

**NOTICE INVITING E- TENDERS**

Registrar MNIT, JLN Marg, Jaipur invites online sealed tenders for the supply of “Equipments” for **Hydraulics and Fluid Mechanics Lab** in **Civil Engineering Department** of this Institute in **Two Bid System (Technical & Financial bids in separate envelope)** as per schedule given below. The complete Tender document can be viewed and downloaded only from the website ([www.tenderwizard.com/MNITJ](http://www.tenderwizard.com/MNITJ)), ([www.mnit.ac.in](http://www.mnit.ac.in)) and CPPP site <https://eprocure.gov.in/epublish/app> during the tender period. The intending bidders should submit the tender documents fee and EMD through DD Mode and to be handed over in the office of Deputy Registrar (S&P), MNIT, Jawahar Lal Nehru Marg, Jaipur -302017 (E-mail address [storepurchase@mnit.ac.in](mailto:storepurchase@mnit.ac.in)) during office hours (9.30am to 6.00pm) on all working days. The tender processing fee is to be payable through e-payment, at the time of making online request.

<b>Event</b>	<b>Date &amp; Time</b>
Download of Tender	21.08.2019
Pre-Bid Meeting Date & Time	30.08.2019 at 2.00 PM
Online Bid Submission Last Date & Time	13.09.2019 by 2.00 PM
Technical Bid Opening Date & Time	13.09.2019 at 3.00 PM
Financial Bid Opening	Will be intimated later on
Tender Fees	Rs. 500.00 (Non-refundable) in the name of The Registrar, MNIT and payable at Jaipur
Earnest Money	Rs.1,40,000/- in the name of The Registrar, MNIT and payable at Jaipur <b>(Kindly attached the RTGS details with cancelled cheque along with the Earnest Money)</b>
Last date and time for submission of hard copy of registration certificate (NSIC/MSME), tender fee and the earnest money	13.09.2019 by 2.00 PM
Tender Processing Fee <b>(Non-refundable)</b>	<b>The tender processing fee is to be payable through e-payment, at the time of making online request.</b>

## **INFORMATION AND INSTRUCTIONS TO VENDORS**

1. To participate in the E-Tendering, it is mandatory for the bidder to have user ID & password, which has to be obtained by submitting **an annual registration** charges of Rs. 2000/-+GST @ 18.00% to ITI, through e-payment.
2. For any difficulty in downloading & submission of tender document at website [www.tenderwizard.com/MNITJ](http://www.tenderwizard.com/MNITJ), please contact at tenderwizard.com helpdesk no. 011- 49424365 or Sh. Deepak Jangid, M/s ITI Ltd: 91-9680005669
3. It is mandatory for all Tenderers to have Class-III Digital Signature Certified from any of the Licensed Certifying Agencies ('CA') to participate in E-Tendering of MNIT Jaipur, (Tenderer can see the list of Licensed CAs from the link [www.cca.gov.in](http://www.cca.gov.in)), in the name of the person who will submit the Online tender and is authorized to do so.Or if any support required on DSC, please contact back to us. (Help Desk No:-011-49424365)
4. Registration: The Bidder has to register (if not registered earlier) with our website [www.tenderwizard.com/MNITJ](http://www.tenderwizard.com/MNITJ) with a non-refundable registration fee of Rs. . 2000/-+GST @ 18.00% to ITI, through e-payment.  
The registration fee is payable once on a yearly basis. For Registered vendors: Renewal is required. The procedure for the registration is as under:
  - 1) Go to the [url:-www.tenderwizard.com/MNITJ](http://www.tenderwizard.com/MNITJ)
  - 2) In the home page, click on Vendor Registration
  - 3) In the Vendor Registration form, vendor has to fill up the applicant details, upload minimum any of three self-attested documents (PAN Card, Registration, DVAT, Goods and Service Tax Registration, Work Order), digital signature information.
4. After submission of the form, the User-id and Password are generated in the form of Acknowledgement.
5. Vendors Training: Please contact to Sh. Deepak Jangid, M/s ITI Ltd: M. No.91-9680005669

## GENERAL TERMS & CONDITIONS

1. **THE RATES QUOTED SHOULD BE F.O.R. JAIPUR inclusive of all charges related to transportation from your end to MNIT, Jaipur in Indian rupees. For imported items, the rates are to be quoted CIF (Cost, Insurance & Freight) Delhi only in freely convertible foreign currencies. In case the rates are quoted CIF (Cost, Insurance & Freight) New Delhi, then it will be the responsibility of the supplier to intimate us well in advance prior to dispatch and submission of all the relevant documents in time which will be required in clearing the consignment from Custom. If, there is delay in sending the documents and demurrage is imposed, then it will be in the account of foreign supplier. Kindly note that if any amendment is required in LC, after its establishment, the Bank Charges in this respect will be in the account of beneficiary only.** The rates and units shall not be overwritten. Quotations shall always be both in the figures and words. The words "No quotations" should be written across any or all of the items in the schedule for which a tender does not wish to tender.
2. As far as possible, quotations should be given for goods of India manufacture which are readily available. Foreign goods quoted and proposed to be supplied should be covered by normal import quota of the dealer. This institute is exempted from payment of custom duty.
3. Detailed specifications and "make" of each item should be clearly given supported by the illustrated pamphlets wherever possible. Quotations without specifying the make and other particulars may be rejected. The accessories included in the equipment should also be clearly mentioned.
4. Losses or damage in transit will be in to the account of the supplier in case of rates **F.O.R. JAIPUR**. The supplier may, if he so desires, get the goods insured and include such charges in the tendered rate.
5. The payment for the ordered items would be made after the articles have been received, found in order and its successful installation. Payment will be made by RTGS to indigenous suppliers. Kindly send the RTGS details and cancelled cheque along with the Invoice. **The payment to foreign supplier will be made through FDD/Wire Transfer OR Letter of Credit as the case may be. However 90 present payment will be released after receipt of items and remaining 10 present after its successfully installation**
6. Your rates should be valid at least for three months (minimum) from the last date of opening of bid.
7. All legal proceedings, if necessity arises to institute may be any of the parties (Institute or Contractor/Supplier) shall have to be lodged in the courts situated at Jaipur and not elsewhere.
8. The institute is not bound to accept the lowest tender and may reject any tender or any part of the tender giving justification for such an action.

9. (a) The Penalty Clause is as under:-

If the seller fails to deliver any or all of the Goods/Services within the original /re-fixed delivery period specified in the Purchase Order, this Institute will be entitled to deduct/recover the Liquidated Damages for the delay at the following percentage:

(i)	Delay up to one month	1%
(ii)	Delay exceeding one month but not exceeding two month	2%
(iii)	Delay exceeding two month but not exceeding three month	5%
(iv)	Delay exceeding three month	5% for each month and part there of subject to maximum 10%

(b) In case of failure to supply the goods within the prescribed time and in accordance with the specifications give in the Quotations, the institute shall be free to cancel the order and make purchases from the next higher tenderer or from the open market as the case may be. In that case the loss sustained by the institute shall be recovered from the defaulting supplier. The institute will be at liberty to recover the loss from the permanent earnest money/or any other pending claims of the supplier without prejudice to its general right to affect recovery from the supplier.

10. The prospective bidders can be those who are the manufacturers of the equipment. For items manufactured outside India, the manufacturer itself can be a bidder or its authorised Indian agent can bid on behalf of its Principal that is the manufacturer.
11. In the event, the country of origin of goods is India, only the manufacturers shall be considered eligible for bidding. Authorised agents of Indian manufacturers may be permitted to submit the bid, provided the concerned manufacturer states that as its policy, it does not bid itself in India and that there is no qualitative difference between manufacturer and its agent as bidder in respect of quality of supplies, cost, and responsibility of maintenance and servicing. The Indian manufacturer must describe the alternatives in clear terms, in the event the bidding agent ceases to continue as agent of the concerned manufacturer within the stipulated warranty period.
12. If any Indian manufacturer requires importing an essential part from a foreign country, the said company may be given to enjoy the benefit of customs duty exemption with the aid of CDEC of MNIT, Jaipur provided the import of the concerned item is done on behalf of MNIT, Jaipur.

13. **THERE IS TWO BID SYSTEM:-**

**(TECHNICAL AND FINANCIAL BID, both bids should be submitted in separate envelopes):**

**(A) Technical Bid:**

- a) Bidder must be a manufacturer/authorized distributor/ Dealers and they have to enclose a certificate of authorization of manufacturer in format at **Annexure – A (Authorization certificate in any other format will not be valid)**. OEM itself or any one authorised dealer on behalf of OEM may participate in bid. OEM and its dealers both may not participate at the same time.
- b) The manufacturers should supply documentary proof i.e. Registration with the Registrar of Industries, National Small Scale Industries Corporation or with penal of MNIT in case of manufacturer. Offers other than the manufacturers should be supported with an authority

letter from the manufacturers, authorizing them to quote rates standing guarantee for the satisfactory execution of supply orders failing which offers are liable to be ignored.

- c) One declaration by the Manufacturer to the extent that in case of failure of its local agent /office to provide service support to the satisfaction of MNIT Jaipur, it shall make immediate arrangement for required service support.
- d) **Bidder should enclose technical compliance from the Manufacturer. The specifications of items should be strictly as specified. Deviation, if any may please be mentioned separately. If there is no deviation than it should be mentioned as “No Deviation”.**
- e) The leaflets catalogue, related to quoted equipment/model etc. should be sent invariably, so that a proper evaluation of the equipment offered is possible.
- f) Mention must be made of the pre-installation requirements for the equipment quoted viz. ambient temperature, humidity, weather specifications, power specifications, civil works etc. When items are provided full performance satisfaction should be demonstrated.
- g) Bidder must enclose the acceptance of terms and conditions and must enclose the duly signed and stamped tender document.
- h) All the Annexure enclosed should be duly filled up and signed.
- i) Please attach proof/certificate of each condition required in the tender document.

**(B) Financial Bid:**

- a) The bidders should clearly mentioned their payment terms & conditions
- b) The GST or any other taxes including Custom duty Etc. should be mentioned clearly
- c) The financial bid is to be submitted on excel sheet only

14. **Delivery Period:-**The ordered quantity of stores must be delivered within 6 to 8 weeks in the case of indigenous equipment and 14 to 16 weeks in the case of imported equipment after opening of L.C. / FDD and Wire Transfer. The extension of delivery period after placing the PO, if required, will be considered only on genuine reasons and proper justifications only.

15. **Installation:** - Successful BIDDER shall depute concerned specialist, for supervision of erection & commissioning of the machine to be carried out as and when necessary. The successful BIDDER shall make necessary arrangements during the entire warranty period at their own expenses for stay, transport and other expenses of their specialist during their stay in Jaipur;

16. **Warranty:** All the bidders are required to provide minimum **01 Year + 60 Days** warranty on the quoted equipment / instrument

17. **Performance Bank guarantee**

Successful Bidder has to Provide Performance security @ 10% of the equipment cost, valid for stipulated warranty period plus 60 days which should be in the form of Bank's Guarantee from a commercial bank in format at **Annexure – B**. Warranty will cover repair/replacement of all defective parts, if any, with the same or equivalent make for any part removed. Maintenance will be provided at site. The supplier will provide after sale service during the warranty period from nearest place to installation. The supplier will attend the complaint within 24 working hours and not beyond 5 working days.

18. **EARNEST MONEY:** A Demand Draft of Rs.1,40,000/- from a Commercial bank only in the name of the Registrar, M.N.I.T. and payable at Jaipur may please be sent at the office of Deputy Registrar (S&P), MNIT, Jawahar Lal Nehru Marg, Jaipur -302017 during office hours (9.30am to 6.00pm) on all working days prior to opening date of the tenders. **No tender shall be considered without earnest money / tender fee. Cheques are not accepted as earnest money amount.** No interest is paid by us on the amount of earnest money. **Kindly attached the RTGS details with cancelled cheque along with the Earnest Money.** Any bid security/EMD received by the institute after the due date for submission of bids prescribed by the institute is liable to be rejected. The firms registered with NSIC/MSME are exempted for furnishing of EMD / Tender Fee. The Hard copy of NSIC/MSME registration certificate is to be sent positively prior to opening of the tenders.
19. **Jurisdiction:** The Courts of Jaipur alone will have the jurisdiction to try any matter, dispute or difference between the parties arising out of this tender/contract. It is specifically agreed that no Court outside and other than Jaipur court shall have jurisdiction in the matter.
20. **Arbitration Clause: - In the eventuality of any dispute, the sole Arbitrator shall be MNIT, Jaipur and his decision shall be binding on all the parties.**
21. **Force Majeure :** Any failure of omission or commission to carry out the provision of this contract by the supplier shall not give rise to any claim by one party, one against the other, if such failure of omission or commission arises from an act of God; which shall include all acts of nature calamities such as fire, flood, earthquake, hurricane, or nay pestilence or from civil strikes, compliance with any statute and / or regulations of the Government, lockouts and strikes, riots, embargoes or from any political or other reason beyond the supplier's control including war (whether declared or not) civil war or stage of insurrection, provided that notice of the occurrence of any event by either party to the other shall be given within two weeks from the date of occurrence of such an event which could be attributed to Force Majeure conditions.
22. **Risk & Cost :** In the event of failure to carry out the contractual obligations, within the stipulated period or extended period and determination of the contract for any reason, violation of warranties etc. the MNIT Jaipur shall have the right to carry out the unfinished obligation at the exclusive - cost and risk of the bidder/firm, after due notice and the difference so accrued shall be recoverable from the bidder/firm.
23. The material found defective upon opening by the supplier representative in presence of Central stores personnel / indenter of MNIT Jaipur or not as per tendered specifications will be lifted back at the cost and risk of the supplier. The material lying in MNIT Jaipur premises would be at supplier's risk and cost.
24. **Custom Duty :** The MNIT, Jaipur is a public funded research Institution registered with Department of Scientific & Industrial Research and concessional Custom Duty @5.15% is applicable for the goods purchased for research purpose vide Government of India Notification No.51/96-Customs dated 23.07.1996

25. **GST:** MNIT, Jaipur is a public funded research Institution registered with Department of Scientific & Industrial Research for concessional GST @5% applicable for the goods purchased for research purpose vide Ministry of Finance (Department of Revenue) Notification No.47/2017-Integrated Tax dated 14.11.2017 & Notification No.45/2017-Central Tax dated 14.11.2017.
26. **Bid Validity:** 90 days (Minimum)
27. **Opening of Bids:** The Bids shall be opened by authorised officials of the institute as per schedule given in Date Sheet. In case, the day of bid opening is declared a holiday by the government, the Bids will be opened on the next working day at the same time. No separate intimation shall be sent to the bidders in this regard. Only opening of bids and accepting the bid will not mean that the firm is technically or financially qualified.
28. **Institute right to vary Quantities at Time of Award or later :** Institute reserves the right at the time of awarding the contract to increase or decrease the quantity of goods and services originally mentioned in our NIT without any change in unit price or other terms and conditions.
29. While submitting the tender, the **GST Registration No., PAN No. & E-mail Address** is to be mentioned by the bidder positively. Failing this, there bid will be treated as non responsive.
30. **After Sales Service Certificate :** After sales service certificate is to be furnished by successful bidder in the prescribed form as **annexure –C**
31. Specification Enclosed as annexure - D

Deputy Registrar  
(Store & Purchase)

**MANUFACTURERS' AUTHORIZATION FORM**

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.]

Date : [insert date (as day, month and year) of Bid Submission]

Tender No. : [insert number from Invitation For Bids]

To : [insert complete name and address of Purchaser]

**WHEREAS**

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 2.20 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Bidder]

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ [insert date of signing]

\*(Not required in case the bidder itself is the manufacturer)



**PERFORMANCE BANK GUARANTEE**

(To be executed on Stamp Paper of Rs. 100/- or such higher value as per the Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Bank Issuing the Guarantee.)

BANK GUARANTEE NO. :

DATED :

Dear Sirs,

1. THIS DEED OF GUARANTEE made on this ..... day of..... between **MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY, JAIPUR** (hereinafter called the "MNIT" which expression shall unless excluded by or repugnant to the context includes its successors and assignees) of the one part and the ..... (hereinafter called the "**Bank**" which expression shall unless excluded by or repugnant to the context include its successors and assignees) of the other part.

2. AND WHEREAS as per clause \_\_\_\_\_ of the purchase order in question the supplier shall furnish a Performance Bank Guarantee of 10% of P.O. Value i.e. Rs. .... (Rs.....

..... only) valid for the period of two months beyond warranty period as and by way of security for satisfactory working of the .....

..... AND WHEREAS at the request of the supplier, the Bank executes these presents.

3.0 THIS DEED WITNESSETH AND IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN PARTIES HERETO AS FOLLOWS:

3.1 The Bank hereby guarantees to the MNIT, Jaipur that the equipment / service contracted are capable of performing the work as demanded by the MNIT, Jaipur. In the event of equipment / service failing to perform to the satisfaction of the MNIT, Jaipur, which shall be final and conclusive of the factum of non-performance, the Bank shall indemnify and keep the indemnified to the extent of ..... of P.O. Value i.e. Rs. .... (Rupees ..... valid for the period of two months beyond the warranty period against any loss or damage that may be caused to or suffered by the MNIT, Jaipur consequent to non-performance of the contracted equipment / services to be supplied by the supplier.

3.2 In consideration of the aforesaid premise and at the request of the supplier, we the Bank hereby irrevocably and unconditionally guarantee that the supplier shall perform in an orderly manner their contractual obligations in accordance with the terms and conditions set forth in the Purchase order dated ..... and in the event of the supplier's failure to do so, the Bank unconditionally pay to the MNIT, Jaipur on demand, any amount up to the value mentioned in Clause 3.1 above without any reference to the supplier and without questioning the claim.

3.3 The guarantee herein shall remain in full force for a period of two months beyond the warranty period from the date of certification by the MNIT, Jaipur of successful installation and commissioning of the equipment/ service contracted. Date of start of warranty period will be notified by MNIT, Jaipur to the Bank.

- 3.4 The decision of the MNIT, Jaipur regarding the liability of the Bank under the guarantee and the amount payable there under shall be final and conclusive and binding on us without question. The Bank shall pay forthwith the amount demanded by the MNIT, Jaipur not withstanding any dispute, if any, between the MNIT, Jaipur and the supplier.
- 3.5 The Bank further agrees that the guarantee herein shall remain in full force during the pendency of aforesaid period mentioned in Clause 3.3 above and also any extension of the guarantee which has been provided by the Bank for this purpose beyond the aforesaid period provided, further, that if any claim accrues or against the Bank by virtue of this guarantee, should be lodged with us within a period of 60 days from the date of expiry of the guarantee period.
- 3.6 This Guarantee shall not be affected by any change in constitution of the supplier, MNIT, Jaipur or us not shall it be affected by any change in constitution or by any amalgamation or absorption or reconstruction thereof otherwise, but will ensure for and be available to and endorsable by the absorbing amalgamated company or concern.
- 3.7 The MNIT, Jaipur has the fullest liberty without affecting the guarantee to postpone at any time or from time any of the powers exercisable by it against the supplier, either to enforce or forbear the clause governing guarantee in the terms and conditions of the said contract and Bank shall not be released from its liabilities under the guarantee by any matter referred to or by reason of time being given to the supplier or any other forbearance, act or omission on the part of the MNIT, Jaipur or any material or things whatsoever which under the law relating to sureties shall but for the provisions hereof have the effect of so releasing the Bank from its liabilities.
- 3.8 We further agree that the MNIT, Jaipur shall have the fullest liberty without affecting in any way our obligations hereunder with or without our consent or knowledge to vary any of the terms and conditions of the said contract or to extend the time of delivery from time to time.
- 3.9 The Bank undertakes not to revoke this guarantee during its currency except with the previous consent in writing of the MNIT, Jaipur.
- 3.10 We further agree that in order to give full effect to the guarantee herein contained MNIT, Jaipur shall be entitled to act as if we were its principal debtors in respect of its claim against the Supplier hereby guaranteed by us as aforesaid and we hereby expressly waive all our rights of suretyship and other rights if any which are in any way inconsistent with the above provision of this Guarantee.

Notwithstanding anything herein before, liability of the Bank under this guarantee is restricted to Rs. .... (Rupees ..... only) and it will remain in force up to the period specified in Clause 3.3 unless a suit to enforce any claim under the Guarantee is filed against the Bank before the period specified in Clause 3.4. All your rights under this Guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

**COUNTERSIGNED**

Signature	:	Signature	:
Name	:	Name	:
Designation	:	Designation	:
Organization	:	Organization	:

AFTER SALE SERVICE CERTIFICATE

From:

-----  
 -----

To

The Registrar,  
 Malaviya National Institute of Technology (MNIT),  
 Jaipur

Whereas, we M/s (Bidder Name) are established & reputable manufacturers (Make of items) of [items name] having service offices at Delhi, Jaipur and in the state of Rajasthan. Details are as under:

-----  
Sr.No.      Address of Service Centre      Phone No.      Number of Engineers

1.

2.

3.

-----  
 We do hereby confirm that:

Services including repair/replacement of defective parts will be done by us. Replacement of defective Systems/parts will be done by equivalent or better systems/parts of the same make. We will attend all the complaints/service calls within 24 working hours and not beyond 5 working days. Down time will not exceed beyond 5 working days. In case, down time exceed 5 working days then we will extend the warranty period of that item(s) double of the down time.

(Signature)

Name :

Designation :

(Head or Senior Executive of Firm)

Address :

Phone No :

Fax No:

Mobile No :

### Technical Specifications of the Equipments

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
1.	Comprehensive system for studying a wide range of Hydrostatics and Properties of Fluids experiments	<p>Self-contained experimental unit for learning objective/experiments like - determination of fluid density and specific gravity, principle of hydrometer, capillarity in tubes, measurement of viscosity, demonstration of Pascal's law, verification of Archimedes principle, determination of metacentric height, measurement of centre of force and centre of pressure, operation and calibration of a Bourdons pressure gauge, Measurement of pressure by different Manometers.</p> <p>Experimental unit comprises a floor standing moulded bench, consisting of Reservoir tank with hand pump, Drain tray, Vernier hook gauge, Fluid level apparatus with interconnected glass tubes of varying cross sections and shapes, Pressure gauge: Bourdon type with visible mechanism and dead weight calibrator, Manometers, Capillarity apparatus: glass tubes of various bores, glass plates with plastic shims for various separations, Calibrated hydrometer, Measuring cylinder, Graduated beaker, Timer, Floating rectangular pontoon with adjustable centre of gravity (complete setup &amp; accessories), Specific gravity bottle, Air pump, Three-beam balance, Centre of pressure tank and balance (complete setup &amp; accessories), Small bore tube for friction demonstrations, Archimedes' mass, Various ball bearings, Single limb barometer.</p> <p>To be supplied with a Compatible Surface Tension Balance –Torsion balance with scale and pointer for the determination of the surface tension of liquids.To be supplied with Compatible Hares Tube Apparatus – Hares tube to establish the specific gravity of a liquid when compared with water, To be supplied with 1 Kg of Mercury as consumable.</p> <p>Supplied with a comprehensive user manual including theory, experiments and sample results. Complete setup with all accessories required to perform the targeted experiments.Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
2.	Experimental setup for study of discharge over a Notch	<p>Experimental setup capable in study of flow measurement through Notches. Unit should support investigation of head against discharge, determination of coefficient of discharge for notches, comparison of theoretical and measured discharge. Experimental setup should be moulded tank having middle section as channel. Setup should have a system to fix weirs, notches of different shapes in the channel section. It consist of portable, corrosion resistant glass fibre channel, comprising of a wide (inlet) section and a deep (outlet) section to include one rectangular and two V section notches, Rectangular notch, one with a 30° notch angle, the other with a 90° notch angle, approx. System to measure the free water surface using adjustable depth gauge attached beam across the channel. Complete setup with all accessories required to perform the targeted experiments.</p> <p>Experimental setup should be supplied alongwith a hydraulic bench capable in controlled recirculating water supply and accurate measuring (flow measurement) system for above mentioned experimental setup and stop watch. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos
3.	Experimental setup for the study for flow measurement & calibration using Orifice Meter and Venturi Meter	<p>Flow meter calibration unit shall be capable in determination of discharge coefficients for flow meters, assessment of accuracy of flow meters, determination of losses in flow meters and k value and determination of velocity profile.</p> <p>Experimental unit consists of bench mounted unit with manometer panel mounted on the volumetric hydraulics bench (bench consists of sump tank with submersible pump, volumetric weighing system and working surface). All parts and material should be manufactured of corrosion resistant material, To be supplied with a Venturi meter, orifice meter for mounting between the quick fit adaptors on the base of the unit, To include 4x water manometers to display pressure difference at the flow meter and across the flow meter assembly. Manometers to have a common glass manifold with an air valve. Manifold to be pressurized with the supplied hand pump to offset the manometer. It should be compatible with Pitot Tube with micrometer adjusted probe and separate pipe wall taping. It should be supplied with Venturi meter with upstream and throat pressure tapings, Compatible sharp-edged Orifice with upstream and downstream pressure tapings, and Compatible orifice meter.</p> <p>Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
4.	<p>Pipe Surge and Water Hammer Apparatus.</p> <p>Equipment should be able to demonstrate the phenomenon of pipe surge resulting from a change in velocity of the water flowing along a pipe.</p>	<p>Experimental setup capable in investigation of pipe surge and water hammer effects in pipes. Experimental setup should be capable in demonstration and analysis of pipe surge, water hammer, frictional head loss between reservoir and surge tower, determination of pressure profile and determination of velocity of sound in the test pipe. Apparatus could be used to demonstration and analysis of pipe surge &amp; water hammer, Frictional head loss between reservoir &amp; surge tower, Pressure profiles and Velocity of sound in a pipe. The apparatus must be installable with Digital Hydraulics Bench. Equipment should essentially have data logging capabilities</p> <p>Equipment setup should have SS pipe surge test pipe of minimum 3.5 m length. Setup should consist of a vertical, clear acrylic surge shaft or surge tank incorporating a level scale. It must contain a trigger operated fast-acting valve capable of generating water hammer condition in the pipe. Pressure measurement should be through pressure sensor 0-7 Bar, output 2-20 mA (for water hammer), flow measurement should be through flow sensor, output 4-20 mA and level measurement should be level sensor output 4-20 mA for pipe surge. Laptop i-5, 4 GB RAM, 500 GB Hard disk, preloaded with minimum Windows 10, MS Office must be provided. Equipment setup should be capable of demonstrating pipe surge, frictional head loss between reservoir and surge tank and to determine the oscillatory characteristics of pipe surge.</p> <p>A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report. Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos
5.	<p>Experimental setup for impact of a jet.</p> <p>Equipments should allow measurement of impact of jet and demonstrate principal of linear momentum</p>	<p>Apparatus could be used to investigate the reaction of a jet of water on various forms of vanes. The apparatus must be installable with Digital Hydraulics Bench. The jet should be arranged vertically and in such a way that it may be conveniently observed through a perspex acrylic cylinder of minimum 16 cm diameter and minimum 30 cm length. Jet should strikes the target vane positioned above it. It should be possible to measure the force on the vane by applying weight to counteract the reaction of the jet. At least two interchangeable vanes should be supplied and it should be possible to mount any other vane made in MNIT workshop. Minimum a flat plate of 80 mm long with 75 mm diameter at right angle to the jet and a 110 mm long with a 30 mm internal radius hemisphere plate</p>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		<p>should be provided. Extra (optional) angled and conical plates may be attached. A nozzle of 10 mm diameter made of brass should be supplied with the apparatus. Weight Beam scale (250 mm in 1 division) and Jockey weight (600 g) should be supplied with the apparatus.</p> <p>A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report.</p> <p>Equipment setup must be capable of being used as test bed for determining impact of jet on any given vane for varying flow conditions.</p>	
6.	<p>Experimental setup for study of operating principle of a Hydraulic Ram. Equipment should be able demonstrate the working principle of hydraulic ram and provide observation data for determining input and output energies and calculate efficiencies based on different datum</p>	<p>Apparatus could be used to demonstration of the water hammer effect to produce a pumping action. The apparatus must be installable with Digital Hydraulics Bench. The apparatus should be utilizing the momentum of a long column of water in the supply pipe. The Ram Pump should be comprises with wall mounted Header Tank, pump assemble (Supply pipe fitted with inner and outer valve, Air vessel to reduce hydraulic shock, Delivery section), interconnected pipework, Adjustable non-return delivery control valve, Adjustable overpressure valve, Pressure sensor in delivery pipe connected to a Bourdon Gauge and Pulse Valve with weight platform for adjusting the pump cycle time.</p> <p>A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report. Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
7.	Equipment should be able to establish uniform flow in channels (Tilted bed flume) and should be able to demonstrate the hydraulic jump in tilted bed flume	<p>Apparatus could be used to demonstration of the Mechanics of sediment transport, Local (bridge) scour experiments, to understand scour holes and effects on the integrity of a structure and able to Investigations in fixed and smooth bed form. Apparatus should be consisting of two sluice gates for investigations into hydraulic jump, specific energy and the determination of discharge coefficient. Also should be able to determine the effects of changing the profile of the weir, Uniform flow in an inclined channel with investigations into the Chezy factor and coefficient. The open channel should be minimum 2.5 m long, 200 to 300 mm wide and 400 to 450 mm in height.</p> <p>The apparatus should be including with Submersible pump (0.5KW) Digital flow meter (10 to 200 litres per minute), Digital inclinometer (High resolution of 0.05 degrees) and water tank (320 litre or more capacity with level gauge). A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report. Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos
8.	Experimental setup for demonstration of the velocity distribution profile in pipeline flow with a pitot static probe and calibration of flow meter including nozzle flow meter	<p>Apparatus should be usable to experiments on calibration of flow meter and determine the velocity distribution profile for pipeline flow with a pitot static probe. The apparatus must be installable with Digital Hydraulics Bench. The apparatus consists of Pitot tube flow meter (suitable dia), Nozzle Flow Meter with aluminum base plate with a vertical aluminum manometer board with four water-filled manometers and Straight pipe. A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report. Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.</p>	01 Nos



S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
9.	Experimental setup for study of flow through an orifice and mouthpiece; Equipment should be able to determination of coefficient of velocity & discharge for a Mouthpiece and Orifice	Apparatus should be usable to determine the coefficient of velocity & discharge for a Mouthpiece and Orifice. The apparatus must be installable with Digital Hydraulics Bench. The apparatus should be includes a set of orifices (sharp-edged circular, triangular and squire orifices) and also converging/diverging, angled entrance and exit, curved entrance mouthpiece. The apparatus should be able to direct measurement of total head, head loss and diameter of a vertical water jet. A comprehensive Instruction Manual should be provided covering equipment setup details, how to maintain the equipment setup, how to conduct the experiment and generate full laboratory report. Complete setup with all accessories required to perform the targeted experiments. Experimental unit should manufactured in accordance with the latest Indian/European standards.	01 Nos
10.	Digital Hydraulics Bench	The digital Hydraulics bench should be able to install with all above equipments which is required. The bench should be included with electronic flow meter and digital display for accurate measurement. The hydraulics should be 160 litres or more capacity and self contained with recirculating water circuit. Pump includes thermal overload protection.	03 Nos

**Purchase may be done as per the following general terms and conditions:**

1. Preference will be given to ISO 9001:2008 certified Manufacturer/suppliers, who can ensure the manufacturing of the machine as per the required testing standards/BS/BIS/ASTM standards and within the specified tolerance limits.
2. Bidders must submit compliance certificate (item wise).
3. Bidders will provide details of service centre and information on service support facilities that would be provided after the warranty period.
4. The bidder should furnish detailed technical description and original literature of the instruments.
5. Bidders should give undertaking regarding installation /commissioning training / demonstration and after sales service of the instruments.
6. Bidders should have supplied such equipment to the Institute of repute like IITs and NITs in last three years

Deputy Registrar  
(Store & Purchase)