

No.CRF-PRJ-275-18-19

Date: 27.11.2018

**Corrigendum**

Reference No.: CRF-PRJ-275-18-19 dated : 26.10.2018

**Subject: Extension of date for submission and Opening of Bids for Printing and supply of High Resolution X-Ray Diffractometer with 5 years warranty.**

<b>Particulars</b>	<b>Date &amp; Time</b>	
Last date and time for submission of tenders	<del>26.11.2018 at 1:00 P.M</del>	<b>13.12.2018 at 01:00 P.M.</b>
Date and time of opening of tenders	<del>26.11.2018 at 4:00 P.M</del>	<b>13.12.2018 at 4:00 P.M</b>

*The others terms & condition of the tender will remain the same*

**Assistant Registrar (P&S)**

**INDIAN INSTITUTE OF TECHNOLOGY  
(INDIAN SCHOOL OF MINES), DHANBAD**



**Notice Inviting Tender (NIT) in Two-Bid System  
for  
Supply and Installation of High Resolution X-Ray  
Diffractometer with 5 years warranty**

Tender No.:CRF/PRJ/275/18-19 Date: 26.10.2018

**Bid Submission deadline: 26.11.2018, 1:00 P.M.**

**\*Tender Fee: Rs. 5900/- (Rs. Five Thousand Nine Hundred only)**

**\*( Tender cost must be paid online please see Chapter 2 of sl. no.11)**

**REGISTRAR**

**Indian Institute of Technology (Indian School of Mines), Dhanbad**

**P.O. – Indian School of Mines (I.S.M.)**

**DHANBAD –826004 (INDIA)**

**[www.iitism.ac.in](http://www.iitism.ac.in)**

**GSTIN : 20AAAAI0686D1ZA**



**Notice Inviting Tender (NIT) in Two-Bid System  
For  
SUPPLY AND INSTALLATION OF HIGH RESOLUTION X-RAY  
DIFFRACTOMETER WITH 5 YEARS WARRANTY**

Tender No.: **CRF/PRJ/275/18-19**

**दिनांक/ Date: 26.10.2018**

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## **CHAPTER 1**

### **Instructions to Bidders**

IIT (ISM), Dhanbad was formerly known as Indian School of Mines (ISM) and was a Deemed University before it got converted into an Institute of National Importance under the Institutes of Technology (Amendment) Act, 2016 passed by the Parliament of India and got the assent of President of India. The Indian School of Mines, now IIT (ISM), Dhanbad, was formally opened on 9th December 1926, by Lord Irwin, the then Viceroy of India to address the need for trained manpower related to mining activities in the country with disciplines of Mining and Applied Geology. In 1967, it was granted the status of a deemed to be university under Section 3 of UGC Act, 1956 and it was renamed as Indian Institute of Technology (Indian School of Mines) in 2016. It started as an institution to impart mining education, and today, has grown into a technical institution with various academic departments. IIT(ISM) is located in the mineral-rich region of India, in the city of Dhanbad in the state of Jharkhand. It is the third oldest institute [after IIT Roorkee and IIT (BHU) Varanasi] which got converted into an IIT.

IIT (ISM), Dhanbad intends to procure the equipment “High Resolution X-Ray Diffractometer with 5 years warranty” to enrich its teaching and research facility at Dhanbad.

Reputed manufactures or authorized distributors are invited to submit their bid for “High Resolution X-Ray Diffractometer with 5 years warranty” for IIT (ISM), Dhanbad as per this tender document in a Two-Bid System: - (a) Techno-Commercial (also termed as technical bid) bid (Part-1) consisting of all technical details of the item along with commercial terms and conditions, Tender Fee and EMD and (b) Price bid (Part-2) indicating price for their items mentioned in the technical bid. All instructions and terms and conditions must be followed, failing which bid(s) will liable to be rejected.

#### **INSTRUCTIONS**

1. Offer should be submitted under TWO-BID system in two separate sealed covers i.e. “Techno-commercial bid” and “Price bid”.
2. Tender Number and tender submission deadline must be clearly mentioned on the top of the envelope.
3. a) In a tender, either the Indian agent on behalf of the principle/ OEM and the Principle/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.  
b) If an agent submit bid on behalf of the principle/ OEM, the same agent shall not submit a bid on behalf of another principle/ OEM in the same tender for the same item/product.
4. Bidder(s) must submit PAN given by Income Tax authorities, TIN and copy of PAN / TIN with the bid.
5. The offer must be submitted in **Two-Bid**. Tender should be dropped in the tender box kept in the office of **Deputy Registrar (Purchase & Stores), IIT (ISM), Dhanbad– 826004 (Jharkhand, India)** only. **Bids may be submitted by Speed Post / Courier in sealed cover only**, but IIT(ISM),

~~Dhanbad will not accept such bid if delivered/submitted to the office of the Deputy Registrar (Purchase & Stores section), IIT (ISM), Dhanbad after the submission deadline and such bids will be~~

treated as Late bids / non-responsive bids. It will be the sole responsibility of the bidders that their bid should be submitted/ delivered as per bid submission deadline. IIT (ISM), Dhanbad will not be responsible for any delay or transit loss or late delivery of bids to the office of the Deputy Registrar. No Tender is to be handed over to any staff of IIT (ISM), Dhanbad personally. All bids / correspondences should be sent to the following address only: "Dy. Registrar (P&S), IIT (ISM), Dhanbad, P.O. – Indian School of Mines (ISM), DHANBAD – 826004 (Jharkhand, India)". Bids sent through Email/Fax or submitted in unsealed cover(s) will not be accepted and such bids will be treated as non-responsive bids.

6. Bid(s) must be sent sufficiently in advance so that it reaches the institute on or before the submission deadline. Bid(s) received after the submission deadline will not be considered.
7. Bid document(s) and all enclosures must contain the signature and seal of the authorised representative of the bidder.
8. The bidder quoting for item(s) as per this tender should be the registered to provide the item/services with the appropriate government authority. Copy of registration certificate should be enclosed with the tenders (part-1). Offers submitted without proper registration certificate shall be rejected summarily.
9. The bidder quoting for item(s) as per this tender should be the registered to provide the item/services with the appropriate government authority. Copy of registration certificate should be enclosed with the tenders (part-1). Offers submitted without proper registration certificate shall be rejected summarily.
10. The Bank/RTGS detail on the letter-head of the bidder(s) must be submitted along with the tenders (part-1). A copy of the cancelled cheque should also be attached.
11. Name and PAN/Voter Card No. /Aadhar No. of the authorized signatory of the bidder(s) must be mentioned in the Form 7.2.
12. A copy of PAN/Voter Card/Aadhar Card of the authorized signatory of the bidder(s) must be attached with the Form 7.2

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## **CHAPTER 2**

### **Terms and Conditions**

**The offer must comprise of the following, failing which it will be treated as non-responsive bid hence will be rejected:**

1. The bids under Two-Bid System will consist of two parts as per following details:- **a) Techno-Commercial bid (Part 1)** consisting of all technical details along with Commercial terms and conditions and EMD (Earnest Money Deposit) in the form of Demand Drafts issued from any Nationalized / Scheduled commercial bank in favour of “Registrar, IIT (ISM), Dhanbad” and payable at “Dhanbad (Jharkhand, India)”, and **b) Price bid (Part 2)** indicating price for the items / services mentioned in technical bid (part-1). In stage-one, only the Techno-Commercial (Part 1) shall be opened and evaluated. In stage-two, the Price bids (Part 2) of only the technically qualified and acceptable offers will be opened, for further evaluation.
2. Sealing and Marking of Bids:
  - a) The Techno-Commercial bid (Part 1) must be sealed in a separate envelope (ENVELOPE-ONE) with Tender Cost and EMD in separate demand draft duly super-scribed as Techno-Commercial Bid (Part 1), Tender No.CRF/PRJ/275/18-19, submission deadline: ~~26.11.2018~~ as per following details :-  
**Tender Cost : Rs.5,900/- (Rupees Five thousand Nine Hundred only)**  
**EMD : Rs.3,00,000/- ( Rupees Three Lakhs only)**
  - b) The Price bid (Part 2) should be sealed in separate envelopes (ENVELOPE –TWO), duly super-scribed as “Price Bid (Part 2) Tender No. CRF/PRJ/275/18-19, submission Deadline:~~26.11.2018~~”.
  - c) The above TWO separate sealed envelopes are to be put in a bigger envelope (ENVELOPE-THREE), which should also be sealed.
  - d) Each of the above THREE envelopes MUST be super-scribed with “**Bid for Supply and Installation of High Resolution X-Ray Diffractometer with 5 years warranty against Tender No.: CRF/PRJ/275/18-19, Dated: 26.10.2018, Submission Deadline: ~~26.11.2018~~**”.
3. The bids must be neatly typed/computer printed. Hand written offer will be rejected. Bids must carry the numbers of GSTIN/ sales tax / VAT / TIN / PAN / Service Tax Registration No. Bids must be in sealed envelope.
4. All relevant technical specifications/details of offered items, drawings, printed technical leaflets, and commercial details which are necessary to ensure that offer is complete in all respects should be attached with the technical bid documents.
5. Compliance Statement: Vendor should provide the detailed compliance statement along with the quote.



6. IIT(ISM) does not bind itself to offer any explanation to those bidders whose Technical Bids have not been found acceptable by the Evaluation Committee of the Institute.
7. Following documents have to be furnished by the bidders with the technical bids (part-1):
- (a) Self attested copies of credentials in support of capability to undertake the supply/work.
  - (b) Technical literature/catalogue with the detail specification of the material
  - (c) Satisfactory performance certificate from their customers for same/similar supply/service must be enclosed along with the technical bid.
  - (d) A copy of this tender document must be signed and sealed on all pages by the bidder(s) accepting the instructions and terms & conditions of the NIT and must be attached with the bid.
8. Price should be quoted on FOR, IIT(ISM) Dhanbad basis (in case of indigenous supply). In case of foreign supply, the price basis should be FOR IIT(ISM) Dhanbad basis only. The packing, forwarding, freight and transit insurance charges, if any, must be included in the price and should not be claimed separately. Duties & taxes, if applicable, are to be shown separately clarifying whether those are extra or included in the price. Educational discounts, if any, should be mentioned clearly. Justification of the price quoted must be provided with the Price Bid. For this, Price List of the OEM and purchase order of govt. organizations / IITs/ NITs/ CSIR Labs / ISRO labs etc. should be attached. Price bids of only technically qualified tenderers shall be opened in on a pre-notified date and time. Decision of IIT (ISM), Dhanbad in this regard will be final and binding by all the bidders.
9. IIT(ISM), Dhanbad is entitled for Excise Duty Exemption under Govt. of India notifications and is registered with DSIR, Govt. of India for this purpose. This may be taken into consideration while quoting minimum possible rate. Exemption Certificates can be issued in favour of manufacturers only, if it is mentioned in the bid. It will not be issued any Indian Agent/dealer or distributor at any circumstances. IIT(ISM) will provide only custom duty exemption certificate for availing concessional custom duty. IIT(ISM) will not pay any extra custom duty other than duty exemption certificate.
10. IIT (ISM), Dhanbad does not issue form 'C' or 'D' for concessional Sales tax/VAT. Hence, full rate of sales tax as applicable to educational institutions against the form of certificate should be indicated.
11. **Tender Fee:-** Tender Cost must be paid through SB Collect only. Tender Cost is non-refundable and non-transferable. **Vendors/contractors/suppliers can pay the Tender Cost through the link: <https://www.onlinesbi.com/prelogin/icollecthome.htm?corpID=272342>** the receipt of tender cost must be attached with the Tender documents.
12. Bid Security or Earnest Money Deposit (EMD):- Required Amount for EMD must be submitted in the form of Demand Draft issued from any Nationalized/Scheduled commercial Bank in favour of Registrar, IIT (ISM), Dhanbad payable at Dhanbad with the bid (part-1). Bid received without EMD in part-1 (techno-commercial bid) will be rejected. It must not be clubbed with Tender Fee. No interest will be payable by IIT (ISM), Dhanbad on the Earnest Money Deposit. The earnest money of all the unsuccessful bidder(s) will be returned to the respective bidder(s) through bank / RTGS transfer without any interest within 60 (sixty) days only after placing the order / awarding the contract. The Earnest Money of successful bidder(s) shall be returned on receipt of Performance Security (Performance Bank Guarantee / PBG) as mentioned in this tender document. If the successful bidder(s) fails to furnish the performance security or fails to deliver/provide the item/installation/service as per the order's terms and conditions within stipulated period, the earnest money shall be liable to be forfeited by IIT (ISM), Dhanbad. An undertaking to this is to be submitted.

13. EMD must be submitted in Demand Drafts.

14. **Performance Security or Performance Bank Guarantee (PBG):-** The successful bidder(s), on whom order will be placed, has to submit a performance security of 10% of the total order value at the earliest as per PO terms before release of any payment. Performance security has to be submitted in the form of Bank Guarantee/Demand Draft/FDR from any Nationalized/Scheduled commercial Bank in favour of the Registrar, IIT (ISM), Dhanbad. Performance security should remain valid for a period of two months beyond the date of completion of all contractual obligations of the successful

bidder(s). No interest will be payable by IIT (ISM) Dhanbad on the Performance Security deposited. In case the contractor fails to provide satisfactory service, the Performance Security submitted by the bidder(s) is liable to be forfeited. An undertaking to this is to be submitted.

15. **Validity Period:** - The validity period of the tender should be clearly specified. It must be at least for **240(Two Hundred Forty) days** from opening of bids.

16. **Warranty:** All the active components must carry 5 years comprehensive warranty from date of successful installation of the XRD system along with its accessories.

17. **Delivery Period and Liquidated Damage:** As time of the essence for this procurement, hence the ordered materials/work complete in all respects are required to be delivered and installed within the period stipulated in the purchase order failing which liquidated damages of 1% per week for the delayed period subject to maximum of 5% of the total basic value of the order shall be deducted from the invoice of the supplier. Earliest/ expected delivery period should be clearly indicated. Packing should be suitable for 'Air freight'.

18. **Inspection:** Inspection shall be carried out at IIT (ISM), Dhanbad after arrival of the materials and decision of the Institute in this regard shall be final.

19. **Rejection and Replacement:** Rejection, if any, shall be notified to the supplier within 30 days of receipt and inspection of the material/workmanship. Rejected materials/work is to be removed by the supplier at his own risk and cost from IIT (ISM). Campus within 14 days of intimation of rejection. Defective Supplies are required to be replaced within 15 days of the removal of the rejected materials/work.

20. **Risk Purchase:** IIT (ISM) shall be at liberty to realize from the supplier the differential amount, if any, which it shall have to incur on purchase of the material/work at higher price(s) from elsewhere in the market, if the supplier, due to their fault, fails to supply the ordered quality and quantity of the material/work within the stipulated time.

21. Conditional offer will not be accepted.

22. **Payment:** In case of indigenous item i.e. inside India, payment may be released through RTGS / online payment mode against complete execution of the purchase order (PO) and submission of all the required documents as per the order within 30 days after satisfactory supply, inspection, installation/commissioning & acceptance and on submission of pre-receipted tax invoice, delivery challan, warranty certificate and installation report in triplicate and Performance Bank Guarantee. In case of foreign supply, i.e. outside India i.e., payment may be released through Letter of Credit as per

policy of IIT (ISM), Dhanbad. The invoice should be duly certified by the Head of Deptt. of IIT (ISM), Dhanbad to which supply is made or any other IIT (ISM) official authorized for this purpose. IIT (ISM), Dhanbad does not make any advance payment. However, as a special case in foreign supply only, 90% Letter of Credit (LC) Payment term may be accepted against dispatch of required documents as per PO terms and PBG and balance 10% payment via wire transfer/RTGS will be released only after satisfactory installation report and other documents as per PO terms received from the user department from the firm.

23. Advance payment will not be released. Any bid having condition of advance payment will be treated as non-responsive bid.
24. Country of origin and port of shipment must be stated in the technical bid itself in case of foreign supply. Any change at later stage will not be accepted.
25. Name and address of Indian Agent, percentage of agency commission, if any and role of the Agent with respect to the subject supplies and a statement thereon that "Agency Commission is included in the bid.
26. Payment will be released through bank/ RTGS/Wire transfer. The payment will be released after statutory deductions and compensation of delay / liquidated damage (LD) / late delivery etc., if any.
27. Any payment will be released only after satisfactory completion of the work/installation and after submission the certified bill(s) / invoice(s).
28. All communications are to be addressed to the Registrar, IIT (ISM), Dhanbad quoting the Tender No. and Date.
29. IIT (ISM), Dhanbad reserves the right to accept or reject or cancel any or all tender notice or bid(s) or order(s) at any stage without assigning any reason thereof.
30. For any dispute, the place of jurisdiction shall be Dhanbad (Jharkhand, India) only.
31. It will be the sole responsibility of the bidder(s) that its bid should reach on or before the submission deadline to Registrar, IIT (ISM), Dhanbad.
32. **Governing Law:** The order, placed, will be the contract between the successful bidder(s) and IIT (ISM), Dhanbad and shall be governed by the LAWS of India and under the contract shall be taken by the parties only in Dhanbad (Jharkhand, India) to competent jurisdiction.
33. Bid(s) shall be submitted in official tender form / format only. If submitted in any other form / format, the same shall be rejected. No paper shall be detached from the tender. All pages must be numbered properly and there must be seal and sign of the bidder(s) on all the pages of its bid.
34. The name and address of the bidder(s) shall be clearly written in the space provided and no overwriting, correction, insertion shall be permitted in any part of the tender. The tender should be filled-in and submitted in strict accordance with the instructions laid down herein; otherwise the bid is liable to be rejected.

35. The bid is liable to be rejected if complete information is not given therein, or if the particulars and data (if any) asked for in the Schedule to the tender are not filled-in properly.
36. The successful bidder(s) will indemnify IIT (ISM), Dhanbad, in case of any damage or liability, which may arise on account of any act or omission directly/indirectly attributable to the bidder(s).
37. Dispute, if any arising out of providing the said service(s) shall be settled mutually or arbitration by sole Arbitrator to be appointed by the Registrar, IIT (ISM), Dhanbad at Dhanbad as per the provisions of the Indian arbitration and Conciliation Act, 1996 and the Rules framed there under. The award passed by the said sole Arbitrator, will be binding upon the parties. The arbitration proceedings shall be held at Dhanbad only.
38. The successful bidder(s) shall ensure that its authorized representative should be present at the time of any discussion at IIT (ISM), Dhanbad regarding the bid, for which no any kind of TA/DA/boarding/lodging will be facilitated by IIT (ISM) Dhanbad.
39. The schedules of items/services are required as per Chapter-4 of this tender. Bidder(s) must clearly indicate in its tenders, the different taxes and duties which they propose to charge mentioning clearly the present rate(s) thereof with appropriate reference. Vague offer like “duties as applicable” shall not be considered.
40. Price should be quoted at Price Bid (Part-2) (Chapter – 5 of this tender) only for the item(s)/services as mentioned at Chapter – 4 of this tender. The required item(s)/services to be delivered / provided on or before the dead line as per purchase order.
41. The bidder(s) should be registered with VAT, CST, SST, Income Tax, service tax authorities, GST etc. and to enclose the copies of the relevant certificate along with the technical bids. The agency must be authorized by appropriate government authority to deliver the items/services at the IIT (ISM) Dhanbad.
42. The successful bidder(s) will ensure that its employees/staff/personnel would strictly follow all the security instructions and rules and regulations of IIT (ISM), Dhanbad during their visit in the campus.
43. If the successful bidder(s) commits breach of any of the above or Order’s terms and conditions or is not able to deliver the item / provide the services / complete the work on time, the contract will be cancelled and security deposit shall be forfeited and a damage liability at the discretion of IIT (ISM), Dhanbad will be imposed on the bidder(s).
44. Bills / Invoices raised by the bidder(s) will be subject to applicable statutory deductions including T.D.S.
45. Necessary corrigendum(s), if required, will be issued at any stage, which must be acceptable to the bidder(s). Any corrigendum will be published on our website [www.iitism.ac.in](http://www.iitism.ac.in) only. Bidder(s) must be in touch with our website [www.iitism.ac.in](http://www.iitism.ac.in) for corrigendum(s). It will be sole responsibility of the bidder(s) that they will go through the corrigendum(s) published, if any, on our website [www.iitism.ac.in](http://www.iitism.ac.in) and submit its tender accordingly.

46. Shortlisted bidder(s) may be called for presentation / demonstration / meeting at IIT (ISM), Dhanbad office with a short notice. Request from the bidder(s) to change the date and time of presentation / demonstration / meeting will not be accepted. If the bidder(s) will not attend for the same, then their bid(s) will be treated as non-responsive and hence the bid(s) will not be considered for further process.
47. Price bids will be opened for those bidder(s) who are shortlisted and declared as technically qualified bidder(s) by the Committee of the IIT (ISM), Dhanbad. In this regard, decision of IIT (ISM), Dhanbad will be final and binding to all the bidder(s).
48. Please note that no part shipment/transshipment/third party shipment is acceptable to us.
49. Submission deadline / last date & time for submission of the bids and date & time for opening of the same are given in this bid. The bids will be opened as per IIT(ISM) rules. Authorized representative of bidders having authorization letter, a govt. issued ID card and an employment ID card issued by the bidder may present during bid opening at their own discretion. In case of submission deadline / last date or bid opening date is a holiday/declared as a holiday, then next working date will be the submission deadline / last date for submission/ opening of tender. Submission deadline or bid opening date & time will not be changed upon any request from the bidder side. However, it may be changed as per IIT(ISM) rules. In this regard, decision of the IIT (ISM), Dhanbad will be final and binding to all the bidders.
50. For the items / services, the bidders must ensure the required quality, quantity, materials, dimensions & other parameters and quote accordingly. In case items / services provided are not same as quoted/ordered, the claim for payment shall not be accepted. No payment, claims for such items / services shall be released. In this regard, decision of IIT (ISM), Dhanbad will be final and binding to the bidders.
51. IIT (ISM), Dhanbad at its discretion may change the quantity/quality/parameters/upgrade the criteria/drop any item(s) or part thereof at any stage. In case of any dispute, the decision of IIT(ISM) shall be final and binding on the bidders/tenderers.
52. IIT (ISM), Dhanbad reserves the right to accept or reject any or all the bids in part or in full without assigning any reason and does not bind itself to accept the lowest bid. The decision of the competent authority of IIT (ISM), Dhanbad will be final and binding to the bidder(s).
53. All the bidders, those are interested to participate in this bid, must have to submit the technical specification of their bid in MS-Word Format in a CD with the technical bid. The CD must be marked with the NIT No. and submission deadline.
54. Professional(s) to be deployed by the successful bidder(s) for the supply of the item / installation / execution of the work in order to provide the item(s) /service(s) as per order must be well qualified.

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**CHAPTER 3**  
**Schedule of Requirements**

<b><u>Description</u></b>	<b><u>Details</u></b>
NIT No.	CRF/PRJ/275/18-19
Date of Tender	26.10.2018
Bid submission deadline	<del>26.11.2018, 1:00 P.M.</del> 13.12.2018, 01:00 P.M.
Date of opening of the bids (technical part-1)	<del>26.11.2018, 4:00P.M.</del> 13.12.2018, 04:00 P.M.

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## CHAPTER 4

### Technical specifications of High Resolution X-Ray Diffraction System

State of art High Resolution X-Ray Diffraction system which can be used for analyzing all powder, thin film and liquid samples with necessary hardware and software. High Resolution X-Ray Diffraction System should have the following facilities:

- a. Powder Diffraction
- b. Rocking Curve
- c. Thin Film X-ray Diffraction
- d. In-Plane Diffraction
- e. Small Angle Scattering
- f. Texture and Residual Stress analysis
- g. X-ray reflectivity
- h. Liquid Sample Analysis

The supplier must quote the most recent model which should not older than four years (i.e., the model should have been launched to the global market in 2014 or later).

The system software must automate all process from the setting and aligning of the optics to sample measurement.

**X-Ray Generator:** 3 KW or better (up to 50 kV or better; 60 mA or better) solid state x-ray generator with stability less than or equal to 0.01%. Fully controllable by software for tube power ramping with voltage ramping in steps of 1 kV and current ramping in steps of 1 mA, standby and system idle modes of operation, monitoring of tube usage duration, etc.

**X-ray Tube:** Cu target, Long line focus with ceramic insulation tube with K alpha beam. Ni filter to remove K beta beam is necessary. Anode voltage up to 50 KV or better, Tube current up to 60 mA or better. Vendors to provide features and technical details of the Tube.

**Goniometer:**  $\theta - \theta$  type vertically mounted goniometer with measurable 2 Theta range from -10 deg up to 160 degrees or better and capable to work in transmission mode geometry. Both the Theta as well as 2Theta should be independently controlled through computer software. All alignment must be automated when mounting and demounting of other accessories like Capillary Sample Stage, grazing incidence sample stage, etc. Vendors should provide features and technical details of the goniometer. Important features required for the Goniometer are given below:

- Operating Mode: Horizontal theta/2 theta decoupled
- Minimum Step size: +/- 0.0001 deg or lower
- Angular reproducibility (2 theta): +/- 0.0002 deg or better
- Goniometer radius : > 285 mm
- Scan speed: 0.005 deg/sec to 0.8 deg/sec
- Linearity: less than or equal to 0.01 degree for 2 theta using standard sample.
- The Goniometer should be capable of using small angle scattering measurement, thin film measurement with proper slit and accessories

**Fully automated sample stage:** Sample stage for high resolution should be completely automated with the system software. Necessary number of sample holders (10 nos at least) must be provided with the equipment.

**Cabinet:** Standalone floor standing cabinet with front access and should have stringent safety measures with respect to X-ray radiation ensuring negligible radiation outside the cabinet. Other features required are lighting system inside the enclosure, emergency stop push button on front panel, External light indicators, namely, enclosure lock, X-Rays ON, etc. in the front panel. Vendors should clearly declare Radiation level in terms of microsievert / hour with X-Ray Tube Cu (Copper) anode material.

**Optics:** Automatic Computer Controlled & Programmable Variable Slits (both incident and receiving side) is required which includes the diffracted beam monochromator, divergence, antiscatter optics, receiving



slit, sollar slit arrangements, height limiting slits, etc. The XRD system should be equipped with a Parabolic Multilayered Mirror and should have the facility for changing from Bragg & Brentano (BB) focusing optics to Parallel Beam (PB) optics and Vis-A-Vis with auto alignment facility. Automatic Alignment of optics should be done by the software for the alignment of source height, source angle, mirror optic, crystal optic, slit height, sample surface and detector angle. Automatic Computer Control adjustment is needed for detector high voltage and pulse height analyzer. Incident & receiving Soller Slits with suitable aperture should be provided. The optics must be such that the system has ability to carry out texture, residual stress, thin film X-ray reflectivity, rocking curve analysis and Grazing Incidence SAXS.

**Detector:** The high speed solid state area detector for static and dynamic scanning.

- The detector should be maintenance free and must work without using any cooling agent.
- Number of channels/ should be > 190 or better
- 99% efficiency for Cu K alpha or better
- Dynamic range:  $1 \times 10^6$  cps/line (minimum).
- The spacial resolution of the Detector chip must be  $75\mu\text{m}$  or less.
- The High Speed Detector should work either in 0-D mode or in 1-D mode and the same detector should also work in normal mode or in fluorescence reduction mode (without using diffracted beam)

Please mention all specifications of detector, e.g. resolution, angular ranges at various distances etc. monochromator).

**Software:** All the relevant software required for fulfil the application requirements, namely, control of instrument parameters, data acquisition and analysis and processing. The software should be on Windows operating system and the output files should be retrievable to commonly used software such as Excel. Minimum requirements are given as follows:

- Software for system and instrument parameter setting and monitoring of the system parameters data.
- Software for data acquisition in standard and user friendly forms.
- Software for analysis and processing of raw data and creation of reports.
- Software(s) should be capable for fully automatic profile fitting, Integrated Intensity calculation, Background subtraction and smoothing, K alpha<sup>2</sup> stripping, Peak Search, Search-Match functionality using the structure database (ICDD PDF2 database and/or ICSD database), 3D crystal structure display, Rietveld Analysis, etc.
- Software for data collection for rocking curve, x-ray reflectivity, residual stress and texture.
- Software for SAXS sample analysis for particle/Pore size and its distribution.
- International database compatible of performing the phase identification with the supplied software, i.e., latest version of ICDD PDF2 database and ICSD database at the time of delivery. Licenses for these database should be for 10 years.
- All software should be with minimum 5 User Licenses.
- Please quote for other software modules available as options.

**Calibration Kit:** Should be provided along with the XRD unit. Calibration kit consists of Si {111} and Quartz or equivalent for HRXRD and poly-silicon or equivalent sample for texture (peak position), or any equivalent kit should be provided.

**Computer and Printers:** Latest version Branded Desktop computer of reputed make compatible to instrument with Intel Core i5 or higher processor with suitable OEM based chipset and Motherboard, 8 GB RAM, 1TB hard disk, 24" TFT colour monitor, at least 1 GB dedicated graphics card, DVD RW drive and a branded Laser color printer.

**Compatible UPS:** True online UPS of **15 KVA** having a minimum backup time of **30 minutes**.

**High efficiency Chiller:** A suitable chiller compatible with the main instrument. Make and Detailed specifications to be provided with installation requirements. Should preferably be manufactured by reputed company.

**Power requirement:** 230 V AC single phase or 440 V three phase, 50 Hz

**Safety Features:** Abnormal cooling water, flow rate, low water pressure detection, Temperature detection, abnormal X-ray generator load detection (over load, line current, abnormal low and high voltage, emergency stop switch, leak breaker), shutter malfunction detection and tube flash detection are needed as Safety features.

**Attachment needed with XRD unit:**

a. High Resolution Thin film attachment:

Automatic  $\chi$ - $\phi$  sample stage which should be included with auto alignment for auto Z- axis alignment for height adjustment and  $\phi$  axis for free rotation of sample with sample tilting facility ( $\chi$  rotation) and with automatic alignment procedure for measurement of thickness, density and roughness (XRR) of thin film sample using application oriented reflectivity software with following detailed specifications:

- $\chi$ (tilt) : Range – 180 degrees (+90 degrees to -90 degrees ); Minimum step size – 0.01 deg or better with a minimum reproducibility of  $\leq 0.01$  deg.
- $\phi$ (rotation) – 360 degree; Minimum step size – 0.01 deg. Reproducibility  $\leq 0.01$  deg.
- X, Y Range – 100 x 100 mm or better; Minimum step size – 0.01 mm for simultaneous linear oscillations during rocking curve measurements.
- Z Range – 10 mm or better; Minimum step size  $\leq 1 \mu\text{m}$  ; Reproducibility  $\leq 1 \mu\text{m}$ .
- Apart from motorized movements it should be possible to record scans for  $\chi$ ,  $\phi$ , x, y, z axis.

b. Small Angle Scattering X-Ray (SAXS) attachment:

SAXS Unit for Particle and Pore Size Distribution of both solid & liquid samples with measuring range from 0.1 to 5 deg. must include SAXS unit preferably with Vacuum Path to reduce scattering of diffracted beam and suitable nano material software for particle size ranging from 1 nm to 100 nm or more. Also, a Certified Standard sample has to be provided for calibration purpose for SAXS measurement. Suitable software for pore size and distribution analysis and long periodicity analysis should be included.

**Capillary spinner** with variable spinning capability should be offered with capillary tube of different dimensions for liquid / powder sample analysis. The necessary capillary holder with diameter 0.5mm to 1.0mm ID with necessary capillary tube should be provided.

c. Elliptical Mirror Optics for capillary measurement should be provided with the XRD unit.

d. Attachment for Residual Stress Measurement

Necessary sample stage for residual stress measurement should be offered with application oriented residual measurement software. Stress measurement for Iron containing sample will be carried out in presence of Diffracted Beam Monochromator.

**Other important requirements needed:**

- a. One extra X-Ray tube with same configuration (Cu target with Ni filter) as attached with XRD must be included which will be used beyond the 5 year comprehensive warranty period.
- b. Auto sampler with 10 position sample loading with independent programming for each sample.
- c. Zero background sample holders of 6 nos. (at least) should be provided with the XRD unit.
- d. System should be upgradable for high temperature attachment in future.
- e. Specification of the various consumable & spare parts required for normal operation and maintenance to be supplied along with the equipment.

**Warranty:** The supplier shall give all comprehensive on-site warranty for a minimum period of 5 years for the following items from date of successful installation of the XRD system along with its accessories.

1. Main XRD system including X-Ray Tube
2. Chiller unit
3. UPS including Battery
4. PC

Warranty shall include free service and free replacement of spares/components including X-Ray tube. After the warranty the vendor/authorized agent shall enter into Annual Maintenance Contract (AMC) and the AMC shall be in continuation of the Warranty.

In case the equipment/any accessory or auxiliary does not work for more than one week during the Warranty period, the Warranty period shall be extended accordingly.

Supplier should give the guarantee that the spare parts including X-ray tube will not become obsolete for next 15 years from the date of supply of the equipment.

**Documentation and Software media:**

1. Separate backup software for operation & maintenance of total system shall be supplied in CD/ DVD format.
2. 4 (Four) sets of Service/ Operational Manuals with explanation of circuits in hard copy (in English) format as well as in CD for all equipment (XRD, chiller and UPS etc.,) should be provided.
3. Complete set of drawings of XRD should be supplied along with the equipment.

**Installation, commissioning and demonstration:**

- Pre-requisites for installation and commissioning should be given to user/purchaser immediately after placement of order.
- Installation, commissioning, demonstration should be done and training should be given.
- Any special tools and tackles required for shifting the equipment and installation should be brought by the supplier.

**Training:** Training for Four Operator on operation, trouble shooting and preventive maintenance of the equipment to be arranged at IIT(ISM), Dhanbad during installation and commissioning.

**Overseas Training:** Training for Two Operators on operation, trouble shooting and preventive maintenance of the equipment is to be arranged at Manufacturer's site for period of at least one week at free of cost immediately after installation and commissioning.

**Shipment:** The instrument should be packed thoroughly and shipment to be by air only.

**List of users with detailed addresses and contact persons' names & designations for last five years (for the offered model and if the model is recent, previous to this model) to be provided. Supplier should have proven records of supplying and having Annual Maintenance contract of the equipment to any Indian Public sector/Government unit in last Five years. Documental evidence need to be enclosed along with the offer in this regard.**

**Compliance statement:** The vendor should provide the detailed compliance statement along with the quote.

## CHAPTER 5 PRICE SCHEDULE

### Price Bid (Part 2)

#### PRICE BID

(Note: This price bid must be in a sealed cover and should be sealed separately from the techno-commercial bid cover.)

The bidder(s) shall quote the amount tendered/financial bids in the following format:

“Price Bid for **Supply and Installation, High Resolution X-Ray Diffractometer with 5 years warranty**“ I / We (\_\_\_\_\_ ) on behalf of M/s \_\_\_\_\_

\_\_\_\_\_ hereby undertake to provide **Supply and Installation, High Resolution X-Ray Diffractometer with 5 years warranty** as specified in this tender and our technical bid for an amount of Rs. \_\_\_\_\_ (in words Rupees \_\_\_\_\_ ) for the item as in

**Chapter –4.** The above quoted amount is inclusive of and in accordance with all the statutory liability, Service Charges, Administrative Charges, etc.” as applicable.

Details of the prices quoted for the various items as per technical bid are as follows: -

Sl. No.	Full Description of Items with (HSN Code/SAC Code)	Qty.	Rate	Amount
			Packing & Forwarding (if any)	
			<b>Total</b>	
			GST	
			Freight (if any)	
			Installation (if any)	
	Amount should be in figure as well as word		<b>Grand Total</b>	

.....

\_\_\_\_\_  
Signature of the bidder(s)/authorized signatory with seal

**UNDERTAKING BY THE BIDDER(S)**

I have carefully gone through the various terms and conditions mentioned in the tender document of **Supply and Installation, High Resolution X-Ray Diffractometer with 5 years warranty**. I agree to all the conditions and offer to supply the item at IIT (ISM), Dhanbad. I am making this offer after carefully reading the conditions and understanding the same. I have acquainted with all the tasks required to be carried out, before making this offer. I will abide by the corrigendum(s), if any, to be issued by IIT (ISM) Dhanbad on its website [www.iitism.ac.in](http://www.iitism.ac.in). I hereby sign this undertaking as token of our acceptance of various conditions mentioned in tender document. Justification of the price is also attached herewith.

Place: \_\_\_\_\_

Dated: \_\_\_\_\_

Name & Signature of the bidder(s):

Address: \_\_\_\_\_

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**CHAPTER 6**  
**Contract Form**

With reference to the tender reference no. **CRF/PRJ/275/18-19**, Dated: 26.10.2018 of IIT(ISM), Dhanbad for Supply and Installation, **High Resolution X-Ray diffractometer with 5 years warranty**, we (bidder(s)'s name) \_\_\_\_\_ accept all the instructions and terms and conditions of the tender and accordingly hereby submit our quotation no. \_\_\_\_\_ dated \_\_\_\_\_.

**ALL TERMS AND CONDITIONS OF THE N.I.T. ARE ACCEPTED**

1	Name and address of the bidder	
2	Telecom nos. of the bidder i.e. phone fax, & email id.	
3	Signature, name & designation of the person signing on behalf of the bidder & his/her office seal	
4.	Name & designation of the contact person & his phone/mobile no./e-mail ID	

We hereby declare that all statements/details made in this tender are true, complete and correct to the best of my knowledge and belief. I understand that in the event of any information being found false or incorrect at any stage or we do not satisfy any of the stated criteria, our offer is liable to be cancelled automatically and IIT (ISM), Dhanbad may take an action against this firm for such false information including legal action.

**Signature:**

**Name:**

**Designation:**

**Bidder(s)'s Name:**

**Seal:**

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## **CHAPTER 7**

### **Form7.1- Checklist** **(to be submitted with technical bid part-1)**

1. Duly sealed and signed (on all pages) of the tender document.	
2. Demand draft is attached as Tender Fee	
3. Demand draft is attached as EMD.	
4. Form No. 7.4 (Techno-Commercial bid, Part-1) is attached	
5. Form No. 7.2and7.3 are attached with Techno-commercial bid (part-1)	
6. Details of PAN, TIN, Service Tax Registration No., GST No. etc. is attached	
7. Bank account details is attached	
8. Complete contact details (Name, Postal address, E-mail address, phone no. mobile no.) is provided	
9. Complete technical details attached	
10. The Techno-Commercial bid (Part 1) is sealed in a separate envelope (ENVELOPE-ONE) with EMD and Tender Fee in the form Demand Draft and duly super-scribed as "Techno-Commercial bid (Part 1) - Bid for Supply and Installation	
11. The Price bid (Part 2) is sealed in separate envelopes (ENVELOPE-TWO) and duly super-scribed as "Price Bid (Part 2) – Bid for Supply and Installation	
12. A copy of PAN/Voter Card/Aadhar Card including ID card of the bidder (firm) of the authorized signatory of the bidder(s) is attached with the Form 7.1	

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## Form No.: 7.2

To,  
The Registrar,  
Indian Institute of Technology (Indian School of Mines), Dhanbad,  
P.O. – I.S.M.  
DHANBAD– 826004.

**Ref.:** Your Notice Inviting Tender No. CRF/PRJ/275/18-19, Dated: 26.10.2018

**Sub:** Technical bid relating to **Supply and Installation, High Resolution X-Ray Diffractometer with 5 years warranty**

Sir/ Madam,

1. I/We have gone through all Chapters of the tender document such as Instructions and Terms and conditions, minimum eligibility criteria, schedule of requirements, Specifications and allied technical details etc. as enlisted by you in your Notice Inviting Tender for the subject under reference.
2. I/We, hereby confirm that we have understood all the above and confirm my/our commitment to abide by them.
3. I/We also confirm my/our commitment to provide the services as enlisted in your Notice Inviting Tender under reference.

**Seal and Signature of authorized signatory of the bidder(s)with date→**

Documents	Yes/No	Document No. (If submitted a copy of the same)
PAN Card/Voter ID/Aadhaar Card		
Official ID Card		
Other Documents (specify below)		

**(A copy of PAN/Voter Card/Aadhaar Card and official ID card of the authorized signatory of the bidder(s) must be attached with this letter.).**

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**Form No.:7.3**  
**(to be submitted with technical bid part-1)**

1. Tender Fee (Non-refundable): Receipt NO. \_\_\_\_\_ Date:\_\_\_\_\_ Amount: Rs. Five  
Thousand Nine Hundred only, Issued by bank and branch \_\_\_\_\_
2. Earnest Money Deposit: DD NO. \_\_\_\_\_ Date:\_\_\_\_\_ Amount: Rupees  
Three Lakhs only, Issued by bank and branch \_\_\_\_\_
3. Validity of Quotation: days from the date submission deadline (minimum 240 days from the  
submission deadline).....
4. Performance Security or PBG: Will Be Submitted with the proforma invoice or invoice, if  
Purchase Order placed by I.I.T. (I.S.M.), Dhanbad
5. Payment Terms: Payment after supply, satisfactory installation and submission of all required  
documents as per Purchase Order after statutory deductions and penalty (liquidity damage), if  
any as decided by I.I.T. (I.S.M.), Dhanbad.

**ALL THE ABOVE MENTIONED TERMS & CONDITIONS ARE ACCEPTED BY US AND  
PROFORMA IS SUBMITTED FOR CONSIDERATION.**

\_\_\_\_\_  
**Signature & Seal of the Bidder(s)**

\*\*\*\*\*

**Form No.: 7.4**

**TECHNO-COMMERCIAL BID (Part-1)**

**TECHNICAL BID**

1. Name of the Bidder(s).....
2. Name of the authorized person (who signs on the tender document on behalf of bidder(s)) with PAN/Voter Card No./Aadhar No. ....
3. Address of the Bidder(s)..... , Website .....
4. Phone No. .... (Mobile)..... Fax..... E-mail .....

**Details of the item and its specification:**

Sl. No	Particulars	Description

**Name of the authorized signatory:**

**Name of the Bidder(s):**

**Contact No.:**

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