

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



**Notice Inviting Tender (NIT) in Two-Bid System for
Supply and Installation of FTIR Spectrophotometer (with
DRIFTS attachments) with high pressure, high temperature
reactor setup (with temperature controller and backpressure
regulator); including Mass flow controllers for reacting gases
and Julabo (circulating bath for temperature control) and two
Mass spectrophotometers along with data acquisition,
retrieval and analysis system and power backup**

Tender No.: IIT(ISM)/Chemical/PRJ/279/ 2018-19

Date: 30 January 2019

Bid Submission deadline: 05.03.2019 , 1:00 P.M.

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

GSTIN : 20AAAAI0686D1ZA

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दिनांक/ Date: 30 January 2019

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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 **“Supply and Installation of FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup”** to enrich its teaching and research facility at Dhanbad.

Reputed manufactures or authorized distributors are invited to submit their bid for “Integrated Gas Hydrate Raman Mapping System” 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.



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 or 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.
c) Indian agent/must submit authorization letter for submission of bid for this NIT from their OEM/Principle.

4. Bidder(s) must submit PAN given by Income Tax authorities, TIN, GSTIN 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: "Deputy. 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

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 Earnest Money Deposit (EMD) to be submitted in form of A/C payee demand draft drawn in favor of Registrar, IIT(ISM) and payable at SBI, IIT (ISM) campus branch or any other Bank/ Branch located in Dhanbad 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 EMD in the form of two separate Demand Drafts, duly super-scribed as **“Techno-Commercial Bid (Part 1), Tender No.: IIT(ISM)/CHEMICAL/PRJ/279/2018-19, Submission Deadline: 05.03.2019”** as per following details: -
EMD: Rs. 2,60,000/- (Rs. Two Lakhs Sixty Thousand 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.: IIT(ISM)/Chemical/PRJ/279/2018-19, Submission Deadline: 05.03.2019”**.
 - 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 FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup against Tender No.: IIT(ISM)/CHEMICAL/PRJ/279/2018-19, Dated: 30 January 2019, Submission Deadline: 05.03.2019”**.
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. Since IIT(ISM) Dhanbad is an Indian Institute of Technology and subject item will be used for research, hence benefit of reduced rate of GST should be considered if applicable.
5. 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.
6. A ‘Compliance Statement’ along with a certificate and duly signed that the tenderer satisfies the technical requirements. The said statement should be in a tabular form with the columns: sl. no., (2)

technical requirement as per NIT; (3) what is offered by the tenderer; and (4) status of compliance: Complied/Not complied).

7. 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.
8. 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 alongwith 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.
9. Price should be quoted as per our price schedule **Annexure-A or Annexure-B**. 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. The comparison between the indigenous and the foreign offers shall be made on FOR destination basis CIF/CIP basis respectively. However, the CIF/CIP prices quoted by any foreign bidder shall be loaded further as under:
Towards customs duty, IGST and other statutory levies, Custom clearance, inland transportation, currency fluctuation etc. – 15% of the CIP/CIP value.
10. IIT(ISM), Dhanbad is entitled for Custom 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. 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. It will sole responsibility of the bidder to get DSIR copy from IIT(ISM) on time.
11. 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.
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. Tender Fee and EMD must be in the two separate 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 within seven days of placement of purchase order and as per PO terms before release of any payment. Performance security has to be submitted in the form of Bank Guarantee/Demand Draft 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 **270 (Two Hundred Seventy) days** from opening of price bid.
16. **Warranty:** All the active components must carry minimum three (03) years onsite comprehensive warranty from the date of satisfactory installation.
17. **Comprehensive Annual maintenance contract (AMC):** The cost of 'annual maintenance contract (AMC)' and "comprehensive maintenance contract (CMC)" should be provided separately for extension of warranty for additional years (which is beyond the normal warranty period mentioned earlier) on yearly basis as an option with the price bid. Offer including terms & conditions should be quoted on per year basis to enable purchaser make AMC for any period from 01 to 05 years, if required.
18. **Delivery & installation 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 or part thereof for the delayed period subject to maximum of 5% of the total 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'.
19. **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.
20. **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 14 days of the removal of the rejected materials/work. Failing which IIT(ISM) will dispose the materials at risk and cost of the bidder.
21. **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.
22. **Conditional offer will not be accepted.**

23. 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 30-45 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. 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 or part payment.
24. Advance payment will not be released. Any bid having condition of advance payment will be treated as non-responsive bid.
25. 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.
26. 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.
27. 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.
28. Any payment will be released only after satisfactory completion of the work/installation and after submission the certified bill(s) / invoice(s).
29. All communications are to be addressed to the Registrar, IIT (ISM), Dhanbad quoting the Tender No. and Date.
30. 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.
31. For any dispute, the place of jurisdiction shall be Dhanbad (Jharkhand, India) only.
32. 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.
33. **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.
34. 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.
35. 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.

36. 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.
37. 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).
38. 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.
39. The bidder shall ensure that its authorized representative should be present at the time of any discussion/presentation/negotiation at IIT (ISM), Dhanbad regarding the bid, for which no any kind of TA/DA/boarding/lodging will be facilitated by IIT (ISM) Dhanbad.
40. 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.
41. Price should be quoted according to the format of 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.
42. 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.
43. 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.
44. 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).
45. Bills / Invoices raised by the bidder(s) will be subject to applicable statutory deductions including T.D.S.
46. 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 only. Bidder(s) must be in touch with our website 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 and submit its tender accordingly.
47. 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.

48. 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).
49. Please note that no part shipment/transshipment/third party shipment is acceptable to us.
50. 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. However, Submission deadline or bid opening date & time will not be changed upon any request from the bidder side 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.
51. 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 final and binding to the bidders.
52. 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.
53. 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).
54. 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.
55. 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.

CHAPTER 3**Schedule of Requirements**

<u>Description</u>	<u>Details</u>
NIT No.	IIT(ISM)/Chemical/PRJ/279/2018-19
Date of Tender	30 January 2019
Bid submission deadline	05.03.2019, 1:00 P.M.
Date of opening of the bids (technical part-1)	05.03.2019, 4:00 P.M.

CHAPTER 4

Sl. No.	Item	Quantity
1.	FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup	One

Specifications for Supply and Installation of Specifications for FTIR coupled to MS-MS system:

FTIR spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrometers along with data acquisition, retrieval and analysis system and power backup

FTIR specifications:

- **Spectral range** : 7800 – 350 cm^{-1} or better
- **Spectral resolution** : 0.4 cm^{-1} or better
- **Signal to Noise ratio** : 50000:1 or better (1 min, peak to peak, 4 cm^{-1} resolution)
- **Beam Splitter**: KBr beam splitter with protective coating (with suitable dehumidifier controller protection)
- **Interferometer** : Capability to perform advanced dynamic auto alignment
- **Laser** : Diode Laser or better
- **Detector** : Long life, Highly sensitive temperature stabilized DLaTGS detector
- **Sampling accessories**:
 - ✓ **Praying Mantis Diffuse Reflectance FTIR Accy**
 - ✓ **High Temperature, High Pressure Reaction Chamber** for Praying Mantis Diffuse Reflectance FTIR Accy with suitable dome :
 - High pressure dome with zinc selenide windows (15 * 4 mm) for the High Temperature Reaction Chamber and it should enable operation to at least 3.44 MPa (25.8 ktorr) pressure and achieves atleast temperatures up to 800°C.
 - Additional KBr windows and one glass observation window (at least two)
 - Low-voltage heating cartridge
 - K-type thermocouple
 - Three inlet/outlet ports to be provided for evacuating the reaction chamber and introducing reacting gases.
 - Made of chemically resistant 316 stainless steel.
 - Suitable Silcotek/Restek inert coatings for greater inertness and corrosion resistance.
 - 220/240V Computer-controlled Reaction Chamber with Temperature Controller with Julabo (circulating bath for temperature control)
 - Standard back pressure regulator (manual) for maintaing the high pressure of at least 3.44 MPa (25.8 ktorr)

- ✓ Necessary connections/coupling to connect the reaction chamber along with heated transfer line and moisture trap if needed (max. Temp 350°C to avoid condensation of gases) to Gas analysis system (GC-Mass spectrometers).
- ✓ Sample packing tool and spill tray
- All necessary consumables and standards required for the above specification
- **Atmospheric Compensation:** System should have minimize effect of atmospheric moisture and CO₂ etc. on the sample spectra.
- **Connection:** Ethernet/USB
- **Sample Placing and Preparation Accessories:** Standard company made accessories are to be provided as follows: (a) Agate Motor and Pestle (2 sets), (b) KBr die set and KBr windows (c) Pellet holder, (d) 15 tonne press for sample preparation

Two Mass Spectrometers (MS-MS) specification:

Mode (MS)

- It should have Electron Ionization (EI), with full-scan (FS), SIM, and FS/SIM simultaneous within sample injection, timed acquisition (t-SIM), and FS/t-SIM

Modes (MS/MS)

- It should have Multiple/Selected Reaction Monitoring (MRM/SRM), combined SRM/full scan, product ion scan and Neutral loss modes

Ion Source

- It should have Electron Ionization (EI) source. Programmable to 350 °C or more
- It should have dual filament for EI and all ionization modes

Transfer Line Temperature

- The temperature should be up to 350 °C or more

Mass Analyzer

- Mass Range: 1.2 –1000 u or better
- Mass Stability better than 0.1 u/48 hours
- Heated, off-axis ion guide for noise reduction and solid, homogeneous, non-coated and cleanable Quadrupole rods or suitable technology
- Resolution: Automatic tuning down to 0.4u or better and selectable SRM/MRM resolution settings 0.7 u, 1.5 u and 2.5 u

Detection System

- The detection system should be with off-axis dynode, discrete dynode electron multiplier and electrometer, linear range of >10⁶

Electron Energy

- It should have an adjustable electron energy up to 150eV dependent on ion source type

Emission Current

- It should have emission current up to 300 µA or more

Collision Energy Range

- 0–60 eV or more

Scan Speed and acquisition rate

- Fast Quadrapole scanning up to 20,000 u/sec or better
- Should acquire more than 97 scans/s in FS when scanning over a range of 125 u
- 800 SRM transitions/sec or better
- 0.5ms dwell time for SRM/MRM transition or better

Pumping System

- It should have a High capacity (>230 L/s), dual-stage turbomolecular pump or better
- It should have Standard rotary-vane pump

Sensitivity Specifications

- **EI SRM/MRM:** 1 μL of 100 fg/ μL OFN (Octafluronaphthalene) will produce the following minimum S/N for transition from m/z 272 to m/z 222 – **6000:1 or better** (with He as carrier gas)
- **Instrument Detection Limit:** 4fg or less OFN (Octafluronaphthalene) derived at the 99% confidence level from area precision of eight sequential injections of 1 μL , 5fg/ μL OFN, acquired in EI SRM/MRM

A Gas Chromatograph GC) is required for separation of gases before their introduction into the MS-MS system, the specification for the GC is as follows:

Oven

The column oven should have an Operating temperature range: ambient + 4 °C to 450 °C.
Cool-down time from 450°C to 50°C should be less than 4 minutes

Oven Ramps/ Plateaus Cool down

- It should have 20 or more ramps/plateaus:
- The maximum heating rate should be 125 °C/min or more

Pneumatic controls

Electronic pneumatic control for injector modules is required. The electronics carrier gas controller should allow operating in constant and programmed flow and pressure modes.

- Pressure range: 0–145 psi or more
- Split ratio: Up to 7500:1 or more
- Pressure set points minimum increments: 0.01 kPa-0.001 psi in all ranges
- Total Flow Setting:
 - Control of split flow in 1 mL/min from 0 to 1250 mL/min or more
 - Purge flow from 0 to 50 mL/min or more

Split/ split less injector with electronic gas controller – 1 Nos.

The injector should be able to operate with capillary (50 μm to 530 μm id), wide bore & packed columns (1/8" and 1/16" packed column, using adapters)

Supports P&T/TD by special adapter

Compatible with Merlin Microseal septum

Packed adapter should be quoted

Maximum Temperature: 400 °C or more; split ratio up to 12500:1

Control of split flow in 1mL/min from 0 to 1250 mL/min

Purge flow from 0 to 50 ml/min (electronic control)

Large Volume split less injection up to 50 μL using specific liners and pre-column

Thermal Conductivity Detector (TCD) with electronic gas controller – 1 Nos

Capillary column optimized (micro TCD) and compatible with 1/8" and 1/16" packed columns
 Maximum temperature: 400 °C or more
 Minimum Detectable Limit (MDL): < 400 pg tridecane/mL with He carrier
 Linear dynamic range: 10⁵ or better

Flame Ionization Detector (FID) with electronic gas controller – 1 Nos

Capillary column optimized compatible with 1/8" and 1/16" packed column
 Flameout detection and automatic re-ignition
 Minimum Detectable Level (MDL): <1.4 pg C/s
 Sensitivity: > 0.03 Coulombs/gC
 Linear dynamic range: >10⁵ or better
 Maximum temperature: 450 °C in steps of 0.1°C
 IEC:

- Air: 0–500 mL/min in 0.1 steps
- H₂: 0–100 mL/min in 0.1 steps
- Makeup gas (N₂ or He) 0–50 mL/min in 0.1 steps

Automatic Heated Gas Sampling Valve – Qty 1

Sampling loops: 250 µL (as standard) and 1 mL should be quoted
 Should be suitable for all capillary columns (50 µm to 530 µm i.d.)
 Compatible with 1/8" and 1/16" packed column using adapters
 Maximum temperature: 180 °C or better
 Switching from load sample to inject sample position (and vice-versa) is controlled by software

GC Analytical Performance

- The GC should have a Retention Time Repeatability of <0.0008 min
- Typical peak area repeatability: <1.0 % RSD or better

Columns

For the detection of H₂, CO, CO₂, N₂, CH₄ and CH₃OH suitable columns like

- 5% phenyl dimethylpolysiloxane capillary column 30 m length – Qty 1
- Carboxen or equivalent Packed column 15 ft – Qty 1

Data System Software with data acquisition, retrieval and analysis system:

- It should have a software for controlling and acquiring MS and conventional detectors
- Fully automated data acquiring & processing software with original CD should be quoted with catalogue number.

Data Retrieval, Storage, and Analysis System	Standard branded system (like Dell/ HP/ Lenevo or alike) and it must be compatible with the quoted instrument and operating software of the instrument
Power Supply Unit (UPS)	Suitable standalone uninterruptible power supply (UPS) with battery backup (at least 30 min) for uninterrupted operation.
Output Volt	210-240 ± 10%
VA	6,000VA (minimum)
Efficiency at Full Load & Half Load	80.0%
Output Frequency (sync to mains)	50/60 Hz ±1 Hz
Surge Protection	Yes
Output Connections	At least India 3-pin 6A (with Battery Backup)

Input voltage range for main operations	150 - 270V, Automatic Voltage Regulation
LCD Display	Power status, input/output voltage, current load, battery charge etc.

- The latest version of the NIST Library software with original CD should be quoted
- It should have easy automatic method development feature
- The system should be offered with suitable & branded data acquisition, retrieval and analysis system in compliance with **FTIR and GC-MS-MS** as per specifications below:

Warranty & AMC

- 3 yrs overall Warranty and 2 years provisional AMC

Consumables

- Graphite/Vespel ferrule for 0.25ID Column Qty 10
- Graphite/Vespel ferrule for 0.32ID Column Qty 10
- Graphite/Vespel ferrule for 0.53ID Column Qty 10
- Injector Septa - Qty 50
- Capillary Column nut for S/SL Injector – Qty 5
- 10µL Liquid Syringe – Qty 1
- Vacuum Pump Oil – 1ltrs
- Filament – Qty 2
- Liner sealing ring – Qty 5
- Split & Split less Liner – each Qty 5
- Tri Filter Moisture-Hydrocarbon & Oxygen – Qty 1
- Capillary column cutter – Qty 5

Accessories:

- High Purity (99.99%) Helium, Argon, Nitrogen, Hydrogen & Zero Air Gas filled cylinder – each Qty 1, Volume: 47 lit.
- Double Stage SS Diaphragm Regulator for Helium, Argon, Nitrogen, Hydrogen & Zero Air; each Qty 1
- Gas Purification Panel with fittings for all gases
- Necessary tubing and fittings for the installation of the whole setup of FTIR-Reactor-GC-MS-MS

Mass flow controllers for reacting gases

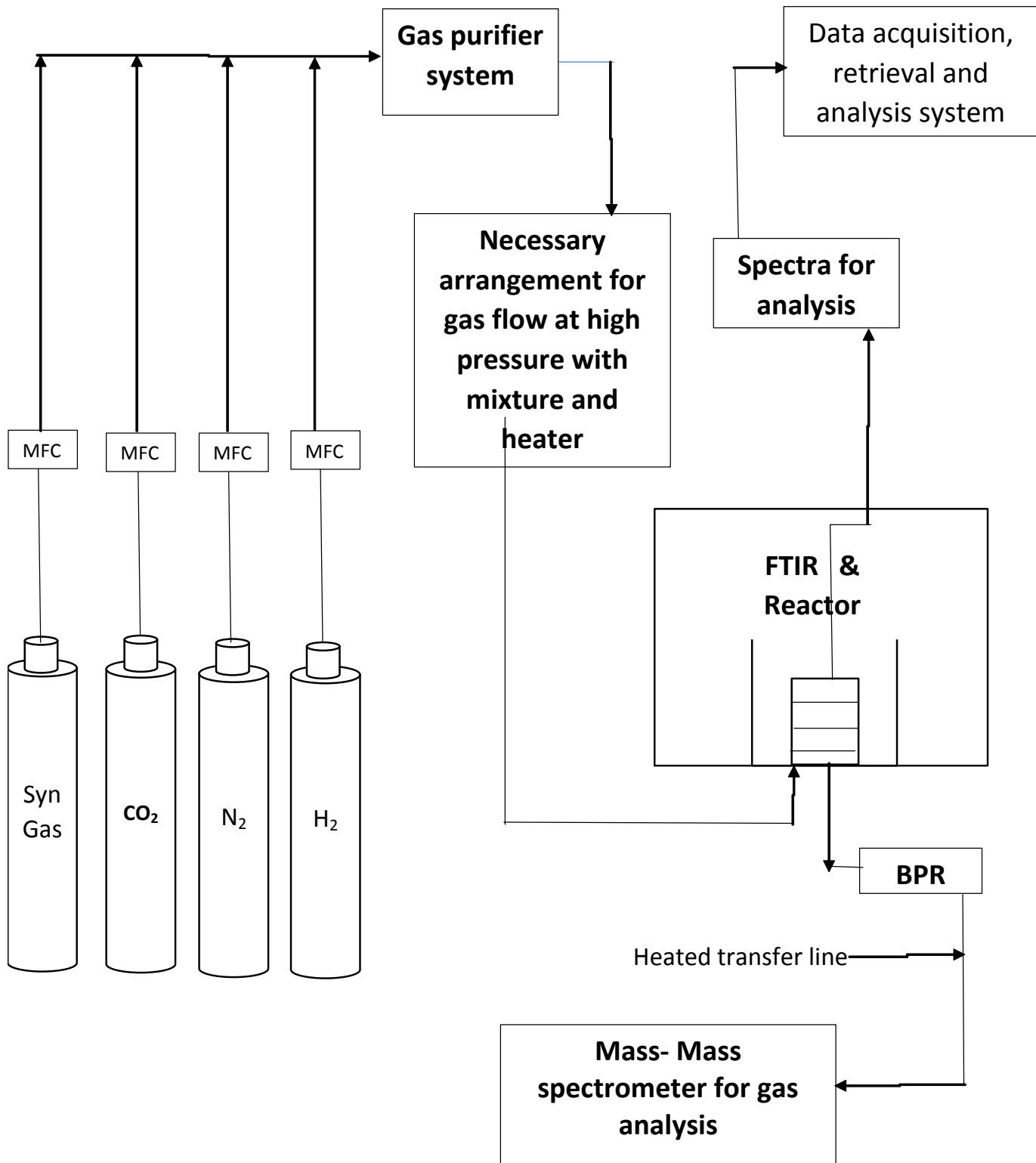
- Mass Flow Controller (thermal type, branded like Brooks/ Bronkhorst)
- Gases: H₂, N₂, Syngas (H₂:CO) in 3:1 and CO₂
- Flow Rate: 0-100 ml/min
- Operating Pressure (max): 35 Bar
- Operating Temperature: Ambient
- MOC (wetted parts): SS 316
- Quantity: 1each
- Suitable connections so that MFCs fit to 'Reaction Chamber with Temperature Controller' and Indian electrical circuit.

A flow diagram of the whole setup is also attached at the end.

Table 2. List of other Certificates/Items to be produced by the OEM/Supplier:

Sl. No.	Description	Attached (Yes/No)
1.	(i) They are the original equipment manufacturer of the equipment/ instrument (base) (ii) A certificate is required from original equipment manufacturer (OEM) that their equipment and accessories meet all minimum specifications as given in Table 1.	
2.	<u>A three year warranty certificate including technical and maintenance support is required from original equipment manufacturer (OEM). In case the local representative of the OEM/Principal Company changes or withdraws a letter of commitment by the OEM/Principal Company is required stating that they will directly cover the warranty and service the equipment as and when required or their new representative will cover the above mentioned services as per the terms and conditions mentioned in this document.</u>	
3.	Detailed Catalogue/Data Sheet of the quoted item(s).	
4.	Clientele List (preferably centrally funded institutions/labs)	
5.	Performance Letter from the Clients	
6.	Compliance chart with respect to NIT specification, supported by catalogue and manufacturer website to be provided.	

Schematic flow diagram



CHAPTER 5
(On the letter head of the bidder)

Price Bid (Part 2) Annexure-A

1. PRICE SCHEDULE FOR GOODS BEING OFFERED FROM ABROAD

Name of the Bidder _____ (On bidders letter head)

NIT Reference No. **Chemical/PRJ/279/18-19**Date: **30 January 2019**

Bidder's Reference No. _____

Date: _____

Sl. No.	Description/Part No./Make Model	Quantity	Unit Price (in foreign currency)	Total Amount (in foreign currency)
1.				
2.				
Total Ex-Works Price-				
Packing & Forwarding and inland freight				
*FCA (at port)				
Terminal charges, loading on vassal				
**FOB (name of port)				
Air freight & insurance up to destination port				
*CIF				
Carrier charges & insurance up to final destination				
**CIP				
Concessional Custom Duty (Against DSIR Certificate)				
IGST rate (Against IIT (ISM) Certificate)				
Other Duties/taxes/clearance charge, if any				
Transportation charges up to IIT ISM Dhanbad				
Chargeable weight/Gross weight of consignment				
Indian agency Commission (%)				
Installation & Commissioning charge				
Training charges, if any				
Additional Warranty Charges, if any				
Annual Maintenance Charge, if any				
Educational discounts, if any				
Total Ex-Works Price-				

* & ** Mandatory requirement

Total Bid Price _____ in words _____

Note :

Total Bid price in foreign currency _____ in words

- (a) Indian agent name & address _____
- (b) Installation, commissioning & training charges, if any _____
- (c) Please note that Indian agents' commission shall be paid in Indian Rupees only.
- (d) Banker's details such as- Name of account holder, Account Number, Name of Bank, Branch code, RTGS code, NEFT code, SWIFT code etc.
- (f) Price schedule of optional items shall be indicated in a separate sheet in the same performa.
- (g) Quoting Price for FOB/FCA and for CIF/CIP basis, otherwise bid will be rejected.
- (h) Wherever the price quoted on FOB/FCA and CIF/CIP basis are the same, the contract would be made on CIF/CIP basis only.
- (i) Country of Origin, Dimension and Gross Weight must be provided

Signature of Bidder

Name _____

Business Address with contact details _____

Price Bid (Part 2) Annexure-A**2.PRICE SCHEDULE FOR GOODS BEING OFFERED WITHIN INDIA**

Name of the Bidder _____ (On bidders letter head)

NIT Reference No. **Chemical/PRJ/279/18-19**

Date: 30 January 2019

Bidder's Reference No. _____

Date:

Sl. No.	Description/Part No./Make Model	Quantity	Unit Price (in foreign currency)	Total Amount (in foreign currency)
1.				
2.				
3.				
Ex-Works Price-				
Packing & Forwarding				
Transportation				
FOR (IIT ISM) Dhanbad				
GST/IGST (their rate(s) as the case may be, clearly specified)				
Please note that IIT ISM is eligible for Concessional GST as per Notification No. 45/2017 – Central Tax (Rate) for CGST, 45/2017 – State Tax (Rate) for SGST and 47/2017 – Central Tax (Rate) for IGST,				
Insurance up to Destination/handover (in case of fabrication)				
Installation & Commissioning charge				
Training charges, if any				
Additional Warranty Charges, if any				
Annual Maintenance Charge, if any				

*(On the basis of the technical specifications submitted)

Total Bid Price _____ in words _____

Note :

(a) The Price schedule of optional items shall be indicated in a separate sheet in the same Performa.

(b) Cost spare parts may be indicated separately

Signature of Bidder

Name _____

Business Address with contact details _____

(To be attached with Price Bid)

(On the letter head of the bidder)

UNDERTAKING BY THE BIDDER(S)

I have carefully gone through the various terms and conditions mentioned in the tender document of **Supply and Installation of FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup**. 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. 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: _____

CHAPTER 6**Contract Form**

With reference to the tender reference no. **IIT(ISM) /Chemical/ PRJ/279/2018-19**, Dated: 30 January 2019 of IIT(ISM), Dhanbad for **Supply and Installation of FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup**, 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:

CHAPTER 7**Form 7.1- 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 of....."	
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 of....."	
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	

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. IIT-ISM / Chemical/PRJ/279/ 2018-19, Dated: 30 January 2019

Sub: Technical bid relating to **Supply and Installation of FTIR Spectrophotometer (with DRIFTS attachments) with high pressure, high temperature reactor setup (with temperature controller and backpressure regulator); including Mass flow controllers for reacting gases and Julabo (circulating bath for temperature control) and two Mass spectrophotometers along with data acquisition, retrieval and analysis system and power backup.**

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/Aadhar Card and official ID card of the authorized signatory of the bidder(s) must be attached with this letter.).

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

1. Online Payment Receipt of Tender Fees: Ref. No. _____ Date: _____ Amount: Rs. 5,900*/- (Rs. Fifty Nine Hundred only),
2. Earnest Money Deposit: DD NO. _____ Date: _____ Amount: Rs. Two Lakhs & Sixty Thousand only, Issued by bank and branch _____
3. Validity of Quotation: days from the date submission deadline (minimum 270 days from the submission deadline).....
4. Performance Security or PBG: Will Be Submitted with the Performance Security (PBG), 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.:

 Signature & Seal of the Bidder(s)
