, laws, rules and/or regulations (including Labour Laws) and amendments enacted from time to time thereto by any Central/State/Local or Municipal Authorities.
- (f) Contractor shall indemnify NIT Raipur against third party claims arising out of equipment malfunctioning / mishandling on the part of employees of the contractor.
- (g) Contractor shall also indemnify to reimburse any loss or damage by his personnel to NIT Raipur personnel or property including machinery, equipment or buildings. In case, any such amount is not deposited/paid to NIT Raipur, the same shall be deducted from Security Deposit/Performance Guarantee/Bills/Future payments due to the contractor.
- (h) Total financial liabilities of the contractor arising out of breach of contractual obligations shall not exceed the value of contract. However, any liabilities arising out of breach of any obligation(s) commonly applicable in Indian or International law or regulation or intellectual property right infringements etc shall not be limited by this agreement and the contractor shall be solely and completely responsible for any such violation on his part and be liable to pay full cost of damage.

15. INSURANCE

NIT Raipur shall not arrange for any "Transit Insurance" and the supplier shall be responsible till the entire goods contracted, arrive in good condition at the destination site. Contractor shall, at his own cost, unconditionally replace / rectify the goods lost / damaged / found defective on inspection to the entire satisfaction of NIT Raipur within 45 days from the date of receipt of intimation from NIT Raipur.

16. EXIT CLAUSE / TERMINATION OF CONTRACT

In case of non-initiation of work or non-performance / breach of the clauses of this contract, NIT Raipur would issue a written notice of 30 days to the party to perform / rectify the breach failing which NIT Raipur shall be at liberty to terminate the Purchase Order / Work Order / Contract by providing 30 days written notice to the party and arrange procurement from alternate sources at the successful Bidder's risk & cost. In such event, the terminated party shall have no right to claim compensation/damages etc from NIT Raipur on account of early termination

17. PRICES

- (a) All Prices shall be in Indian Rupees and no foreign exchange / import license shall be provided. The prices should be all inclusive as mentioned in Chapter-I: Instructions to Bidders.
- (b) However, the bidder is advised to explicitly mention tax and duty rate percentages etc. separately. In case of change in any duty or tax on account of change in rules / legislation by the Government, the actual rates as applicable at the time of supply shall be payable only for taxes and duties which are clearly stated as percentages in the offer and firms will not be reassessed for lowest due to change in taxes.

- (c) Quoted prices shall remain firm for the period of validity of the offer.
- (d) NIT Raipur reserves the right to place order for a part item / combination of the quantity offered. The unit rates offered by the bidders shall be valid for any such part order.

18. FIRM PRICES

The rates quoted by the bidder in the bids shall be fixed for a period of 12 months from the date of submission of bids. The bid price must be quoted in Indian Rupees.

19. ACCEPTANCE OF PURCHASE ORDER

Prior to the expiry of bid validity, the successful bidder shall be notified by post / fax / e-mail. Within 05 days of the award of the contract the successful bidder shall send his / her acceptance of the purchase order along with the performance cum guarantee warranty bond.

20. ONE BID PER BIDDER

Each bidder shall submit only one bid in this tender. Bidder submitting more than one bid shall be disqualified from participating in the tender

21. BIDDING BY CONSORTIUM

Bidding by consortium is not allowed in this tender.

22. ON COMMENCEMENT OF JOB / SERVICES

The contractor shall supply the various items and provide the required service as per the requirement in the schedule of requirements and scope of work section of the tender. The complete responsibility for providing services as per the terms of the tender shall be with the contractor. The contractor shall be solely responsible for the acts and deeds of the personnel deployed by him for the services. NIT Raipur will, in no way, be responsible for violation of any rules / regulations / instructions / laws of the concerned agencies and/ or for any loss or damage caused by the personnel of the contractor, to NIT Raipur and/or third party staff and/or property and any such loss or damage shall have to be compensated/borne by the contractor. The contractor shall be responsible for engaging adequate manpower in accordance with the work defined in the schedule / scope of work so that the continuity of work is maintained and the work is completed within time. Contractor's responsibilities shall include but shall in no way be limited to supervision of personnel provided by the contractor, verification of antecedents of the contractor's personnel, quality and timely completion of work by the contractor's personnel.

23. PROBLEM RESOLUTION METHOD

If the bidder is notified in writing of a problem he shall act appropriately to resolve the same in reasonable time.

24. DELIVERY CONDITIONS

All supply items in the work order must be delivered within 90 days.

NIT reserves the right to change the quantity, locations, delivery schedule for the equipment without imposing LD.

25. LIQUIDATED DAMAGES FOR DELAY IN DELIVERY

Any delay by the contractor 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 bidder then in such condition LD shall not be imposed. However, prior written information has to be provided for the same.

26. GUIDELINES FOR REASONABLE UNIFORMITY

Following systems should individually be of the same manufacturer: Racks, PAC, UPS, DG, LAN, Fire Detection & Alarm, Rodent Repellent, Water Leak Detection etc.

27. WARRANTY

All components should be supplied with total of 12 months repair / replacement warranty from the date of supply.

28. PERFORMANCE & SLA TERMS

Datacenter facility has to remain operational on a 24 x 7 x 365 basis. Contractor shall make necessary arrangements to ensure power and cooling availability to the Racks. Contractor shall make all possible arrangements to ensure that facility is available on an average of 99.5 % annually. Faults if any have to be attended and rectified within a maximum of 48 hours after which a penalty at the rate of Rs. 1000 per day shall be levied for every faulty equipment until the equipment is rectified.

29. INCOME TAX

- (a) Income tax shall be deducted at source by NIT Raipur from all the payments made to bidder according to the Income tax Act, unless the bidder prior to the release of payment submits valid and complete documents for Income tax exemption.
- (b) A certificate shall be provided by NIT Raipur to the bidder for any tax deducted at source.

30. VARIATION OF QUANTITIES

Actual quantities of items and jobs work are subject to variation on either side for all components, subject however to a total price impact of 10% on the work order value. However, only the indicative ballpark quantities

mentioned in the price schedule shall be considered by the bidders for preparing the price bids and by NIT Raipur for tender. The payment for this variation in supply and installation quantities shall be made on a proportional (pro-rata) basis. No separate work order or supplementary order or amendment etc. shall be issued by NIT Raipur for any additional items over and above the initial work order supplied and installed under this contract subject to the ceiling mentioned herein. However, the written approval / concurrence of the CCC through e-mail / hardcopy shall be required before supplying and installing any additional items under this contract.

31. BILL SUBMISSION

Bills shall be submitted in triplicate to the Central Computer Centre. On successful inspection, the CCC shall forward the bills with appropriate payment recommendation to the accounts section for realization of payment.

32. PAYMENT TERMS AND CONDITIONS

- a) Twenty percent (20%) of the contract value will be paid as mobilization advance and shall be released against equivalent amount of bank guarantee valid for a period of 180 days from the date of signing the agreement.
- b) Fifty percent (50%) of the contract value will be paid on delivery of all supplies.
- c) Twenty percent (20%) of the contract value will be paid on installation of all supply items.
- d) Ten percent (10%) of the contract value will be paid on commissioning and testing.

All payments shall be made through RTGS.

33. PROJECT COMPLETION AND ACCEPTANCE

The contractor will have to complete the entire work as mentioned in this document to create a fully functional data centre within 120 days from the date of signing the agreement. Project shall be treated as complete and ready for handover on the completion of

- (a) Supply, Installation, Configuration, System Integration, Documentation and Test Reports.
- (b) 3 days satisfactory functioning of the facility
- (c) At the time of handover contractor shall handover:
 - (i) All the printed documentation including all kinds of manuals and guides of all equipment supplied
 - (ii) As build layouts and operational guidelines.
 - (iii) Test reports

34. SETTLEMENT OF DISPUTES THROUGH ARBITRATION AND JURISDICTION

- (a) NIT Raipur and the contractor shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- (b) If even after thirty (30) days from the commencement of such informal negotiations, NIT Raipur and the contractor are unable to amicably resolve the dispute, either party may require that the dispute be referred for resolution to The Director, National Institute of Technology, Raipur, as single party Arbitrator in accordance with the Arbitration and Conciliation Act, 1996. Decision of arbitrator shall be final and binding to all parties.
- (c) All Arbitration proceedings shall be held at NIT Raipur, Chhattisgarh, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.
- (d) Jurisdiction: The High Court of Chhattisgarh at Bilaspur has exclusive jurisdiction to determine any proceeding or arbitration award in relation to the Contract.

35. FORCE MAJEURE CONDITIONS

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, quarantine restriction, 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 non-performance 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.

36. CONTRACT FORM:

- (a) A suitable contract agreement shall be signed before starting the work.
- (b) Successful bidder shall be required to enter into a contract with the Institute after the issue of the work order.
- (c) Submission of the bid against this open tender enquiry by a bidder implies that the bidder is in full agreement with the terms and conditions mentioned in this tender document.
- (d) The successful bidder shall be required to affix his signature and seal on each page of this tender document and submit the same as proof of having accepted the terms and conditions mentioned herein.
- (e) The contract with the successful bidder will be on Rs. 100/- stamp paper and shall contain the terms and conditions mentioned under the different chapters and sections of this tender document.

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CHAPTER III: SCHEDULE OF REQUIREMENTS**(including scope of work)**

S. No.	Description of Supplies / Services	Unit	Qty
A	Civil & Interior Works		
1	Glass Doors		
1.1	Aluminum doors using 6 ~8 mm clear toughened float glass and all necessary hardware's like EDPM gaskets, heavy duty door closer etc of approved colour, S.S. handles, locking device with duplicate keys etc. complete as per layout. The joints between main door frame and partition shall be filled and sealed with silicon sealant.		
1.1.1	Size 1200 mm x 2100 mm, Single shutter	Nos.	2
1.1.2	Size 1000 mm x 2100 mm, Single shutter	Nos.	2
1.1.3	Sun film on glass doors as per approved design.	Sqft	72
1.1.4	Installation of above glass doors.	Lot	4
2	Fire Rated Metal Doors		
2.1	Size = 1500 x 2100mm (equal Double leaves) Fire rated (120 min) metal door with frame, fire rated glass vision panels, SS ball bearing butt hinges, lock, SS lever with heavy duty door closer, all complete. (01 door with panic bar)	Nos	6
2.2	Size = 1800 x 2100mm. Single shutter, Fire rated (120 mins) metal door with frame, fire rated glass vision panel, SS ball bearing butt hinges, lock, with heavy duty door closer, all complete.	Nos	1
2.3	Installation of above fire rated metal doors.	Lot	7
2.4	Rolling shutters or grill gate for LT & DG Synch Panel Room. Size to be as per site requirement.	No	1
2.5	Main entrance sliding gate, as per site conditions. Size to be as per site requirement.	No	1
3	False Ceiling (No false ceiling in the Server, Electrical, UPS and battery rooms)		
3.1	Gypsum board false ceiling with approved G.I Frame work and hangers including openings for lights and air conditioning grilles to be framed with teak wood members at no extra cost etc as per specification complete.	Sqft	250
3.2	Mineral fibre board ceiling 600 x 600 tegular edge in true horizontal level suspended on locking 15mm grid system.	Sqft	1000
3.3	Installation of above false ceilings.	Sqft	1250
4	Vitrified Flooring		
4.1	Vitrified tile flooring, as per site requirement.	Sqft	3500
4.2	Installation of vitrified tile flooring.	Sqft	3500
5	Wall Finishing		
5.1	Wall Putty over cement plaster. To be done in perfect line and level including finishing off machine cut grooves and chases, edge banding, scaffolding pockets etc. complete as per site requirement.	Kgs	As required
5.2	Acrylic Emulsion Paint.	Litres	As required
5.3	Enamel Paint over a primer coat, on metal structures and as per manufacturers recommendations.	Litres	As required
5.4	Installation / labour charges for all paintings.	Lot	1

6	Trench Works		
6.1	Underground trenching for laying of power cables, as per specifications.	RMT	40
6.2	Trench finishing, as per site requirement	RMT	40
7	Cement Concrete / MS Works		
7.1	Construction and finishing of ramps, as per layout , specifications and site requirement. Ramps should be finished with anti-skid tiles or any other suitable material, pre-approved.	Sqft	300
7.2	Construction and finishing of steps, as per layout and site requirement.	Sqft	30
7.3	MS railing for steps in the DC building from ground to first floor with painting.	Nos	1
7.4	MS Grills in the windows of fire safety room, control room and transformer/DG Panel room of DC building	Nos	3
7.5	Sliding windows in safety room, control room and transformer/DG Panel room of DC Building.	Nos	3
7.6	Blocking of door areas to create door openings, as per site requirement.	Sqft	300
7.7	Floor Screeding : Construction of the base floor by brick soling and a layer of PCC , 50 ~ 75 mm , as per specifications.	Sqft	3500
7.8	Construction of ODU mounting platforms, as per site requirement.	Nos	As required
7.9	Construction of DG foundation bases, as per site requirement.	Nos	As required
7.10	Wall chasing for concealed cable paths, boring holes in walls for cable entries, sealing with fire sealants and finishing.	Rft	As required
8	Miscellaneous		
8.1	Signage, displays and instruction display charts.	Nos	10
8.2	SS Waste paper basket.	Nos	12
8.3	Door mats, of minimum size 1500 x 800 mm, as per site requirement.	Nos	3
8.4	Foot bridge with railing, as per specifications and site conditions, to connect DC and CCC buildings.	No	1
8.5	Projection over external doors and windows, as per site requirement.	Nos	As required
8.6	Miscellaneous Brick and Plaster Work	Lot	1
8.7	Minor landscaping works, as per site requirement.	Lot	1
B	Electrical Works		
1	Main LT Panel		
1.1	MAIN LT Panel, cubicle type, made of 14 SWG CRCA sheet steel, totally enclosed, IP-42, free standing, floor mounting, indoor, compartmentalised, powder coated painting suitable for operation on 3 phase and neutral 415V, 50 Hz AC system with bus bars extendable on both sides, interconnections including supply and installation of following items and as per specifications. Breakers shall be suitable as per load.	No	1
1.2	Installation, commissioning and testing.	No	1
2	UPS Output Panel		
2.1	UPS output Panel, cubicle type, made of 14 SWG CRCA sheet steel, totally enclosed, IP-42, free standing, floor mounting, indoor, compartmentalised, powder coated painting suitable for operation on 3 phase and neutral 415V, 50 Hz AC system with bus bars extendable on both sides, interconnections including of following items and as per specifications	Nos	1

	The panel should have two incomers of suitable rating and four outgoing of suitable rating. Intelligent multi function digital meter to read V,A,KVA KW, KVAR, PF, Hz etc with communication facility (RS 485 port) and LED display with 3 Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.		
2.2	Installation, commissioning and testing.	No	1
3	Lighting & Raw Power DB		
3.1	Distribution boards for lighting and raw power sockets. The DB should have an incomer of suitable rating and appropriate number of outgoing of suitable rating considering spares.	Nos	2
3.2	Installation, commissioning and testing.	Nos	2
4	Rack UPS Power DB		
4.1	Distribution Boards for UPS Power to Racks :-6 way TPN	Nos	4
4.2	Installation, commissioning and testing.	Nos	4
5	Emergency Light DB (ELDB)		
5.1	Distribution Boards for Emg Light, Power sockets :-6 way SPN	Nos	1
5.2	Installation, commissioning and testing.	Nos	1
6	UPS DB (UDB)		
6.1	Distribution Boards for desktops,fire & security sockets :-6 way SPN	Nos	1
6.2	Installation, commissioning and testing.	Nos	1
7	Raw Power DB (RDB)		
7.1	Distribution Boards for Raw Power sockets :-12 way SPN	Nos	1
7.2	Installation, commissioning and testing.	Nos	1
8	CAC DB		
8.1	Distribution Boards for Raw power to CAC's : 6 way TPN	Nos	1
8.2	Installation, commissioning and testing.	Nos	1
9	Cabling		
	Supply of the following sizes of 1100 volt grade, PVC insulated and armoured, copper or aluminium conductor cables. Rate to include for all necessary hardware cable clamps, M.S. supports and hangers etc.for cables.		
9.1	3.5 core x 240 sq.mm. AL. AR. Cables 2 run (from transformer- 400 KVA to LTP) estimated at 25 mtrs distance	Mtrs.	100
9.2	3.5 core x 240 sq.mm. AL. AR. Cables 2 run (from 320 KVA DG to LTP) estimated at an average of 30 mtrs distance.	Mtrs.	120
9.3	3.5 core x 120 sq mm Cu flexible cable (LTP to PAC Panel)	Mtrs.	40
9.4	1 core x 70 sq mm Cu flexible cable (LTP to Main UPS & UPS to UPS O/P Panel)	Mtrs.	200
9.5	3.5 core x 25 sq mm Cu flexible cable (PAC Panel to PAC)	Mtrs.	40
9.6	3.5 core x 35 sq.mm. Cu. flexible cables (LTP to CAC DB)	Mtrs.	25
9.7	1 core x 4 sq.mm. Cu. flexible cables (LTP to AUX UPS/ AUX UPS to UPS DB)	Mtrs.	200
9.8	2 core x 6 sq.mm. Cu. flexible cables	Mtrs.	50
9.9	3 core x 4 sq.mm. Cu. flexible cables (CAC - 2.0 Tr)	Mtrs.	200
9.10	3 core x 1.5 sq.mm. Cu. flexible cables (Point wiring)	Mtrs.	500
9.11	8 core x 1.5 sq.mm. Cu. flexible cables	Mtrs.	100
9.12	3 core x 6 sq.mm. Cu. flexible cables (for Racks)	Mtrs.	As required
9.13	Laying of the above cables including all tools and labour charges.	Mtrs	As required

9.14	Joining the ends of the sizes as mentioned above sizes of PVC insulated and armoured cables including supply of brass cable glands, cable sockets and all jointing materials.	Nos	60
10	Cable Trays		
	Supply of the following sizes of wire mesh or perforated GI cable trays with epoxy finish. Rate includes all necessary supporting brackets, clamps, saddles, fixing hardware etc.		
10.1	600 (W) x 50 (H) x 2 mm (T)	Mtrs.	100
10.2	300 (W) x 50 (H) x 2mm (T)	Mtrs.	100
10.3	150 (W) x 50 (H) x 2mm (T)	Mtrs.	150
10.4	Laying of the above cable trays including all tools and labour charges.	Mtrs	350
11	Earthing		
11.1	Supply of earthing material for 3.0 metre long earth pipe set with back fill compound, bus for termination, SS bolts, nuts, and washers etc.	Nos.	12
11.2	Supply of earthing material for 600 X 600 X 3 mm copper Plate Type Earthing, as per specifications.	Nos.	4
11.3	25 mm x 3 mm GI Strip	Mtrs	100
11.4	No. 8 SWG Cu. Wires	Mtrs	200
11.5	Copper Earth Busbar with insulators	Nos.	4
11.6	Installation & commissioning of the above earthing systems including including excavation, refilling & complete as required, including heavy duty cast iron cover and all associated civil works like construction of chamber and rough plastering etc.	Nos.	16
12	Lighting and power wiring		
	Wiring to the following light points , PVC insulated copper conductor wires drawn in heavy gauge PVC conduit pipes installed on the ceiling or run over the false ceiling with drops to the distribution boards and switch boxes recessed in the walls/partitions. Points to be controlled in groups or individually by means of 6 amps, single pole, flush type modular switches housed in flush mounted G.I. boxes.		
12.1	Points to be controlled in groups of 4 - 6 from the raw power / light DB	Points	5
12.2	Points to be controlled individually from the respective switch box / socket-outlets	Points	10
12.3	Point wiring for utility & workstations : Wiring with 2 Nos. 6A, 5 Pin Socket and 2 Nos. 6A switch, housed in 6-way modular faceplates of approved color and design mounted either with or without G.I. back-boxes, as per site requirement.	Points	12
12.4	Point wiring for 16 amps socket-outlets : Wiring with PVC insulated copper conductor wires drawn through PVC conduit & each point to be complete with 1 No. 16A Switch + 1 No. 16A Socket outlet, housed 4-way modular faceplates of approved color and design mounted with G.I. back-box.	Points	8
12.5	Labour charges for laying / installation of point wiring materials.	Nos	35
12.6	Supply of 3-Pole, Single/ Three Phase, 250 volts, inter-locked switch socket-outlet, as suitable rack design.		
12.6.1	32 A interlocked socket-outlet	Nos.	As required
12.6.2	63 A interlocked socket-outlet	Nos.	As required
12.6.3	Installation and Commissioning of the above interlocked sockets.	Nos.	As required

13	Lighting fixtures		
13.1	Energy efficient and low maintenance type LED type light fixtures :		
13.1.1	Ceiling hanging type LED light fixtures	Nos.	16
13.1.2	Ceiling recessed type LED light fixture, suitable for grid ceiling	Nos.	14
13.1.3	Outdoor LED lights.	Nos.	4
13.1.4	Installation and Commissioning of the above light fixtures.	Nos.	34
14	Lightning Arrestor with Earth Pit		
14.1	Early Streamer Emission (ESE) type Lightning Terminal	No.	1
14.2	GI MAST	No.	1
14.3	Lightning Strike Recorder	No.	1
14.4	Test Link Joint	No.	1
14.5	Transient Earth clamp	No.	1
14.6	Earth pit with all accessories and cables.	No.	1
14.7	20 mm x 3 mm Cu Strip	Mtrs	15
14.8	Installation and Commissioning of the above Lightning Arrestor and Earth Pit including all labour charges.	No	1
15	First Aid Box	Set	1
16	Danger Plate	Nos.	6
17	Shock Treatment Chart	Nos	3
18	Rubber mats	Lot	1
19	Exhaust Fan	Nos	4
20	Ceiling Fan	Nos	12
C	Main UPS System		
1	160KVA (3Ph-3Ph) Microprocessor based double conversion parallel redundant online UPS system with 15 Min battery back up as per technical specifications	Nos	2
2	Installation and Commissioning of the above.	Nos	2
D	Auxilliary UPS System		
1	15 kVA/ 12 kW 3-Phase Input / 1-Phase Output parallel redundant online UPS system with 15 Min battery back up as per technical specifications	Nos	2
2	Installation and Commissioning of the above.	Nos	2
E	Diesel Generator		
1	Supply of 400 KVA Diesel Generating set (with AMF) with acoustic enclosure, radiator, fuel tank, heavy duty silencer and exhaust piping and control panel, as per specifications.	Nos	2
2	Exhaust System		
2.1	Supply and fixing of exhaust piping B class 150mm dia., 2mm thick MS pipe with all support structures, flanges, filer flay gasket, hardware, etc complete. The exhaust piping shall be insulated with mineral wool with chicken mesh bonded and aluminium sheet cladding. All labour, materials, lead, lift, tools, plants etc. complete.	Rmt	20
3	Miscellaneous		
3.1	Fuel refilling with lub oil in DG	Lot	2
3.2	Statutory clearance charges from Polution Control Board and others, as req.	Lot	2
3.3	Transportation, Loading & Unloading Charge	Lot	2

4	Installation, testing and commissioning of the above DG Sets including transportation to NITR campus mounting in the specified location including all materials, labour, tools & plants, all lead, lifts, tackles for unloading/ handling of equipments and materials at site, their assembly, sundry items etc. The work should include all labour, aligning the D.G set, fuel tank erection, filling of fuel, oil etc, installing battery assembling, connecting earth connections, testing and commissioning.	Nos	2
F	Comfort Air-conditioning System for facility area		
1	Supply of 2.0 Tr, Wall Mount Split AC, 3 Star, as per specifications.	Nos	8
2	Copper refrigerant piping with fittings, nitrile rubber insulation & wiring , as required, for each compressor to interconnect the condensing units with the indoor units including gas charging, testing & commissioning	Nos	8
3	uPVC High Pressure Drain Water Piping, as required, complete with fittings (elbows, tees, reducers, sockets etc.), supports, jointing, nitrile rubber insulation etc. and any other item required to make the system complete. Nominal diameters in mm as indicated below:		
3.1	32 mm (length to be estimated as per site conditions)	Nos	8
3.2	25 mm (length to be estimated as per site conditions)	Nos	8
4	Installation and commissioning of the above CAC units.	Nos	8
5	Mounting of outdoor units with all necessary brackets and civil works.	Sets	8
G	Addressable Fire Alarm System		
1	Intelligent Addressable Microprocessor based Fire Alarm panel	Nos	1
2	Addressable photo electric type smoke detector with blinking LED	Nos	60
3	Addressable heat detectors	Nos	2
4	Response indicator with LED	Nos	6
5	Addressable control modules	Nos	12
6	Addressable monitoring modules	Nos	10
7	Isolator module complete with junction box and mounting accessories	Nos	10
8	Manual Pull Station	Nos	3
9	Electronic Strobe cum Hooter	Nos	3
10	1.5 sq.mm copper FRLS cable	RM	400
11	Installation and commissioning of the above	Nos	1
H	Fire Suppression System		
1	5 Kg, ABC Type Wall Mount Fire Extinguisher	Nos	5
2	Installation and commissioning of the above	Nos	5
3	Polymer Fire Detection Tube Based In-Cabinet Localized Fire Suppression System for Electrical Panels (4.5 kg CO ₂)	Nos	5
4	Installation and commissioning of the above	Nos	5
5	Electrically actuated automatic CO ₂ based flooding system for server racks and electric panels complete with cylinders, pipe network, discharge nozzles, etc.	Lot	1
6	Design, Installation and Commissioning of the above	Lot	1
I	Access Management System for facility area		
1	Microprocessor based Control Panel for Access Control.	Set	1
2	Low power 12 Vdc power supply with internal battery backup for 4 hours operation.	Nos	1

3	Smart card Readers	Nos	9
4	Biometric Finger Print cum Smart Card Reader	Nos	2
5	Smart Cards (Blank faced)	Nos	50
6	Electromagnetic Locks (600 lbs) with Magnetic Contact, door sensor for single leaf doors.	Nos	3
7	Electromagnetic Locks for Double Doors (2x600 lbs) with Magnetic Contact & door sensor.	Nos	6
8	Emergency Door Release (Break Glass Type).	Nos	3
9	Exit switches	Nos	7
10	Access Management Software	Set	1
11	8 core, 1.0 sq.mm cable.	Mts.	250
12	1.5 sq. mm. copper conductor cable	Mts.	250
13	25mm PVC conduit	Mts.	100
14	Installation and commissioning of the above.	Nos	1
J	Rodent Repellent System for facility area		
1	Master Console capable of connecting to 12 Satellites complete with all accessories as per specifications	Nos.	1
2	Satellite Units complete as per the specification	Nos.	12
3	Connecting Cables	Rmt	200
4	Bracket Stand	Set	1
5	25mm PVC conduit	Mtr.	100
6	Central Reporting and Monitoring Software	Nos	1
7	Installation and commissioning of the above	Nos	1
K	Wall Mount Display for Control Room		
1	42" LCD display, wall mount, for Control Room	Nos	2
2	Installation and commissioning of the above.	Nos	2
L	Racks & Accessories		
1	42 U 600 x 1450 Racks with Mechanical Locks at the Front and Rear Doors and 1 No. Metered and 1 No. Normal PDU	Nos	18
2	Installation and commissioning charges of the above	Nos	18
3	500A Power Raceway with 20 Nos. x 32 A Tap-up Boxes with MCB and End-Feed Unit	Nos	2
4	Installation and commissioning charges of the above	Nos	2
5	Supply of In-row type Precision air conditioning units with horizontal air flow pattern, can be placed in-between the racks or at the ends of rows, close to the heat source with SHF more than 0.99 to Cold Aisle at 22+/-1 deg C . Unit should have Galvanized sheet metal, external epoxy powder coated, internally insulated with open-cell foam construction, Dx type with inverter scroll compressor, electronic expansion valve, multiple EC fan, Filter, Microprocess Controller, individual display, multiple stage heater, humidifier, Modbuscard, water leak detector, etc. Capacity :30 Kw with 4200 Cum/h air volume	Nos	8
6	Refrigerant Piping between Indoor & Outdoor unit with insulation(as per manufacturer standard). Pipes running outside the building should be additionally protected with UV resistant tape.- Suitable size (as per	RMT	50

	manufacturers recommendation) with 18 gauge hard copper piping with necessary fittings and supports. The measurement is per circuit (for both gas suction and liquid line of copper pipings)- 5/8" & 7/8"- Assuming Distance between IDU & ODU is 25 RMT		
7	Necessary control cabling between Indoor & Outdoor Unit - copper flexible 3C 2.5 sq mm -Assuming Distance between IDU & ODU is 30 RMT	RMT	60
8	Necessary power cabling for IDU Unit - copper flexible 4C 10 sq mm - Assuming Distance between IDU & isolator as 10 RMT	RMT	20
9	Lifting shifting & positioning	Nos	2
10	Commissioning with refrigerant	Nos	2
11	Fresh water piping for humidifier line - 20 mm cpvc-Assuming 8 rmt per unit	RMT	20
12	Drain water piping –CPVC 40 mm-Assuming 8 rmt per unit	RMT	20
13	Main Incoming cable cu flexible with termination 4 C 10 Sq.mm	RMT	20
14	1U Screwless Blanking Panel	Nos	300
15	2U Screwless Blanking Panel	Nos	200
M	Passive Networking		
1	LC-LC Multimode 50/125 micron OM4 Duplex Patch Cord, LSZH, 10 Meter	Nos.	20
2	LC-LC Multimode 50/125 micron OM4 Duplex Patch Cord, LSZH, 20 Meter	Nos.	20
3	Cat6 UTP Cable 23 AWG	Box	2
4	Cat6 UTP Jack for field side	Nos.	12
5	Cat6 Patch Cord, 1 Mt., Green	Nos.	12
6	Cat6 Patch Cord, 2 Mts., Green	Nos.	12
7	24 Port unloaded modular Jack Panel	Nos.	1
8	Cat6 UTP Jack for Jack Panel	Nos.	24
9	Single type shuttered Face Plate	Nos.	12
10	12U Rack	Nos.	1
11	24-core Fibre Cable	Mts	120
12	24-port LIU	Nos.	4
M.1	Installation Services		
1	Laying of OFC Patch Cord	Nos.	40
2	Laying of Cat6 Cable	Mts.	610
3	Laying of 24-core fibre cable through cable trays	Mts	120
4	Termination of 24-port LIUs with all necessary accessories	Nos.	4
5	Termination of I/O	Nos.	12
6	Termination of Jack Panel	Nos.	1
7	12U Rack fixing	Nos.	1
N	Material Movement System	Nos.	1
1	Robust and sturdy table trolley for carrying 2 bulky servers of 50 kg weight each, Material: Overall stainless steel body Maximum Size: Length 1000mm, width 600mm, height 750mm Wheel: Four Shelves : Min 2 with 2 feet vertical spacing	Nos	2
2	Material Movement System (Battery Cart)	Nos	1
O	Water Leak Detection System		
1	Water Leak Detection System with Necessary Accessories like control panel,	Lot	1

	required number of sensor, cables etc.		
P	Project Management		
1	Project Management charges	Lot	1
2	Onsite warranty support for one year from the date of commissioning & handover, as per SLA.	Lot	1
3	Training and documentation.	Lot	1

Bidder has to design, supply, install, commission, integrate, test and maintain the Datacenter Physical Infrastructure as per minimum specifications elaborated in this tender document. The bidder has to study the tender document and quote for the total solution of works complete in all respects. Detailed BoQ in line with the tender requirements has to be provided by the bidder. A tentative BoQ has been included. The successful bidder shall have the entire responsibility to complete the solution and integrate the same for proper functioning. Any deviation to the technical specification has to be mentioned assigning proper reasons / justifications and acceptance of such reasons / justifications shall be at the sole discretion of NIT Raipur.

- 1.1 This specification covers a built Datacenter Physical infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure to be installed at NIT Raipur as detailed in the specifications, complete with all accessories required for efficient and trouble free operations.
- 1.2 The detailed specifications of the Datacenter Physical infrastructure shall be in adherence to TIA 942 guidelines and shall be composed of multiple active power and cooling distribution paths, but only one path active.
- 1.3 The Datacenter Physical Infrastructure should essentially include Civil and Interior works, a fault tolerant electrical distribution system, secondary power generation systems, automatic switching between utility and secondary power, redundant or backup power supplies, environmental controls (e.g., precision air conditioning, fire suppression, smoke detection, water leak detection, humidity sensor, etc), security devices, equipment racks, networking and monitoring capabilities, etc. Critical systems like UPS and Precision Air-conditioning systems should be in N+1 and preferably in N+N topology. Bidders are requested to go through the detailed Schedule of Requirements.
- 1.4 The Server Room (1200 Sqft approx) under the Datacenter Physical Infrastructure is proposed to currently accommodate a minimum of 18 units of 42U equipment racks of dimension 600 x 1450 mm. The design and placement of racks inside the room should allow enough free space to add an identical set of racks in future along with the associated precision cooling units.
- 1.5 The precision cooling of the racks should be through cold aisle containment. The hot air return to the precision cooling units should be through hot aisle containment inside the racks. Precision Air conditioner should be with variable capacity cooling; heater and humidifier to cater to a minimum IT load of 126 KVA and in N+1 or N+N topology for total 18 racks.
- 1.6 The racks should be equipped with smoke detectors, water leak detection system, and beacon. CO₂ gas discharge nozzles for extinguishing fire should be inside the racks for local flooding in case of a fire trigger or event.

- 1.7 The sensor systems in the racks should have the capability of monitoring and generating SMS alerts through appropriate interface with GSM modem.
- 1.8 32A Vertical Rack mount PDU of type IEC C13 & IEC C19 combination. Each rack shall have two such PDU's – The active PDU shall be a non-intelligent metered PDU.
- 1.9 Electrical power distribution system for the racks with essential MCB/MCCB.
- 1.10 All network and power cables shall run through wire mesh cable trays either suspended from the ceiling or laid over cable trays running below the floor. The rack infrastructure would have provision to add an extra rack in future, subject to space availability. It should be flexible, adaptable, controllable infrastructure.
- 1.11 The scope of work would include supply, installation, testing, commissioning of all the systems as listed under the Schedule of Requirements including a 12 month comprehensive warranty on all electrical & electronic equipments and excluding batteries and consumables.
- 1.12 Water and electricity for construction works as well as running the data center physical infrastructure would be provided by NIT Raipur at nominal rates.
- 1.13 Transformer and required power would be provided by NIT Raipur.
- 1.14 Minor landscaping works around the DC facility building.
- 1.15 Foot bridge connecting DC and CCC, as per site conditions.
- 1.16 Main entrance manual sliding gate, as per site conditions.
- 1.17 Roof treatment works, if any, is excluded from the scope of works.
- 1.18 Bidder has to arrange for all transportation of materials upto the proposed facility building including un-loading, un-packing and mounting.

Notes to Bidders:

All bidders are requested to do a proper site survey and quote for the complete solution. Indicative bill of material has been provided.

Bidders are required to elaborate and detail the individual items under the major heads provided with their unit rates etc. at the time of quoting.

All bidders should submit detailed line item wise compliance of the technical specifications as per annexure.

All bidders should submit authorization from the respective OEM, as per format provided.

All the bidders are to abide with local rules and regulation, specifications laid by government / municipality or any of the concerned authority including the various insurance for man and materials etc, in all the works / sub works. Such rules will over ride / co- exist and will be applicable above any of the specifications given in this document.

The selected bidder shall submit product brochure/ technical datasheets for all the product's used for construction and get prior approval of client before ordering the same.

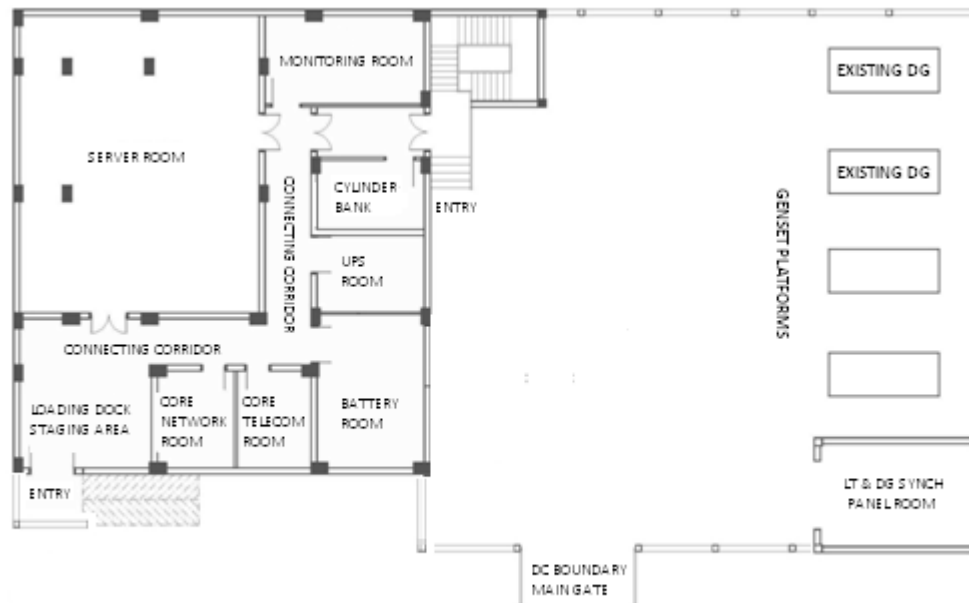
The selected bidder shall submit all drawings before start of work for necessary approvals. The as-built drawings shall be separate for each package and shall be submitted in color 3 sets in hard copies and in softcopy on a CD which contains drawings both in AutoCAD and PDF.

All bidders should submit a solution document with the technical bid complying with the requirements as laid out in the scope of works. Bids without such solution document or with non-compliant solutions shall be summarily rejected.

CHAPTER – IV: SPECIFICATIONS AND ALLIED TECHNICAL DETAILS

CIVIL & INTERIOR WORKS

General Layout



Entire Data Centre is logically divided in Zones.

- Zone A** - Comprises of the Server Room which shall host the Servers, Network and Storage Racks.
- Zone B** - This includes the Monitoring, Telecom, Network, Staging and the Cylinder Bank rooms.
- Zone C** - This shall include the Electrical & UPS rooms.

Scope of Civil & Interior Work

The scope for civil work in this tender is to furnish the facility area in all aspects. The furnishing includes but not limited to the following:

Cement Concrete works
Trench works
Minor landscaping including foot bridge connecting DC and CCC buildings
Ramps and Steps

Painting and POP
Vitrified Flooring
Partition Walls
Fire Rated Metal Doors
Fire Exit
Signage
False Ceiling
False Flooring
Tentative Rack Layout

All material to be used shall be of approved quality ISI mark unless otherwise specified. The bidder should adhere to the civil and interior specifications mentioned including compliance.

Cement Concrete works

The base floor of the entire facility shall have to be prepared by brick / rubble stone soling and PCC, 50 ~75 mm thk, using 15/20 mm graded granite aggregate including compaction, curing, formwork, top surface finished smooth etc., as suitable, before commencement of work at the site. Bidders can propose any design considerations in this regard and the same can be submitted as part of the technical bid.

Trench for cables and pipes

Trench may be required to be made at suitable places for cables to be laid from DG area / Substation to LT panel room and other areas, as per site requirement. Same is in Bidder's scope. Trench shall be minimum 1.5' wide and 3-4' deep as per site requirement. The bed of the trench has to be filled in with sand and brick. The top of the trench should be flushed with the ground level. Trench should be easily serviceable, as and when required. Enough care should be taken not to damage any existing pipes, wires, cables that comes in the way of trench. Any damage done to existing structure has to be repaired and charges borne by the bidder. Cables shall be drawn through PVC ducting / DWC pipes / Cement Hume Pipes of appropriate diameter. The trench routes shall be marked using cable route markers every 5-6 m or so taking special care of turnings etc.

Minor Landscaping and Footbridge Connecting CCC and DC buildings

A one meter wide foot bridge with suitable railing has to be constructed (preferably retractable type) to connect the DC and the CCC buildings. The length of the bridge would be around 10 feet. Bidders are requested to assess the exact distance and height during site survey and propose the design along with the technical bid.

Minor landscaping works around the DC building may be considered, as per site conditions.

Ramps and Steps

Ramps and steps have to be constructed at suitable places for smooth transition to elevated floor levels. Bidder has to propose designs for the same along with the technical bid. Ramps for equipment entry shall be minimum 4500 x 2000 mm and constructed with brick and cement concrete. Top surface to be finished with net cement and anti-skid tiles fixed over the same. Ramps should not have steep slopes and the design has to be approved before construction.

All ramps should have MS railings. MS railing should be considered for the steps to the roof top in the DC building. MS grills to be considered in the windows of fire safety room, control room and transformer/DG Panel room of DC building. All MS structures to be painted suitably to prevent rusting.

Painting & POP

Anti-dust type, odorless, low VOC painting shall be used for the entire datacenter. Paint color shall have to be duly approved before procurement and application. All brick walls and partitions to be applied with two (02) coats of paint. A third coat may be applied, if required, during final handover.

Gypsum / Plaster of Paris / putty paste of thickness 5 - 8 mm punning over cement plaster shall be provided so as to ensure a level and smooth texture to the exposed walls and columns. The existing surfaces are to be cleaned and scratched and markers kept before the application of punning material. After the material has dried upon application, it is to be smoothened by means of rubbing it with sandpaper. Upon this smoothened surface one coat of primer and two coats of acrylic emulsion paint of approved make & shade is to be applied. This will be applicable for all vertical plane surfaces. Server, UPS and Electrical rooms shall additionally include the roof surface. All exposed roof surfaces shall be painted white.

Vitrified Flooring

20mm thick vitrified tiles 600 x 600 size conforming to IS:15622: 2006 to be fixed either with cement mortar or special adhesive of Dr. Fixit Fevimate X-L or equivalent. All areas should have 6 inch skirting. Cable trenching arrangement, inside the facility, if any, shall have to be made by the bidder. Drawing to be submitted for approvals.

Partition Walls

Partition walls, wherever required (battery, UPS, network and telecom rooms shall be full-height and made of brick like other internal walls.

The internal partitions for server room, shall be full height 125 mm thick fire line Gyp Board using 12.5 mm thick double fire line gyp-board on both sides with GI sheet metal vertical stud frame of size 75 mm thick fixed in the floor and ceiling channels of 75 mm wide to provide a strong partition. Glass wool insulation inside shall be provided as required. Fixing shall be made by self tapping screw width vertical studs being at 610 mm intervals. The same should be inclusive of making cut-out for switchboards, sockets, grills etc. It shall also include preparing the surface smooth and finally finishing with coats of primer / paint.

Fire Rated Metal Doors

Fire rated single /double leaf metal doors of required size as per schedule of requirement with 2 hours fire rating, along with the required framework, vision panel, handle, locking system, top patch and bottom patch, hardware, etc as per the technical specifications, to be provided and fixed. Details along with drawings to be submitted with the technical bid.

Fire rated metal door to be considered for the control room.

Glass door technical details: Glass door of minimum size 900 X 2100mm in the control room should be made out with minimum 8 mm thick clear toughened glass. Glass should be properly fixed in the suitable powder coated aluminum frame work (Size - 90 x 50 x 2) (304 Grade). All glass doors should have SS handles on both sides, door closer, provision to fix magnetic door locks, translucent door films of approved color and glass door sweeps. 'PUSH' and 'PULL' door signage to be fixed from both ends as per approved design, size and color.

All glass are to be of preferred manufacturer complying with IS 1548-1966 as per approved quality and sample to be of the selective qualities specified and free from bubbles, smoke, wanes, waviness, air holes and any other defects.

Suitable projection over doors and windows to be considered to prevent rain water from flooding in DC and CCC.

Rolling Shutters or grill gates in DC Building (LT & DG Synch Panel Room) to be considered complete with inside / outside painting.

Fire Exit

A suitable fire exit with panic bar to be provided from the Server Farm area.

Signage

Signage plays an important role in the datacenter physical infrastructure. They communicate with the user and make information's visible. Appropriate signage to be designed and fitted in all the server room and associated areas. The signage should be made out of acrylic board with vinyl pasting on both sides. Directional signage shall have proper arrows. Color codes chosen should be as per standards. LED signage should be used in appropriate places. All signage to be hung from the false ceiling or fixed to the ceiling grid through proper fasteners. All rooms should have room labels and door signage.

Large format wall mount displays to be mounted at suitable places. Drawings which is generally used to display a system, e.g, Emergency Evacuation Plan, Electrical Distribution System, Fire Detection and Alarm System, etc.

False Ceiling

Required in Monitoring Room, Maintenance Room, Network and Telecom Rooms. Bidder can propose in other areas like server room if there is a functional requirement.

False Floor

Bidder can propose if there is a functional requirement.

Tentative Rack Layout

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
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R1	R2	R3	R4	R5	R6
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It is proposed to provide minimum 18 Racks in the Server Room, as shown in the above layout. The design should be such that each rack has at least 10 kW of cooling without considering redundant units and is able to draw at least 7 kW of power.

ELECTRICAL WORKS

The entire electrical distribution system of the data center physical infrastructure shall be designed for automatic switching (without manual intervention) to ensure a minimum power availability of 99.7 % annually. Sufficient redundancies and switchgear level spares to be incorporated in the design. The system should have sufficient capability to handle various electrical faults as well as surge voltages. Grounding to be done as per datacenter best practices.

The Institute shall be responsible for installing the necessary transformers. The total load of the data center physical infrastructure currently should not exceed 400 kVA. LT Power from the transformer shall have to be drawn by the bidder. The associated cabling along with all necessary switchgears shall be in the scope of the bidder.

It is proposed to have two (02) 400 kVA transformers which will be connected to one utility source (Service Provider / Sub-Station). For secondary power, we plan to install Silent Diesel Generators of 400 kVA in N+1 configuration. For initiating operations, bidder shall have access to ~150 kVA power source from the electrical panel room on the ground floor of the adjacent CCC building. The associated cabling in trenches along with all necessary switchgears shall be in the scope of the bidder.

Datacenter Physical Infrastructure Load (Current) Approx

IT Load	-	126 kVA
Aux Load	-	10 kVA
HVAC Load	-	180 kVA
CAC Load	-	20 kVA
Others	-	4 kVA

TOTAL	-	340 kVA
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DG Sizing (Peak Load)

Considering, the current estimated load of 340 KVA, as above, the DG requirement would be 02 x 400 KVA, with one working and one standby which provides both N+N as well as N+1 redundancy and operating at 85% load.

Electrical Scope of Work

The electrical work shall include the following:

- Main electrical panel
- UPS Output Panel
- Raw & UPS Power Distribution Boards
- UPS point wiring
- Light point wiring and light fixtures
- Power cabling for electrical equipments and utility points, etc.
- Separate earth pits for electrical equipments and racks.

The distribution of power from the UPS room to the following shall be considered:

- All proposed component for the environment controls
- UPS Power to the Racks
- Main UPS in N+1, of minimum 160 KVA with static bypass arrangement.
- Both sets of UPS would be connected in Load Bus Synchronization (LBS) configuration.

- Auxiliary UPS in N+1, of minimum 15 KVA.
- Sub distribution panels for UPS output.

The bidder is required to maintain two electrical distribution paths (one active & one redundant) for the cabling of Racks inside the server farm area.

Specifications for Electrical Cabling

Cables inside the Server Room shall be fire retardant type of rated capacity exceeding the power requirement of fully blown configuration of the existing and proposed component to be used. PVC insulated cables shall be used in rest of the areas. For expansion needs suitable redundant power points to be provided at suitable locations. All materials used should conform to IS standards as per industry practice.

Bunching of Wires

Wires carrying current shall be so bunched in the conduit that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.

Drawing of Conductors

The drawing Aluminum / Copper conductor wires shall be executed with due regards to the following precautions while drawing insulated wires in to conduits. Care shall be taken to avoid scratches and kinks, which cause breakages.

Joints

All joints shall be made at main switches, distribution boards, socket outlets, lighting outlets and switch boxes only. No joints shall be made inside conduits and junctions boxes. Conductors shall be continuous from outlet to outlet.

Mains & Sub-Mains

Mains & sub-mains wires where called for shall be of the rated capacity and approved make. Every main and sub-main shall be drawn into an independent adequate size conduit. Adequate size draw boxes shall be provided at convenient locations to facilitate easy drawing of the mains and sub-mains. An independent earth wire of proper rating shall be provided. The earth wires shall run along the entire length of the mains and sub-mains.

Load Balancing

Balancing of circuits in three-phase installation shall be planned before the commencement of wiring.

Color Code of the Conductors

Color code shall be maintained for the entire wiring installation, Red, Yellow, Blue for three phases and "OFF" circuit black for neutral and green for earth (or bare earth).

Fixing of the Conduits

Conduits junction boxes shall be kept in position and proper holdfasts shall be provided. Conduits shall be so arranged as to facilitate easy drawing of the wires through them. Adequate junction boxes of approved shape & size shall be provided. All conduits shall be installed so as to avoid stream and hot water pipes. After conduits, junction boxes, outlet boxes & switch boxes are installed in position their outlets shall be properly plugged so that water, mortar, insects or any other foreign matter does not enter into conduit system. Conduits shall be laid in a neat and organize manner as directed and approved by the Information Technology Department Personnel or person on their behalf. Conductors shall be planned so as not to conflict with any other service pipe lines / ducts.

Protection

To minimize condensation or sweating inside the conductors all outlets of conduit system shall be adequately ventilated and approved by the proper competent authority. All screwed and socketed connections shall be adequately made fully water tight by use of proper jointing materials.

Switch-Outlet Boxes and Junction Boxes

All boxes shall conform to all prevailing Indian Standards. The cover plates shall be of best quality Hylam sheets or ISI grade Urea Formaldehyde Thermosetting insulating material, which should be mechanically strong and fire retardant. Proper support shall be provided to the outer boxes to fix the cover plates of switches as required. Separate screwed earth terminals shall be provided inside the box for earthing purpose.

Inspection Boxes

Rust proof inspection boxes of required size having smooth external and internal Finish shall be provided to permit periodical inspection and to facilitate removal and replacement of wires when required.

Earthing

All electrical components to be earthed by connecting two earth wires / tapes from the frame of the component ring will be connected via several earth electrodes. The cable arm will be earthed through the cable glands. Earthing shall be in conformity with provision of rules 32, 61, 62, 67 & 68 of Indian Electricity rules 1956 and as per IS- 3043. The entire applicable data center physical infrastructure in the facility shall be earthed.

Testing of Earth continuity path

The earth continuity conductor including metal conduits and metallic envelopes in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance or leakage circuit - breaker measured from the connection with the earth electrodes to any point in the earth continuity conductor in the completed installation shall not exceed one mega ohm.

Earthing Conductors

All earthing conductors shall be of high conductivity copper or GI as required /specified and shall be protected against mechanical damage and corrosion. The connection of earth continuity conductors to earth bus and earth electrode shall be strong and sound and shall be easily accessible. The earth conductors shall be rigidly fixed to the walls, cable trenches, cable trays or conduits and cables by using suitable clamps.

- Main earth bus shall be taken from the main medium voltage panel to the earth electrodes. The number of electrodes required shall be arrived at taking in to consideration the anticipated fault on the medium voltage network.
- All the sub-mains and sub-circuits shall be provided with earth continuity conductors as specified and connected to the main earth bus. Earthing conductors for equipment shall be run from the exposed metal surface of the equipment and connected to a suitable point on the sub -main or main earthing bus. All switch boards, distribution boards and isolators, disconnect switches shall be connected to the earth bus. Earthing conductors shall be terminated at the equipment using suitable lugs, bolts, washers and nuts. All conduits, cable armor, raceways, rising mains, metal boxes, panel boards etc., shall be connected to the earth all along their run by earthing conductors of suitable cross sectional area. Sprinkler pipes, water pipes, steel structural elements, lighting conductors shall not be used as a means of earthing an installation.

The electrical resistance of earthing conductors shall be low enough to permit the passage of fault current necessary to operate a fuse / protective device / a circuit breaker and shall not exceed 1 Ohm.

LT and UPS Output Panel

LT utility power from the transformers and secondary power from the DG sets shall be terminated in the A & B sides of the LT panel. The A and B side busbars shall be electrically / manually interlocked. The LT Panel shall provide power to further electrical distribution units like the UPS, raw power DB's, precision and comfort AC's.

The LT panel, shall be metal clad, totally enclosed, rigid, floor mounting, air insulated, cubical type for use on 415 volts, 3 phase, 4 Wire 50 cycles system. The equipment shall be designed for operation in high ambient temperature and high humidity tropical conditions. Means shall be provided to facilitate ease of inspection, cleaning and repairs.

Power from the main UPS will be fed to an UPS output panel from where it shall be distributed further to the distribution units of Racks, light, fire & security systems.

Power distribution units

Distribution boards shall be suitable for 230 volts single phase A.C. supply as required. Distribution board shall generally conform to IS: 2675. The power distribution units shall have a main incomer and suitable no of outgoing of appropriate rating. The units shall be wall mounted and flushed with the top cover above the wall surface. Each breaker should have adjacent identification tag for rapid circuit ID identification. Power distribution to the racks shall be through power raceways with endfeed units.

Low Voltage Cables

Low voltage cables shall be copper conductor (unless otherwise specifically mentioned for Aluminum), PVC /XLPE insulated and will be of FR / FRLS type. PVC sheathed and steel wire armored or steel tape armored construction. The conductors of cable from 16sqmm size shall be stranded. Sector shaped stranded conductors shall be used for cables of 50sqmm size and above. The cable shall conform to IS – 1554 part -I in all respects. The XLPE cables shall be ST HR inner sheathed ST2 - FRLS outer sheathed as per IS – 7098 (Part-1) wire stripped.

Rating: The cable shall be rated for a voltage of 1100 volts.

Core Identification: Cores shall be provided with the following color scheme of PVC insulation.

- 1 Core: Red/Black/Yellow/Blue OR proper identification with heat shrinkable sleeve at the termination ends and at every 1 meter interval in case of black cables.
- 2 Cores: Red and Black
- 3 Cores: Red, Yellow and Blue
- 3 1 / 2 / 4 Core: Red, Yellow, Blue & Black.

Cables and other items:

- Specifications for XLPE Cables: IS 7098 part-1-1988
- Specification for PVC insulated: IS 1554 -1964 (Heavy duty) electric cables Part - I for voltage up to 1100 Volts.
- Specifications for PVC insulated: IS 694 – 1988 for voltage up to 1100V Part - II With aluminum conductors.
- Code of practice for safety of buildings: IS 1646 -1961
- (General) Electrical installation.

- Single phase neutral conductors shall be sized throughout to carry the full design load current and shall not be less than the full size of the phase conductors. Neutral conductors shall not be shared between circuits. All 3 phase neutral conductors shall be rated at 150 % of the phase current. No cable joins are to be used

Cable Trays:

Cables shall be laid on cable trays. The cables laid shall be securely fixed to the Cable trays by means of lockable nylon ties. After laying the cables the cable shall be securely fixed by using 25x3mm GI strips and bolted to the cable tray. The cost of the nylon ties and the overlapping GI strip shall be included in to the laying cost of the cable as no separate payment will be made for the overlapping strip and nylon ties. Cables installed on trays or ladder shall be laid in a single layer, leaving 25% of the tray or ladder width as spare capacity for further use. Single core cables forming part of a three phase circuit shall be run in trefoil formation.

Cable Terminations:

Each termination shall be carried out using brass compressions glands and cable sockets. Hydraulic crimping tool shall be used for making the end terminations. Cable gland shall be bonded to the earth by using suitable size G.I wire / tape.

LIGHTING AND LIGHT FIXTURES

It is proposed to have LED lighting system for the entire datacenter. These should be preferably fitted with proximity detectors to turn the lights on when someone enters an equipment area, and off again when no motion occurs for a predetermined interval. The Server farm should be properly lit. A minimum of 500 lux at 1 meter distance should be maintained. In the Server, UPS and Electrical rooms, light fixtures are to be hung from the ceiling and at 1000 mm above the racks or equipments.

Light fixtures shall be recessed mounted and suitable for installation in grid false ceiling. Following should be taken care of -

- The fixtures should have proper earthing facility to take care for eddy currents.
- The fixtures fixed to the false ceiling shall have a clip-on mechanism for fixing.
- The fittings shall be mounted with G.I chain fixed with anchor bolt to the ceiling.
- All the fixture shall be with loop in or loop out wiring facility.
- Not more than two light fixtures should be connected in a single loop.
- Light fixtures should be non-glaring LED type.

UNINTERRUPTED POWER SUPPLY

There shall be two UPS systems in the facility to cater to the current IT load and which shall be drawing power from the Main LT Panel. The main UPS system shall cater to the IT load inside the Server Farm only. An auxiliary UPS system should be in place to cater to the UPS power requirement for the workstations, display units, fire and security systems and emergency lighting. UPS and battery banks to be placed away from the IT racks and outside the Server Room.

The rating of the main UPS has been considered based on the current and future IT loads. It is proposed to currently have 02 x 160 kVA online UPS, as per specifications outlined in **SPECIFICATIONS AND ALLIED TECHNICAL**

DETAILS. Battery backup of minimum 15 minutes on full load should be available with each UPS. Battery shall be 12V SMF type, as per specification, from reputed manufacturer's only. Common battery banks shall not be approved. The UPS system should ensure a minimum power availability of 99.9 % annually.

Rating of the auxiliary UPS is required as 15 KVA. Battery backup of minimum 15 minutes on full load should be available with each UPS. Battery shall be 12V SMF type, as per specification, from reputed manufacturer's only. Common battery banks shall not be approved. The UPS system should ensure a minimum power availability of 99.9 % annually.

Both the UPS and batteries should be included for three years comprehensive warranty / support. Service backup by engineer to be provided till system is fully operational and subsequently training is to be provided to the concerned persons of the Institute.

Diesel Generator

The diesel generator set should be in redundancy mode and total number of units should not exceed three. This should be as per N+1 redundancy requirement of Tier II data center. It is proposed to have 400 kVA Silent DG Sets with all necessary accessories and as per specifications.

Scope of work

This specification covers the design, manufacture test at works, supply, installation testing and commissioning of 400 kVA Diesel Generating sets complete with all accessories like, starting batteries, control panel, interconnecting cable, tank, fuel/coolant/ exhaust pipes, silencer, anti vibration mountings, foundation etc.

- Silent Diesel General Sets, 400 kVA, with acoustic enclosure.
- Loading, Un-loading and mounting of DG Sets on the foundation base.
- Exhaust piping, as per required height, with insulation.
- Inbuilt fuel storage tanks.
- Manual fueling system.
- Electrical cabling, connectivity for monitoring.
- Installation, testing and configuration.
- Load balancing.
- Pollution clearance.
- Lube oil, first fill, for testing. Diesel to be provided or cost reimbursed by NIT .
- Diesel and lube oil for day-to-day running along with all associated costs for procuring the same – Consumable. *To be either provided by NIT or reimbursed at actuals, on a monthly basis.*
- Liaising with local diesel supply pumps for priority supply of diesel, on demand.
- Maintenance of DG run time book, fuel log book, preventive maintenance log book, repair log book.
- Comprehensive maintenance for 03 years from the date of commissioning.

Standard

The generating set shall be designed, manufactured and tested in accordance with the latest revision of Indian standards.

IS 10002/1981 - Specification for Diesel Engines as amended up to date
IS 4722/2001 - Rotating Electrical Machines – Specification (second revision)

General

The generating sets shall be robust in construction factory tested and assembled to ensure perfect alignment of Engine and Alternator on a common base frame. The base frame shall be fabricated out of adequate thickness rolled steel sections. The set shall be mounted on anti-vibration mounting to prevent transfer of vibration to the foundation and structures. The equipment shall be suitable for operating at a hot humid and saline atmosphere at an ambient temperature of 45 degree centigrade.

Detailed specifications are listed in the **SPECIFICATIONS & ALLIED TECHNICAL DETAILS** part of this tender.

PRECISION COOLING

The racks in the Server farm shall be kept in a precision cooled environment. The cooling should be of closed loop type with N+1 redundancy and placed in rack rows. This is to ensure that an IT equipment rack receives precision cooling even in the event of failure of one cooling unit thereby increasing the facility availability.

The work would include supply, installation, testing and commissioning of DX Type Air-conditioning Units designed specifically for high sensible heat ratio with variable cooling technique to match the low latent loads of systems to be installed in the cabinet for effective and uniform distribution of cooling.

Cool air fed to the racks shall be from the bottom or front of the rack as required for fully contained solution. The return air flow shall either be through the contained enclosures or ducts. The rack arrangement has been discussed previously. The cooling units should be linked to a particular row without affecting any other nearby rows. This gives an independent row based cooling solution, ensuring high efficiency and complying with Tier-III requirements of TIA 942 standards.

Total cooling load to be estimated and provisioned at a minimum of 10kW per rack excluding the redundant unit.

The precision cooling units should have provision to be integrated to any suitable monitoring software.

The bidder will be required to design, supply, transport, store, unpack, erect and commission the Precision Cooling units for the data centre requirement.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

COMFORT ROOM COOLING

The scope of work includes supply, installation, testing and commissioning of high performance split type, wall mount AC's.

High performance, wall mount, split AC units should be rugged, robust and reliable running on three-phase input power. These units should be suitable for long hours of operation. The units should be fitted with active carbon and dust filters. In case of faults, the AC unit should show appropriate error codes. The outdoor unit should have powder coated metallic outer body. Compressor should be reciprocating type.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

FIRE DETECTION AND ALARM

Fire can have disastrous consequences and affect operations of the critical data centre facility. The early detection of fire and employing means for automatic suppression of the fire is important for effective functioning. The critical area shall be divided into number of zones. Whenever fire is detected or sensed in any of the zones, annunciation should be available on the Fire Alarm Control Panel (FACP), and the appropriate suppression system in that particular zone should be deployed / activated immediately on confirmation of a real fire.

Additionally, the racks shall have provision for fire detection and suppression. The fire detection sensors i.e., sensitive smoke detectors and gas discharge nozzles shall be mounted inside each rack. If smoke is detected in a rack, the signal shall be communicated to the FACP which shall then activate visual and audible alarms and send SMS alerts to up to 10 users through interface to a GSM modem. The FACP shall notify the Fire Suppression Control Panel (FSCP) which shall turn on the electric valve actuator and trigger the discharge of the gas into the affected zone. Environmentally friendly gas is used to ensure that no harm to human beings and environment is caused.

Scope of Work

The scope of work for the fire detection and alarm systems would include:

- i) Fire detection and alarm systems with panel, detectors and other accessories for the equipment racks and the rest of the data centre facility.
- ii) Integration with the fire suppression system.

Following systems shall be installed.

1. Gas for fire suppression system
2. Fire detection and alarm systems, with detectors and panel.
3. Access control system.
4. Protected area: The entire enclosed volume of the equipment rack cabins is protected with fire detection and fire suppression system. The front doors are secured by Access Control system.
5. The gas system is designed and installed as per applicable contemporary standards. Approved standards based gas cylinders are mounted on wall using appropriate clamps.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

FIRE SUPPRESSION SYSTEM

The scope shall include, design, supply, installation, testing and commissioning of gas based fire suppression system. The successful bidder shall make detailed working drawings and coordinate them with other agencies at site, if any.

The racks and the equipments installed in them inside the Server farm should be protected by an automatic fire suppression system using gas. Design of the system shall be in accordance with NFPA guidelines.

The scope shall include design, supply, installation, testing and commissioning of piping system & manifold required for the gas based suppression system. ASTM 106, Grade-B, Schedule-40 seamless pipes shall be used for

this purpose. All the equipment racks shall be protected by gas based fire suppression system. The gas system is to be designed and installed as per contemporary NFPA standards. Approved standards based gas cylinders are mounted on wall using appropriate clamps.

The bidder shall submit copies of the datasheets of the hardware used in the system. The bidder shall also submit copy of PESO approval letter or test report for the cylinder. These documents shall be attached to the bid.

The bidder shall also submit calculations to evidence the qty of agent considered for the system.

The successful vendor must submit, along with the supply invoice, a certificate of authenticity, for the agent from the system engineering company duly checked and verified by manufacturer. The gas used shall be clean CO₂ agent.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

RODENT REPELLANT SYSTEM

Scope of Work

SITC of microprocessor based Master Controller with 16 X 2 LCD DISPLAY capable of operating in 4 ultrasonic frequency band spectrums. The controller should support upto 20 transducers in dedicated connection & 24 transducers in single loop @300 sq.ft each for Room Void Area & 150 sq.ft each for Ceiling & Floor Void each and networkable on RS 485 having facility to support hardwired third party BMS integration via Modbus & potential free NO-NC contacts. The system shall use UL and CE approved transformers for power supply.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

WATER LEAK DETECTION SYSTEM

General

Water leak detection System shall be designed to protect the critical area where the IT racks shall be installed and to alert the personnel about the leak in the AC systems. The system shall be capable of interfacing to Water leak detection sensors, condensation sensors & I/O modules.

Events should be clearly reported on LCD/LED display with full English language description of the nature of the fault in the panel.

Detailed Specifications are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

SERVER RACK

It is proposed to currently provide a minimum of 18 racks in the server room preferably placed in two (02) rows in the data centre as shown in the tentative layout. Rack dimensions shall be 42U (Fixed U space), 600 (Fixed Width) x 1450 (Max Depth) in mm. Deviation in rack dimension shall not be allowed.

Detailed Specifications of the rack and its supportive accessories including rack power distribution units are as mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS**.

LOCAL AREA NETWORKING

Entire passive cabling for data and voice in the data centre facility is to be provided in line with the suggested layout. All cables are required to be routed in cable wire baskets running over the racks – suspended from the ceiling. The cable wire ducts or baskets shall be customizable to accommodate large number of wires.

Final Design including cable routing layout and finite BoQ will have to be submitted by bidders. This design will be subject to final approval from CCC before final deployment by the successful bidders.

Detailed specifications for all passive cables and components are mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS.**

ACCESS CONTROL SYSTEM

The access control system of the data centre will work at three (03) levels of physical access security, ensuring highest level of security to the data inside the equipment racks.

- | | | |
|----------------|---|---|
| Level 1 | : | Physical security at main entry. |
| Level 2 | : | Biometric access control at Server Room entry. |
| Level 3 | : | Simple mechanical lock and key based access control at equipment racks. |

Scope

- The scope of work shall cover supply, installation, testing and commissioning of access control system for the Server, Staging, Electrical, UPS and Telecom rooms, meeting the intends of the specifications.
- Additionally, it should be possible to integrate IP based intelligent locking / digital locking / number locking feature to the racks in future without any modification to the door.
- The system generally covers control of:
 - i. Door entry with smart card readers.
 - ii. Door exit with smart card readers.
 - iii. Biometric access control for Server Room.
 - iv. Simple mechanical lock and key based access control at equipment racks.
 - v. Emergency exit using panic / press bar.
- All access control doors should be provided with magnetic locks. Magnetic locks should be of reputed makes and as per specification. There should be no access control or magnetic locks on fire exits.
- The scope of work shall also cover field training of owner's representatives for a period of 5 working days or as required on the operation and maintenance of the system during normal and emergency conditions and also include the Annual Maintenance as required by the client.

ACCESS CONTROL SYSTEM

Bidder shall propose access control system for the Server, Staging, UPS, Electrical, Telecom and Control rooms. Such system shall have a separate control panel and powered by auxiliary UPS power.

Detailed specifications for various components of the proposed access control system are mentioned in **SPECIFICATIONS & ALLIED TECHNICAL DETAILS.**

TECHNICAL COMPLIANCE FORMATS

Bidder has to mandatorily fill up the technical compliance formats for the item given below which are being quoted.

Table 1: False Ceiling

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Type : Grid type, 600 x 600 mm			
2	Material : Hot dipped galvanized steel			
3	Surface : Plain			
4	Sheet thickness : 0.5 mm			
5	Color : White			
6	Grid system : 15 mm			
7	Maintenance: Each tile should be easily replaceable.			

Note : False ceiling is required in monitoring, helpdesk, telecom and network rooms. If there is functional requirement bidder can propose similar in other areas e.g., server room as well.

Table 2: Fire Rated Partition

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Partition thickness – 125 mm			
2	Gypboard thickness – 12.5 mm			
3	Metal stud thickness – 75 mm			
4	Plasterboard material – Non- combustible gypsum core with glass fibre			
5	Fire resistance – 120 minutes			
6	Fire performance testing – To be tested as per BS 476, Part 6 & 7.			
7	Thermal conductivity : Minimum 0.24 W/mK			

Table 3.0: Vitrified Tiles

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Type : Polished Vitrified Tiles			
2	Size : 600 x 600 mm			
3	Thickness : Minimum 20 mm			
4	Deviation in thickness - $\pm 3 \sim 4 \%$			
5	Breaking strength - ≥ 2200 N			
6	Stain resistance - Yes			
7	Chemical resistance - Yes			
8	Scratch hardness – Minimum 6			
9	Color – As per approved shade / color			
10	Fixing – By Adhesive			

Table 4: Fire Rated Metal Doors

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Providing and fixing of Hollow metal fire rated doors as per IS 3614 part-1 & part-2 for stability and integrity. Pressed Galvanized steel confirming to IS 277.			
2	Fire door shall have doors tested at CBRI or ARAI for maximum rating of 2hrs with vision panel.			
3	Door frame shall be double rebate KERF frame profile of size 143 x 58mm made out of 1.60 mm (16 gauge) minimum thick galvanized steel sheet.			
4	Door leaf or Single leaf shall be 46mm thick fully flush double skin door with vision lite. Door leaf shall be manufactured from 1.2 MM (18 Gauge) minimum thick galvanized steel sheet.			
5	The infill material shall be resin bonded honeycomb core.			

6	Vision lite wherever applicable should be provided as per manufacturer's recommendation with a beading and screws from inside. The glass should be 6mm clear borosilicate fire rated glass of relevant rating of the door.			
7	All doors and frames shall be finished with polyurethane aliphatic grade paint of approved color. The door leaf and frame shall have passed minimum 250 hours of salt spray test.			
8	The shutter shall be mounted with SS- 304 grade ball bearing butt hinges.			
9	Door Closer shall be heavy duty type.			
10	Doors shall have stainless steel 304 grade, 250mm x 19 mm D type pull handle with rose and necessary screw as required.			
11	Emergency Exit should have panic bar fitted from inside.			
12	Door sizes shall be as per approved layout and site conditions.			

Table 5: Electrical Panels

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	The power control panels shall be metal clad, totally enclosed, rigid, floor mounting, air insulated, cubical type for use on 415 volts, 3 phase, 4 Wire 50 cycles system.			
2	The equipment shall be designed for operation in high ambient temperature and high humidity tropical atmospheric conditions.			
3	The equipment shall be designed for operation in high ambient temperature and high humidity tropical atmospheric conditions.			
4	The equipment shall be designed to conform to the requirements of Power distribution units.			
5	Indicators should be LED types.			
6	Metering: Combined Meter for Voltage / Ampere / Frequency			

	Combined Meter for kW / Power Factor / kVA Electronic kWh Meter (Counter Display) Current Transformers			
7	Switchgears shall follow the make list given in this Tender Document			
8	All IS Standards and protections has to be present in all the panels.			
9	All MS sheet steel used in the construction of panels shall be 2mm thick and shall be cut to different sizes and bolted as necessary to provide a rigid support for all components.			
10	Joints of any kind in sheet metal shall be bolted type and not welded type.			
11	All covers shall be properly fitted and square with the frame, and holes in the panel correctly positioned.			
12	Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with hank nuts. Self-threading screws shall not be used in the construction of panels.			
13	The Panels shall be suitable for IP42 protection.			
14	Knockout holes of appropriate size and number shall be provided in the panel in conformity with the location of incoming and outgoing cables.			
15	Each feeder shall be clearly numbered from left to right to correspond with wiring diagram.			
16	All the switches and feeders shall be distinctly marked with a small description of the service installed.			
17	Terminals: The outgoing terminals and neutral link shall be brought out to a cable alley suitably located and accessible from the panel front.			
18	The current transformer for instruments metering shall be mounted on the terminal blocks.			
19	Circuit Compartment: Each circuit breaker, MCCB and switch fuse units shall be housed in separate compartments and shall be enclosed on all sides.			

20	Wire-way: A horizontal wire way with screwed covers shall be provided at the top to take interconnecting control wiring between different vertical sections.			
21	Cable Compartment: Cable compartment of adequate size shall be provided in the Sub Distribution Boards for easy termination of all incoming and outgoing cables entering from bottom or top.			
22	Adequate proper supports shall be provided in cable compartments to support cables.			
23	All incoming and outgoing switch / MCCB terminals shall be brought out to terminal blocks of adequate capacity in the cable compartment.			
24	Meters: All meters shall be housed in a separate compartment and accessible from front only.			
25	Wiring for meters shall be color coded and labeled with approved plastic ferrules for easy identification.			
26	Current transformers shall be in accordance with IS: 2705-1964 as amended up to date and cast resin type, tape wound CT's are not acceptable.			
27	Painting: All sheet steel work shall undergo a process of degreasing pickling in acid, cold rinsing, and phosphate, passivation and then sprayed with a high corrosion resistant primer. The primer shall be baked in an oven.			
28	The finishing treatment shall be by application of two coats of synthetic enamel paint of approved color and powder coated. The nine Tank process shall be adopted.			
29	Labels: Engraved anodized aluminum labels shall be provided on all incoming and outgoing feeder switches.			
30	Circuit diagram showing the control wiring shall be pasted on inside of the panel door and covered with transparent laminated plastic sheet.			
31	The label shall indicate the name of the feeder, the specific area it is feeding, ampere rating and the cable size it is receiving.			
32	The label shall be provided on the backside of the panel in case of back access.			

Table 6: Earthing

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	All non-current carrying metal parts of the electrical installation shall be earthed as per IS: 3043 and with subsequent amendments.			
2	All earthing conductors shall be of high conductivity copper or GI as required /specified and shall be protected against mechanical damage and corrosion. The connection of earth continuity conductors to earth bus and earth electrode shall be strong and sound and shall be easily accessible. The earth conductors shall be rigidly fixed to the walls, cable trenches, cable trays or conduits and cables by using suitable clamps.			
3	Main earth bus shall be taken from the main medium voltage panel to the earth electrodes. The number of electrodes required shall be arrived at taking in to consideration the anticipated fault on the medium voltage network.			
4	All the sub-mains and sub-circuits shall be provided with earth continuity conductors as specified and connected to the main earth bus. Earthing conductors for equipment shall be run from the exposed metal surface of the equipments and connected to a suitable point on the sub -main or main earthing bus.			
5	All switch boards, distribution boards and isolators, disconnect switches shall be connected to the earth bus. Earthing conductors shall be terminated at the equipment using suitable lugs, bolts, washers and nuts. All conduits, cable armor, raceways, rising mains, metal boxes, panel boards etc., shall be connected to the earth all along their run by earthing conductors of suitable cross sectional area			

6	Sprinkler pipes, water pipes, steel structural elements, lighting conductors shall not be used as a means of earthing an installation. The electrical resistance of earthing conductors shall be low enough to permit the passage of fault current necessary to operate a fuse / protective device / a circuit breaker and shall not exceed 1 Ohm.			
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Table 7: UPS - 2 x 160 kVA with 15 minutes battery backup

S. No.	Specifications	Requirement	Compliance (Yes/No)	Deviations, if any
1	Capacity (in kVA / kW)	160 kVA/ 128 kW 3-Phase Input / 3-Phase Output		
2	Technology and Capability	a) True Online configuration double conversion UPS with fully controlled rectifier & inbuilt isolation transformer at inverter o/p.		
		b) DSP (Digital Signal Processor) / Microprocessor based control, using SCR/IGBT devices and high switching frequency PWM		
		c) Fully controlled 125% rated rectifier capable to supply dc power to inverter and at the same time charge the battery.		
		d) Capability to operate in N+1 / N+X PRS - Parallel Redundant Configuration		
		e) Capability of independent or common battery bank operation of the UPS when operated in PRS		
3	Model Name & Number			
	160 kVA / 128kW	Make / Model / Part No must be specified		
4	Input			
4.1	Input facility -Phases / Wires	3-Phase / 4-Wire & Gnd (R, Y, B -Phases & Neutral + Ground)		
4.2	Nominal Input Voltage	380 / 400 / 415V AC (Selectable)		
4.3	Input Voltage Range	305 - 499 V AC (On Full Load)		
4.4	Nominal Input Frequency	50 / 60 Hz (Auto selectable)		
4.5	Input Frequency Range	47.5 to 52.5 Hz		

4.6	Input Power Factor	> 0.9 on Full Load		
4.7	Input Current Harmonic Distortion (THDi)	< 10% on Full Load (with Mains THDu less than 1%)		
4.8	Generator Compatibility	Compatibility to genset supply required		
4.9	Input Protection (Thru In-built 3P MCCB	Input to Rectifier		
		Input to Bypass (Separate from rectifier input)		
5				
5.1	Nominal Output Voltage	380 / 400 / 415V AC (Selectable)		
5.2	Output Voltage Regulation	+/- 1%		
5.3	Nominal Output Frequency	50 / 60 Hz (Selectable)		
5.4	Output Frequency Regulation	+/- 0.01 % (Free Running / Self Clocked Mode)		
		+ / - 3 Hz (Synchronized to Mains Mode)		
5.5	Output Frequency Slew Rate	1 Hz / s		
5.6	Output Wave Form	Pure sine wave		
5.7	Output Voltage Distortion (THDu)	<= 3% (For 100% Linear / Resistive Load)		
		<= 5% (For 100% Non-Linear / RCD Load)		
5.8	Crest Factor	3 : 1 On Full Load		
5.9	DC Ripple without Battery	< 1%		
5.1	Unbalanced load on phases	100% unbalanced load should be allowed		
5.11	Voltage symmetry with 100% Unbalanced Load	+/- 1%		
5.12	Displacement angle for 100% Unbalanced Load	120 deg +/- 2 deg		
5.13	Output Protection	Thru In-built 3P MCCB		
6				
6.1	Transient response: Dynamic regulation for 0% to 100% step load	+/- 5%		
7				
7.1	Transfer Time (Mode of operation)	Nil from Mains mode to Battery Mode		
		Nil from Battery Mode to Mains mode		
7.2	Transfer Time (Inverter to Bypass / Bypass to Inverter)	< 4 ms (Synchronized Mode)		
		< 12 ms (A synchronized Mode)		

7.3	Automatic & Bi-directional static by-pass (In-built)	Should be provided to take care of uninterrupted transfer of load from Inverter to bypass (under overload / fault conditions) & automatic retransfer from bypass to inverter (on removal of overload / fault conditions)		
8				
8.1	Overall Efficiency (AC to AC) - Online (Double Conversion)	92%		
8.2	Inverter Efficiency (DC to AC) - Battery Mode of operation	> 94% (On Full Load)		
9	Overload			
9.1	Inverter Overload capacity (Mains Mode & Battery Mode)	125% for 10 minutes		
		150% for 60 seconds		
10	Display Panel (In-build LC Display & LED)			
10.1	Measurements (On LCD)	Input: Voltage / Frequency / Current		
		Bypass: Voltage / Frequency		
		Output: Voltage / frequency / Current		
		Battery: Voltage / Current / Percentage		
		Load: In kVA / kW / Percentage/PF		
		Temperature: Battery /Inverter/ Transformer		
10.2	Operating Status (On LCD)	DC Bus Voltage: High / Low Shutdown		
		Inverter: Overload / Short-circuit		
		Over-temperature: Battery / Inverter/ Transformer		
		Fault: Rectifier / Bypass / Inverter / Paralleling		
		Fuse Failure: Inverter		
		Battery: Low / Over-charge		
10.3	Event Logging & Statistical Data (On LCD): UPS should capture and display up to 500 events	Events like: Over temperature / DC Bus Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc		
		Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc		
10.4	User Programmable Parameters & Settings (On LCD)	Bypass : Voltage / Frequency Range		
		Inverter : Voltage		
		Battery : Chargers Current / Manual &		

		Automatic Testing.		
		Password : User / Administrator Setting		
		Information : UPS Serial No. / Firmware		
		Log & Statistical Data Reset & Firmware upgrade.		
10.5	Indications (LED)	Mains Mode of Operation / Battery Mode of Operation / Bypass feeding the load / UPS Fault		
11				
	Audible Alarms	Mains Failure / Battery Low Alarm / UPS Overload / Fault / Shutdown		
12				
12.1	Backup Required	(15 min)		
12.2	Battery Bank Voltage	348 V DC or more		
12.3	Battery Bank V Ah (Vendor to include battery sizing calculations with tender)	_____		
12.4	Batteries Type	VRLA (AGM) Sealed Maintenance Free (SMF) - 12V Cells		
12.5	Battery Makes	Amara Raja / Exide / Rocket		
12.6	Number of Battery Banks	Up to 2		
12.7	Minimum Charger Rating (Including internal / external)	10% of Battery Ah rating offered		
12.8	Charger type / Charging Method & Charging Voltages	Constant Voltage Constant Current Solid state SMPS charger designed for at least 10% of Battery Ah offered		
		Float Voltage: 2.25 VPC		
		Boost Voltage: 2.32 VPC		
12.9	Battery recharge time (After complete discharge) to 90% capacity	10-12 hours		
12.10	Battery Protection (Vendor to specify the rating)	Fuse or DC MCCB (Internal or external to the UPS)		
12.11	Battery Housing (Vendor to provide the GA drawings of the offered Battery Rack)	Should be compact and space saving MS steel open racks complete with interconnectors / Battery fuse box or isolator (in case of external protection)		
12.12	Battery End Cell Voltage	1.75 VPC		
13				
13.1	Serial Communication Port	RS232: Should be provided as standard		
13.2	REPO (Remote Emergency Power Off)	Provided in-built in the UPS		

13.3	Interface to NMS (Network Management System) - To be quoted as option	SNMP Card for connecting the UPS to LAN thru Ethernet port & monitoring thru NMS		
13.4	Interface to BMS (Building Management System) - To be quoted as option	ModBus Card for connecting to UPS to BMS thru RS485 & monitoring thru BMS		
13.5	Interface to DCS (Distributed Control System) - To be quoted as option	Relay I/O Card or PFC (Potential free contacts) for connecting to UPS to DCS / PLC / SCADA system for communication UPS operating status		
13.6	RMP (Remote Monitoring Panel) - To be quoted as option	Annunciation of indications like mains on, inverter on/off/faulty/trip/battery low and static bypass switch at a remote location (at least 50 meters away from the UPS installation)		
14	Restart / Testing Capability			
14.1	Automatic Restart	UPS should start up automatically on mains resumption after battery low shutdown		
14.2	Battery Self Test	Manual / Scheduled battery test to ensure healthiness of batteries. However in event of weak batteries, test should be aborted and fault reported to the user thru replace battery warning		
14.3	Self Diagnosis	UPS should carry out self test of Rectifier / Charger / Inverter module during start up		
15	Physical			
15.1	Operating Temperature	0 to 40 deg C		
15.2	Storage Temperature	-20 to 40 deg C		
15.3	Operating Humidity	0 to 90% RH (Non-condensing)		
1.4	Operating Altitude	1000 m.a.s.l (meters above sea level)		
15.4	Protection Class	IP – 20		
15.5	Type of Cooling	Forced Air		
15.5	Noise Level	< 70 dbA at 1 meter distance		
15.6	Form Factor	Free Standing Floor Mounted UPS		
15.7	Dimension (w x d x h) in mm	To be furnished by the vendor		
15.8	Weight - in kg	To be furnished by the vendor		
15.9	Reliability	MTBF greater than 100000 hours		
15.1	Packaging Material	Recyclable (No CFC)		
15.11	Connections - Rectifier Input / Output / Bypass Input / Battery	Hardwired		
16	Certifications			

16.1	Manufacturer	QMS: As per ISO 9001: 2008		
		EMS: As per ISO 14001: 2004		
		OSHAS: As per ISO 18001: 2007		
16.2	Product	Safety: As per EN50091-1-1		
		EMC: As per EN50091-2		
		ESD: As per IEC61000-4-2 Level 4		
		RF: As per IEC61000-4-3 Level 3		
		FT/Burst: As per IEC61000-4-4 Level 4		
		Surge: As per IEC61000-4-5 Level 4		
		CE Declaration of Conformance		

Table 8: UPS - 2 x 15 kVA with 15 minutes battery backup

S. No.	Specifications	Requirement	Compliance (Yes/No)	Remarks
1	Capacity (in kVA / kW)	15 kVA/ 12 kW 3-Phase Input / 1-Phase Output		
2	Technology and Capability	a) True Online configuration with double conversion UPS b) DSP based control. c) Possibility of enhancing UPS capacity / redundancy by operating UPS in N+X Parallel Redundant Configuration(PRS) . d) Capability of Independent battery bank operation of the UPS when operated in PRS. e) UPS should be designed at Rated PF of 0.8 i.e. 15kVA / 12 kW UPS rating. f) Dual Input design.		
3	Model Name & Number			
3.1	15 kVA / 12 kW	Make / Model / Part No to be specified by the vendor		

4	Input			
4.1	Input facility -Phases / Wires	3-Phase / 4-Wire & Gnd (3Phase & Neutral + Ground)		
4.2	Input Voltage Range	220/380V, 230/400V, 240/415V Range (Full Load) 176~276 / 305~477V Range (Derating to 50% Load) 120~175 / 208~304V		
4.3	Nominal Input Frequency	50/ 60 Hz (Auto selectable)		
4.4	Input Frequency Range	45 to 65 Hz		
4.5	Input Power Factor	> 0.95 (full load)		
4.6	Generator Compatibility	Compatibility to genset supply required		
4.7	Input Protection (Thru In-built 1P MCB)	Should be provided at the input of the UPS suitable for the full rated capacity of the UPS		
5	Output			
5.1	Nominal Output voltage	220/230/240 VAC		
5.2	Output Voltage Regulation	± 1 %		
5.3	Nominal Output Frequency	50/60 Hz		
5.4	Output Frequency Regulation	± 0.1Hz		
5.5	Output Frequency Slew Rate	< 1 Hz / s		
5.6	Output Wave Form	Pure sine wave		
5.7	Output Voltage Distortion (THDu)	<2% (For Linear Load)		
5.8	Crest Factor	3:1 On Full Load (Minimum)		
5.9	Output Short circuit Protection	Electronic Protection		
6	Transient Response / Recovery			
6.1	Transient Response: Dynamic Regulation for 10% to 90% step linear load	±7%		
6.2	Transient Recovery to steady state condition after 10% to 90% step linear load	< 1 cycle		
7	Transfer Time			
7.1	Transfer Time (Mode of operation)	Zero ms from Mains mode to Battery Mode Zero ms from Battery Mode to Mains mode		

7.2	Transfer Time (Inverter to Bypass / Bypass to Inverter)	<1ms (Synchronized Mode)		
7.3	Automatic & Bi-directional static by-pass (In-built)	Bypass To Inverter $\pm 10\%$ (Rated Voltage) Inverter To Bypass $\pm 7\%$ (Rated Voltage)		
7.4	Maintenance Bypass	1. In built manual bypass instead of optional. 2. Maintenance bypass cover removal sensing. 3. The maintenance bypass should provide for Hot-swap of the faulty UPS PWB for repairs / service.		
8	Efficiency (At Nominal Voltage & Resistive Load up to kW rating of UPS)			
8.1	Overall Efficiency (AC to AC) - Online (Double Conversion)	Online Mode 92%		
8.2	Overall Efficiency (AC to AC) - ECO Mode (Bypass feeding the load under normal conditions)	Online Mode 96%		
9	Overload			
9.1	Inverter Overload capacity	$\leq 105\%$ continuous, $106\% \sim 110\%$ 600sec, $111\% \sim 125\%$ 300sec, $126\% \sim 150\%$ 30 sec, $>150\%$ Immediate		
10	Display Panel (In-built LC Display & LED)			
10.1	Measurements (On LCD)	Input: Voltage / Frequency, Bypass: Voltage / Frequency, Output: Voltage / frequency, Battery: Remaining time / Battery Level Indicator, Load: Percentage / Load Level Indicator, Battery Voltage Capacity/Status/Test Result, System Date/Time Setting, Current Time, PFC Fuse Open, Battery Temperature Too High, Battery Over Charge, Battery Out of Date, INV Short Circuit, Output Breaker Off		

10.2	Fault Indication (On LCD)	Main Input Sequence Fault,Power Module General Fault,Battery Ground Fault,Bypass Static Switch Fault,System General Fault,Parallel Fault,Provide Bypass O/P Even If UPS Fault,		
10.3	Indications (LED)	Normal-Green/Battery- Orange/Bypass-Green/Fault- Red		
11	Alarms			
11.1	Audible Alarms	Battery Low beep / DC Fault beep/ UPS Overload beep/ o/p short ckt fault beep/ Shutdown beep		
12	Battery Backup / Battery Bank & Charger			
12.1	Backup Required	15 minutes		
12.2	Battery Bank Voltage	240 V DC or higher		
12.3	Battery Bank VAh (Vendor to include battery sizing calculations with tender)	10080 Vah for 15 Hr backup		
12.4	Batteries Type	Sealed Maintenance Free (SMF) - 12V Cells		
12.5	Battery Makes	Amara Raja / Exide /Rocket		
12.6	Number of Battery Banks	Maximum Two Banks in parallel		
12.7	Minimum Charger Rating (Including internal / external)	The charger should be able to deliver charging current equivalent to 10% of Battery Ah rating offered.(In case of external chargers, suitable monitoring of the chargers should be provided in the UPS. Also all external chargers taking AC input must have PFC - Power factor correction)		
12.8	Charger type / Charging Method & Charging Voltages	Constant Voltage Constant Current Solid state SMPS charger Float Charge 270V±(2V) Boost Charge 280V±(2%V)		
12.9	Battery recharge time (After complete discharge) to 90% capacity	10-12 hours		

12.10	Battery Housing (Vendor to provide the GA drawings of the offered Battery Rack)	Should be compact and space saving MS steel open racks complete with interconnectors		
12.11	Battery End Cell Voltage	1.75 V/cell		
13	Interfaces			
13.1	Serial Communication RS232 Port (Option of USB Port should be available)	RS2323 Port should be provided as standard in the UPS. However there should be provision for USB port also in the UPS.		
13.2	REPO(Remote Emergency Power OFF) / ROO(Remote ON - OFF) Port	Provide both onsite & remote EPO to shutdown UPS when emergency situation happens. REPO Port with a user-supplied switch		
13.3	Interface to NMS (Network Management System) - To be quoted as option	SNMP (IPV6) Card for connecting the UPS to LAN thru Ethernet port & monitoring thru NMS should be available (The cost of SNMP Card / NMS software to be quoted separately)		
13.4	Interface to BMS (Building Management System) - To be quoted as option	ModBus Card for connecting to UPS to BMS thru RS485 & monitoring thru BMS		
13.5	Interface to DCS (Distributed Control System) - To be quoted as option	Relay I/O Card or PFC (Potential free contacts) for connecting to UPS to DCS / PLC / SCADA system for communicating UPS operating status		
14	Restart / Testing Capability			
14.1	Cold Start	UPS should start up On AC Supply (Mains) without DC Supply (Batteries) On DC Supply (Batteries) without AC Supply (Mains)		
14.2	Automatic Restart	UPS should start up automatically on mains resumption after battery low shutdown		
14.3	Self Diagnosis	UPS should be capable to carry out self test of Rectifier / Charger /Battery & Inverter module during start-up		
15	Physical			

15.1	Operating Temperature	0 to 40 deg C		
15.2	Storage Temperature	-20 to 40 deg C		
15.3	Operating Humidity	0% ~ 95%RH (No Condensing)		
15.4	Operating Altitude	0-3000m (0 To 10000ft)		
15.5	Type of Cooling	Forced Air		
15.6	Noise Level	< 60 dbA at 1 meter distance		
15.7	Form Factor	Rack & Tower mountable		
15.8	Air Filters	UPS should have internal anticorrosion air filters for dust filtration		
15.9	Dimension (w x d x h) in mm	To be furnished by the vendor		
15.10	Weight - in kg	To be furnished by the vendor		
15.11	Reliability	MTBF greater than 100000 hours		
15.12	Packaging Material / Vibration Withstand & Drop Test	Recyclable (No CFC) & 1. Vibration testing as per ISTA -1G Non-operational with Packing		
15.13	Standard Package of UPS to include the following minimum accessories	1. UPS 2. CD - Monitoring Software 3. RS232 Cable 4. Tower Stand - For use as Tower 5. Brackets for mounting in 19" IT Server / Networking Rack 6. UPS to Battery bank connecting Cable 7. User Manual		
15.14	Parallel Configuration	UPS should have capability for parallel 4 units.		
15.15	Grounding	UPS should have grounding arrangement		
16	Certifications			
16.1	Manufacturer	QMS: As per ISO 9001: 2008 EMS: As per ISO 14001: 2004 OSHAS: As per ISO 18001: 2007		

16.2	Product Safety Certifications (Mandatory)	ESD: IEC61000-4-2: level4 RS : IEC61000-4-3: level3 EFT: IEC61000-4-4: level4 SURGE: IEC61000-4-5: level4 CS: IEC61000-4-6: level3 IEC 61000-2-2 EN 62040-2 EN 61000-3-2		
17	Service Center	Minimum 15 Service Centres Across India. Kindly furnish the details of service locations with service escalation chart		
18	Company Turnover	Should not less than 80 Cr (INR) in UPS for last 3 years consecutively (Audited Balance Sheet Should be attached)		

Table 9: Diesel Engine of 400kVA DG Set

S.No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	The diesel generator set should be in a redundancy mode and total number of units should not exceed two. This should be as per N+1 redundancy requirement of Tier II data center. It is proposed to have 400 KVA Silent DG Sets with all necessary accessories.			
2	Scope of work			
	This specification covers the design, manufacture test at works, supply, installation testing and commissioning of 400 KVA Diesel Generating set complete with all accessories like, starting batteries, control panel, interconnecting cable, tank, fuel/coolant/ exhaust pipes, silencer, anti vibration mountings, foundation etc.			
2.1	Silent Diesel General Sets, 02 x 400 KVA, with acoustic enclosure.			
2.2	Loading, Un-loading and mounting of DG Sets on the foundation base.			
2.3	Exhaust piping, as per required height, with insulation.			
2.4	Inbuilt fuel storage tanks.			
2.5	Manual fueling system.			
2.6	Electrical cabling, BMS connectivity			
2.7	Installation, testing and configuration.			
2.8	Load balancing.			

2.9	Pollution clearance.			
2.10	Lube oil, first fill, for testing. Diesel to be provided or cost reimbursed by NIT.			
2.11	Diesel and lube oil for day-to-day running along with all associated costs for procuring the same – Consumable. <i>To be either provided by NIT or reimbursed at actuals, on a monthly basis.</i>			
2.12	Liasoning with local diesel supply pumps for priority supply of diesel, on demand.			
2.13	Maintenance of DG run time book, fuel log book, preventive maintenance log book, repair log book.			
2.14	Comprehensive maintenance for 05 years from the date of commissioning.			
3	Standard			
3.1	The generating set shall be designed, manufactured and tested in accordance with the latest revision of Indian standards.			
4	General			
4.1	The generating sets shall be robust in construction factory tested and assembled to ensure perfect alignment of Engine and Alternator on a common base frame. The base frame shall be fabricated out of adequate thickness rolled steel sections. The set shall be mounted on anti-vibration mounting to prevent transfer of vibration to the foundation and structures. The equipment shall be suitable for operating at a hot humid and saline atmosphere at an ambient temperature of 45 degree centigrade.			
5	Diesel Engine			
5.1	The engine shall be multi-cylinders, vertical, 4 stroke, Direct Injection, water cooled type, developing the rated horsepower at a speed of 1500 rpm.			
6	Starting			
6.1	The engine starting shall be by means of totally enclosed axial type electric starter suitable for 24 volts DC. The DC supply shall be derived from a heavy duty 24 volts maintenance free battery.			
7	Cooling			
7.1	An engine driven centrifugal pump shall be employed to circulate the coolant through a cooling radiator with an axial blower fan. A temperature gauge shall be provided with contacts for stopping the engine on high temperature.			
8	Lubrication			

8.1	Pressure lubricating oil system with an engine driven pump shall be provided to cover to complete engine, with built in oil coolant heat exchangers. Full foam filters removable elements shall be provided and these shall be located at easily accessible location for ease of maintenance. The supply shall include first filling of lubricating oil. An oil pressure gauge shall be provided to monitor the lubrication oil pressure. The gauge shall be provided with contacts for stopping the engine on failure of lubricating oil flow.			
9	Governor			
9.1	The governor shall be of electronic type suitable for monitoring constant engine speed within the specified limits for auto parallel and auto load sharing operation.			
10	Exhaust			
10.1	The exhaust piping system shall be supplied with a residential silencer. The exhaust piping and the silencer shall be wrapped with rock wool and/or calcium silicate. The outside shall be neatly wrapped with aluminum cladding. The exhaust line shall be extended beyond the height of the utility building roof as required by pollution control norms.			
11	Daily Service Tank			
11.1	The supplier shall supply and install Daily Service Tank of sufficient capacity to enable running of the generator set for 12 hours continuous run. The Daily Service Tank shall be fitted with necessary fuel guage with shut off cocks.			
12	Pipe works			
12.1	All necessary pipes and accessories for cooling water, lubricating oil, fuel, oil and exhaust shall be designed and supplied to suit the standard arrangement for a system, mounted on anti-vibration mountings.			
13	Foundation and Anti-Vibration Footing			
13.1	The generating set shall be mounted on standard size cement concrete foundation with required number of anti-vibration footings to prevent transfer of vibration to the foundation and structure.			

Table 10: DG Alternator

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Alternator			
1.1	The alternator shall be 400 KVA 3 phase 0.8 PF 415V, 4 wire 1500 rpm, housed in screen protected drip proof enclosure. The alternator shall be capable of delivering rated output at rated power factor with,			
1.2	a. Terminal voltage differing from the rated value by not more than +/- 5%.			
1.3	b. Frequency differing from the rated value by not more than +/- 0.5%.			
1.4	c. Short circuit capacity of 300% for 10 seconds.			
1.5	d. Over load capacity of 110% for one hour.			
2	Insulation			
2.1	The insulation shall be class H and shall be fully impregnated for use in hot, humid, tropical climate conditions, with an ambient temperature of 45 deg. C.			
2.2	The stator and rotor windings of the alternator and the exciter shall be provided with acid resistant varnish finish.			
3	Bearings			
3.1	The alternator shall be provided with single bearing or two sleeves to ensure perfect alignment under all conditions. The bearing shall be self-lubricating type. Close coupling of single bearing alternator is preferable.			
4	Voltage Regulator			
4.1	A rapid response voltage regulator shall be provided to regulate the generated voltage .The overall regulations from no load to full load, including cold to hot variation and load power factor of 0.8 lag to unity shall be within 2% of the normal voltage. The excitation system shall be designed to promote rapid voltage recovery following sudden application and disconnection of load.			

5	Acoustic Enclosure			
5.1	The acoustic enclosure should be supplied along with DG set from the manufacturer outlet itself as per CPCB norm.			
6	Construction			
6.1	Acoustic enclosure shall be of powder coated and fabricated out of 16 SWG CRCA MS sheet. Powder coating shall be done after seven tank surface preparation process of sheet metal. The canopy shall have four hinged doors, one door with glass window to view proper parameters on the control panel. The canopy and doors shall have inside lining of fire retardant foam/glass wool as acoustic materials.			
6.2	The base frame shall be fabricated in ISMC channel or in sheet metal, with lifting hooks for convenient lifting of complete set i.e. along with canopy, engine and alternator.			
6.3	The sound level shall have less than 75 db (A) at a distance of 1 meter . The allowable temperature raise inside the canopy is 5 to 7 deg. Centigrade. The measurement of noise will be as per ISO 3744/ ISO 8528 (Part 10) standard.			
7	Salient features			
	The following should be complied.			
	1. Open air canopy installation			
	2. Lockable doors on the DG.			
	3. External accessible emergency stop button to be present.			
	4. Provision for taking out exhaust gases through pipes to prevent any leak pressure on the engine.			
	5. Exhaust piping should be done as per site requirement and PCB guidelines.			
	6. Statutory clearances including PCB clearance to be made.			
	7. First fill of diesel and lube oil to be considered.			

Table 11: Auto Mains Failure (AMF)

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	AMF Panel Features			
	The AMF panel to be designed to meet the following requirements of Automatic Operation of D.G. set.			
1.1	i. While the Main supply is normal and the D.G. set is at rest, the load is applied directly from Mains through mains Contactor.			
1.2	ii. When the Main Supply fails or drops below a certain preset value, the automatic system gives starting signal to D.G. set and D.G. set starts.			
1.3	iii. As soon the D.G. set reaches its operational voltage and speed, the D.G. contactor closes and the connected load is supplied from the D.G. set.			
1.4	iv. When the Main supply is restored approximately for at lease one minute, the load gets transferred to mains Contactor and D.G. set will be brought to rest.			
1.5	v. The panel is also to be designed for manual operation of D.G. set through Push Button Start/Stop as required.			
2	Insulation: The insulation shall be class H and shall be fully impregnated for use in hot, humid, tropical climate conditions, with an ambient temperature of 45 deg. C.			
3	The stator and rotor windings of the alternator and the exciter shall be provided with acid resistant varnish finish.			
4	Bearings: The alternator shall be provided with single bearing or two sleeves to ensure perfect alignment under all conditions. The bearing shall be self-lubricating type. Close coupling of single bearing alternator is preferable.			
5	Voltage Regulator: A rapid response voltage regulator shall be provided to regulate the generated voltage .The overall regulations from no load to full load, including cold to hot variation and load power factor of 0.8 lag to unity shall be within 2% of the normal voltage. The excitation system shall be designed to promote rapid voltage recovery following sudden application and disconnection of load.			

6	Acoustic Enclosure: The acoustic enclosure should be supplied along with DG set from the manufacturer outlet itself as per CPCB norm.			
7	Construction: Acoustic enclosure shall be of powder coated and fabricated out of 16 SWG CRCA MS sheet. Powder coating shall be done after seven tank surface preparation process of sheet metal. The canopy shall have four hinged doors, one door with glass window to view proper parameters on the control panel. The canopy and doors shall have inside lining of fire retardant foam/glass wool as acoustic materials.			
8	The base frame shall be fabricated in ISMC channel or in sheet metal, with lifting hooks for convenient lifting of complete set i.e. along with canopy, engine and alternator.			
9	The sound level shall have less than 75 db(A) at a distance of 1 meter. The allowable temperature raise inside the canopy is 5 to 7 deg. Centigrade. The measurement of noise will be as per ISO 3744/ ISO 8528 (Part 10) standard.			
10	Salient features			
	The canopy shall have the following features.			
	Open air installation			
	Lockable doors			
	External accessible emergency stop button			
	Provision for taking out exhaust gases through pipes to prevent any leak pressure on the engine.			

Table 12: In-Row PAC DX Cooling Units (30kW)

S. No.	Technical Specifications	Compliance (Yes/No)	Deviations, if any	Remarks
1.	Scope:			
	The scope of this section comprises Supply, Installation, Testing, Commissioning, Balancing, Performance Testing & Handing Over of In-Row DX Cooling Units with 300 mm width also called cabinet units as regards the indoor unit, with connected outdoor condensing unit, direct expansion version with DC inverter scroll compressor, R410A ecological refrigerant, air-cooled by outdoor condensing unit			
2.	Casing:			

2.1	The Casing of the Unit shall be of frame and Panel type constructed out of 18 G corrosion resistant sheet steel and modular construction with aluminum based railings and hinged doors.			
2.2	The exterior panel shall have 80 Kg/m ³ density foam insulation and the insulation shall comply with UL94HF-1. The front & rear of the panel shall be 18 G perforated steel with 80% open free area with locking arrangement to provide a means of securing access to the internal component of the unit.			
2.3	The frame shall be made out of 16 G sheet steel and the unit shall have provision for maintenance from both front and the rear and suitable for installation within a row of equipment racks.			
2.4	The exterior of the panel shall have powder coated texture finish. The unit shall be mounted on casters and leveling screws to allow ease of installation in row and provide a means to level the equipment with adjacent equipment racks.			
3.	Cooling Coil:			
3.1	The evaporator coil shall be constructed of rifled bore copper tubes and louvered aluminium fins, with the frame and drip tray fabricated from heavy gauge steel. The evaporator coil must be minimum 4 rows deep to handle high temperatures across the coil, further since the application are high sensible loads the evaporator must be designed accordingly. The coil with hydrophilic or varnish coating will be preferred to prevent any water carry if used without sensible loads only as a primary cooling solution. Drip trays are an option best recommended to be provided as standard option and must be double angled for condensate flow and easily removable for cleaning. The construction of the drip pan must be of stainless steel/aluminum or galvanized steel as per manufacturer's recommendation. The coil shall be rated for a maximum pressure of 2070 kPa (300 psig). The coil is configured in a counter flow arrangement to enhance heat transfer efficiency.			
3.2	The cooling coil shall be suitable for chilled water application.			

3.3	The unit shall be supplied with inbuilt drain pump having head of up to 5 m for condensate removal.			
4.	Drain Pan:			
	The unit shall be provided with drain pan / drip trays, if required. The drain pans shall be made out of stainless steel / aluminum as per manufacturer's standard.			
5.	Internal Temperature and Humidity Sensors:			
5.1	Internal Temperature Sensors: Thermistor temperature sensors shall be mounted behind the front and rear doors to provide control inputs based on supply and return air temperature. Sensor accuracy shall be within $\pm 2^{\circ}\text{F}$ accuracy.			
5.2	Internal Humidity Sensors: Humidity sensors shall be mounted behind the rear door.			
6.	Fan Motor Assembly:			
6.1	The air-conditioning unit will have fans with backward-curved blades made from reinforced ultra-light and highly resistant polymer material. The motors are coupled directly to the fans (plug-fan), and are EC (Electronically Commuted) brushless motors: this technology allows continuous modulation of air flow-rate by continuously controlling fan speed via a 0-10V signal. Fan rotation speed can also be controlled directly on the user terminal, so as to allow adjustment of the flow-rate or external static pressure (ESP)			
6.2	The motor can be powered at either 50 or 60Hz, and will have IP54 ingress protection. All the fans are statically and dynamically balanced, have self-lubricating bearings and are mounted on vibration-damping supports.			
6.3	The unit controller will be able to modulate fan speed at part loads, together with the compressor inverter. This further reduces power consumption during part-load operation.			
6.4	The fans are designed to allow "hot replacement" in the event of faults, i.e. an individual faulty fan can be replaced without having to stop the entire unit, thus reducing system down time			

7.	Compressor			
7.1	The unit will feature a cooling circuit with one compressor.			
7.2	The compressor will be a high efficiency scroll unit installed on the outdoor condensing unit so as to limit maintenance requirements inside the data center. This is equipped with an electronic controller for managing cooling capacity, using DC INVERTER Brushless technology. An electronic board fitted with microprocessor will control effective compressor capacity using a PID algorithm (proportional – integral – derivative) so as to ensure continuous and precise modulation of compressor rotation speed.			
7.3	Minimum modulation will be at least 30% of nominal capacity.			
7.4	R410A ecological refrigerant will be used; no alternatives are permitted.			
7.5	The cooling circuit will include: electronic thermostatic valve, solenoid valve, high and low pressure switches, liquid sight glass and filter-drier. The low pressure switch features automatic reset and activation can be delayed when restarting in winter. The high pressure switch requires manual reset.			
7.6	The circuit will also include an oil separator to guarantee oil return to the compressor and reduce the risk of shutdown, plus a liquid separator.			
8.	Control of the condensation stage			
8.1	The condensation stage must be controlled by measuring the compressor discharge pressure i.e. on the condensing unit, so as to be able to manage the effective pressure difference across the compressor and allow simultaneous control of the evaporator-condenser system.			
9.	Active redundancy and shared mode			
9.1	The cooling units will be capable of providing active redundancy. To ensure this, all the units installed, including the redundant unit, must be able to operate at the same time and at part loads.			
9.2	This feature must also be able to increase system efficiency by reducing energy consumption at part loads.			

10.	Humidifier			
10.1	The unit will read the relative humidity (RH) and control the level by activating humidification cycles only when the return air humidity is too low (<40%, settable).			
10.2	The humidifier is an immersed electrode model with modulation of steam production. It also features automatic control of dissolved salt concentration so as to allow untreated water to be used.			
11.	Reheating			
11.1	The unit will be equipped with electric heaters, to allow temperature control during dehumidification cycles.			
11.2	The electric heaters include stainless steel fins, and are fitted with safety thermostat to cut-off power supply and activate an alarm in the event of overheating. The heaters feature modulating operation, in 3 stages.			
12.0	Main Disconnect Switch:			
12.1	The unit shall be provided with Main Disconnect Switch suitable for 220V, 50 Hz, 100 KA rating.			
12.2	The unit shall include individual disconnect switch for both Primary & Secondary power inputs.			
13.0	Electrical Panel:			
13.1	Control cabinet to be as per OEM design, with grounding lug, combination magnetic starters with overload relays, circuit breakers and cover interlock, and fusible control circuit transformer. The construction of the unit electrical panel must be such to also provide space for microprocessor controller and without opening of any panels from the front of the unit the microprocessor panel must have direct access for operation. Return air T/H sensor shall be part of standard supply of the unit.			
13.2	The electric panel provided for the unit must be equipped with main incoming power isolation switch, additionally the unit must be provided with under voltage / over voltage / phase reversal / single phasing protection, all three phase motors must be operated only via 24V coil voltage contactors and MPCB's, additionally step down transformer must be provided for power			

	supply to the unit controller. The electrical panel must also be providing with relay block for common alarm.			
14.	MICROPROCESSOR CONTROLLER:			
14.1	Monitoring and Configuration: The master display shall allow monitoring and configuration of the cooling unit through a touch screen control (ACRC300 series). Functions include status reporting, set-up, and temperature set points. LEDs report the operational status of the connected air conditioning unit.			
14.2	Controls: The microprocessor controller shall allow the user to navigate between menus, select items, and input alpha numeric information.			
14.3	Alarms: The microprocessor controller shall activate a visible and audible alarm in the occurrence of the events listed in the Technical Specifications Manual.			
14.4	Logging: The microprocessor controller shall log and display all available events. Each alarm log shall contain a time/date stamp. Controller shall display the run time hours for major components.			
15.	NETWORK MANAGEMENT CARD:			
15.1	The unit shall include a network management card to provide management through a computer network through TCP/IP. Management through the network should include the ability to change set points as well as view and clear alarms.			
16.	MICROPROCESSOR DISPLAY UNIT:			
16.1	In normal operating mode the screen should display unit number, temperature and relative humidity set points and actual, operating status.			
16.2	The unit must have a large screen LCD display on controller with user friendly menus and minimum two level password protections.			
16.3	RS485 interface port for BMS compatibility with ModBus RTU protocol is required			

Table 13: High Performance, Wall Mount, Split AC

S. No.	Technical Specifications	Compliance (Yes/No)	Deviations, if any	Remarks
1	Cooling capacity (BTU/Hour) : 6370			
2	Power input (watts) : Not more than 2100			
3	EER (w/w) : 3.11			
4	Moisture removal (ltrs / hr) : 2.1			
5	Air Flow Volume (CFM) : High / Low : Min 540 / 435			
6	Horizontal Louvre : Motorized			
7	Self Diagnosis : Yes			
8	LCD display in IDU : Hidden Display			
9	Filters : Catechin/ Active Carbon / Dust Filters / Anti Bacterial			
10	Evaporator fins : Hydrophilic Blue			
11	Condensor fins : Anti Corrosive Blue Fins			
12	Voltage / Frequency / Phase : 230V / 50Hz / Single			
13	Condenser : Copper Condenser			
14	Compressor type : Scroll			
15	Max. piping length : 20 Meters			
16	Max. Vertical piping length : 10 Meters			
17	Max Ambient Temp (Degrees C) : 50			
18	IDU Net Weight : Less than 20 Kgs			

Table 14: Fire Detection & Alarm (UL Listed & FM Approved)

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Control Panel: The control panel shall be microprocessor based using multiple microprocessors throughout the system providing rapid processing of smoke detector and other initiation device information to control system output functions.			

1.1	There shall be a watchdog circuit, which shall verify the system processors and the software program. Problems with either the processors or the system program the panel shall activate a trouble signal, and reset the panel.			
2	The system modules shall communicate with an RS 485 network communications protocol. All module wiring shall be to terminal blocks.			
2.1	The control panel shall be equipped with four Form C relays for alarm, trouble, supervisory, and programmable output.			
3	Manual call points : Manual call points should be located at key locations and as per best practices. MCP's shall be 'PULL' type and installed with proper signage.			
3.1	Manual stations shall contain the intelligence for reporting address, identity, alarm and trouble to the fire alarm control panel. The manual station communications shall allow the station to provide alarm input to the system and alarm output from the system within less than four (4) seconds.			
3.2	The manual station shall be equipped with terminal strip and pressure style screw terminals for the connection of field wiring.			
4	Smoke detectors : The smoke detector shall be an intelligent digital photoelectric detector with a programmable heat detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes. The detector communications shall allow the detector to provide alarm input to the system and alarm output from the system within four (4) seconds.			
4.1	The detector shall have a tri-color LED to streamline system			
4.2	The detector shall be RoHS-compliant: it shall meet standards for Reduction of Hazardous Substances (RoHS) by reduction in lead content.			
4.3	The detector shall be UL listed for operation in a 95% relative humidity (RH) environment.			

5	Heat Detector : Thermal Detectors shall be rated at 135 degrees for fixed temperature. Detectors shall be constructed to compensate for the thermal lag inherent in conventional type detectors due to the thermal mass, and alarm at the set point of 135 degrees Fahrenheit. The choice of alarm reporting as a fixed temperature detector shall be made in system software and be changeable at any time without the necessity of hardware replacement. The detectors shall be installed according to the requirements of NFPA 72 for open area coverage.			
6	Monitor Module : The two-wire addressable monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box or with an optional surface back box.			
7	Control Module : Addressable control modules shall be provided to supervise and control the operation of one conventional devices of compatible, 24 VDC powered polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.			
8	Isolator Module : Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on a loop Class A. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the loop segment or branch.			
9	Audible alarms : Electronic sounders shall be fitted with flashing light and adjustable sound outputs.			
10	All manual call points and automatic fire detectors when operated result in the correct text & zone indications at all necessary indicating equipment.			

Table 15.0 Technical Specification of Rodent Repellent System (RRS)

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	Digital Technology			
2	Safety Compliance as per IRPA Guidelines			
3	Networkable on RS-485 with support of Hardware third party BMS integration via Modbus & potential free NO-NC contacts			

4	Auto & Manual mode of operation			
5	Audible testing of Transducers			
6	Minimum Number of Wave Speed Options: 3			
7	Minimum Number of Wave Density Options: 4			
8	Minimum Number of Wave Frequency Bands: 4			
9	Password protection Controller			
10	Minimum number of Transducers supported: 12			
11	Maximum Power Consumption: 15 Watt			
12	Minimum Area coverage per Controller: 3600 Sqft per dedicated connection			
13	Minimum Area coverage per Transducers: 150 Sqft Above False Ceiling, 300 Sqft below False Ceiling & 150 Sqft below False Floor			
14	Transducers Sound Output: 50 to 110 dB (Verifiable)			
15	Transducers Power Output: 800 mW			
16	UL Listed			

Table 16: Rack Blocks:

S.No.	Specification	Compliance (Yes/No)	Deviations, if any	Remarks
1.	General Requirements			
1.1	The rack shall be designed to secure, store, streamline and systemize IT equipment			
1.2	The block shall be self cooled and contained			
1.3	All cable entries and exits shall have glands to reduce heat losses			
1.4	Racks should have good cable management / basket to avoid hot air blockages in rear side			
1.5	Rack should have air sealing kits to avoid thermal short circuits			
1.6	Rack front shall have double layered glass door to avoid heat losses and to eliminate noise			
1.7	Rear side shall have metal door			
1.8	Rack blocks shall have inspection cover / door for PAC units			
1.9	Rack blocks shall have rack separators in front and back to ensure multi user management.			
1.10	N+1 cooling redundancy			
1.11	The block shall be powered with power raceway			
1.12	The rack shall be self-contained.			

1.13	Proper air circulation with in-row cooling solution should be provided			
1.14	The racks shall not be more than 2200mm in height with 800X1450 for network/ server application and 600X1450 for server application			
1.15	Rack shall have 100% assured compatibility with all equipment conforming to DIN 41494 (General Industrial Standard for Equipment) or equivalent EIA / ISO / EN Standard			
2.	Physical Requirements			
2.1	The rack unit supported by plinth should support a static load of at least 1.5 tons total installed equipment weight			
2.2	The rack should have front glass door and rear metal door			
2.3	The rack should have two side panels, top Cover, four vertical frame posts, four adjustable 19" verticals and grounding and bonding accessories pre-installed by the manufacturer			
3.	Equipment Access & Installation			
3.1	Rack should have 42U usable space for mounting IT and other equipment			
3.2	Rack should have 4 nos. adjustable, 19" verticals with punched 10mm square hole and universal 12.7mm-15.875mm-15.875mm alternating hole pattern offering greater mounting flexibility, with numbered U positions			
3.3	The mounting hardware for equipment fixing has to be provided			
3.4	The front and rear doors should be easily detachable			
3.5	The front and rear doors should be open able to allow easy access			
3.6	The doors of the rack should be reversible such that it can be mounted on either side.			
3.7	The racks should have side panels which can be removed without using tools, using easy finger latches for fast access to cabling and equipment.			
3.8	Side panels should flush with the frame so the overall width of the unit does not change with the side panels installed.			
4.	Material Requirements			
4.1	All weight bearing components should be made from steel with a thickness not less than 2.0 mm, 19" equipment mounting angle should be 2.5mm and other parts not less than 1mm			
4.2	All sheet metal parts should be pre-treated and powder coated meeting ASTM Standard			
5.	Grounding Requirements			

5.1	All enclosure components i.e. frame and door should be bonded together and to rack ground point			
5.2	The rack ground point has to be provided with a provision to further ground to telecom ground bus bar System			
5.3	Grounding and bonding as per UL Standards			
5.4	Manufacturer should provide horizontal or vertical ground bus bar for equipment grounding as per end user requirement			
6.	Certifications, Environmental and Safety Requirements			
6.1	Racks should be manufactured by ISO9001:2008, ISO14001:2004 & OHSAS18001:2007 certified company and should have proper EHS Policy.			
6.2	Manufacturer must certify that the products are RoHS Compliant			
6.3	Manufacturer must certify that the products are compliant with DIN41494 and equivalent EIA/ISO/EN /CEA standard			
6.4	The rack should comply to a minimum of IP 50 rating for protection against touch, ingress of foreign bodies and ingress of water			
6.5	The enclosure should both protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition.			
7.	Ventilation & Thermal Management			
7.1	The rack should be ventilated with 5 fans which are placed inside the PAC unit			
7.2	No ventilation on front & rear doors to avoid cold air leakage			
7.3	The rack should provide the means to mount optional cooling accessories for high density			
7.4	The manufacturer should provide blanking panel kit to prevent the recirculation of hot exhaust air			
7.5	The manufacturer should provide air seal kit to seal all gaps to prevent recirculation of hot air			
7.6	The manufacturer should provide PG Gland entry and exit cutouts to avoid cold air leakage			
8.	Cable Management			
8.1	42U 800 width racks			
8.1.1	2 Nos. of finger type cable management with detachable door for management of horizontal cables			
8.1.2	2 Nos. of loop type / closed type cable organizer for management of horizontal and power cables			

8.1.3	2 Nos. of 300mm cable basket for management of vertical cables			
8.2	42U 600 width racks			
8.2.1	150mm 2 No universal cable basket in rear side to manage power and data (Copper or Fiber) cables with detachable 1U / 2U cable loops / closed			
9.	Accessories			
9.1	The manufacturer should offer at least one fixed and one sliding shelf with the ability to support up to 100 kg of non-rack mount equipment.			
9.2	Rack Display Unit - Mechanical			
10.	Security			
10.1	Rack should have swing handle locking with unique / common Key			
10.2	It should be possible to integrate IP based intelligent locking / digital locking / number locking feature in future without any modification to the door.			
11.	Delivery & Installation			
11.1	The unit should be shipped fully assembled as one orderable unit			
11.2	Manufacturer should offer an inside-delivery shipping option, which includes reasonable delivery to the inside of the building and removal and disposal of shipping material and packaging			
12.	Warranty			
12.1	Manufacturer shall provide warranty for 1 year from date of installation			
12.2	Electrical items such as Sockets, switches, fans etc. should have warranty for 1 year from date of installation			
12.3	For malfunction of any units/item in the rack, the support should be provided within the next business day			
12.4	Warranty claim shall be attended to within 2 or 3 working days			

Table 17: Normal PDUs

S. No.	Technical Specifications	Compliance (Yes/No)	Remarks
1.	Type Of PDU: Normal		
2.	Phase: 1Phase		

3.	Rating: 7.3kW		
4.	Current: 32A		
5.	Type and no. of outlets: 20 X C13 & 4 X C19		
6.	PDU Mounting: Vertical		
7.	Space Requirement: 0 U		

Table 18: Non-Intelligent Metered PDUs

S. No.	Technical Specifications	Compliance (Yes/No)	Remarks
1.	Type Of PDU: Non-Intelligent Metered		
2.	Phase: 1Phase		
3.	Rating: 7.3kW		
4.	Current: 32A		
5.	Type and no. of outlets: 20 X C13 & 4 X C19		
6.	PDU Mounting: Vertical		
7.	Space Requirement: 0 U		

Note: The active PDU in each rack shall be metered while the standby shall be normal.

Table 19: Power Raceway

S. No.	Specifications	Compliance (Yes/No)	Remarks
1.	Power Raceway is used to distribute power to the racks. It is modular in construction and takes 16A/32A/63A single phase, 32A/63A three phase.		
2.	Power Raceway of required rating is designed with necessary rated copper bus bar which is connected to an End feeder box which meters and displays for understanding the health/status of the power.		
3.	Power Bus bar can be designed from 100 to 500 Amps.		
4.	Generally, the Bus bars are supplied in pairs to feed the rack with Source A and Source B with universal tap off box which can accommodate all combinations of Receptacles and these tap off boxes will be powered from the Copper Bus bar of a feeder box with Appropriate rating of the cable. These Tap Off boxes can be supplied with		

	or without MCB based on Customer requirement.		
5.	Generally, the Power Raceway length will be as that of the Aisle length and powered on left or right based on site condition		
6.	Bidder is required to supply and install an optimally rated power raceway keeping the safety margin as 20%. Bidder is also required to supply and install the universal tap up boxes as well as the cable connecting them to the PDUs of the individual racks.		

Table 20: Biometric Access Control System for Server Room

S. No.	Technical Specification	Compliance (Yes / No)	Deviation, if any	Remarks
1	The biometric finger print and proximity card reader shall have a transaction storage capacity.			
2	The biometric reader shall have anti-microbial coating for the hygiene of Users. The verification time shall not be more than 1 second.			
3	The reader should have certifications like FCC, CE and UL-294 rated.			
4	20 Proximity Cards compatible with the system shall be provided			
5	The biometric reader shall interface with the BMS via TCP/IP protocol.			
6	The biometric reader shall have RS232 port for connection with a Printer.			
7	All the necessary hardware, software with its cabling are to be supplied and installed.			
8	The access control mechanism must have biometric as well as proximity card readers.			
9	The biometric reader shall have an on-board controller for standalone operation and shall also be network capable.			
10	Control Panel: Shall be provided for connectivity with BMS & third party system.			

Table 21: Material Movement System

S.No.	Specifications	Compliance (Yes/No)	Deviations, if any	Remarks
1.	This 4-wheel battery operated vehicles with front glass, weather proof roof, and steering is ideal for warehouses, golf courses, factories, stores, airports and institutes for carrying goods and materials in everyday use.			
2.	Power supply Power of motor: 3kw or 4kw Battery :8v 175ah x 6 accelerator:adjustable inductive accelerator continuously variable speed system Charger : full automatic efficiency pulse charger			
3.	Performance Maximum speed :24 km/h Maximum travel distance :60-80 km Slope climbing capacity :35% safe Carrying capacity :custom capacities Passenger capacity :2 persons			
4.	Chassis chassis :steel Platform size :l: 1220mm w: 1067mm h: 370mm tires :6.50-10			
5.	Weather proof roof covering passengers and cargo			
6.	Extra ground clearance			
7.	Safety bumper			

Table 22: Water Leak Detection System

S.No.	Specifications	Compliance (Yes / No)	Deviation, if any	Remarks
1	Water leak detection System shall be designed to protect the Air-conditioned premises and to alert the personnel about the leak in the AC systems. The system shall be capable of interfacing to Water leak detection sensors, condensation sensors & I/O modules.			
2	Events should be clearly reported on LCD/LED display with full English language description of the nature of the fault in the panel. The successful bidder shall make detailed working drawings and coordinate them with other agencies at site.			
3	Water Leak Detection systems shall have provision to be integrated with BMS/DCIM			
4	Continuous / Zone Detecting Cable systems			

6	LCD screen / LED display displays alarm location.			
7	Integral screen showing areas being protected.			
8	Audible and visual alarm.			
9	Alarm mute/test/reset facilities			
10	The system to be connected to the auxiliary UPS.			
11	The requirements to complete the water detection system			
12	Detection of leaks in the sub floor			
13	Detection of leaks from air conditioners or support piping			
14	Integration with monitoring system			
15	Use of distance-read systems (cable type systems) in rooms with large raised-floor areas			
16	Water leak detection cable should be provided on flooring as well as ceiling around all possible leak sources.			
17	The proposed system shall be Digital type.			
18	Controller with Built-in Software to sense, receive and recognize the signals sent by the sensor cables.			
19	It should have multi zone adaptability.			
20	Non-conductive and abrasion resistant polymer cables with full length detection capability is required			
21	LED Display for all zones displaying status of all leakage sensors			
22	Auto GSM Dialler with number dialing option of minimum of 10 phone numbers configuration.			

List of Approved Makes

List of Preferred Makes For Network & Other Computer Items

S. No.	Item	Preferred Makes
1.	UTP Cable CAT-6	Molex / TE / Legrand/ Panduit/ Commscope / Belkin
2.	UTP Patch Cords	Molex / TE / Legrand/ Panduit/ Commscope / Belkin
3.	I/O Box Single	Molex / TE / Legrand/ Panduit/ Commscope / Belkin
4.	UTP Patch Panel	Molex / TE / Legrand/ Panduit/ Commscope / Belkin
5.	LCD / Plasma TV	Philips / Sony / LG / Samsung
6.	IT Racks	Rittal / WQ / President / Emerson/ Netrack/ Valrack
7.	Rack PDU	Schneider / enLOGIC / Netrack / Emerson / Aten/ Raritan

List of Preferred Makes For Civil Interior Works

S. No.	Item Name	Preferred Makes
1.	Laminate (1.5 mm)	GREENLAM / MERINO / FORMICA
2.	Hardware fittings	EBCO / HAFELE
3.	Cylindrical locks/ Mortise Lock	GODREJ / DORMA / D-LINE
4.	Heavy Duty Door Closer & Door Spring	DORMA / BRITON
5.	Fire Door Accessories & Door Control System	BRITON / BOYD AUSTRALIA / YALE / DORMA / INGERSOLL RAND
6.	Aluminum Powder Coated Door Accessories	GODREJ / DORMA / D-LINE
7.	Panic bar push type	BRITON / BOYD AUSTRALIA / YALE / DORMA
8.	Aluminum Sections	INDAL / JINDAL / HINDALCO
9.	Float Glass (Toughened)	SAINT GOBAIN / INDO-ASAHI / MODIFLOAT
10.	Partition System (MDF Board / Gyp Board)	EVEREST / UNIWUD/ INDIA GYPSUM / LAGYP/ HYLUX
11.	Veneer	JACKSONS
12.	Melamine	MRF / ASIAN
13.	Water proof plywood	KITPLY / UNIPLY / ARCHIDPLY
14.	Plastic Emulsion / Texture paint	ASIAN PAINTS / BERGER / ICI-DULUX / J & N
15.	Enamel Paint	ASIAN PAINTS / BERGER / ICI-DULUX / J & N
16.	Weather Coat paint	ASIAN PAINTS / BERGER / ICI-DULUX / J & N
17.	Raised Access flooring	EVEREST / FLEXI / UNITILE / WINKO
18.	Under deck Thermal Insulation	ARMADUCT / ARMAFLEX / SUPREME
19.	Vitrified Ceramic tiles	NITCO / JOHNSON / BELL / MARBITO
20.	Venetian Blinds	VISTA LEVLOR / MAC
21.	Fire Rated Door	SHAKTHI -HORMAN / GODREJ
22.	Steel Door	SHAKTHI -HORMAN / GODREJ
23.	Fire Rated Glass	SG /PROMAT / FIRELITE / PILKINGTON / SCHOTT
24.	Grid False Ceiling	AMSTRONG / EVEREST / ANF
25.	Metal False Ceiling (Grid)	AMSTRONG / EVEREST / ANF

26.	Aluminum Composite panel	ALUSTRONG / ALUCOBOND / ALSTONE
27.	Texture Paint	RENOVA / SPECTRUM / HERITAGE
28.	Anti-termite Treatment	PCI / DIAMOND
29.	Flush Doors	UNIPLY / GLOBE / KUTTY / ARCHIDPLY
30.	Panic Bar	DORMA / HONEYWELL / EUROPLEX
31.	Furniture	FEATHERLITE/ DÉCORX/ GODREJ
32.	Waterproofing treatment	PIDLITE / ARMOURCRETE / TAPCRETE
33.	Trap Door For AC Ducts	NOVAPAN / GREENLAM
34.	Wall Paneling	NOVAPAN / GREENLAM

List of Preferred Makes For ELECTRICAL , DG, UPS, PAC & CAC System

S. No.	Item Name	Preferred Makes
1.	PCC / LT Switch Board	C&S / GE / EAP / SIEMENS / L&T / SCHNEIDER / ABB
2.	Electrical Switches	GE / LEGRAND / ANCHOR / HAVELLS / ABB
3.	Electrical Fittings	PHILIPS / BAJAJ/ MESCAB / GE-LIGHTING / HAVELLS / MARC
4.	MCB / MCCB	ABB / GE / L&T / C&S / SCHNEIDER / SIEMENS / HAVELLS
5.	Air Circuit Breaker (ACB)	GE / L&T / SIEMENS / SCHNEIDER / C&S / ABB
6.	Distribution boards (LDB /PDB / SDB)	ABB / SCHNEIDER / SIEMENS / HAVELLS
7.	HRC fuse	SIEMENS / L&T / GE / STANDARD / INDO-ASIAN
8.	Voltmeter/Ammeter	AE / IMP / MECO / L&T / SECURE METEL / RISHAV
9.	Aux. Contactor	SIEMENS / L&T / BCH / SCHNEIDER / ABB / GE / C&S
10.	Timers	BCH / SIEMENS / L&T / ALSTOM / SCHNEIDER / EAPL / MINILEC
11.	Power Contactor	BHEL / BCH / SCHNEIDER / ABB / SIEMENS / GE / SIEMENS
12.	Push Button	SIEMENS / BCH / L&T / SCHNEIDER / C&S / CGL / GE
13.	Signaling Lamp	ESSEN / BLUE BELL / MICROTECH / BCH / GE / KHERAJ / EPCC / BEMCO
14.	Overload Relay	SIEMENS / L&T / BCH / SCHNEIDER / ABB / GE / C&S
15.	Control/Selector Switches	SIEMENS / L&T / BCH / SCHNEIDER / C&S / ECC / EPCC / KAYCEE
16.	FRLS / FR Cable	NICCO / UNIVERSAL / HAVELLS / RPG / POLYCAB / MW
17.	LT Power & Control Cable XLPE / PVC Insulated	CCI / POLYCAB / HAVELLS / UNIVERSAL / FINOLEX / NICCO / RPG / GLOSTER
18.	Terminal Blocks	ESSEN / WAGO/ CONNECTWELL/ PHOENIX / ELMEX
19.	Isolator	SIEMENS/ L&T/ ABB/ GE
20.	Diesel Generator (DG)	KIRLOSKAR / CUMMINS / GREAVES COTTON
21.	UPS	EMERSON / EATON / HITACHI / APC
22.	Precision AC (PAC)	EMERSON / CLIMAVENETA/ SCHNEIDER

23.	Comfort AC (CAC)	BLUE STAR / DAIKIN / LG / VOLTAS
24.	Exhaust Fan	V-GUARD/ BAJAJ/ CROMPTON GREAVES/ HAVELLS/ KHAITAN/ USHA/ ORIENT
25.	Ceiling Fan	HAVELLS/ ORIENT/ CROMPTON GREAVES/ USHA/ BAJAJ

List of Preferred Makes For Fire / Access Control & Other Systems

Fire detection and Alarm System		
1.	Fire Panel	HONEYWELL / SIEMENS / EDWARDS
2.	Photo Electric type Smoke detector	HONEYWELL / SIEMENS / EDWARDS
3.	Photo Electric type Heat detector	HONEYWELL / SIEMENS / EDWARDS
4.	Manual Pull Station	HONEYWELL / SIEMENS / EDWARDS
5.	Strobe cum Hooter	HONEYWELL / SIEMENS / EDWARDS
6.	Control Modules	HONEYWELL / SIEMENS / EDWARDS
7.	Isolator Modules	HONEYWELL / SIEMENS / EDWARDS
8.	Monitor Modules	HONEYWELL / SIEMENS / EDWARDS
Fire Suppression System		
1.	Fire Suppression System (Novec / Sinorix 1230)	KIDDE / 3M / SIEMENS/ FENWEL / UTC
2.	Hand Held extinguisher	FIRE SHIELD / MINIMAX / CEASEFIRE / SAFEX
3.	CO ₂ Based Flooding Solution	CEASEFIRE / FIRE SHIELD/ ANSUL/ MINIMAX
Access Control System		
1.	Door Controller	HONEYWELL / HID / SMART-I / SIEMENS
2.	Biometric Finger Print Reader	HONEYWELL / HID / SMART-I/ SIEMENS
3.	Smart card Readers	HONEYWELL / HID / SMART-I/ SIEMENS
4.	Smart Cards	HONEYWELL / HID / SMART-I/ SIEMENS
5.	Electromagnetic Locks (600 lbs) with Magnetic Contact	BEL
6.	Emergency Door Release (Break Glass Type)	HONEYWELL / HID / SIEMENS / REPUTED
CCTV Surveillance System		
1.	IR Indoor Dome Camera	HONEYWELL / BOSCH / HIKVISION/ SIEMENS/ VIVOTEK
2.	IP66 IR Outdoor Bullet Camera	HONEYWELL / BOSCH / HIKVISION / SIEMENS/ VIVOTEK
3.	DVR / NVR	HONEYWELL / BOSCH / HIKVISION / SIEMENS/ VIVOTEK
High Sensitivity Smoke Detection		
1.	VESDA 4 Zone Unit	SYSTEM SENSOR / XTRALIS / SIEMENS
2.	Aspiration Tubes, capillary Tubes, Nozzles, accessories, etc.	SYSTEM SENSOR / XTRALIS / SIEMENS
Water Leak Detection System		
1.	Water Leak detection Panel	JAY FIRE / STAR
2.	Water leak detection cable	SONTAY / STAR
Rodent Repellent System		
1.	Rodent Repellent Panel	MASER / STAR
2.	Satellite Units	MASER / STAR
Public Address System		

1.	Multi-zone selection panel with Amplifier	BOSCH / TOA / AHUJA
2.	Ceiling Mount Speaker	BOSCH / TOA / AHUJA
3.	Paging Microphone	BOSCH / TOA / AHUJA
Monitoring Software		
1,	Monitoring Software	EMERSON / SCHNEIDER / NULIMITS / SEIMENS

CHAPTER – V: PRICE SCHEDULE

Detailed Price Schedule

S. No.	Description of Supplies / Services	Unit	Qty	Make, Model, Part No. (if any)	Unit Rate	Taxes	Total Unit Price	Cost as per Mentioned Quantity
A	Civil & Interior Works							
1	Glass Doors							
1.1	Aluminum doors using 6 ~8 mm clear toughened float glass and all necessary hardware's like EDPM gaskets, heavy duty door closer etc of approved colour, S.S. handles, locking device with duplicate keys etc. complete as per layout. The joints between main door frame and partition shall be filled and sealed with silicon sealant.							
1.1.1	Size 1200 mm x 2100 mm, Single shutter	Nos.	2					
1.1.2	Size 1000 mm x 2100 mm, Single shutter	Nos.	2					
1.1.3	Sun film on glass doors as per approved design.	Sqft	72					
1.1.4	Installation of above glass doors.	Lot	4					
2	Fire Rated Metal Doors							
2.1	Size = 1500 x 2100mm (equal Double leaves) Fire rated (120 min) metal door with frame, fire rated glass vision panels, SS ball bearing butt hinges, lock, SS lever with heavy duty door closer, all complete. (01 door with panic bar)	Nos	6					
2.2	Size = 1800 x 2100mm. Single shutter, Fire rated (120 mins) metal door	Nos	1					

	with frame, fire rated glass vision panel, SS ball bearing butt hinges, lock, with heavy duty door closer, all complete.							
2.3	Installation of above fire rated metal doors.	Lot	7					
2.4	Rolling shutters or grill gate for LT & DG Synch Panel Room. Size to be as per site requirement.	No	1					
2.5	Main entrance sliding gate, as per site conditions. Size to be as per site requirement.	No	1					
3	False Ceiling (No false ceiling in the Server, Electrical, UPS and battery rooms)							
3.1	Gypsum board false ceiling with approved G.I Frame work and hangers including openings for lights and air conditioning grilles to be framed with teak wood members at no extra cost etc as per specification complete.	Sqft	250					
3.2	Mineral fibre board ceiling 600 x 600 tegular edge in true horizontal level suspended on locking 15mm grid system.	Sqft	1000					
3.3	Installation of above false ceilings.	Sqft	1250					
4	Vitrified Flooring							
4.1	Vitrified tile flooring, as per site requirement.	Sqft	3500					
4.2	Installation of vitrified tile flooring.	Sqft	3500					
5	Wall Finishing							
5.1	Wall Putty over cement plaster. To be done in perfect line and level including finishing off machine cut grooves	Kgs	As required					

	and chases, edge banding, scaffolding pockets etc. complete as per site requirement.							
5.2	Acrylic Emulsion Paint.	Litres	As required					
5.3	Enamel Paint over a primer coat, on metal structures and as per manufacturers recommendations.	Litres	As required					
5.4	Installation / labour charges for all paintings.	Lot	1					
6	Trench Works							
6.1	Underground trenching for laying of power cables, as per specifications.	RMT	40					
6.2	Trench finishing, as per site requirement	RMT	40					
7	Cement Concrete / MS Works							
7.1	Construction and finishing of ramps, as per layout, specifications and site requirement. Ramps should be finished with anti-skid tiles or any other suitable material, pre-approved.	Sqft	300					
7.2	Construction and finishing of steps, as per layout and site requirement.	Sqft	30					
7.3	MS railing for steps in the DC building from ground to first floor with painting.	Nos	1					
7.4	MS Grills in the windows of fire safety room, control room and transformer/DG Panel room of DC building	Nos	3					
7.5	Sliding windows in safety room, control room and transformer/DG Panel	Nos	3					

	room of DC Building.							
7.6	Blocking of door areas to create door openings, as per site requirement.	Sqft	300					
7.7	Floor Screeding : Construction of the base floor by brick soling and a layer of PCC , 50 ~ 75 mm , as per specifications.	Sqft	3500					
7.8	Construction of ODU mounting platforms, as per site requirement.	Nos	As required					
7.9	Construction of DG foundation bases, as per site requirement.	Nos	As required					
7.10	Wall chasing for concealed cable paths, boring holes in walls for cable entries, sealing with fire sealants and finishing.	Rft	As required					
8	Miscellaneous							
8.1	Signage, displays and instruction display charts.	Nos	10					
8.2	SS Waste paper basket.	Nos	12					
8.3	Door mats, of minimum size 1500 x 800 mm, as per site requirement.	Nos	3					
8.4	Foot bridge with railing, as per specifications and site conditions, to connect DC and CCC buildings.	No	1					
8.5	Projection over external doors and windows, as per site requirement.	Nos	As required					
8.6	Miscellaneous Brick and Plaster Work	Lot	1					
8.7	Minor landscaping works, as per site requirement.	Lot	1					
B	Electrical Works							
1	Main LT Panel							

1.1	MAIN LT Panel, cubicle type, made of 14 SWG CRCA sheet steel, totally enclosed, IP-42, free standing, floor mounting, indoor, compartmentalised, powder coated painting suitable for operation on 3 phase and neutral 415V, 50 Hz AC system with bus bars extendable on both sides, interconnections including supply and installation of following items and as per specifications. Breakers shall be suitable as per load.	No	1					
1.2	Installation, commissioning and testing.	No	1					
2	UPS Output Panel							
2.1	UPS output Panel, cubicle type, made of 14 SWG CRCA sheet steel, totally enclosed, IP-42, free standing, floor mounting, indoor, compartmentalised, powder coated painting suitable for operation on 3 phase and neutral 415V, 50 Hz AC system with bus bars extendable on both sides, interconnections including of following items and as per specifications	Nos	1					
	The panel should have two incomers of suitable rating and four outgoing of suitable rating. Intelligent multi function digital meter to read V,A,KVA KW, KVAR, PF, Hz etc with communication facility							

	(RS 485 port) and LED display with 3 Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.							
2.2	Installation, commissioning and testing.	No	1					
3	Lighting & Raw Power DB							
3.1	Distribution boards for lighting and raw power sockets. The DB should have an incomer of suitable rating and appropriate number of outgoing of suitable rating considering spares.	Nos	2					
3.2	Installation, commissioning and testing.	Nos	2					
4	Rack UPS Power DB							
4.1	Distribution Boards for UPS Power to Racks :-6 way TPN	Nos	4					
4.2	Installation, commissioning and testing.	Nos	4					
5	Emergency Light DB (ELDB)							
5.1	Distribution Boards for Emg Light, Power sockets :-6 way SPN	Nos	1					
5.2	Installation, commissioning and testing.	Nos	1					
6	UPS DB (UDB)							
6.1	Distribution Boards for desktops, fire & security sockets :-6 way SPN	Nos	1					
6.2	Installation, commissioning and testing.	Nos	1					
7	Raw Power DB (RDB)							
7.1	Distribution Boards for Raw Power sockets :-12 way SPN	Nos	1					
7.2	Installation,	Nos	1					

	commissioning and testing.							
8	CAC DB							
8.1	Distribution Boards for Raw power to CAC's : 6 way TPN	Nos	1					
8.2	Installation, commissioning and testing.	Nos	1					
9	Cabling							
	Supply of the following sizes of 1100 volt grade, PVC insulated and armoured, copper or aluminium conductor cables. Rate to include for all necessary hardware cable clamps, M.S. supports and hangers etc.for cables.							
9.1	3.5 core x 240 sq.mm. AL. AR. Cables 2 run (from transformer- 400 KVA to LTP) estimated at 25 mtrs distance	Mtrs.	100					
9.2	3.5 core x 240 sq.mm. AL. AR. Cables 2 run (from 320 KVA DG to LTP) estimated at an average of 30 mtrs distance.	Mtrs.	120					
9.3	3.5 core x 120 sq mm Cu flexible cable (LTP to PAC Panel)	Mtrs.	40					
9.4	1 core x 70 sq mm Cu flexible cable (LTP to Main UPS & UPS to UPS O/P Panel)	Mtrs.	200					
9.5	3.5 core x 25 sq mm Cu flexible cable (PAC Panel to PAC)	Mtrs.	40					
9.6	3.5 core x 35 sq.mm. Cu. flexible cables (LTP to CAC DB)	Mtrs.	25					
9.7	1 core x 4 sq.mm. Cu. flexible cables (LTP to AUX UPS/ AUX UPS to UPS DB)	Mtrs.	200					
9.8	2 core x 6 sq.mm. Cu.	Mtrs	50					

	flexible cables							
9.9	3 core x 4 sq.mm. Cu. flexible cables (CAC - 2.0 Tr)	Mtrs.	200					
9.10	3 core x 1.5 sq.mm. Cu. flexible cables (Point wiring)	Mtrs.	500					
9.11	8 core x 1.5 sq.mm. Cu. flexible cables	Mtrs	100					
9.12	3 core x 6 sq.mm. Cu. flexible cables (for Racks)	Mtrs.	As required					
9.13	Laying of the above cables including all tools and labour charges.	Mtrs	As required					
9.14	Joining the ends of the sizes as mentioned above sizes of PVC insulated and armoured cables including supply of brass cable glands, cable sockets and all jointing materials.	Nos	60					
10	Cable Trays							
	Supply of the following sizes of wire mesh or perforated GI cable trays with epoxy finish. Rate includes all necessary supporting brackets, clamps, saddles, fixing hardware etc.							
10.1	600 (W) x 50 (H) x2 mm (T)	Mtrs	100					
10.2	300 (W) x 50 (H) x 2mm (T)	Mtrs	100					
10.3	150 (W) x 50 (H) x 2mm (T)	Mtrs	150					
10.4	Laying of the above cable trays including all tools and labour charges.	Mtrs	350					
11	Earthing							
11.1	Supply of earthing material for 3.0 metre long earth pipe set with back fill compound, bus for termination, SS bolts, nuts, and washers etc.	Nos.	12					

11.2	Supply of earthing material for 600 X 600 X 3 mm copper Plate Type Earthing, as per specifications.	Nos.	4					
11.3	25 mm x 3 mm GI Strip	Mtrs	100					
11.4	No. 8 SWG Cu. Wires	Mtrs	200					
11.5	Copper Earth Busbar with insulators	Nos.	4					
11.6	Installation & commissioning of the above earthing systems including including excavation, refilling & complete as required, including heavy duty cast iron cover and all associated civil works like construction of chamber and rough plastering etc.	Nos.	16					
12	Lighting and power wiring							
	Wiring to the following light points , PVC insulated copper conductor wires drawn in heavy gauge PVC conduit pipes installed on the ceiling or run over the false ceiling with drops to the distribution boards and switch boxes recessed in the walls/partitions. Points to be controlled in groups or individually by means of 6 amps, single pole, flush type modular switches housed in flush mounted G.I. boxes.							
12.1	Points to be controlled in groups of 4 - 6 from the raw power / light DB	Points	5					
12.2	Points to be controlled individually from the respective switch box / socket- outlets	Points	10					

12.3	Point wiring for utility & workstations : Wiring with 2 Nos. 6A, 5 Pin Socket and 2 Nos. 6A switch, housed in 6-way modular faceplates of approved color and design mounted either with or without G.I. back-boxes, as per site requirement.	Points	12					
12.4	Point wiring for 16 amps socket-outlets : Wiring with PVC insulated copper conductor wires drawn through PVC conduit & each point to be complete with 1 No. 16A Switch + 1 No. 16A Socket outlet, housed 4-way modular faceplates of approved color and design mounted with G.I. back-box.	Points	8					
12.5	Labour charges for laying / installation of point wiring materials.	Nos	35					
12.6	Supply of 3-Pole, Single/ Three Phase, 250 volts, inter-locked switch socket-outlet, as suitable rack design.							
12.6.1	32 A interlocked socket-outlet	Nos.	As required					
12.6.2	63 A interlocked socket-outlet	Nos.	As required					
12.6.3	Installation and Commissioning of the above interlocked sockets.	Nos.	As required					
13	Lighting fixtures							
13.1	Energy efficient and low maintenance type LED type light fixtures :							
13.1.1	Ceiling hanging type LED light fixtures	Nos.	16					
13.1.2	Ceiling recessed type	Nos.	14					

	LED light fixture, suitable for grid ceiling							
13.1.3	Outdoor LED lights.	Nos.	4					
13.1.4	Installation and Commissioning of the above light fixtures.	Nos.	34					
14	Lightning Arrestor with Earth Pit							
14.1	Early Streamer Emission (ESE) type Lightning Terminal	No.	1					
14.2	GI MAST	No.	1					
14.3	Lightning Strike Recorder	No.	1					
14.4	Test Link Joint	No.	1					
14.5	Transient Earth clamp	No.	1					
14.6	Earth pit with all accessories and cables.	No.	1					
14.7	20 mm x 3 mm Cu Strip	Mtrs	15					
14.8	Installation and Commissioning of the above Lightning Arrestor and Earth Pit including all labour charges.	No	1					
15	First Aid Box	Set	1					
16	Danger Plate	Nos	6					
17	Shock Treatment Chart	Nos	3					
18	Rubber mats	Lot	1					
19	Exhaust Fan	Nos	4					
20	Ceiling Fan	Nos	12					
C	Main UPS System							
1	160KVA (3Ph-3Ph) Microprocessor based double conversion parallel redundant online UPS system with 15 Min battery back up as per technical specifications	Nos	2					
2	Installation and Commissioning of the above.	Nos	2					
D	Auxiliary UPS System							
1	15 kVA/ 12 kW 3-Phase Input / 1-Phase Output parallel redundant online UPS system with 15 Min battery back up	Nos	2					

	as per technical specifications							
2	Installation and Commissioning of the above.	Nos	2					
E	Diesel Generator							
1	Supply of 400 KVA Diesel Generating set (with AMF) with acoustic enclosure, radiator, fuel tank, heavy duty silencer and exhaust piping and control panel, as per specifications.	Nos	2					
2	Exhaust System							
2.1	Supply and fixing of exhaust piping B class 150mm dia., 2mm thick MS pipe with all support structures, flanges, filer flay gasket, hardware, etc complete. The exhaust piping shall be insulated with mineral wool with chicken mesh bonded and aluminium sheet cladding. All labour, materials, lead, lift, tools, plants etc. complete.	Rmt	20					
3	Miscellaneous							
3.1	Fuel refilling with lub oil in DG	Lot	2					
3.2	Statutory clearance charges from Polution Control Board and others, as req.	Lot	2					
3.3	Transportation, Loading & Unloading Charge	Lot	2					
4	Installation, testing and commissioning of the above DG Sets including transportation to NITR campus mounting in the specified location including all materials, labour, tools & plants, all lead, lifts, tackles for	Nos	2					

	unloading/ handling of equipments and materials at site, their assembly, sundry items etc. The work should include all labour, aligning the D.G set, fuel tank erection, filling of fuel, oil etc, installing battery assembling, connecting earth connections, testing and commissioning.							
F	Comfort Air-conditioning System for facility area							
1	Supply of 2.0 Tr, Wall Mount Split AC, 3 Star, as per specifications.	Nos	8					
2	Copper refrigerant piping with fittings, nitrile rubber insulation & wiring , as required, for each compressor to interconnect the condensing units with the indoor units including gas charging, testing & commissioning	Nos	8					
3	uPVC High Pressure Drain Water Piping, as required, complete with fittings (elbows, tees, reducers, sockets etc.), supports, jointing, nitrile rubber insulation etc. and any other item required to make the system complete. Nominal diameters in mm as indicated below:							
3.1	32 mm (length to be estimated as per site conditions)	Nos	8					
3.2	25 mm (length to be estimated as per site conditions)	Nos	8					

4	Installation and commissioning of the above CAC units.	Nos	8					
5	Mounting of outdoor units with all necessary brackets and civil works.	Sets	8					
G	Addressable Fire Alarm System							
1	Intelligent Addressable Microprocessor based Fire Alarm panel	Nos	1					
2	Addressable photo electric type smoke detector with blinking LED	Nos	60					
3	Addressable heat detectors	Nos	2					
4	Response indicator with LED	Nos	6					
5	Addressable control modules	Nos	12					
6	Addressable monitoring modules	Nos	10					
7	Isolator module complete with junction box and mounting accessories	Nos	10					
8	Manual Pull Station	Nos	3					
9	Electronic Strobe cum Hooter	Nos	3					
10	1.5 sq.mm copper FRLS cable	RM	400					
11	Installation and commissioning of the above	Nos	1					
H	Fire Suppression System							
1	5 Kg, ABC Type Wall Mount Fire Extinguisher	Nos	5					
2	Installation and commissioning of the above	Nos	5					
3	Polymer Fire Detection Tube Based In-Cabinet Localized Fire Suppression System for Electrical Panels (4.5 kg CO ₂)	Nos	5					
4	Installation and commissioning of the	Nos	5					

	above							
5	Electrically actuated automatic CO ₂ based flooding system for server racks and electric panels complete with cylinders, pipe network, discharge nozzles, etc.	Lot	1					
6	Design, Installation and Commissioning of the above	Lot	1					
I	Access Management System for facility area							
1	Microprocessor based Control Panel for Access Control.	Set	1					
2	Low power 12 Vdc power supply with internal battery backup for 4 hours operation.	Nos	1					
3	Smart card Readers	Nos	9					
4	Biometric Finger Print cum Smart Card Reader	Nos	2					
5	Smart Cards (Blank faced)	Nos	50					
6	Electromagnetic Locks (600 lbs) with Magnetic Contact, door sensor for single leaf doors.	Nos	3					
7	Electromagnetic Locks for Double Doors (2x600 lbs) with Magnetic Contact & door sensor.	Nos	6					
8	Emergency Door Release (Break Glass Type).	Nos	3					
9	Exit switches	Nos	7					
10	Access Management Software	Set	1					
11	8 core, 1.0 sq.mm cable.	Mts.	250					
12	1.5 sq. mm. copper conductor cable	Mts.	250					
13	25mm PVC conduit	Mts.	100					
14	Installation and commissioning of the above.	Nos	1					
J	Rodent Repellent System for facility area							
1	Master Console capable of connecting to 12	Nos.	1					

	Satellites complete with all accessories as per specifications							
2	Satellite Units complete as per the specification	Nos.	12					
3	Connecting Cables	Rmt	200					
4	Bracket Stand	Set	1					
5	25mm PVC conduit	Mtr.	100					
6	Central Reporting and Monitoring Software	Nos	1					
7	Installation and commissioning of the above.	Nos	1					
K	Wall Mount Display for Control Room							
1	42" LCD display, wall mount, for Control Room	Nos	2					
2	Installation and commissioning of the above.	Nos	2					
L	Racks & Accessories							
1	42 U 600 x 1450 Racks with Mechanical Locks at the Front and Rear Doors and 1 No. Metered and 1 No. Normal PDU	Nos	18					
	Installation and commissioning charges of the above	Nos	18					
2.	500A Power Raceway with 20 Nos. x 32 A Tap-up Boxes with MCB and End-Feed Unit	Nos	2					
3.	Installation and commissioning charges of the above	Nos	2					
4	Supply of In-row type Precision air conditioning units with horizontal air flow pattern, can be placed in-between the racks or at the ends of rows, close to the heat source with SHF more than 0.99 to Cold Aisle at 22+/-1 deg C . Unit should have	Nos	8					

	Galvanized sheet metal, externally epoxy powder coated, internally insulated with open-cell foam construction, Dx type with inverter scroll compressor, electronic expansion valve, multiple EC fan, Filter, Microprocess Controller, individual display, multiple stage heater, humidifier, Modbuscard, water leak detector, etc. Capacity :30 Kw with 4200 Cum/h air volume						
5	Refrigerant Piping between Indoor & Outdoor unit with insulation(as per manufacturer standard). Pipes running outside the building should be additionally protected with UV resistant tape.- Suitable size (as per manufacturers recommendation) with 18 gauge hard copper piping with necessary fittings and supports. The measurement is per circuit (for both gas suction and liquid line of copper pipings)- 5/8" & 7/8"- Assuming Distance between IDU & ODU is 25 RMT	RMT	50				
6	Necessary control cabling between Indoor & Outdoor Unit - copper flexible 3C 2.5 sq mm - Assuming Distance between IDU & ODU is 30 RMT	RMT	60				
7	Necessary power cabling for IDU Unit - copper flexible 4C 10 sq mm -	RMT	20				

	Assuming Distance between IDU & isolator as 10 RMT							
8	Lifting shifting & positioning	Nos	2					
9	Commissioning with refrigerant	Nos	2					
10	Fresh water piping for humidifier line - 20 mm cpvc-Assuming 8 rmt per unit	RMT	20					
11	Drain water piping – CPVC 40 mm-Assuming 8 rmt per unit	RMT	20					
12	Main Incoming cable cu flexible with termination 4 C 10 Sq.mm	RMT	20					
13	1U Screwless Blanking Panel	Nos	300					
14	2U Screwless Blanking Panel	Nos	200					
M	Passive Networking							
1	LC-LC Multimode 50/125 micron OM4 Duplex Patch Cord, LSZH, 10 Meter	Nos.	20					
2	LC-LC Multimode 50/125 micron OM4 Duplex Patch Cord, LSZH, 20 Meter	Nos.	20					
3	Cat6 UTP Cable 23 AWG	Box	2					
4	Cat6 UTP Jack for field side	Nos.	12					
5	Cat6 Patch Cord, 1 Mt., Green	Nos.	12					
6	Cat6 Patch Cord, 2 Mts., Green	Nos.	12					
7	24 Port unloaded modular Jack Panel	Nos.	1					
8	Cat6 UTP Jack for Jack Panel	Nos.	24					
9	Single type shuttered Face Plate	Nos.	12					
10	12U Rack	Nos.	1					
11	24-core Fibre Cable	Mts	120					
12	24-port LIU	Nos.	4					
M.1	Installation Services							
1	Laying of OFC Patch Cord	Nos.	40					

2	Laying of Cat6 Cable	Mts.	610					
3	Laying of 24-core fibre cable through cable trays	Mts	120					
4	Termination of 24-port LIUs with all necessary accessories	Nos.	4					
5	Termination of I/O	Nos.	12					
6	Termination of Jack Panel	Nos.	1					
7	12U Rack fixing	Nos.	1					
N	Material Movement System	Nos.	1					
1	Robust and sturdy table trolley for carrying 2 bulky servers of 50 kg weight each, Material: Overall stainless steel body Maximum Size: Length 1000mm, width 600mm, height 750mm Wheel: Four Shelves : Min 2 with 2 feet vertical spacing	Nos	2					
2	Material Movement System(Battery Cart)	Nos	1					
O	Water Leak Detection System							
	Water Leak Detection System with Necessary Accessories like control panel, required number of sensors, cables etc.	Lot	1					
P	Project Management							
1	Project Management charges	Lot	1					
2	Onsite warranty support for one year from the date of commissioning & handover, as per SLA.	Lot	1					
3	Training and documentation.	Lot	1					

Consolidated Price Schedule:

S. No.	Name Of Equipment	UoM	Qty	Make, Model and Part No. (if any)	Unit Rate	Taxes	Total unit price	Cost as per mentioned quantity
A	Civil / Interior Works	Lot	1					
B	Electrical Works	Lot	1					
C	UPS Systems 160kVA	Lot	1					
D	UPS Systems 15kVA	Lot	1					
E	Diesel Generator	Lot	1					
F	Comfort Air-Conditioning System	Lot	1					
G	Addressable Fire Alarm Systems	Lot	1					
H	Fire Suppression System	Lot	1					
I	Access Control System	Lot	1					
J	Rodent Repellent System	Lot	1					
K	Wall mount display for control room	Lot	1					
L	(a) Equipment Racks & Accessories	Lot	1					
	(b) PAC System	Lot	1					
M	Passive Networking	Lot	1					
N	Material Handling and Movement	Lot	1					
O	Water Leak Detection System	Lot	1					
P	Project Management							
Q	Installation & Commissioning for above (A to L)	Lot	1					
R	Any other supply or service items as may be needed to complete the work as per specifications and site conditions.							
	GRAND TOTAL							

* Evaluation of Price Bids of Technically Qualified Bidders shall be done on GRAND TOTAL

Place :

Date :

Company Seal :

Signature of the Bidder

CHAPTER-VI: OTHER FORMS TO BE SUBMITTED**Form 1: BIDDER'S SELF INFORMATION FORM**

S.No.	Information	Details		
1.	Tender Enquiry No. and Date			
2.	Bidder's Reference No. and Date			
3.	Name of firm			
4.	Address of firm			
5.	Telephone No.			
6.	Fax No.			
7.	E-mail Id:			
8.	Website, if any			
9.	*Permanent Account No:			
10.	*Sales Tax Registration No.			
11.	*Service Tax Registration No.			
12.	*Financial turnover of 2013-2014	<i>In INR in figures as well as words</i>		
13.	*Financial turnover of 2014-2015	<i>In INR in figures as well as words</i>		
14.	*Financial turnover of 2015-2016	<i>In INR in figures as well as words</i>		
15.	Details of the authorized signatory of the bidder including name, designation and Postal address with telephone, mobile, fax and email (Add rows to include all authorized signatories)		(Affix authorized signatory's signature in this space)	(Affix authorized signatory's recent coloured passport size photo in this space)
16.	Details of the officer (Bidder's Project Manager for this project) to whom all references shall be made regarding this tender enquiry including name, designation and postal address with telephone, mobile, fax and email		(Affix officer's signature in this space)	(Affix officer's recent coloured passport size photo in this space)
17.	Bid Processing fee Details			
18.	EMD Details			

*Attach Attested Copies

Signature: _____ **Seal of the company**
Date: _____
Name: _____
Designation: _____
Place: _____ **Company:** _____

Form 2: FORM FOR SUBMISSION OF BIDS

NIT Raipur Tender Enquiry No: _____

Due to open on: _____ **at** _____ **(time)**

Bidder's Ref No:

To
The Registrar
NIT Raipur
Chhattisgarh, India

Dear Sir

Having examined the conditions of the contract as _____ specified in the Bid Documents and the Specifications and Allied Technical Details including _____ revisions / amendments / corrections / corrigenda Nos. _____ the receipt of which is hereby duly acknowledged, we the undersigned offer to supply and deliver "TENDER FOR DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND MAINTENANCE OF DATA CENTRE PHYSICAL INFRASTRUCTURE" in conformity with the said drawings, conditions of contract, and specifications for the sum of mentioned in the **Price Schedule**, or such other sums as may be ascertained in accordance with the schedule of prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted to complete delivery of all the ordered items by us specified in the contract within 8-12 weeks from the date of issue of your Purchase Order. If our Bid is accepted, we will furnish the performance guarantee of a Nationalised Bank for a sum not exceeding 10 percent, of the contract sum. We agree to abide by this Bid for a period of 180 days from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period. Until a formal Purchase Order or contract is prepared and executed this Bid together with your written acceptance thereof in your notification of award shall constitute a binding contract between us. Bid submitted by us is properly sealed and prepared so as to prevent any subsequent alteration and replacement.

We understand that you are not bound to accept any or all bids you may receive.

Date this day of _____

Signature _____

(Name in Block Letters of the Signatory) In
capacity of

Witness

Duly authorised to sign the bid for and on behalf of **(Attach Power of Attorney)**

Address: _____

Signature: _____

FORM 3: MANUFACTURER'S AUTHORIZATION TO BIDDER

We M/s Manufacturer's Name are Manufacturers of product name marketed and sold under the brand name.

Our main office in India is located at Indian office address.

We hereby authorise M/s Bidder's Name & Office Address to represent us, to bid, negotiate and conclude the contract on our behalf with you.

Our authorized bidder M/s Bidder's Name shall quote the items mentioned in the list below manufactured by us in Tender No. _____ dated _____ of your organization.

List of Items Manufactured

- 1.
- 2.
- 3.
- 4.
- 5.

We undertake all of the following:

An authorized representative of the bidding organization and NIT Raipur can log complaints / open support cases directly with us through phone / email / web during the initial and extended warranty periods.

Problems in equipment which cause downtime / degradation of services and resolution of which require development of patches, bug fixes etc. shall be treated by us on urgent basis.

If such equipment has to be taken by us to the factory for repair / replacement we shall arrange an alternative through the bidder, if required, so that service continuity is maintained.

As Manufacturers we shall also be responsible for providing the bidder with necessary products and accessories on time to ensure timely implementation of the project.

We shall ensure that the warranty and service commitments in the tender are met.

We shall ensure the availability of spares for a period of 05 years for the aforementioned items. If applicable, we shall also ensure the availability of software upgrades, if any.

In case of default in execution of the project as per this tender by our authorized bidder M/s Bidder's Name, then we M/s Manufacturer's Name shall provide all necessary assistance for successful completion of this project as per this tender.

Yours faithfully,

(Name)
For and on behalf of

M/s Manufacturer's Name

Signature of Witness
Manufacturer

Dated:
Place:

Signature of

Dated:
Place:

Note: This authorization letter should be on the letter-head of the manufacturing concern and should be signed by a person not less than the level of regional head/manager.

Form 4: FORM FOR AFTER SALES SERVICE / TECHNICAL ASSISTANCE CENTRES IN INDIA

The service / technical assistance centres in India listed below are fully functional and equipped with spares and skilled manpower for providing satisfactory after sales services of the equipment supplied by us under this contract.

S.no.	Name of equipment	Name of Manufacturer	Nearest Service Centre address	Service Contact person With tel. no. and E-mail ID
1.				
2.				
3.				

Bidder shall quote only those products whose manufactures have their own after sales service / Technical Assistance centre in India.

Form 5: FORM FOR WARRANTY

We warrant that the equipment to be supplied by us hereunder shall be brand new, free from all encumbrances, defects and faults in material workmanship and manufacture and shall be of the highest grade and equally consistent with the established and generally accepted standards for material of the type ordered shall be in full conformity with the specifications, drawings or samples, if any, and shall operate properly. We shall be fully responsible for its efficient and effective operation. This warranty shall survive inspection of and payment for and acceptance of the goods, but shall expire 30 months (to be called warranty period) from after their successful installation and acceptance by the purchaser or warranty period plus 6 months from the date of completion of supply of material.

We also warrant that the function contained in the system software if any will meet the manufacturer's specification together with any clarifications given by us and that the operation of these firmware will be uninterrupted and error free and all software defects, if any will be corrected by us.

The obligations under the warranty expressed above shall include all costs and taxes relating to labour, spares maintenance (preventive and unscheduled) and transport charges from site to manufacturers works and back and for repair/adjustment or replacement at site of any part of equipment which under normal care and proper use and maintenance proves defective in design, material or workmanship or falls to operate effectively and efficiently or conform to the specifications and for which notice is promptly given by the purchaser to the supplier.

Signature of the Witness

Signature of the Bidder

Date:

Seal of the company

Form 6: FORM FOR STATEMENT OF DEVIATIONS FROM TENDER CONDITIONS

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

Clause of Tender	Deviation from the Clause	Remarks (including justification)

Date:

Place:

Signature:

Name:

Designation

Company:

Seal:

Form 7: FORM OF BANK GUARANTEE FOR 5% CONTRACT VALUE FOR CONTRACT PERFORMANCE GUARANTEE BOND

Ref.....

Date

Bank Guarantee No.....

To

Director

National Institute of Technology, G.E. Road, Raipur.

1. Against contract vide Advance Acceptance of the Tender No..... datedcovering supply/ installation/commissioning ofhereinafter called the 'Contract'), entered into between the Director, National Institute of Technology, Raipur (hereinafter called the NIT Raipur) and.....(hereinafter called the 'Contractor') this is to certify that at the require of the Contractor weBank Ltd., are holding in trust in favour of the Director, NIT Raipur, the amount of(write the sum here in words) to indemnify and keep indemnified the Director, NIT Raipur against any loss or damage that may be caused or likely to be caused to or suffered by Director, NIT Raipur by reason of any breach by the Contractor of any of the terms and conditions of the said contract and/or the performance thereof whether any breach of any of the terms and conditions of the said contract and or in the performance thereof has been committed by the Contractor and amount of loss or damage that has been caused or suffered by Director, NIT Raipur shall be final and binding on us and the amount of the said loss or damage shall be paid by us forth with on demand and without demur to Director, NIT Raipur.
2. We,Bank Ltd., further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for satisfactory performance and fulfilment in all respects of the said contract by the Contractor i.e. till(viz. the date up to 3 months after the last date of warranty on goods/services supplied under the contract) hereinafter called the "said date" and that if any claim accrues or arises against us,Bank Ltd., by virtue of this guarantee before the said date, the same shall be enforceable against usBank Ltd., notwithstanding the fact that the same is enforced within six months after the said date. Payment under this letter of guarantee shall be made promptly upon our receipt of notice to that effect from Director, NIT Raipur.
3. It is fully understood that this guarantee is effective from the date of the said contract and that we,.....Bank Ltd., undertake not to revoke this guarantee during its currency without the consent in writing of Director, NIT Raipur.
4. WeBank Ltd., further agree that the NIT Raipur shall have the fullest liberty, without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said contract or to extend time of performance by the Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by NIT Raipur against the said Contractor and to forbear or enforce any of the terms and conditions relating to the said contract and WeBank Ltd., shall not be released from our liability under this guarantee by reason of any such variation of extension being granted to the said Contractor or for any forbearance and or omission on the part of NIT Raipur or any indulgence by NIT Raipur to the said Contractor or by any other matter the effect of so releasing us from our liability under this guarantee.
5. WeBank Ltd., further agree that the guarantee herein contained shall not be affected by any change in the constitution of the said Contractor.

Date.....

Signature

Place

Printed Name.....

**Witness
(Designation)**

.....

.....

(Bank's Common Seal)

Form 8: FORM FOR SUBMISSION OF SIMILAR WORKS EXECUTED BY BIDDER AS PROOF OF ELIGIBILITY

S.No.	Name of the Client Organization	Project Cost (in lakhs)	Nature of Work	Contact Person Of Client Organization with Name, Designation, E-mail and Mobile Number	Remarks	Purchase order & Work Completion Certificate (Yes/No)

Date:

Place:

Signature:

Name:

Designation

Company:

Seal:

Form 9: FORM FOR PRE-BID CLARIFICATION

Bidder is required to submit e-mail with subject "Pre-bid Clarification" to cccdc@nitrr.ac.in. Bidder should attach two file attachments with this e-mail

- (i) duly-filled table below in editable MS Excel © Spreadsheet, and
- (ii) a scanned copy of this form

If bidder does not comply with aforementioned, or sends beyond the last date for pre-bid clarification as mentioned, such pre-bid queries shall be ignored.

S.No.	Chapter No.	Section No.	Page No.	Clause	Query	Remark
1.						
2.						
3.						
4.						
5.						

Date and Time (IST):

Signature:

Name:

Company:

Contact Number:

Address:

Seal:

Form 10: PRELIMINARY TEST CERTIFICATE**PURCHASE ORDER NO:****DATED:**

Against the above mentioned purchase order. The items detailed below have been received on

Equipment		Description			
S.No.	Physical Check	Power On Test	Firmware / Software		Remarks

Note: A random sample of the active devices shall be POST tested for payment recommendation at this stage. However, if any active device is found not working at any stage till issue of commissioning certificate, it shall be replaced by the contractor free of cost. During the warranty period, the item may be replaced / repaired as needed free of cost or in terms of the warranty.

Witnesses:

Bidder's Representatives

S.No.	Signature	Name	Designation	Date	
1.					
2.					
3.					
4.					
5.					

CCC Committee Members

S.No.	Signature	Name	Designation	Date
1.				
2.				
3.				
4.				
5.				

Form 11: FINAL COMMISSIONING CERTIFICATE

Purchase Order No. : _____

Dated: _____

Project Nomenclature : _____

Name and Address of Contractor: _____

Against the above mentioned Purchase Order, the items detailed below have been successfully commissioned after installation and tested. The manuals, documentation, and training as required have also been provided by the vendor as per specification in the PO.

S.No.	Item Description	Quantity

Witnesses:**Bidder's Representatives**

S.No.	Signature	Name	Designation	Date
1.				
2.				
3.				
4.				
5.				

CCC Members

S.No.	Signature	Name	Designation	Date
1.				
2.				
3.				
4.				
5.				

ANNEXURE 1: STATEMENT OF DEVIATIONS FROM TECHNICAL SPECIFICATIONS

To,
The Director,
NIT Raipur

Reference. Tender No. Dated.....

Dear Sir,

Following are the deviations and variations from the Technical Specifications of tendered items. These deviations and variations are exhaustive. Except these deviations and variations, the entire work shall be performed as per your specifications and documents.

Sr. No.	Selection No. & Page No	Deviation in the Bid	Brief reason
1			
2			
3			
4			

Date:

Place:

Signature:

Seal of the bidder

Name:

Designation

Company:

ANNEXURE 2: BANK GUARANTEE FORMAT FOR EARNEST MONEY DEPOSIT

To

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

WHEREAS _____ (Name of Bidder) (hereinafter called "the Bidder" has submitted its Bid dated _____ (Date) for the execution of contract " TENDER FOR DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND MAINTENANCE OF DATA CENTRE PHYSICAL INFRASTRUCTURE" (hereinafter called "the Bid") in favour of National Institute of Technology Raipur hereinafter called the "Employer";

KNOW ALL MEN by these presents that we, _____ (name of the issuing Bank), a body corporate constituted under the _____ having its Head Office at _____ amongst others a branch/office at _____ (hereinafter called "the Bank" are bound unto the employer for the sum of Rs. 9,00,000/- (Rupees Nine Lakhs only) for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents;

THE CONDITION of this obligation is: If the bidder withdraws or amends their quotation before the issue of work-order to the successful bidder by the employer, or fails to submit PBG within stipulated time, (in case he becomes the successful Bidder), We undertake to pay to the Employer up to the above amount upon receipt of his first written demand without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of any of the above conditions. Notwithstanding anything contained herein

i)Our liability under this Bank Guarantee shall not exceed Rs. 9,00,000/- (Rupees Nine Lakhs only)

ii)This Bank Guarantee is valid up to _____ (date) and

iii) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand On or before _____ (mention period of guarantee as found under clause (ii) above plus claim period)

Dated _____ day of _____ 20_____

SIGNATURE AND SEAL OF THE BANK