



**Institute of Physics**  
**Po-Sainik School, Bhubaneswar-751005**

**Global Tender**

Sealed two part Tenders are invited on behalf of Director Institute of Physics, Bhubaneswar from the manufacturers (Indian or Foreign) and their authorized reseller/Indian agent and stockiest only for supply & installation of the following items.

Tender Notice No.	Name of the Item	Qty.	EMD in Rs.	Due date of submission of Tender (up to 3.00 PM)	Date of Opening of Technical Bid (at 3.30 PM)
NIT/23-1/2015	Scanning Electron Microscope & Accessories	01	4.00 Lakh	30.04.2015	30.04.2015
NIT/23-2/2015	A) Polarising Microscope Camera B) Hot stage Optical Microscope Camera	01 01	80000/- 20000/-	30.04.2015	30.04.2015
NIT/23-3/2015	Wire Bonder (Advanced Ball/Wedge Bonders)	01	N.A.	30.04.2015	30.04.2015
NIT/23-4/2015	High Dynamic Range X-ray detector for 15-20 keV x-Rays	01	N.A.	30.04.2015	30.04.2015
NIT/23-5/2015	Scanning Tunneling Microscopy	01	N.A.	30.04.2015	30.04.2015
NIT/23-6/2015	Dry Rotary Pump	01	N.A.	30.04.2015	30.04.2015
NIT/23-7/2015	Turbo Molecular Pumping Systems (65-70 ltr/s and 675-700 ltr/s) with accessories	3Nos.	N.A.	30.04.2015	30.04.2015
NIT/23-8/2015	KrF gas (6900 lit), valve DIN 477/14	01	N.A.	30.04.2015	30.04.2015
NIT/23-9/2015	Cables	As per technical specification	N.A.	30.04.2015	30.04.2015
NIT/23-10/2015	HPC AMD System	1 No.	Rs.1,10,000/-	30.04.2015	30.04.2015

**Cost of Tender Paper** : Rs.500/- (Nonrefundable) for each item

For further details, please refer to the detailed NIT in IOP's website [www.iopb.res.in](http://www.iopb.res.in)

**NOTE:-**

- 1) Parties may quote along with requisite amount of EMD indicated against above equipment. Party registered with SSI/DGS&D/DAE and foreign parties quoting directly are exempted from paying EMD only.
- 2) Bidder who submit the form downloaded from the web site must attach **Demand Draft for Rs.500/- for each item** prepared in favour of "Director, Institute of Physics" with their bid towards the cost of tender documents.
- 3) Parties who have already quoted against the earlier tender Notice No, NIT/20-2,4,5,6,9,11,12,15/2015, may resubmit the tender , if they interested otherwise their earlier quotation will be considered.

DIRECTOR

## INSTITUTE OF PHYSICS NIT OPEN DOCUMENT (2 PART BID)

Institute of Physics (IoP), Bhubaneswar, India is an Autonomous Institute under Dept of Atomic Energy, Government of India. IOP would like to procure the following equipment. The Technical Specifications, Schedule of Requirements and Allied Technical details are given in Part-1 of tender document.

The Items are:

Tender Notice No.	Name of the Item	Qty.
NIT/23-1/2015	Scanning Electron Microscope & Accessories	01
NIT/23-2/2015	A) Polarising Microscope Camera B) Hot stage Optical Microscope Camera	01 01
NIT/23-3/2015	Wire Bonder (Advanced Ball/Wedge Bonders)	01
NIT/23-4/2015	High Dynamic Range X-ray detector for 15-20 keV x-Rays	01
NIT/23-5/2015	Scanning Tunneling Microscopy	01
NIT/23-6/2015	Dry Rotary Pump	01
NIT/23-7/2015	Turbo Molecular Pumping Systems (65-70 ltr/s and 675-700 ltr/s) with accessories	3Nos.
NIT/23-8/2015	KrF gas (6900 lit), valve DIN 477/14	01
NIT/23-9/2015	Cables	As per technical specification
NIT/23-10/2015	HPC AMD System	1 No.

- **Tender Enquiry No: As mentioned in the NIT**
- **Due Date & Time: As mentioned in the NIT**
- **Opening of Technical Bids: As mentioned in the NIT**

Sealed tenders are invited for supply, installation, testing & commissioning of above items/equipment in the Institute of Physics, Bhubaneswar. The tender document consists of the following two parts.

Part-1 (A) TERMS & CONDITIONS of the tender common to all items

(B TECHNICAL BID of the tender.

Part-2: "COMMERCIAL BID" of the tender.

The sealed envelope containing "Terms & Conditions", "Technical Bid" and "Commercial Bid" on prescribed tender document should reach the Director, Institute of Physics, Bhubaneswar on or before **as mentioned in the NIT** otherwise the tender will not be accepted.

The sealed envelope of the bidders containing Part-1 "Terms & Conditions" and "Technical bid" shall be opened on **as mentioned in the NIT**. One authorized representative of each vendor may participate at the time of opening the bids. The Part -2 "Commercial Bid" of only those parties who qualify in Part -1 will be opened on a later date. The date of opening of Part-2 of the tender will be informed to each qualified party separately.

**DIRECTOR**

**The Institute can provide the following documents.**

- 1. Custom Duty / Excise duty exemption certificate.**
- 2. Road permit for entering in Odisha.**

**The Institute cannot provide the following documents.**

- 1. Form D for Central Sales tax/IIID for UP Trade Tax.**

**COST OF TENDER PAPER FOR EACH ITEM IS **Rs.500/-** (NON REFUNDABLE).**

**This is payable in cash or Demand Draft of a Scheduled Bank drawn in favour of the Director, Institute of Physics, Bhubaneswar.**

**PART – 1(A)**  
**TERMS & CONDITIONS**

1. Director, Institute of Physics, Bhubaneswar invites sealed tenders for Laboratory equipments from manufacturers and their authorized agent/dealers having following credentials.

A. Should have satisfactorily completed **similar supply** (at least one of them in Central/state Government/Central Autonomous Body/Central PSU)

B. **Similar or Similar Nature of work means** Supply, Installation, testing and commissioning of Laboratory Equipments for any of the following:

a) **Government/Autonomous Institutions**

b) **Government Research Centers**

c) **Universities**

d) **Autonomous/Reputed Private Research Centers**

C. Purchase Orders / Completion certificates, if any, for supporting above requirements.

2. The Bidders are requested to give detailed tender or its own form in **Two Bid** format, i.e.  
Part - I Technical Bid  
Part - II Commercial Bid.

**3. Supply means:**

“Supply, Installation, Testing & Commissioning and satisfactory demonstration of the whole equipments”. Extra Charges if any are payable for Installation and Commissioning, the same should be specified in the commercial offer.

**4. Submission of Bids:**

(a) Place: Office of Director, Institute of Physics, Bhubaneswar

(b) Time and Date of Submission: **As mentioned in the NIT**

(c) Time and Date of opening Technical Bid: **As mentioned in the NIT**

IOP will not be responsible, for submission / delivery of quotation at wrong places other than the Director, Institute of Physics, Bhubaneswar. IOP will also not be responsible for any postal delay.

**5. Two Bid System: (For each equipment separately)**

The two bid system should be followed for this tender. In this system the bidder must submit his offer in two separate sealed envelopes. Both the technical bid and commercial bid envelopes should be securely sealed and stamped separately and clearly marked as “Envelope No.1 – Technical Bid” and “Envelope No.2 – Commercial Bid” respectively. Both the sealed envelopes should be placed in a third larger envelope. The main envelope which will contain both the bids should be super scribed with our tender enquiry No. **NIT No , name of the item due on as mentioned in the NIT** and to be submitted to the address given below so as to reach on or before **As mentioned in the NIT**

Director

Institute of Physics, P.O. Sainik School

Bhubaneswar – 751 005

Odisha

India

**The envelopes must be super-scribed with the following information:**

- Tender Reference Number
- Name of the Equipment and Item No.
- Due Date
- Name of the Vendor
- **Envelope No. 1:** Shall contain “Acceptance of Terms & Conditions”, “Technical Bid” and Earnest Money Deposit (EMD) and cost of tender paper if any.  
**The technical offer should not contain any price information..**

- **Envelope No.2:** Shall contain “Commercial Bid” only.

The Technical Bid must be submitted in an organized and structured manner. No brochures/leaflets etc. should be submitted in loose form. Please indicate page nos. on your quotation eg. If the quotation is containing 25 Pages, please indicate as 1/25, 2/25, 3/25 ----- 25/25.

**Printed conditions of the vendor submitted with the tender will not be binding on** Director, Institute of Physics, Bhubaneswar.

**Important Instruction**

The bidders are requested to make separate bids (technical & financial both) for each quoted equipment along with the requisite amount of EMD.

**The Technical Offer should comprise of the following:**

- a) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.
- b) The technical offer should be complete to indicate that all products and services asked for are quoted. Each page of the bid and cutting/corrections shall be duly signed and stamped by the bidder. Unsigned Tenders will also be rejected. Failure to comply with this requirement may result in the bid being rejected.
- c) The purpose of certain specific conditions is to get or procure best product/service etc. for IOP. The opinion of Technical Committee shall be the guiding factor for technical short listing.
- d) The earnest money deposit as indicated against each items should be enclosed along with the terms & conditions & technical bid duly signed and stamped in the form of Account Payee Bank Draft payable on any branch of Nationalized/Schedule Bank at Bhubaneswar in favour of Director, Institute of Physics, Bhubaneswar, in a separate sealed envelope. All tenders submitted without requisite amount of earnest money shall be rejected and their technical and financial bids shall not be opened. No interest is payable on EMD.

**N.B. Those firms who have already deposited EMD against earlier tender Notice No.NIT/20-1,2/2014 for supply of Scanning Electron Microscope & Accessories and Polarising Microscope Camera and Hot stage Optical Microscope Camera, are not required to submit the EMD again. However, they should mention the earlier EMD details in a separate envelope.**

The EMD will be returned to the bidders(s)/Agents whose offer is not accepted by IOP within one month from the date of the placing of the final order(s) on the selected bidder(s). In case of the bidder(s) whose offer is accepted the EMD will be returned on submission of Security Deposit (SD). However, if the return of EMD is delayed for any reason, no interest / penalty shall be payable to the bidders.

**The EMD shall be forfeited:** If the bidder withdraws the bid during the period of bid validity specified in the tender. In case a successful bidder fails to furnish the Security Deposit

a) Undertaking that the successful bidder agrees to give a performance Bank Guaranty of 10% of the purchase order value in favour of “Director, Institute of Physics, Bhubaneswar” valid till warranty period.

b) Duly filled in Technical Bid with proper seal and signature of authorized person on each page of the bid should be submitted and the same should accompany with complete specifications and drawings, Manufacturer’s name, address and relevant Technical Literature/Brochures with warranty Terms and EMD if any.

c) If the bid is for branded makes, authorization letter from manufacturer clearly indicating that the vendor is the competent authority to sell and provide services towards the items mentioned in the scope of supply given in this tender document.

d) Copy of LST/CST/WCT No. PAN No. and TIN No. allotted by the concerned authorities. If registered with the National Small Industries Corporation, the registration number, purpose of registration and the validity period of registration and a copy of DGS&D registration wherever it is applicable should also be provided in Technical Bid.

e) List of deliverables / Bill of materials and services.

f) Compliance sheet with any deviation with reference to the terms and specifications.

g) Indicate the names of the Indian reputed Organizations where you have supplied similar/related items/equipments and may attach the satisfactory performance report of the equipments from user Organization.

h) The successful vendor must provide hard copies of all technical documents, including that for OEM products. This should include operation and service manuals, drawings, designs, electrical diagrams, etc. This should be specific to the instrument provided, and not generic. All manuals should be written in English and the manuals including technical drawings should be complete in all respects to operate the system without any problem.

i) Bid documents should be submitted as per the above sequence with Index page and page numbers (including technical literature). Each page of the bid should be signed & stamped in original. Unsigned bids will not be considered for evaluation.

• **Envelope 2: “Commercial Bid” shall contain:**

a) Price schedule complete in all respects with proper seal and signature of authorized person. Tender with any condition including conditional rebate shall be rejected forthwith.

b) Cost of all the items should be mentioned clearly and individually in the Commercial Offer (Part-II) only.

c) **The Bidders are requested to quote for Educational Institutional discounted Price for Machine/ Equipment and, since we are eligible for the same.**

**6. Date of opening the Technical Bids.**

Technical Bids will be opened on - **As mentioned in the NIT** at office of the Director, Institute of Physics, Bhubaneswar

The Technical bids will be opened in the presence of the bidders on the specified time and date. Bidders/Agents who have responded to the tender only will be allowed to be present.

The technical bids will be evaluated to shortlist the eligible bidders. The bidders should be available for technical presentations, if required, on an earliest possible date (determined by the

committee) following the opening of the technical bids. The commercial bids of only the short listed bidders shall be considered for further processing. Bidders whose technical offer is found acceptable and meeting the eligibility requirements as specified in this tender will be informed about the date and time of the opening of the commercial bid.

**Note:** (1) Please do not insert "Commercial Bid" (prices quoted) in the technical bid envelope. If the same is submitted with the technical bid, the tender may be rejected.

(2) No camera mobiles / mobiles are allowed during tender opening.

## **7. Opening of Commercial Bids**

IOP will open the commercial bids of only the short listed bidders, in the presence of the bidders or their authorized representatives who choose to attend the commercial bid opening. The Date and Time of opening the Commercial Bid will be intimated only to pre-qualified and technically acceptable Bidders for the item at a later date.

The representatives of short listed firms only will be allowed for commercial bid opening.

ONLY TECHNICALLY accepted competitive bids will be considered for placing Purchase Order. The commercial offers of the vendors whose technical offers are found to be technically deficient or do not meet the qualification criteria as specified in this tender will be rejected.

The bid can be submitted in person or through post/courier (IOP will not be responsible for delayed / late quotations submitted / sent by Post / Courier etc. resulting in disqualification/ rejection of any bid) so as to reach IOP on or before the due date and time.

Fax / E-mail / Telegraphic / Telex tenders will not be considered unless it is asked for. The bidders' authorized representative can attend the bid opening.

**8. Director, Institute of Physics, Bhubaneswar reserves the right to accept the offer in full or in parts or reject summarily or partly.**

## **9. Delivery Period / Timeliness**

The deliveries, installation must be completed as per the purchase order terms and conditions. The time is the essence of the contract. It is mandatory for the bidders who respond to this bid to meet these expectations, as they are tightly linked to IOP's plans of completing the project within the time frame.

## **10. Locations for the Supply / Services**

The Laboratory Equipments covered by this document is required to be supplied and installed at Institute of Physics, Bhubaneswar.

## **11. Order Placement and Release of Payment**

The Purchase Order and payment shall be processed by –

Director

Institute of Physics

Bhubaneswar-751 005

Odisha, India.

Payment for the items to be supplied by the vendor against the purchase order shall be made by Institute of Physics as follows:-

For indigenous supplies, 90% payment will be made after 100% delivery of the material on submission of original invoice and delivery challans duly signed and stamped by the authorized representative of IOP along with 10% Performance Bank Guarantee. Balance 10% payment will be released on submission of installation and warranty certificate duly signed and stamped by the authorized representative of the user department.

In case of imports, 100% payment will be made through Letter of Credit. 90% will be paid after delivery of the materials (equipments) and necessary documents preferably through bank. whereas the balance 10% will be released after satisfactory installation and commissioning along with submission of mandatory Performance Bank Guarantee favouring Director, Institute of Physics, Bhubaneswar valid till warranty period. Any deviation requested in payment terms needs justification

**12. IOP** will not provide any transportation for the engineers / representatives for attending installation, commissioning and demonstration work. It is the absolute responsibility of the Principal Supplier/Indian Agent to make their own arrangements.

**13. The successful bidder**, on award of contract / order, must send the contract / order acceptance in writing, within **two weeks** of award of contract / order failing which the EMD will be forfeited.

#### **14 Period of validity of bids**

Bids shall be valid for a period of 90 days from the date of opening the Technical bid.

IOP may ask for the bidders' consent to extend the period of validity. Such request and the response shall be made in writing only. The bidder is free not to accept such request without forfeiting the EMD. A bidder agreeing to the request for extension will not be permitted to modify his bid.

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

#### **15. Award of Purchase Order**

IOP shall award the contract to the eligible bidder whose bid has been determined as the lowest evaluated commercial bid. If more than one bidder happens to quote the same lowest price, IOP reserves the right to award the contract to more than one bidder or any bidder. **Purchaser's Right to vary Quantities at the time of Award:** IOP reserves the right at the time of award of Contract to increase or decrease the quantity of items specified in the Schedule of Requirements without any change in price or other terms and conditions.

#### **16. Corrupt or Fraudulent Practices**

IOP requires that the bidders who wish to bid for this project have highest standards of ethics. IOP will reject a bid if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices while competing for this contract. IOP may declare a vendor ineligible, either indefinitely or for a stated duration, to be awarded a contract if it at any time determines that the vendor has engaged in corrupt and fraudulent practices during the execution of contract.

#### **17. Interpretation of the clauses in the Tender Document / Contract Document**

In case of any ambiguity / dispute in the interpretation of any of the clauses in this Tender Document, Director, IOP's interpretation of the clauses shall be final and binding on all parties.

#### **18. Price**

The price quoted shall be considered firm and no price escalation will be permitted at any time. The quotation should be in Indian Rupees or any known foreign currency. Packing, forwarding, freight, insurance, **Agency commission** and commissioning charges, if any, may be quoted separately in the "Commercial Bid".

In case of Foreign Currency bids, price criteria should be Ex-works /FOB/ CIP Kolkata / CIP Bhubaneswar airport with detail break up of Price, FCA cost, **Agency Commission**, Insurance, Freight up to Kolkata / Bhubaneswar Airport is required.

#### **19. Pre-installation**

Pre-installation facilities required for installation may please be intimated in the technical bid. Subsequently, before the consignment lands in IOP, Bhubaneswar the bidder shall confirm that the pre-installation requirements are sufficient for installation of the equipments. In other words the bidder



should continuously monitor the pre-installation requirements and see that everything is ready before the consignment is taken to the site for installation. The vendor must arrange for at their expense a factory visit after completion of the manufacturing process but before shipment and demonstrate that the benchmarks are met. All utilities must be specified *a priori*, and the vendor must visit the installation site to ensure that the facilities are adequate.

## **20. Installation**

Bidder shall be responsible for installation / demonstration wherever applicable and for after sales service during the warranty and thereafter. The vendor must install and commission the system within one month from delivery. Failure to do so may incur a penalty (unless the delay is requested from IOP, Bhubaneswar).

## **21. Warranty / Support**

**The items covered by the schedule of requirement shall carry minimum one year of comprehensive warranty from the date of acceptance of the equipments by IOP.** Warranty shall include free maintenance of the whole equipment supplied including free replacement of parts. The defects, if any, shall be attended to on immediate basis. The comprehensive warranty includes onsite warranty with parts. **Three-year comprehensive warranty may please be quoted as an option.**

The defects, if any, during the guarantee/warranty period are to be rectified free of charge by arranging free replacement wherever necessary. This includes cost, insurance, freight, custom duty, octroi, local taxes if any should be borne by the beneficiary or his agent. A clear confirmation should be given for this item.

The bidder shall assure the supply of spare parts after warranty is over for maintenance of the equipment supplied if and when required for a period of 10 years from the date of supply of equipment on payment on approved price list basis.

The vendor will have to arrange for all the testing equipment & tools required for installation, testing & maintenance etc.

## **22. Indemnity**

The vendor shall indemnify, protect and save IOP against all claims, losses, costs, damages, expenses, action suits, and other proceedings resulting from infringement of any law pertaining to patent, trademarks, copyrights etc. or such other statutory infringements with respect to all the equipments supplied by him.

The successful tender should give an undertaking that the staff deployed at the centre in terms of this contract at all time will be employees of the agency exclusively and they shall not be entitled to any claim of employment or permanency of job with IOP.

IOP reserves the right to forfeit whole or part of the security money towards any damage/loss caused due to the negligence on the part of the agency engaged.

## **23. Insurance**

The equipments to be supplied will be insured by the vendor (till IOP will take over the consignment) against all risks of loss or damage from the date of shipment till such time it is delivered at IOP site in case of Rupee/Foreign currency transaction.

## **24. Penalty for delayed Services / LD**

As time is the essence of the contract, Delivery period mentioned in the Purchase Order should be strictly adhered to. Otherwise EMD/SD of the bidder will be forfeited and also LD clause will be applicable /enforced.

If the supplier fails to Supply, Install and Commission the equipment as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of

1% of order value per every week of delay subject to a maximum of 10% beyond the due date. Such money will be deducted from any amount due or which may become due to the supplier.

IOP reserves the right to cancel the order in case the delay is more than 60 days Penalties, if any, will be deducted from the Security Deposit.

**25.** If a dispute arises out of or in connection with the contract, or in respect of any defined legal relationship associated therewith or derived there from, the parties agree to submit that dispute to arbitration under the ICADR Arbitration Rules, 1996. The authority to appoint the arbitrator(S) shall be the International Centre for alternative dispute resolution. The International Centre for Alternative Dispute Resolution will provide administrative services in accordance with the ICADR arbitration Rules, 1996.

**26.** Clarification or query if any mail to **[purchase@iopb.res.in](mailto:purchase@iopb.res.in)**

**27. Jurisdiction**

The disputes, legal matters, court matters, if any, shall be subject to Bhubaneswar Jurisdiction only.

Director  
Institute of Physics,  
Bhubaneswar

**DECLARATION BY THE VENDOR**

It is hereby declared that I/We the undersigned, have read and examined all the terms and conditions etc. of the tender document for which I/We have signed and submitted the tender under proper lawful Power of Attorney. It is also certified that all the terms and conditions of the tender document are fully acceptable to me/us and I/We will abide by the conditions from serial no. 1 to 26. This is also certified that I/We/our principal manufacturing firm have no objection in signing the purchase contract if the opportunity for the supply of the items against this tender is given to me/us.

Date:

Signature:

Address:

Name:

(Please take the printout on your letter head along with all details)

To,

The Director,  
Institute of Physics,  
Sachivalaya Marg, Sainik School,  
Bhubaneswar-751005

Ref: Tender Ref. No.: \_\_\_\_\_ dated: \_\_\_\_\_

Sub: Refund of EMD

Dear Sir,

We have deposited EMD of Rs. \_\_\_\_\_/- vide D/D No. \_\_\_\_\_ dated.  
\_\_\_\_\_ of \_\_\_\_\_ (Name of Bank) against  
above mentioned tender. Since our tender has not being qualified, we request to release our EMD.

Yours faithfully,

Signature of the Authorised Signatory

(with Company Seal)

Our Addressed is verified as below:

M/s. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Pin Code: \_\_\_\_\_

Phone No.: \_\_\_\_\_

### General Information

1.	Name of the Company	
2.	Full address of company alongwith  Telephone no. Fax no. E-mail address :	
3.	Local address of company for communication, if any	
4.	Are you a manufacturer or dealer/reseller	
5.(c)	Trade Tax / Sales Tax Registration no. with Place	
5.(d)	Income Tax Registration no. with place	

# PART-1(B)

## TECHNICAL SPECIFICATIONS

### 1) NIT No. NIT/23-1/2015

#### Scanning Electron Microscope

Single Unit consisting of W-Gun Scanning Electron Microscope workable to at various vacuum conditions ( $10^{-4}$  Pa to  $\geq 2500$  Pa) with a heating stage (maximum  $\geq 1200^{\circ}\text{C}$ ), and an optional port-mounted probes (single or multiple) for electrical transport measurements as attachments. A stand-alone quote for heating stage and probes for carrying measurements in side SEM can also be quoted.

S.No	Details	Optional/ Basic
1	<p>(a) Electron Source: W (Tungsten based) (thermionic emission)</p> <p>(b) Accelerating voltage: 200 V to 30 kV Adjustable in Steps of 10 V increment or Continuous Variation</p> <p>(c) Probe current: 0 to <math>\geq 2 \mu\text{A}</math></p> <p>(d) Magnification: <math>\leq 10\times</math> to <math>\geq 1000000\times</math></p> <p>(d) Three Vacuum modes: High Vacuum (HV) : <math>\approx 10^{-4}</math> Pa; Low Vacuum (LV): <math>\approx 10</math> to 100 Pa Very Low Vacuum (VLV): <math>\approx 100</math> to <math>\geq 2500</math> Pa (high pressures) Pressure range: Minimum: <math>\leq 7\times 10^{-4}</math> Pa and Maximum <math>\geq 2500</math> Pa (The vacuum system should include differential pumping through the lens technology so as to reduce the degassing from the specimen and keep the chamber clean. <b>Three modes of vacuum should be as a standard and as an integrated system</b>)</p> <p>(e) Resolution: In <b>three</b> vacuum modes: <math>\leq 3.0</math> nm with SE detector at 30 kV <math>\leq 4.0</math> nm with BSE detector at 30 kV <math>\leq 10.0</math> nm with SE detector at 3 kV <b>(The resolution values needs to be supported with proof of certification from original equipment manufacturer).</b></p> <p>(d) Detectors:</p> <ul style="list-style-type: none"> <li>• Three appropriate SE detectors dedicated for each Vacuum Regime</li> <li>• Back scattered electron detector</li> <li>• IR-CCD camera for sample viewing</li> <li>• Appropriate BSE detector for detecting the electrons when the stage is at high temperature; This detector should able reject the light emitted at temperatures. This detector either should be integrated with the main SEM systems (for operation, control and analysis) through appropriate inter-linking software and hardware (part of heating).</li> </ul>	<p>Basic</p> <p>BASIC</p>

	<p>(e) Chamber and stages:</p> <ul style="list-style-type: none"> <li>• <u>Chamber</u>: The chamber should be capable of having ports to attach the following as attachments as part of basic system: (i) Energy dispersive x-ray fluorescence system (ii) A high temperature heating stage port (iii) a 4-probe station for electrical transport measurements (iv) CL measurements attachments. There should be at least two (2) free ports available for optional fittings such as Probe station and additional needle valve for controlled gas injection for carrying out reaction measurements in the moderate high pressure mode (very low vacuum mode).</li> <li>• <u>Stage</u>: 5 axis goniometer; X = Y = <math>\geq 50</math> mm and Z = <math>\geq 25</math> mm, Tilt: - 10° to 60° (or better); R = 360°; (Mention the resolution, i.e., the minimum step size, in each case). Out of these five motors, tilt axis can be of manual control while the other motors to be motorized.</li> </ul> <p>(f) Vacuum Control:</p> <ul style="list-style-type: none"> <li>• Fully automatic, with automatically operated pneumatic column isolation valve. Manual override switch for maintenance.</li> <li>• Pump Down Time: <math>\leq 5</math> minutes;</li> <li>• Fast sample transfer; Seamless transition between high vacuum and low vacuum;</li> <li>• Three modes of vacuum should be as a standard (not as an upgrade system) and integrated.</li> </ul> <p>(g) Appropriate needle valve:</p> <ul style="list-style-type: none"> <li>• to provides a capillary gas injector close to the heated sample surface along with gas flow control (in particular with very low vacuum mode)</li> </ul> <p>(h) Data Acquisition and Control/ Digital Image Processing:</p> <ul style="list-style-type: none"> <li>• Dwell time: 50 ns to 25 ms (adjustable in case of beam scan capabilities);</li> <li>• Image resolution: Up to 3k <math>\times</math> 2k (or better) pixels;</li> <li>• 4 Single frame or 4quadrant</li> <li>• image display; 4 – quadrant – live;</li> <li>• Frame averaging, continuous averaging, pixel averaging, movie recorder</li> <li>• TFT or LED monitors</li> <li>• Movie recorder (Digital video recording) (capable of creating AVI type files for movies)</li> </ul> <p>(i) Heating stage (basic for SEM - OEM but an independent quotation only for heating stage also can be submitted that can be fitted with any possible SEM manufacturer.</p> <ul style="list-style-type: none"> <li>• Temperature range: Minimum: Room temperature;</li> <li>• Maximum <math>\geq 1200</math> °C (the higher the better)</li> <li>• Appropriate detectors, power supplies, and control units should be integral part of heating stage quotation</li> <li>• Those who quote only for Heating stage, need to have fully operation and integral system for any SEM).</li> <li>• Enhanced signal to noise detection of weak SE signals from hot</li> </ul>	<p>BASIC</p> <p>BASIC</p> <p>Basic</p> <p>Basic</p> <p>Basic</p> <p>Basic</p> <p>Also, those who quote for SEM, need to quote for heating stage as well as a part of basic unit. Those who</p>
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	<p>specimens.</p> <ul style="list-style-type: none"> <li>• replacement x-y-z stage and SEM door assembly, to accept other-than-OEM stage module, electrical and water connections (this is not for OEM and for those quote for this attachment).</li> <li>• An appropriate gas injector close to the heated sample surface plus needle-valve gas flow control (Optional)</li> </ul> <p>(j) Inbuilt active vibration isolation system (basic)</p> <p>(k) Energy Dispersive System for X-ray Analysis</p> <ul style="list-style-type: none"> <li>• This is to carry out qualitative and quantitative analysis from an area on a specimen excited by the electron beam with low background count and having high count rate (dynamic range) SDD (LN<sub>2</sub> free) as an optional item (LN<sub>2</sub> free detector).</li> <li>• Acquire elemental maps and linescans.</li> <li>• Quantitative data analysis: like composition analysis (offline and online)</li> <li>• Energy resolution: 130 eV or better at 5.9 keV</li> <li>• Standards reference data/ samples (like Cobalt pin stub)</li> <li>• including Cobalt standard on pin stub</li> <li>• Detection from Be (4) to U(92)</li> <li>• Detector area ≥ 10 mm<sup>2</sup>.</li> </ul> <p>(l) Port mounted single or multiple Probes for electrical measurements and sample manipulation: (Optional) Integrated to SEM:</p> <ul style="list-style-type: none"> <li>• Independently mounted probes (single or multiple): Quote can be given for single or multiple probes (up to 4 probes).</li> <li>• Port Mounted, Motorized tip movement controlled with software. Generic flange compatible with SEM system</li> <li>• Appropriate low-current measurement system to allow low-current, low-capacity measurements for conductive and semiconductor samples (along with probe tip holder, vacuum and air-side triax cabling and a vacuum feed-through and vacuum flange</li> <li>• A control module for simplified, fast and secure tip approach</li> <li>• One hundred probe tips - tip radius: 100 nm or less</li> <li>• Universal mounting solution (to be customized according to SEM model)</li> </ul> <p>(l) The vendors should have successfully installed at least one similar system (variable vacuum or at high pressures as specified above ) and high temperatures stages (≥ 1000 °C) in India in last three years (2011 - 2014).</p> <p>(m) The vendors should have a record of good after sales and maintenance record. The vendors may supply a user satisfaction certificate along with list of users and their contact addresses (in India and also in abroad).</p>	<p><i>does not quote for SEM, can quote only for heating stage as well.</i></p> <p>Basic</p> <p>Optional (those who quote SEM needed to be mention as optional item with separate pricing).</p> <p>Optional probe station needs to be quoted as optional item. These can be a single probes as well.</p> <p>Basic</p> <p>Basic</p>
	Appropriate Water Chiller for the whole SEM system	Basic
	Appropriate UPS with one hour backup	Basic



## 2) NIT No. NIT/23-2/2015

### **A) Polarising Microscope System and Accessories**

Polarizing Microscope with center-able pole nose-piece and a rotary stage with following main specification

- 1) Transmitted as well as reflected light capability
- 2) 6 fold centerable coded nose-piece
- 3) Rotary stage with preferred 0.1 degree accuracy
- 4) Full 360° rotation for polarizer and analyzer for both reflected and transmitted light, with 1° accuracy or better.
- 5) Objective 5X, 10X, and large working distance 100X, eyepiece with 10X/25mm/
- 6) Infinity corrected and harmonic corrected optics.
- 7) Tube optics with at least two magnification capabilities, with one magnification larger than 1.5, coded iris diaphragm.
- 8) Focus finder capability for high Magnification objectives, preferred auto-focus capability.
- 9) Homogeneous lighting, preferred automatic Koehler illumination.
- 10) LED light source Illumination.
- 11) Motorized condenser with detachable condenser top, motorized reflector turret, for bright field and POL contrast.

#### **Optional items for the Microscope system**

- 1) Large working distance objectives 20X, 50X, with working distance of at least 0.7 cm, compatible with hot stage.
2. High resolution digital CCD camera for the Microscope, with at least 12 Megapixel, high sensitivity with pixel size larger than 6 microns. Speed at least 10 fps. Compatible desktop computer system.
- 3) Digital CCD camera for microscope with at least 30 fps speed, at least 5 Megapixel, with pixel size larger than 3 Microns.
- 4) Image analysis and interactive measurement software with movie making facility.

*Service facility for the item should be available in India. Company must have supplied at least 2 same products in India in Last 5 years. User list should be supplied with the quotation.*

### **(B) Two Hot stages Micro scope Camera with accessories**

- 1) Transmitted as well as reflected light capability.
- 2) One hot stage with 0.02° C accuracy or better. High stability of temperature required.
- 3) The other hot stage with 0.1°C accuracy or better. High stability of temperature required.  
Following are the other required specifications for the hot stages
- 4) Peltier cooled (with water/air cooling)

- 5) Range for temperature T: Lowest T $\sim$ -20° C. Highest T 120° C or more. Fast cooling/heating.
- 6) Dual heating located above and below the sample chamber
- 7) Temperature controller and water cooling accessories. General programming capability (for cooling and heating).
- 8) Adapter for microscope.
- 9) Sample viewing aperture: 2mm or larger

*Service facility for the item should be available in India. Company must have supplied at least 2 same products in India in Last 5 years. User list should be supplied with the quotation.*

### **3) NIT No. NIT/23-3/2015**

#### **Wire Bonder (Advanced ball /Wedge bonder)**

- The system should include the bonding technique Ball Bonding and Wedge bonding having Manual, Semi-Auto, Auto mode of control
- The system should include ultrasonic bonding and thermionic bonding facilities.
- Gold Wire Range: 17 to 75 microns
- Aluminium Wire Range: 20 to 75microns
- Ribbon Size Range: up to 25 X 250microns
- Spool Size: 12.7 mm (0.5 inch), 50.8 mm (2 inch)
- Bonding area: 135 X 135 mm (5.3 X 5.3 inch)
- The bonder is required to perform bonding on silicon, alumina, ceramics substrates
- The magnification of the microscope may vary from 10x – 100x. multiple angle mounting provision is also required
- Throat depth: 143 mm (5.6 inch)
- Z motion system: dc servo / lvd control
- Z motion range: 12.5 mm (500 mil) or better
- Ultrasonic system: high q60 kHz transducer & PLL Ultrasonic generator , power 1.3-2.5 w
- Bond time: 10-250 msec. / 10-1000 msec.,
- Bond force: 3-80 gm
- Wire termination: clamp tears adjustable length
- Capillary for 25 $\mu$  wire
- Wedge-tool for 25 $\mu$  wire
- Gold wire 25 $\mu$ - 10 meter
- Aluminium wire 25 $\mu$ - 50 meter
- Copper bonding kit for wedge and ball bonding

### **4) NIT No. NIT/23-4/2015**

#### **High Dynamic Range X-ray Detectors**

(a) A complete detection system consisting of scintillation detector (NaI based detector) and a pulse processing unit with a through put/Range with a minimum counts:  $\leq 5$  cps and maximum  $\geq 1 \times 10^6$  cps at 17.5 keV.

Detector body length should be  $\leq 150$  mm, Body diameter  $\leq 14$  mm and detector aperture  $\leq 7.5$  mm; Crystal thickness appropriate for 17.5 keV (Mo K $\alpha$ ). The pulse processing system should be compatible

with NIM based, and consists of shaping amplifier, single channel analyser, high voltage power supply, computer control (along with computer and software), rate meter and required cables and accessories.

(b) Optional: Ionization chamber with electrode length of 10 mm and associated power supply and accessories; This is an optional item. The data acquisition (reading counts) to be allowed to do with above (as mentioned (a)) computer.

(c) Optional: A compact double crystal monochromator for 17.5 keV x-rays (from a rotating anode x-ray source) along with associated electronics and accessories and with computer control.

(d) Optional: **8k Channel Multi Channel Analyzer card**

Maximum resolution 8192 channel, software selectable as 8192,4096,2048,1024,512

MCA Software window 2008 compatible

#### 5) NIT No. NIT/23-5/2015

#### Scanning Tunnelling Microscope (In Air)

- Scanning range  $\geq 800$  nm (X);  $\geq 800$  nm (Y);  $\geq 200$  nm (Z)
- Drive resolution in :  $\leq 20$  nm (X);  $\leq 20$  nm (Y);
- Drive resolution in Z direction:  $\leq 4$   $\mu$ m
- Current set point : 0.1 - 100nA in 25pA steps
- Imaging modes: Constant Current (topography), Constant Height
- Spectroscopy modes: Current - Voltage, and Current - Distance
- Tip voltage:  $\geq \pm 7.5$  V in 5.0 mV steps
- Sample size:  $\leq 10$  mm

#### 6) NIT No. NIT/23-6/2015

#### Dry rotary Pump with accessories

Dry rotary Pump  $10\text{m}^3$  /h with flexible below 2mtr length and clamps in let flange NW25KF, out let Flange NW25KF

## 7) NIT No. NIT/23-7/2015

### (A) Turbo Molecular Pump (TMP) and accessories (Quantity 2 Nos.):

#### Specifications for pump:

Inlet flange: - DN 63 CF-F, Outlet Flange:- DN 16 ISO-KF

Pumping speed for:

- i) Nitrogen: higher than or equal to 65 lps,
- ii) Argon: higher than or equal to 65 lps

Compression ratio for:

- i) Nitrogen and Argon: higher than  $1 \times 10^{11}$
- ii) Hydrogen: higher than  $1 \times 10^5$

Maximum backing vacuum pressure for N<sub>2</sub>: Higher than 20 mbar

Gas throughput at Full Rotational Speed:

- i) Nitrogen: approximately 1 mbar l/s,

Ultimate pressure with backing pump:  $< 5 \times 10^{-10}$  mbar when backed by backing pump of  
Ultimate vacuum of  $< 0.1$  mbar

Run-up time: less than 2 minutes,

Rotation Speed variable by controller: 20 -100%

Protection: Against water spillage

Mounting orientation: Any

Control Unit (1 no.) with Display for the above pumps should inform following parameters: -

- a) Speed of the pump in terms of revolutions per seconds or mins.
- b) Current drawn by the pump.
- c) Operating hours.
- d) Temperature of the pump
- e) power requirement for TMP: 220 V AC, 50 Hz

The turbo pump should be supplied with all essential accessories such as Mess, Connector for connecting all accessories, Air cooling kit, all inter connecting cables needed

#### **(1) Backing Pump with Multi Stage dry roots Vacuum Pump**

Peak pumping speed: 14 m<sup>3</sup>/h

Inlet port: DN 25 ISO KF

Exhaust port: DN16 ISO KF

Helium leak tightness: Better than  $5 \times 10^{-7}$  mbar l/s

Ultimate pressure:  $\leq 3 \times 10^{-2}$  mbar

Max continuous inlet pressure: 1000 mbar

Max pure water vapor tolerance: 80 g/h

Operating voltage: 220 V AC 50 Hz

Operating temperature: 15 to 40 °C

The pump should frictionless design with no wearing parts in the pumping line for particle generation

The pump should be free of lubricant inside the pumping module with no hydrocarbon vapors back streaming. A written commitment has to come from the vendor in the quote.

#### **(2) Backing Pump: Double stage rotary vane Vacuum pump with following specifications**

Pumping speed:- 2.5 m<sup>3</sup>/hr

Ultimate pressure:-  $\leq 6 \times 10^{-3}$  mbar without gas ballast,  
 $\leq 6 \times 10^{-3}$  mbar without gas ballast

Flange in & out: DN 16 ISO-KF

Rate Power: 0.15 kW

Water vapor tolerance at 50Hz: 15 mbar

Water vapor capacity at 50 Hz: 30 grams/hr  
Emission sound pressure level: 53 dB  
Pump fluid filling: 0.4 lit.

**(B) Electro pneumatic Gate Valve with Position Indicator and with Pilot Valve Quantity: One (1)**

Flange in: DN 63 CF-F  
Flange out: DN 63 CF-F  
Actuator: Hand Electropneumatic  
Bake out temperature: actuator 200° C (position indicator 80° C, pilot valve 50° C)  
Bake out temp. (Valve Open): Minimum 250° C  
Bake out temp. (Valve Closed): Minimum 200° C  
Tightness- Housing:  $< 5 \times 10^{-10}$  mbar lit/sec  
Valve Seat:  $\sim 10^{-9}$  mbar lit/sec  
Seal: Housing: Metal  
Seal: Valve Seat: FKM  
Compressed Air (over pressure) max.: 7 bar  
Compressed Air (over pressure) max.: 4 bar  
Compressed air volume: 80 cm<sup>3</sup>  
Pressure ranges (Max. – Min): 1.6 bar -  $1 \times 10^{-10}$  mbar  
Feedthrough: Bellows  
Housing: Stainless Steel  
Power Consumption: 24 V DC/5.4 W  
Conductance for molecular flow: 600 lit/sec  
Can be opened to a pressure difference of:  $\sim 30$  mbar  
Service life: Min. 50000 cycles  
Valve plate: Stainless Steel  
Position feedback: Load Capacity: 250 V AC/ 2A; 50 V DC / 1.2 A  
Closing/Opening time: 1 sec

**Accessories:**

Suitable Copper Gasket for above Gate Valve, Quantity: Ten (10) nos  
Suitable studs for above Gate Valve, Quantity: 2 Sets

**(C) Turbo Molecular Pump (TMP) and accessories (Quantity 1 No.):**

**Specifications for pump:**

**Turbo molecular pump with integrated drive unit.**

**Inlet flange:** - DN 160 CF-F,

**Outlet flange:** - DN 25 ISO-KF,

**Pumping speed for:**

Nitrogen: higher than or equal to 680 lps,

Helium: higher than or equal to 650 lps,

Hydrogen: higher than or equal to 550 lps

**Compression ratio for:** -Nitrogen: - higher than  $1 \times 10^{11}$ ,

**Maximum backing vacuum pressure for N<sub>2</sub>: 11 mbar**

**Gas throughput at full rotational speed:**

Nitrogen: 6.5 mbar l/s,

Hydrogen: higher than 14 mbar l/s

Rotation Speed variable by controller: 20 -100%

**Protection category:** - IP 54

**Ultimate pressure with backing pump:**  $< 5 \times 10^{-10}$  mbar

**Mounting orientation:** Any

Control Unit for the above pump should inform following parameters:

- Speed of the pump in terms of revolutions per seconds.
- Current drawn by the pump
- Operating hours
- Gauge reading facility
- Temperature of bearing, Motor and Electronics of the Turbo Pump
- Should have provision for stand by option so that speed of the Turbo Pump can varies.

Air cooling kit, vent valve, splinter shield, and connecting components and other essential accessories to be quoted.

**The turbo pump should have maintenance free, permanent magnetic bearing at High Vacuum Side, and oil lubricated ceramic bearing.**

**Backing pump: Double stage rotary vane vacuum pump with magnetic coupling, with 20 m<sup>3</sup>/h pumping speed along with Oil mist separator**

Specifications for Double Stage Rotary Vane Pump

- 1) Pumping speed: 20 m<sup>3</sup>/h.
- 2) Flange connection: DN 25 ISO-KF
- 3) Ultimate pressure: 0.005 mbar without gas ballast.
- 4) Motor to pump coupling: Magnetic coupling
- 5) Integrated with high speed hydraulically controlled high vacuum safety valve.
- 6) Should be controlled from the Display & Control unit of the Turbo Pump.

**(D) Pirani/Cold cathode gauge head - 2 Numbers**

Connection flange: DN 40 CF -F  
Measurement range: 1000 mbar to 5.10<sup>-9</sup> mbar.

Connecting cable length 3m

**(E) Dual Gauge Controller Unit: - 1 Number**

No. of sensor connections: 2

Suitable Copper Gasket, Nut & Bolts and connecting components

**After Sales Service Facility: After sales service: In case of break down, complete repairs of the Turbo Pump, viz. bearing replacement, motor parts replacement, complete cleaning of a pump etc. should be possible at site.**

The vendor should have Service Centre/Facility and complete infrastructure within India to handle complete repairs of the turbo pump, such as, changing of stator / rotor assembly, repairs of electronics etc. and availability of critical spares off the shelf, from their Indian office.

**A detail technical compliance sheet in Tabular Form is mandatory for all sub-items and major items) and in terms of desired numbers. In absence of it, the quote may get rejected.**

**8) NIT No. NIT/23-8/2015**

**Ultra Pure KrF Gas with cylinder**

Valve DIN 477/14

Purity 99.99% or better

F- 0.09%

Kr-3.82%

Ne-94.41%

Maximum Impurity contents :

O2: <20.0ppmv, HF/H2O: <15.0 PPMV, N2: <20.0ppmv, He:<8.0ppmv, CO2:<3.0ppmv, SIF4,COF2,CF4,CH4,Xe,NF3,SF6:<1.0ppmv

No other gas (Ar or He) is required with this premix gas.

**9. NIT No. NIT/23-9/2015**

**Cables**

Sl. No.	Name of the Item	Qty	Part No.	Unit Price	Amount
1.	RG-59A/U 75- Ω Cable with two SHV female plugs Each cable length 5mtrs	10 Nos.			
2.	BNC Plug-RG-58 A/U (50 Ω)- BNC Plug	100 Nos.			
3.	Signal cables RG-174 50 -Ω cable with two LEMO male plugs				
a)	2 mtrs Length	10 Nos	MFB.00.250.LTE200		
b)	1 mtrs length	10 Nos.	MFB.00.250.LTE100		
c)	0.5 mtrs length	30 Nos.	MFB.00.250.LTE050		
d)	0.20 mtrs length	30 Nos.	MFB.00.250.LTE020		
e)	0.10 mtrs length	20 Nos	MFB.00.250.LTE010		
	<b>Total</b>	<b>100 Nos.</b>			
4.	Terminator, 50 Ω, BNC male plug	100 Nos.			
5.	Terminator, 50 Ω, LEMO	100 Nos.	FRT.00.250.NTA.50		
6.	BNC Tee connector	100 Nos.			
7.	SHV Tee Connector	100 Nos.			
8.	BNC Connector, female to female	100 Nos.			
9.	SHV Connector, male to male	100 Nos.			
10.	Tee Adapter, LEMO	100 Nos.	FTA.00.250.NTF		

11.	LEMO/BNC Adapter with Male LEMO and female BNC	100 Nos.			
12.	BNC/LEMO Adapter with Male BNC and female LEMO	100 Nos.	ABA.00.250.NTL		
13.	LEMO I connector	100 Nos.	RMA.00.250.NTM		
14.	SHV panel mounting connector	100 Nos.			



10. NIT No. NIT/23-10/2015

**Technical Specification of HPC AMD System**

Server	Master Node & Compute Node		
Item	Description of Requirement	Compliance	Deviation
Form Factor	2 U Rack Mountable	yes	
Processor Type and Speed	2*AMD Opteron™6380 (2.5GHz/16-core/16MB/115W TDP) Processor	yes	
Chipset	AMD SR5690 Northbridge and SP5100 Southbridge	yes	
Memory & Graphics	128GB DDR3 RDIMM, scalable to 768 GB @1600MHz, Integrated Matrox G200	yes	
Memory Protection	Proposed memory should support identifying itself and authenticate with the server installed to increase reliability of the server Advanced ECC Online Spare	yes	
Bays	12 Hot Plug 3.5" drive bays Or 25 Hot Plug 2.5" drive bays	yes	
Hard Disk Drives	1TB SATA , 7.2K RPM, Hot Plug HDD	yes	
HDD carrier	Hard disk drive should support "Do Not Remove" caution indicator to avoid human errors in replacing failed HDD	yes	
Controller	SAS Raid Controller with RAID 0/1. Controller should support 512MB/1GB/2GB flash backed write cache	yes	
Networking features	1Gb 4-port network adaptor supporting advanced features such as Large Send offload capability, TCP checksum and segmentation, VLAN tagging, MSI-X, Jumbo frames, IEEE 1588, and virtualization features such as VMware Net Queue and Microsoft VMQ.	yes	
Ports	USB 2.0 support With 6 Total: (2) front, (2) internal and (2) rear accessible ports and 1 internal Secure Digital (SD) slot	yes	
Bus Slots	Up to Six PCI-Express slots, offering PCI-e with x4, x8 and x16 PCI configurations. Each server to be populated with Dual Port QDR HCA with cables.	yes	
Power Supply	Redundant Platinum Power Supplies offering at least 93% efficiency	yes	
Fans	Hot Swap Redundant Fans	yes	
Industry Standard Compliance	ACPI 2.0b Compliant, PCIe 2.0 Compliant, PXE Support, WOL Support, Microsoft® Logo certifications, USB 2.0 Compliant	yes	
Security	Power-on password Serial interface control Administrator's password	yes	
OS Support	Microsoft Windows Server, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), VMware, Citrix Xen Server	yes	
Warranty	3 year warranty. Pre failure warranty on CPU, Memory and Hard disks	yes	
Provisioning	Essential tools, drivers, agents to setup, deploy and maintain the server should be embedded inside the server. There should be a built -in Update manager that can update firmware of system by connecting online.	yes	

Remote Management	System remote management should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication.	yes	
	Remote management port should have at least 4GB of NAND Flash to download the firmware from the website directly or from internal system. Server should support automated firmware update.	yes	
	Server should have dedicated 1Gbps remote management port	yes	
	Server should support agentless management using the out-of-band remote management port.	yes	
	The server should support Active Health System which monitors and records changes in the server hardware and system configuration. It assists in diagnosing problems and delivering rapid resolution when system failures occur.	yes	
	Applications to access the server remotely using popular handheld devices based on Android or Apple IOS should be available.	yes	
	Remote console sharing up to 6 users simultaneously during pre-OS and OS runtime operation, Console replay - Console Replay captures and stores for replay the console video during a server's last major fault or boot sequence. Microsoft Terminal Services Integration, 128 bit SSL encryption and Secure Shell Version 2 support. Should provide support for AES and 3DES on browser. Should provide remote firmware update functionality. Should provide support for Java free graphical remote console.	yes	
Server Management	The Systems Management software should provide Role-based security	yes	
	Should help provide proactive notification of actual or impending component failure alerts on critical components like CPU, Memory and HDD. Should support automatic event handling that allows configuring policies to notify failures via e-mail, pager, or SMS gateway or automatic execution of scripts.	yes	
	Should provide an online portal that can be accessible from anywhere. The portal should provide one stop, online access to the product, support information and provide information to track warranties, support contracts and status. The Portal should also provide a Personalized ask board to monitor device health, hardware events, contract and warranty status. Should provide a visual status of individual devices and device groups. The Portal should be accessible on premise (at customer location - console based) or off premise (using internet).	yes	
	Should support scheduled execution of OS commands, batch files, scripts, and command line apps on remote nodes	yes	

	Should be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Should support the reports to be saved in HTML, CSV or XML format.	yes	
	Should help to proactively identify out-of-date BIOS, drivers, and Server Management agents and enable the remote update of system software/firmware components.	yes	
	The Server Management Software should be of the same brand as of the server supplier.	yes	

**STORAGE & INFINIBAND SWITCH: 36 PORT FDR INFINIBAND SWITCH**

**DATA STORAGE**

SI.No	Item	Description of Requirement	Compliance	Deviation
1	Heterogeneous Support	The storage array should support industry-leading Operating System platforms & clustering including Windows Server (Enterprise Edition) and Linux.	yes	
2	Storage Capacity	12 TB usable space after RAID 5 implementation using NL/MDL SAS drives. SAN disk storage.	yes	
3	Scalability	Offered storage enclosure should be scalable up to a minimum of 80 number of drives	yes	
4	Controllers	Dual, redundant, hot-pluggable; active-active array controllers.	yes	
5	Cache memory	Minimum of 2GB cache per controller in a single unit after removing the operating system overhead. Cache shall be backed up in case of power failure for 7 days or equivalent functionality.	yes	
6	Multiprotocol support	4 number of native FC ports running at 8Gbps speed and 4 number of Native iSCSI ports running at 1Gbps speed.	yes	
7	RAID Support	Should support Raid 0, 1, 1+0, 3, 5, 5+0 and Raid 6 with Dual Parity Protection	yes	
8	Availability	No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc.	yes	
9	Balanced Performance	Multi-path and load balancing software shall be provided, if vendor does not support MPIO functionality of Operating system.		
10	LUN support	Minimum of 512 Logical Units. Should support creation of more than 12TB volume at controller level.	yes	
11	Snapshot/Clones	Array based Snapshot and clone functionality and shall be configured for minimum of 60 snapshot licenses	yes	
12	Management software	Storage shall be offered with necessary management software.		
13	Warranty	Shall have 3-years onsite warranty	yes	
14	OEM Support	OEM/BIDDER shall have spares and support center in Eastern region.	yes	

## **Qualifying criteria for HIGH PERFORMANCE COMPUTING REQUIREMENT at IOP Bhubaneswar**

*Quotations are invited for HPC systems where only those OEM products will be accepted that satisfy the following:*

- [OEM should have at least 5 similar system listed within top 100 in the Nov2012 supercomputer list in top500.org](http://top500.org)
- OEM must have a regional office in Eastern India and in Odisha for sale and support with at least one HPC installation of similar system within Orissa
- Systems being offered should have minimum 5 installations in India
- Quotations must be accompanied with tender specific OEM authorization for the server hardware and software.
- Bidder should have at least two such customers where they have supplied such equipment
- OEM should have more than 5 years presence in India supporting HPC customers
- OEM Warranty for minimum 3 years on all hardware is a must.

### **Requirements of Hardware in detail:**

<b>SI No</b>	<b>Item Make &amp; Model</b>	<b>Qty.</b>	
1	Master Node	1	
2	Compute Node	12	
3	FDR Infiniband Switch with cables	1	
4	Storage Array	1	
5	42U Rack with Rail Kit & all required accessories	1	
6	FC HBA cable for Master Node	1	

### **HPC software:**

**Open source Linux operating system & open source cluster management software, should support Gfortran& GCC, should support Open source libraries LAPACK, BLAS & FFTW with their parallel versions. Should support Microsoft & Linux server software.**

**PART-2  
COMMERCIAL BID**

NIT No.	Systems	Approx. Qty.	Unit Price FOB in Foreign currency	Unit Price including all taxes, freight and Insurance (delivered at IOP, Bhubaneswar service charges, installation)
(1)	(2)	(3)	(4)	(5)
NIT/23-1/2015	Scanning Electron Microscope Detailed technical specification as per technical bid	1 Unit		
NIT/23-2/2015	A) Polarising Microscope Camera  (B) Hot stage Optical Microscope Camera Detailed technical specification as per technical bid	1 Unit  1 Unit		
NIT/23-3/2015	Wire Bonder (advanced ball / Wedge Bonders) Detailed technical specification as per technical bid	1 Unit		
NIT/23-4/2015	High Dynamic Range X-ray detector for 15-20 keV X-Rays Detailed technical specification as per technical bid	1 Unit		
NIT/23-5/2015	Scanning Tunneling Microscopy Detailed technical specification as per technical bid	1 Unit		
NIT/23-6/2015	Dry Rotary Pump as per the Detailed technical specification as per technical bid	1 Unit		
NIT/23-7/2015	Turbo Molecular Pumping System (65-70 ltr/s) and 675-700 ltr/s) with accessories Detailed technical specification as per technical bid	03 Unit		
NIT/23-8/2015	KrF gas (6900 lit), valve DIN 477/14 Detailed technical specification as per technical bid	01 unit		
NIT/23-10/2015	HPC AMD System Detailed technical specification as per technical bid	1 Unit		

**Above item should carry three year onsite comprehensive warranty. In case the tendered provided warranty less than 03 years then he has to give justification for lesser period of warranty. Without justification his tender is liable to be rejected.**

NIT/23-9/2015	Cables Detailed technical specification as per technical bid	As per the technical bid		
2.	FCA Charges Included/Excluded in the quoted price	Amount		
3.	CIP Kolkata / CIP Bhubaneswar Charges Included/Excluded in the quoted price	Amount		
4.	Excise Duty Included/Excluded in the quoted price	____ . ____ % of basic price <b>(Excise duty exemption)</b>		
5.	Custom Duty Included/Excluded in quoted price	____ . ____ % of basic price <b>(Custom Duty exemption)</b>		
6.	Clearing Charges from Airport and delivered to IOP Bhubaneswar <b>Included/Excluded in the quoted prices.</b>	Amount		
7.	Any other charges Included/Excluded in the quoted price (i) Trade tax/Sales tax (Institute will not issue any Sales Tax concession form) (ii) Any other levies	____ . ____ % of (basic price + excise duty)		
8.	AMC charges	____ . ____ %		

Date:

Signature:

Address:

Name:

## CHECK LIST

Your bid should accompany with following documents. Please enclose the required document and put (√) Mark in the check list wherever applicable

<b>Sl. No.</b>	<b>Description of the Documents</b>	<b>Enclosure</b>
1.	EMD	YES/NO.
2.	Acceptance of declaration by the Vendor enclosed with terms and conditions.	YES/NO.
3.	Duly filled EMD refundable sheet (if EMD is there)	YES/NO.
4.	At least 03 Purchase order copy for Supply & Installation of above equipment's during the last 01 financial year in State Government or Government of India Department(s) / Reputed Organization s (in Nos. and Value)	YES/NO.
5.	Trade Tax / Sales Tax Registration No with place	YES/NO.
6.	Income Tax Registration No. with Place	YES/NO.
7.	Detailed Technical description of the item	YES/NO.
8.	Detailed filled Financial Bid	YES/NO.
9.	Authorisation letter in letter head duly signed by the authorized signatory for allowing your representative to attend the tender opening meet	YES/NO.

Signature of the Authorised Signatory with Date  
With company seal