



## INDIAN MARITIME UNIVERSITY

(A Central University Govt. of India)

P-19, Taratala Road, Kolkata - 700088

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(033) 2401 4431/4333

### **NOTICE INVITING TENDER**

Sealed tenders are invited for **Procurement of Applied Mechanics Lab Apparatus** under Two cover system. Bidders are advised to study the Tender Document (including all Sections, Schedules and Annexure etc) carefully. Submission of Tender shall deem to have been done after careful study and examination of the Tender Document with full understanding of its implications.

The Tender Document can be downloaded free of cost from IMU KC website [www.merical.ac.in](http://www.merical.ac.in) from 12.02.2021 onwards. The last time & date for submission of tender at IMU Kolkata Campus is 1430 hrs. on 05.03.2021. The technical bids would be opened on the same day at 1500 hrs.

**Director**

## Tender Abstract

1	<b>Title</b>	:	Procurement of Applied Mechanics Laboratory Equipments.
2	<b>Notice Inviting Tender No.</b>	:	IMU/KC/AML/02 dated 12.02.2021
3	<b>Tender document download date</b>	:	12.02.2021
4	<b>Pre bid meeting (mandatory)</b>	:	1500 hrs. on 26.02.2021, Indian Maritime University, Kolkata-700088.
5	<b>Last date and time of submission of bids</b>	:	1430 hrs on 05.03.2021
6	<b>Date and time for opening of Technical bid</b>	:	1500 hrs on 05.03.2021
7	<b>Proposal currency</b>	:	Prices shall be quoted in Indian Rupees (INR)
8	<b>Language of the proposal</b>	:	This proposal should be filled in English language only. If any supporting documents are to be submitted, in any other language other than English, then translation of the same in English language, attested by the bidder should be attached.
9	<b>Validity of tender offers</b>	:	180 days from date of opening of Technical bid
10	<b>EMD Amount</b>	:	Rs. 30,000.00
11	<b>Performance Security Deposit (for finalized bidder only )</b>	:	10% of the contract value in the form of Demand Draft or Bank Guarantee of any nationalized /Scheduled Bank having branch at Kolkata.
12	<b>Address for Submission of Tender</b>	:	The Director, Indian Maritime University, P-19, Taratala Road, Kolkata - 700088.

**INDIAN MARITIME UNIVERSITY**  
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## 1. About Indian Maritime University:

The Indian Maritime University, established through an Act of Parliament (Act 22 of 2008) in November 2008 as a Central University and headquartered at Chennai, is poised to play a key role in the development of trained human resource for the maritime sector. IMU is an autonomous body under Ministry of Ports, Shipping & Waterways, Govt. of India.

## 2. Invitation for Bids:

The Indian Maritime University Kolkata (hereinafter referred to as the Buyer or IMU KC) invites sealed tenders for Procurement of Applied Mechanics Lab Apparatus (hereinafter referred to as the “Supply”) under two cover system.

Type of Tender	Two cover system 1. Cover-I-Technical Bid 2. Cover-II- Price Bid
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Overall Scope and objective of this Tender is to select a successful bidder for supply, installation, commissioning, training with 6 years warranty period for Applied Mechanics Lab Apparatus.

### 2.1. EMD and Tender Fees:

Sl.No.	Particulars	Supporting document
1	Tender documents can be downloaded at free of cost from <a href="http://www.merical.ac.in">www.merical.ac.in</a>	Nil
2	Bidder must have submitted EMD for Rs. 30,000.00 (Rupees Thirty Thousand only)	Demand Draft from nationalized / scheduled commercial bank in favour of “Indian Maritime University, Kolkata Campus” payable at Kolkata.

### 2.2. Eligibility Criteria:

The bidder should have mandatory qualification as per the following table. The proposal of the bidders who are fulfilling the mandatory qualification criteria as per Technical Bid (cover-I) shall be considered for Price Bid (cover-II) evaluation. The offer will be rejected if the bidder does not fulfil any one of the mandatory qualification criteria in the Technical Bid.

Sl.No	Qualification Criteria	Supporting documents
1	The Bidder should be in the Business of Providing ‘Similar Supply’ for a period not less than 5 years i.e. since 2016 – 17	ESI / PF / Service Tax Registration and GST Certification / Certificate of Incorporation / Registered partnership deed / IT Returns / Copies of the Work order, Agreement and Work Completion certificate for the Completed or ongoing supply – Proof for providing similar supply during 2016-17 to 2020-21 to be enclosed.

2	<p>The Bidder should have satisfactorily completed “Similar Supply” involving values as listed below during the last 5 financial years i.e. since 2016-17</p> <p>a) at least 1 Similar Supply with a minimum value of i.e. Rs. 12,00,000 [OR]</p> <p>b) at least 2 Similar Supply with a minimum value of Rs. 9,00,000 [OR]</p> <p>c) at least 3 Similar Supply with a minimum value of Rs. 6,00,000</p>	Copies of the supply order, Payment advice, Certification from buyer entity.
3	The Bidder should have a positive net worth and an average annual turnover of at least Rs. 30,00,000 during the past 3 financial years i.e. 2017-18, 2018-19 & 2019-20.	Annual accounts duly certified by a Chartered Accountant / Income tax Returns.
4	The Bidder should have a valid PAN and GST Registration Certificate.	Copy of the PAN Card and GST registration certificate.
5	The Bidder shall be the reputed Original Equipment Manufacturer (OEM) or their authorized or certified partner or authorized reseller. He shall furnish necessary authorization from the OEM and authorizing him to provide all goods and services support indicated in this tender and confirming that necessary assistance would be provided to him in providing required support during the Warranty Period.	OEM Authorisation or Certification as per the Annexure III. In case of participation by OEM, self-declaration.
6	The Bidder should not have been black listed so far.	Self-declaration to this effect.

- 2.2.1.** ‘Similar Supply’ means supply of equipment of the similar as per the tender with Government / Semi-Government/ Public Sector organizations/ National level educational institutes like IIT, IIM, NIT and Central Universities/ State Universities / Public Limited Companies. / Reputed UGC/ AICTE Recognized or private Sector Universities / Maritime training institutes and port organizations / Central Govt. Research laboratories such as CSIR / DRDO / ISRO .
- 2.2.2.** With regard to the various proof/supporting documents produced by the bidders for establishing that they meet the various eligibility conditions, it shall be IMU’s prerogative to decide whether the document produced is valid evidence or not and to call for additional proof, if required.
- 2.2.3.** All the Mode of Proof Documents for meeting eligibility criteria enclosed with the tender are to be duly signed by the authorized signatory. If required, IMU may insist for notarized copy or ask to produce originals to ascertain the veracity of the documents. IMU also reserves the right to ask more proof to corroborate the eligibility declarations.

### **2.3. Pre-bid Meeting:**

Pre Bid meeting will be held on the scheduled date & time as mentioned in Tender Abstract, at Indian Maritime University P19, Taratala Road, Kolkata-700088. Bids of bidders who have not participated in Pre-Bid meeting shall not be considered for further processing of the tender.

IMU-KC may or may not incorporate any changes in the Tender document based on acceptable suggestions received during the Pre-Bid meeting. The decision of IMU regarding acceptability of any suggestion shall be final in this regard and shall not be called upon to question under any circumstances.

### **2.4. Response to queries and issue of amendments:**

- 2.4.1.** IMU KC will respond to any valid request for clarification in the Pre Bid Meeting. IMU KC's decision is final and binding with regard to interpretation of terms used or other tender contents.
- 2.4.2.** IMU KC may, for any reason, suo motu or in response to a clarification by a prospective bidder or bidder, modify the tender documents by amendments (through addenda / corrigenda etc.)
- 2.4.3.** Any such amendments will be informed to all the participants in the pre-bid meeting besides hosting on IMU website. All the bidders who had downloaded the Bid Document shall verify, whether any such amendments have been issued by IMU KC, before submitting their bid and shall take cognizance of and include such amendment(s) in their submission. In any case, the amendment(s), if any, shall be binding on the Bidder.
- 2.4.4.** Any such corrigendum/addendum shall be deemed to be part or incorporated into this bid.
- 2.4.5.** In order to provide prospective bidders reasonable time for taking the Corrigendum/modifications into account, IMU KC may, at its discretion, extend the last date of submission of Bids. However, no such request in this regard shall be binding on IMU KC.
- 2.4.6.** It is the responsibility of the bidder to check the website of IMU KC time to time for updates up to the previous day of submission of bids.

### **2.5. Language of Proposal & Correspondence:**

The tender, and all correspondence and documents, related to the tender, exchanged between the bidder and IMU KC should be in the English language only. If the bidder along with their offer furnish any printed literature written in any other language, such documents should be supplemented with their English translation also. The contents in the English translated version alone shall be taken into consideration.

### **2.6. Tender Validity:**

- 2.6.1.** Tenders shall remain valid for 180 days from the last date for submission of tender. A proposal valid for a shorter period may be rejected by IMU KC as being non-responsive. During the period of validity of Proposals, the terms and condition mentioned shall not change and any such request may lead to denial of the award.
- 2.6.2.** In exceptional circumstances, prior to the expiry of the original tender validity period, the IMU KC may request the bidder to extend the period of validity for a specified additional period. The request and the response thereof shall be made in writing through E-mail or Post. A bidder

agreeing to the request will not be required to nor permitted to modify his tender, but will be required to extend the validity of his tender for the period of extension. In case a bidder is not agreeing to the request of the IMU for extension of validity of the tender, then his tender will not be processed further and the portions of his tender which have not been opened will be returned to them unopened as the case may be. The EMD paid by them will also be refunded to them as in the case of other unsuccessful bidders.

## **2.7. Proposal prices:**

The prices indicated in the price schedule shall be entered in the following manner:

- i) The total price quoted must be inclusive of freight and insurance up to delivery, Installation, Commissioning, training, and up-gradation of software hardware and warranty period for 6 years, excluding applicable GST.
- ii) Prices quoted as above shall be valid for a minimum period of 180 days from last date for submission of the tender.
- iii) It must be clearly understood that the prices quoted in the tender are to include everything required to be done as per the specification and the conditions of tender and supply for the proper execution of supply/works although special mention thereof may have been omitted in the specification. The specifications indicated are for minimum and shall include accessories etc. to make the system fully operational.
- iv) IMU KC has the right to change /increase / decrease the quantities of any items in the tender prior to acceptance by the supplier of the work order issued by IMU KC.

## **2.8. Earnest Money Deposit (EMD):**

- 2.8.1.** Tender should be accompanied by an Earnest Money Deposit (EMD) for the value stated in the Tender Abstract which shall be in the form of Demand draft from any Nationalized Bank / Scheduled Bank drawn in favour of “Indian Maritime University, Kolkata Campus”, Payable at Kolkata. No other form/ mode of deposit towards Earnest Money shall be accepted. Tenders not accompanied by the Earnest Money Deposit in the manner prescribed by the IMU KC will be summarily rejected. However, exemption from EMD may be considered by IMU KC only upon written request enclosed with the technical bid duly enclosing the relevant and valid exemption certificates from MSME/NSIC. No exemption from payment of EMD is available to any bidder for any other reason whatsoever.
- 2.8.2.** The EMD of all unsuccessful bidders would be refunded by IMU KC within 90 days on selection of successful bidder. No interest will be allowed on the Earnest Money. The EMD of the successful bidder will be refunded only after the remittance of Security Deposit. Alternatively, the successful bidder shall when his tender is accepted, furnish Security Deposit as specified in the clause elsewhere after adjusting the amount deposited by him as earnest money. The earnest money shall retain its character as earnest money deposit, till the successful bidder furnishes the Security Deposit in full with or without adjustment of EMD.
- 2.8.3.** Where a person whose tender has been received by IMU KC intimates that he is withdrawing their tender before the validity period or makes any modification in the terms and conditions of the tender which are not acceptable to the IMU KC (or) fails to furnish the Security Deposit within the prescribed time, the IMU KC shall without prejudice to IMU KC's any other right or remedy, be at liberty to forfeit the Earnest Money deposited by such person absolutely.

## **2.9. Submission of the Proposal:**

The tender submitted by the Bidder shall comprise the following and should be read in conjunction with any Amendments issued at the time of submission of bid.

### **2.9.1. Cover-I (Technical Bid):**

The Cover-I should comprise of following;

- 2.9.1.1. Earnest Money Deposit.
- 2.9.1.2. Tender Document downloaded from IMU KC Web site comprising Tender Notification, Abstract, General Rules and Directions for the Guidance of the bidder, General description of Supply and other terms and conditions, including the amendments, corrigenda / addenda issued by IMU KC which should be duly signed by the authorized signatory of the bidder in each page with stamp signifying the acceptance of all the tender conditions / terms / contents.
- 2.9.1.3. Duly filled Technical Bid format (Annexure II) and Supplier's OEM Authorization Form (Annexure III) with all the documents stated in the technical bids and other supporting documents in evidence of the data filled in technical bids and any other documents/enclosures/schedules/annexures etc. stated in the tender document.
- 2.9.1.4. Bidder Memorandum (Annexure IV) duly signed by the bidder.
- 2.9.1.5. The duly authorized signatory (ies) of the entity should sign and seal in all the pages of the tender document including the annexure / schedules signifying the acceptance of all the terms and conditions, stated in the various parts of the tender. The person(s) authorized to sign the tender shall also sign in all the pages of the supporting documents with office seal submitted as proof of their eligibility, proof of technical compliance etc. In other words, every page of the bid submitted should have the signature of the duly authorized signatory of the bidder with rubber stamp.
- 2.9.1.6. The Cover I shall be addressed to "The Director, Indian Maritime University Kolkata Campus" and should be duly super scribed as "Cover-I-Technical Bid for Procurement of Applied Mechanics Lab Apparatus" and sealed properly. Name and Address of the bidder shall also be written/ printed on the cover.

### **2.9.2. Cover-II (Price Bid)**

- 2.9.2.1. The Cover II shall only contain the Price Bid formats given in Annexure – V & Schedule 1. It has to be duly filled in, signed and sealed.
- 2.9.2.2. The Cover II shall be addressed to "The Director, Indian Maritime University" and should be duly super scribed as "Cover-II-Price Bid for Procurement of Applied Mechanics Lab Apparatus" and sealed properly. Name and Address of the bidder shall also be written/ printed on the cover.
- 2.9.2.3. The Rate shall be filled in either typed or written in indelible ink and shall be signed by the person or persons duly authorized to sign on behalf of the bidder. In case of discrepancy between the amount written in figures and words, the amount written in word will be taken as final.

### **2.9.3. Main Cover:**

Both the “Cover I” and “Cover II” shall be placed inside the main cover and sealed properly. The main cover should be duly super scribed as “**Tender for Procurement of Applied Mechanics Lab Equipments for School of Marine Engineering**” and to be submitted in the following address which should reach by 1430 hrs on 05.03.2021 to the address: **The Director,  
Indian Maritime University,  
P-19, Taratala Road,  
Kolkata-700088.**

- 2.9.4.** The bidder shall note that no alternative or counter or qualifying tender conditions by the bidder will be acceptable to IMU KC. Tenders containing any qualifying conditions or even bidder's clarifications in any form may be treated as non-responsive and will run the risk of rejection. In general, printed terms & conditions shall not be accepted.
- 2.9.5.** Bidder who submits more than one tender will be disqualified.

### **2.10. Deadline for Submission of Proposals:**

Tenders must reach the Director’s office through speed post/ courier or to be dropped in to the box placed in the Deputy Registrar’s Office at Room No. 130 of Administrative Building, IMU KC, prior to the last date & time for submission, specified in the abstract. IMU KC may, at its sole discretion extend the date and time for submission of tenders. Any updates with regard to such extension or any other communication intended for the bidders / prospective bidders will be made only through IMU KC’s website stated above. Any tender received after the last date and time for submission of tenders prescribed will be rejected.

### **2.11. Late Proposal:**

Any proposal received by IMU KC after the deadline for submission of proposals prescribed by IMU KC, will be rejected and kept as an unopened Tender.

### **2.12. Modification and withdrawal of bids:**

- 2.12.1.** The bidder may be allowed to modify or to submit revised bid due to corrigendum, addendum, etc., issued by IMU KC, any time prior to the last date & time prescribed for receipt of bids, by giving a written notice to the IMU KC.
- 2.12.2.** The bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in a manner similar to the original Proposal.
- 2.12.3.** Subsequent to the last date for receipt of bids, no modification of bids shall be allowed. No bid may be withdrawn in the interval between the deadline for submission of bids and expiration of the of bid validity period specified. Withdrawal of a bid during this period will result in Bidder’s forfeiture of bid security/EMD.

### **2.13. IMU KC’s Right to accept and to reject any or all proposals:**

Notwithstanding anything else contained to contrary in this Tender Document, IMU KC reserves the right to accept or reject any Bid or to annul the bidding process fully or partially or modifying the same and to reject all Proposals at any time prior to the award of work, without incurring any liabilities in this regard.

## **2.14. Rejection of Bids:**

The bids will be rejected on following grounds:

- 2.14.1.** If any of the eligibility criteria as per the qualification criteria is not met
- 2.14.2.** EMD not submitted
- 2.14.3.** If tender terms and conditions are not met
- 2.14.4.** If bidder gives wrong information in the bid
- 2.14.5.** Canvassing in any form in connection with the bids
- 2.14.6.** If the bid is incomplete /partial bid/ conditional/unclear in any form
- 2.14.7.** Bids submitted after due date and time
- 2.14.8.** Bids are submitted through Telex/Fax/ e-mail (i.e. modes other than by way of speed post/ courier/ dropping in the box provided)
- 2.14.9.** Erasure and/or overwriting (if not countersigned by authorized person)
- 2.14.10.** Bids not signed by authorized signatory

## **2.15. Evaluation Process:**

- 2.15.1.** IMU KC shall evaluate the responses to the bids and all supporting documents / documentary evidence. Inability to submit requisite supporting documents / documentary evidence, may lead to rejection.
- 2.15.2.** The interpretation of the bids and the decision made by the IMU KC in the evaluation of responses to the bids shall be final. No correspondence will be entertained outside the process of evaluation with IMU KC.
- 2.15.3.** IMU KC may ask for meetings with the bidders to seek clarifications on their bids.
- 2.15.4.** IMU KC reserves the right to reject any or all bids on the basis of any deviations.
- 2.15.5.** Each of the responses shall be evaluated as per the criteria and requirements specified in this bid.

## **2.16. Tender Evaluation:**

- 2.16.1.** Technical bids will be opened at the IMU KC, located at the address stated in tender abstract. Any bidder who is willing to observe the tender opening, may, in person or through his authorized representative (maximum one personnel on production of authorization letter), be present at the venue and witness the tender opening.
- 2.16.2.** The bidder or his authorized representative who are present shall sign a register evidencing their attendance. IMU KC reserves the right to reschedule the tender opening date (technical / financial bid opening) if the scheduled tender opening day is declared as a holiday for the IMU KC or due to any other administrative reasons which would be published in IMU KC website and such rescheduling may not be communicated individually in any other modes.
- 2.16.3.** Technical bid (Cover-I) of each bidder shall fulfil the minimum eligibility criteria prescribed in bids.
- 2.16.4.** The information furnished by the bidder in Cover - I in the format(s) prescribed as part of the tender document by IMU KC will form the basis for the technical evaluation. In exceptional cases, IMU KC reserves the right to obtain any clarifications from any of the bidder. If, in the opinion of the IMU KC, information and documents supplied in support of the tender do not meet the minimum eligibility criteria as per bid and the any or some of the technical specifications as per bid, as determined by IMU KC, the tender / product offering will be treated as non-responsive and rejected by the IMU KC and their Cover II – Price bid shall not be opened for evaluation. The IMU KC's decision is final and binding, with regard to technical evaluation.
- 2.16.5.** After satisfying that all / or some of the bidders have attained the minimum qualifying technical criteria as detailed above, bids of only such technically qualified bidders i.e.

which fulfil all the qualification / eligibility criteria and also comply with the technical specifications, will be considered for further evaluation. A suitable date and time for opening of the Cover II – Price Bids will be fixed and those bidder(s) who are technically qualified will be intimated through email about the opening of Cover - II – Price Bids or alternatively, the date may be published in IMU KC website. Other procedures for opening the cover II including the witnessing (by only the technical qualified bidders) the tender opening event, no. of participants etc., will be similar as those for cover-I explained in the earlier para(s).

**2.16.6.** Price bid evaluation will be made based on Price inclusive of freight and insurance up to delivery, Installation, Commissioning, training, and up-gradation of software, hardware and warranty period for 6 years, excluding applicable GST. IMU KC also reserves right to change quantities before issuing the order, due to exigencies, if any. The destination point for delivery of materials will be as follows:

Quantity in Nos	Consignee
01	The Director, IMU Kolkata Campus, P-19, Taratala Road. Kolkata: 700 088. West Bengal, India.

**2.16.7.** After evaluating the price bids received under Cover II, the bidder who quoted the lowest (L-1) Price and have fulfilled all the required conditions, will be awarded the work order.

### 3. General Conditions of Contract:

#### 3.1. Termination Clause:

- 3.1.1. In the event of the breach of any of the provisions of contract by the supplier, IMU KC shall have the right to terminate the tender summarily, at any stage.
- 3.1.2. In the event of IMU KC terminating the contract for breach by the supplier of any of the provisions thereof, the supplier shall be liable for any loss suffered by IMU KC up to the time of the termination of the contract.
- 3.1.3. In the event of the death, insanity or insolvency of the supplier IMU KC shall have the right to terminate the contract summarily and to purchase in the open market any Goods/ Services covered by the contract. In this case, the supplier shall not be liable for any excess in the price paid, for any such purchases over the tender price.

#### 3.2. Security Deposit:

- 3.2.1. The supplier shall be required to submit the performance security in the form of Demand Draft in favour of “Indian Maritime University, Kolkata Campus”, payable at Kolkata or irrevocable Bank Guarantee issued by any Indian Nationalized Bank for an amount of 10% of the Purchase Order value within 7 days from the date of receipt of the purchase order. It should be valid for a period of 90 days beyond the date of completion of warranty period.
- 3.2.2. Security Deposit will be refunded / returned without any interest only 90 days after successful completion of warranty period. The refund or return of Security Deposit is subject to the complete fulfilment of the contract obligation by the supplier to the

satisfaction of IMU KC and after adjustment of dues to IMU KC or penalty imposed by IMU KC.

**3.3. Delivery Period:**

The bidder is required to deliver, installation, testing, Commissioning and starting of operation of the equipments in all aspects within **60 days** from the date of work order at IMU KC.

**3.4. Inspection & Rejection:**

The supply shall be subject to inspection by IMU KC and IMU KC's decision as to the acceptance of any equipment or rejection of any equipment / goods as not conforming to specification, shall be final and binding on the successful bidder. Such of the equipment / goods which are rejected shall be removed by the successful bidder at their own expense and replaced by fresh ones within a time, as determined by IMU KC.

**3.5. Liquidated Damages:**

If the successful bidder fails to execute the Supply/Works in all respects within the period specified or within such extended period as may be allowed, the successful bidder shall pay a sum equivalent to 0.5% of the value of the total tender price per week (Seven days) or part thereof subject to a maximum limit of 10% of the value of the each of the item tender as liquidated and ascertained damages. IMU KC shall have the right to determine what the "amount payable/corresponding payment" for any step/activity is, and while the Successful Bidder has a right to represent/clarify, IMU KC's determination of the same shall be final without prejudice to the Successful Bidder's rights to seek alternative remedy through arbitration/Courts.

**3.6. Comprehensive Onsite warranty:**

- 3.6.1. A comprehensive onsite warranty for the supplied equipment shall be provided by the supplier for a minimum of 6 years from the date of final acceptance of the equipment by IMU KC. The supplier will be notified of any defect or claim arising under this warranty and the warranty support shall be provided at site of IMU Kolkata Campus.
- 3.6.2. If the supplier having been notified fails to remedy the defect within 7 days, IMU KC may proceed to take such remedial action as may be necessary at the supplier's expense. The period that the equipment is out of commission / operation as a result of supplier's failure to remedy the defects notified shall result in extension of the warranty period correspondingly and imposition of penalty (Rs. 10000/- per instance which will be adjusted from the Security Deposit or any other dues to the supplier).

**3.7. Payment Terms:**

- 3.7.1. Payment will be made against Supply, Installation, Commissioning, Acceptance Testing, Training and putting in to operation of Apparatus at IMU Kolkata Campus against the invoice. IMU KC will, after verification of the claim for its correctness, make payment within thirty days after the date of receipt of the claim, complete and correct in all respects, from the supplier.

- 3.7.2. The Tax Invoice raised by the supplier must be in compliance of relevant GST acts, rules & notifications made there under and should bear the **IMU KC GST Registration no. 19AAAAL2610K1ZU**. The rate and amount of CGST, SGST, IGST and GST (Compensation to state) cess, related to supply of goods, shall be shown separately in tax invoice for each item of supply.
- 3.7.3. **Statutory variation:** If there is any statutory change in CGST & SGST or IGST within contractual delivery period, the same shall be admissible and will be paid at actual based on the documentary evidence. However, no upward revision in the same beyond original delivery period shall be admissible.

### **3.8. Ownership of License:**

Licenses for all the software including Anti-Virus, if any, supplied along with the equipment under the scope of supply shall be in the name of IMU KC. All documents and reports prepared or obtained in performing the operation of the equipment shall become and remain the property of IMU KC.

### **3.9. Secrecy:**

The Supplier shall not transfer any part or share of his responsibilities directly or indirectly to any person whomsoever without the written consent of IMU KC.

### **3.10. Force Majeure:**

- 3.10.1. The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 3.10.2. For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 3.10.3. If a Force Majeure situation arises, the Supplier shall promptly notify the IMU KC in writing of such conditions and the cause thereof. Unless otherwise directed by the IMU KC in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

### **3.11. Indemnity:**

The selected bidder shall indemnify IMU KC from and against any costs, loss, damages, expense, claims including those from third parties or liabilities of any kind how-so-ever suffered including patent, copyright, trademark and trade secret, arising or incurred inter-alia during and after the Contract period out of:

- 3.11.1. Negligence or wrongful act or omission by the Selected Bidder or its team or any Agency/ Third Party in connection with or incidental to this Contract; or
- 3.11.2. Any breach of any of the terms the Selected Bidder's Proposal as agreed, the Tender and this contract by the Selected Bidder, its Team or any Agency/ Third Party.

- 3.11.3. Bidder (the "Indemnifying Party") undertakes to indemnify the client (the "Indemnified Party") from and against all losses, claims for damages including losses, claims for damages on account of bodily injury, death or damage to tangible.
- 3.11.4. The indemnity shall be to the extent of 100% of project cost in favour of the IMU KC.

### **3.12. Arbitration & Jurisdiction:**

In the event of disputes, differences, claims and questions arising between the parties hereto arising out of this Agreement or anyway relating hereto or any term, condition or provision herein mentioned or the construction or interpretation thereof or otherwise in relation hereto, the parties shall first endeavour to resolve such differences, disputes, claims or questions by mutual discussion and failing such settlement, the same shall be referred for arbitration by a sole Arbitrator appointed by IMU KC / IMU HQ. Such arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act 1996 or re-enactment thereof for the time being in force and shall be held in Kolkata. In case the Arbitration award is not acceptable to either of the parties, they may approach courts having jurisdiction at Kolkata only.

### **3.13. Applicable Law:**

The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction of Kolkata Courts only.

## **4. Special Conditions of the Tender:**

### **4.1. Site Preparation:**

The supplier shall visit the IMU KC Campus and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.

### **4.2. Supply of Equipment:**

The supply shall include complete set of equipment including accessories and spares as described in the subsequent paragraphs of the "Technical Specification" (Annexure I)

### **4.3. Installation, Demonstration and User Acceptance Testing:**

- 4.3.1. The supplier is required to do the installation and demonstration of the equipment within 15 days of the arrival of materials at the IMU KC's site of installation; otherwise the penalty clause will be the same as per the supply of materials.
- 4.3.2. The successful Bidder shall depute their Service Engineer for demonstration or calibration of the equipment. The Service Engineer shall demonstrate operation of equipment to the satisfaction of respective IMU KC. IMU KC may request to demonstrate the functioning of the equipment, after installation, by asking to perform a few experiments and verification of the results either by theoretical or other practical means.
- 4.3.3. In case of any mishap /damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IMU KC will not be liable to any type of losses in any form.

- 4.3.4. The demonstration proposed to be done by the bidder in proof of correct working of the entire set up both individually and as an integrated system has to be specified in the technical bid format in Annexure. Such demonstration should be acceptable to IMU KC. If the demonstration proposed by the bidder is not acceptable to IMU KC, at its discretion either reject the tender or alternatively ask the bidder to do some other demonstration which found by IMU KC, to be more appropriate.

#### **4.4. Inspection and Tests:**

The compliance of the equipment with the requirements mentioned in Technical specifications and elsewhere in Tender document should be verifiable with supporting documents like OEM's manual, Certification from OEM etc. the certificate should be valid.

- 4.4.1. The above tests shall demonstrate the satisfactory operation of integrated system covering the full range of facilities of the equipment.
- 4.4.2. The acceptance tests for supplied goods shall be carried out at IMU KC by the supplier with the participation of concerned personnel from IMU KC.
- 4.4.3. In case of the acceptance tests are not concluded to the satisfaction of IMU KC the supplier shall repair or replace, at the supplier's cost, the whole or any part of the equipment as may be necessary for conclusion of the acceptance tests to the satisfaction of IMU KC within the reasonable period agreed by IMU KC. Demonstration of performance of the equipment should be done after such repair / replacement for acceptance of IMU KC.
- 4.4.4. IMU KC reserves the right to accept the delivered items with deviations, provided the supplier agrees to rectify the deviations within an acceptable time period. Regarding the acceptance date, decision of IMU KC would be final.
- 4.4.5. The supplier shall provide necessary consumables till the completion of acceptance testing, without any additional cost.
- 4.4.6. The All parts and equipment should be brand new and unused. Refurbished items shall not be provided.
- 4.4.7. The equipment shall be robust for academic use and shall have to produce results with accuracy, as determined reasonable by IMU KC.

#### **4.5. Availability of Spare Parts:**

The Supplier may be required to provide any or all the notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- 4.5.1. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- 4.5.2. In the event of termination of production of the spare parts:
- 4.5.3. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
- 4.5.4. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.
- 4.5.5. Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods. Other spare parts and components shall be supplied as promptly as possible but in any case within one month of placement of order.
- 4.5.6. The Successful Bidder shall stand guarantee for the supply of spares of all the equipment under the scope of supply for a minimum period of 10 years from the date of awarding the

contract and also guarantee that discontinuity of production of any item offered as a part of the system shall not affect the maintainability of the system for a period of 10 years from the start date of operation.

#### **4.6. Replacement of Defective Equipment:**

If any of the equipment supplied by the supplier is found to be substandard, refurbished, unmerchantable or not in accordance with the description/specification or otherwise faulty, the IMU KC will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the supplier with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 30 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, IMU KC may consider 'Banning' the supplier and any other remedies, as deemed fit by IMU KC.

#### **4.7. Supply of Manuals & Drawings:**

- 4.7.1. Two Sets of operation and maintenance instruction manuals for each equipment shall be supplied to IMU KC.
- 4.7.2. Complete technical and functional specifications, operation and maintenance manual for each hardware / cards on the equipment with part numbers and model de-codification documents, to be supplied in original, photocopy is not acceptable.
- 4.7.3. Complete engineering details of each system as required for the purpose (experiments and research) the equipment's are bought.
- 4.7.4. Complete system wiring details, input, output, wiring details as applicable to the scope of supply.
- 4.7.5. Operation and maintenance manuals for the scope of supply including computers, Data Acquisition Units, interface devices etc. if applicable (to be supplied in original, photocopy is not acceptable)
- 4.7.6. The party shall supply all the software with proper license (including Windows, PC-Motherboard drivers (as applicable to the supplied electronic data acquisition units), and any other software as required.
- 4.7.7. One set of service agents and depots lists shall be supplied along with the equipment.
- 4.7.8. In addition to the Manuals given by the Manufacturers, the successful Bidder shall prepare full documentation.

#### **4.8. Documentation:**

- 4.8.1. The successful bidder shall provide IMU KC with necessary documents including the following:
  - 4.8.1.1. Operational and Maintenance Manuals of equipment.
  - 4.8.1.2. Equipment serial numbers and models.
  - 4.8.1.3. Test Certificates, calibration certificate, and Licenses if any.
  - 4.8.1.4. Acceptance test results and acceptance status.
  - 4.8.1.5. Training Material, each item should be handed with a manual.
  - 4.8.1.6. Full documentation with the software.

- 4.8.2. Four sets of hardcopy of the above shall be handed over to nominated personnel of IMU KC. Soft copy of the documents shall also be provided where applicable. Handing over of documents to IMU KC by supplier is a pre-requisite for Acceptance.
- 4.8.3. Manuals for the instruments are to be supplied with respect to operation, maintenance, ordering spares / technical services.

#### **4.9. Power Tolerance:**

The equipment or its battery charger shall operate correctly from a 220 or 440 Volts (+/- 10%) and 50 Hz (+/-6%) power supply 1Ph/3Ph. It should be capable of withstanding permissible voltage and frequency variations without any damage to the equipment or loss of the information.

#### **4.10. Data Storage capability:**

The equipment should be capable of storing sufficient measured data history in the equipment or its supported PC and should be able to transfer the data stored into a computer. The scope of supply includes all means by way of drivers, software and interface cables and adapters to facilitate such transfer.

#### **4.11. Training and Support:**

- 4.11.1. The supplier shall impart training to four persons at IMU KC on operation of the equipment. The training shall be imparted in a phased manner without disrupting the working of the Campus. The training will be conducted as and when software/hardware upgraded or any other parameters altered by the Manufacturer/Supplier. Periodical refresher training may need to be imparted.
- 4.11.2. The supplier shall make his own arrangements for supplying training material, equipment required for training etc.
- 4.11.3. IMU KC will provide necessary space, infrastructure free of cost for conducting the training.
- 4.11.4. The training provided by the supplier shall cover:
  - a) Operation of the equipment along with course/reference material for each individual.
  - b) Operational level training along with course/reference material for each individual.
- 4.11.5. On completion of training, the supplier shall submit an evaluation report on the participants along with course details.
- 4.11.6. Completion of training is a pre-requisite for acceptance of the equipment.
- 4.11.7. All charges pertaining to the training shall be part of the price bid.
- 4.11.8. Support the operators through help desk (online plus telephonic support) and visits to the sites (at his own cost) as may be required. The number of visits may be specified in the pre-bid meeting if any questions are raised on this.

#### **4.12. Acceptance of Equipment:**

- 4.12.1. The activity shall deem to have been completed with the completion of Supply, Installation, Commissioning, Training and putting in to operation of equipment at IMU Kolkata Campus. However, the supply shall be complete only upon certification to this effect issued by IMU KC's Consignees i.e. the Director of designated IMU KC.
- 4.12.2. Upon completion of Supply / work and after successful completion of other prerequisites like acceptance testing, training etc., as prescribed in this document, IMU KC shall receive a written undertaking from the supplier that the supply / works have been completed and

accordingly a certificate of completion would be issued in respect of the supply/works. The warranty period for the supplied system would commence from the date of Acceptance by IMU Kolkata campus.

#### **4.13. Bidder's Representations And Warranties:**

The selected bidder has to confirm to the IMU KC that:

- 4.13.1. He has the capability to duly perform its obligations in accordance with the terms of the tender and to the satisfaction of the IMU KC. However, that the IMU KC's judgment in this regard shall be final and binding on the Bidder.
- 4.13.2. The execution of the Supply, Installation, Commissioning, Training and putting in to operation of equipment at IMU Kolkata campus by the Bidder does not and will not violate, breach any covenants, stipulations or conditions of any Agreement, Deed entered into by the Bidder with any third parties.
- 4.13.3. Bidder shall abide by all laws of the land including, Companies Act, Taxation laws, and all other statutory and other obligations applicable to this contract for supply and IMU KC will not be responsible non-compliance, if any, by the supplier, in any way whatsoever.
- 4.13.4. Provide the software updates free of charge within warranty period.

#### **4.14. Bidder's Covenants:**

- 4.14.1. The Goods/ Services to be supplied by the bidder shall be of the quality or sort specified and in every respect equal and answerable to the specifications sent with the tender and shall be subject to the approval of the IMU KC.
- 4.14.2. Supply, Installation, Commissioning, Training and putting in to operation of equipment at IMU KC is to be completed, free of delivery charges as per specified time on Door delivery basis.
- 4.14.3. Rejected Goods shall be removed by and at the expenses of the bidder within seven days after notice. If not taken away so, the IMU KC may seize the goods or remove the materials on its own and charge the bidder with all expenses incurred on such removal.
- 4.14.4. Any notice to the successful bidder shall be deemed to be sufficiently served, if given or left in writing at his usual or latest known place of business or sent to the email address specified in the bid submitted.
- 4.14.5. In these conditions unless there is something in the subject or context inconsistent there with words importing the singular shall include the plural and vice-versa words importing the masculine gender shall include the feminine and the words importing persons shall include bodies corporate/firms etc.

**Director**

Applied Mechanics Laboratory requirements (2<sup>nd</sup> Semester)

Sl No.	Name of the Equipment	No. of required quantity
1	Wall jib crane	4
2	Shear Leg Apparatus	4
3	Derrick Crane	4
4	Bell crank lever	4
5	Simply supported beam	6
6	Inclined Plane Friction Apparatus	4
7	Screw Jack	4
8	Worm and Worm Wheel	4
9	Compound Wheel and Axle	4
10	Single Purchase Crab	4
11	Double Purchase Crab	4
12	Thread Efficiency Testing Equipment	4
13	Flywheel Apparatus	4
14	Belt Friction Apparatus	4
15	Bifilar/Trifilar Suspension Apparatus	4
16	Governors Hartnell, Porter and Proell Governors, Centrifugal clutch to demonstrate the process of Power parameters of the Hartnell Governor	4

**Procurement 1:**  
**Wall jib Crane**

Equipment	Objective and Technical Specification
<p>Wall jib Crane</p> <p><b>Experiment No. 1a (As per IMU syllabus)</b></p>	<p><b>Wall Jib Crane:</b></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>- Graphical breakdown of forces by force parallelogram</li> <li>- Determination of the bar forces on various jib forms</li> <li>- Comparison of: measuring result - calculation - graphical method</li> </ul> <p><b>Technical Specification:</b></p> <p>[1] Tensile and compressive forces in a planar central force system based on the example of a crane jib</p> <p>[2] Integrated spring balances in the bars with IS 1702:1967 standard</p> <p>[3] Max. load on crane jib 50N</p> <p>[4] Stainless steel retaining bar</p> <p>[5] Sturdy metal base plate</p> <p>[6] Handles to aid transportation</p> <p>[7] Storage system to house the components</p> <p>Technical data</p> <p>Spring balance for tensile forces</p> <ul style="list-style-type: none"> <li>- Tensile force: 0...50N</li> <li>- Graduation: 0.5N</li> </ul> <p>Spring balance for compressive forces</p> <ul style="list-style-type: none"> <li>- Pressure force: 0...50N</li> <li>- Graduation: 1N</li> </ul> <p>Weights</p> <ul style="list-style-type: none"> <li>- 1x 1N (hanger)</li> <li>- 4x 1N</li> <li>- 1x 5N</li> <li>- 4x 10N</li> </ul> <ul style="list-style-type: none"> <li>- Weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</li> <li>- Material - Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</li> <li>- Short link should have IS 2429 standard or equivalent.</li> </ul> <p>Dimensions and weight</p> <p>LxWxH: 600x200x620mm</p> <p>Weight: approx. 10kg</p> <p>LxWxH: 720x480x178mm (storage system)</p> <p>Weight: approx. 10kg (storage system)</p>

## Procurement 2

### Shear Leg Apparatus

Equipment	Objective and Technical Specification
Shear Leg Apparatus  <b>Experiment No. 1b (As per IMU syllabus)</b>	<b>Shear Leg Apparatus:</b> <b>Objective:</b> -To determine the magnitude and nature of forces in different member of the shear leg apparatus  <b>Technical Specifications:</b> Weight: 5 kg Horizontal arm is of: 200 cm Vertical arm is of: 120 cm The apparatus we provide mounted on wooden base that is useful for making balancing related experiments in the laboratories.

## Procurement 3

### Derrick crane

Equipment	Objective and Technical Specification
Derrick crane  <b>Experiment No. 1c (As per IMU syllabus)</b>	<b>Derrick Crane:</b> <b>Objective:</b> -To determine the magnitude and nature of forces in different member of the Derrick Crane  <b>Technical Specifications:</b> Maximum vertical distance between wall pivots approximately 350mm. Tensile Member length: 500mm (approx.) Compressive Member length: 400mm (approx.) Tensile force spring balance 6Kgf in 0.1Kgf increments Compressive force spring balance: 60N in 2N increments

## Procurement 4:

### Bell Crank Lever

Equipment	Objective and Technical Specification
Bell Crank Lever	<b>Bell Crank Lever</b> <b>Objective:</b> -To determine by experiment the reaction force of a bell crank lever to an applied load -To confirm the effect of leverage ratio

<p><b>Experiment No. 2b</b> <b>(As per IMU syllabus)</b></p>	<p>-To compare with calculation by taking moments about the pivot.</p> <p><b>Technical Specification:</b></p> <ul style="list-style-type: none"> <li>-Aluminium base with rubber feet</li> <li>- 90° Bell Crank Lever</li> <li>-Hanger positions from fulcrum: 200, 250, 300, 350, 400 mm</li> <li>-Spring Balance: 6kgf, 0.1kgf resolution</li> <li>-1 x Load hanger</li> <li>-Weights set</li> <li>Weight: 4 kg</li> <li>Length: 440mm</li> <li>Width: 100mm</li> <li>Height: 270mm</li> </ul>
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**Procurement 5:**  
**Simple Supported Beam**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>Simple Supported Beam</p> <p><b>Experiment No. 2b</b> <b>(As per IMU syllabus)</b></p>	<p><b>Simple Supported Beam</b></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>- Calculation of the reactions arising from the static conditions of equilibrium</li> <li>- Application of the method of sections to calculate the internal forces and moments</li> <li>- Under a point load</li> <li>- Under multiple point loads</li> </ul> <p><b>Experiment No. 2b</b></p> <ul style="list-style-type: none"> <li>-Calculation of the shear force diagram</li> <li>-Calculation of the bending moment diagram</li> <li>-Comparison of calculated and measured values for shear force and bending moment</li> </ul> <p><b>Technical Specification:</b></p> <ol style="list-style-type: none"> <li>[1] Determination of shear force and bending moment on beam mounted on 2 supports</li> <li>[2] Measurement of shear force and bending moment in beam by low-friction hinge with 2 degrees of freedom</li> <li>[3] Position of hinge at 1/3 span</li> <li>[4] 2 bearing supports</li> <li>[5] Loading of beam by 1 to 3 point loads</li> <li>[6] Force gauges to indicate shear force and determine bending moment</li> <li>[7] Bending moment determined by force measurement and lever arm</li> <li>[8] Adjuster nuts for horizontal alignment of beam</li> <li>[9] Steel rule to determine positions of point loads</li> <li>[10] Storage system to house the components</li> </ol> <p><b>Technical data</b></p>

	<p>Beam</p> <ul style="list-style-type: none"> <li>- total length: 1000mm</li> <li>- span: 800mm</li> </ul> <p>Weights</p> <ul style="list-style-type: none"> <li>- 3x 1N (hanger)</li> <li>- 12x 1N</li> <li>- 9x 5N</li> <li>- Max. weight per hanger: 20N</li> <li>-Weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</li> <li>-Material - Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</li> </ul> <p>Measuring ranges</p> <ul style="list-style-type: none"> <li>- Bending moment via force gauge and lever arm</li> <li>- Lever arm: 100mm</li> <li>- Force gauge: <math>\pm 100\text{N}</math></li> <li>- Bending moment: <math>\pm 10\text{Nm}</math></li> <li>- Shear force: <math>\pm 50\text{N}</math></li> </ul> <p>steel rule: 1000mm, graduation: 1mm</p> <p>Calibration of force proving instruments will generally be carried out in accordance with IS 4169:2014 /ISO 376:2011 or equivalent standard.</p> <p>Dimensions and weight</p> <p>LxWxH: 1400x320x600mm</p> <p>Weight: approx. 35kg</p> <p>LxWxH: 1170x480x178mm (storage system)</p> <p>Weight: approx. 12kg (storage system)</p>
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**Procurement 6:**

**Inclined plane friction**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>Incline Plane Friction</p> <p><b>Experiment No. 3i</b> (As per IMU syllabus)</p>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>- To determine the coefficient of friction between leather and metal in an incline plane.</li> <li>- Determination of the friction coefficients of various material pairings</li> <li>- Transition from static to dynamic</li> <li>- Static equilibrium of forces on the inclined plane - determination of the angle of inclination as from which sliding occurs (calculation and verification by experiment)</li> </ul> <p><b>Technical Specification:</b></p> <p>[1] Experiment relating to friction on the inclined plane</p>

	<p>[2] Inclined plane with plastic coating, drag link with angle scale and ball bearing-mounted deflection roller</p> <p>[3] Angle of plane adjustable</p> <p>[4] 2 samples</p> <p>[5] Graduated weight set</p> <p><b>Technical data</b></p> <p>Friction body</p> <ul style="list-style-type: none"> <li>• LxWxH: each 80x60x44mm</li> <li>• dead-weight force: each 10N</li> <li>• 1x steel / polypropylene</li> <li>• 1x aluminium / brass</li> </ul> <p>Inclined plane</p> <ul style="list-style-type: none"> <li>• length: 1000mm</li> <li>• adjustable angle range: <math>\pm 45^\circ</math></li> </ul> <p>Weights</p> <ul style="list-style-type: none"> <li>• 1x 1N (hanger), 4x 0,1N, 1x 0,5N, 4x 1N, 1x 5N</li> </ul> <p>- Weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</p> <p>-Material - Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</p> <p>LxWxH: 1130x300x800mm</p> <p>Weight: approx. 35kg</p>
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**Procurement 7:**

**Screw Jack**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>Screw Jack</p> <p><b>Experiment No. 4a</b></p> <p>(As per IMU syllabus)</p>	<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>-Determination of velocity ratio, mechanical advantage, and efficiency.</li> <li>-Determination of velocity ratio and comparison with calculated value.</li> <li>-Determination of variation with load of: effort friction efficiency</li> </ul> <p>Limiting efficiency of the machine.</p> <p><b>Technical Specification:</b></p> <p>Simple screw jack of 220 mm diameter turntable fitted with a 30 mm x 6 mm pitch screw is supported in a heavy cast iron base. The apparatus is stood on a firm bench and a cord and weight hanger are wound round the rim of the turntable and hung over the pulley. The pulley runs on ball bearings to reduce friction to a minimum. This equipment is part of a range designed to both demonstrate and experimentally confirm basic engineering principles.</p>

**Procurement 8:****Worm and Worm Wheel**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>(a). Worm and Worm Wheel</p> <p>(b). Compound Wheel and Axle</p> <p><b>Experiment No. 4b</b></p> <p>(As per IMU syllabus)</p>	<p><b>Worm and Worm Wheel</b></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>-Determination of velocity ratio, mechanical advantage, and efficiency.</li> <li>-Determination of velocity ratio and comparison with calculated value.</li> <li>-Development of the main variables and relationships in a worm gear</li> <li>-Investigation of transmission ratio, torque, friction and selflocking</li> <li>-Determine the efficiency</li> </ul> <p><b>Technical Specification:</b></p> <ul style="list-style-type: none"> <li>[1] Function and design of worm gears</li> <li>[2] Bronze worm wheel</li> <li>[3] Steel worm IS 3734- 1983 standard or equivalent</li> <li>[4] 2 aluminium cable drums</li> <li>[5] Worm, worm wheel and pulleys mounted on ball bearings</li> <li>[6] Anodised aluminium base plate</li> </ul> <p><b>Technical Data</b></p> <p>Cable drum</p> <ul style="list-style-type: none"> <li>- worm shaft diameter: <math>\varnothing=40\text{mm}</math></li> <li>- worm wheel shaft diameter: <math>\varnothing=120\text{mm}</math></li> </ul> <p>Worm gear</p> <ul style="list-style-type: none"> <li>- centre distance: 80mm</li> <li>- gear ratio: 30:1</li> <li>- module: <math>m=4\text{mm}</math></li> <li>- number of gears: 1</li> <li>- force transmission: 10</li> </ul> <p>Weights on the worm side</p> <ul style="list-style-type: none"> <li>- 1x 50N</li> <li>- 1x 20N</li> <li>- 2x 10N</li> <li>- 1x 10N (hanger with equalising mass)</li> </ul> <p>Weights on worm wheel</p> <ul style="list-style-type: none"> <li>- 1x 5N</li> <li>- 4x 2N</li> </ul>

	<ul style="list-style-type: none"> <li>- 1x 1N</li> <li>- 1x 0,5N</li> <li>- 1x 0,5N (hanger)</li> <li>- Weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</li> <li>-Material- Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</li> </ul> <p>Dimensions and Weight LxWxH: 250x150x200mm Weight: approx. 22kg</p>
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**Procurement 9:**

**Compound Wheel and Axle**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
Compound Wheel and Axel  <b>Experiment No. 4c</b>  <b>(As per IMU syllabus)</b>	<p><b>Compound Wheel and Axle</b></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>-Determination of velocity ratio, mechanical advantage, and efficiency.</li> <li>-Determination of velocity ratio and comparison with calculated value.</li> <li>-Determination of variation with load of: effort friction efficiency Limiting efficiency of the machine.</li> </ul> <p><b>Technical Specifications:</b></p> <p>The wheel is of 350mm dia and axle in 3 steps of reducing 200, 100 and 50 mm diameter supported on ball bearings in iron brackets. The base is provided with holes to fix the apparatus n wall. Complete with snatch pulley block, cord and hooks. Supplied without weights.</p>

**Procurement 10:**

**Single Purchase Crab**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
Single Purchase Crab	<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>-Determination of velocity ratio, mechanical advantage, and efficiency.</li> <li>-Determination of velocity ratio and comparison with calculated value.</li> </ul>

<p><b>Experiment No. 4d</b>  (As per IMU syllabus)</p>	<p>-Determination of variation with load of: effort friction efficiency Limiting efficiency of the machine.</p> <p><b>Technical Specification:</b> Fitted with heavy cast iron wall brackets. The grooved wheel is of 25 cm diameter and gears are machine cut. This apparatus is used for experiments in efficiency of mechanical advantage. No. of teeth on load wheel -100, No. of teeth on effort wheel -20, Dia. of load drum -56 mm</p>
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**Procurement 11:**  
**Double Purchase Crab**

Equipment	Objective and Technical Specification
<p>Double Purchase Crab</p> <p><b>Experiment No. 4e</b>  (As per IMU syllabus)</p>	<p><b>Objective:</b> -Determination of velocity ratio, mechanical advantage, and efficiency. -determination of velocity ratio and comparison with calculated value. -Determination of variation with load of: effort friction efficiency Limiting efficiency of the machine.</p> <p><b>Technical Specification:</b> Fitted with heavy cast iron wall brackets. The grooved wheel is of 25 cm diameter and gears are machine cut. Apparatus is used for experiments in efficiency of mechanical advantage. No. of teeth on load wheel -100, No. of teeth on effort wheel -20, Dia. of load drum-56 mm</p>

**Procurement 12:**  
**Thread Efficiency Equipment**

Equipment	Objective and Technical Specification
<p><b>Thread testing</b></p> <p><b>Experiment No. 05 (As per IMU syllabus)</b></p>	<p><b>Learning Objective:</b> - Determine the friction coefficient of a steel threaded spindle in conjunction with - a cast iron nut - a bronze nut - a plastic nut - Determine the relevant thread efficiency</p>

	<p><b>Technical Specification:</b></p> <p>[1] Investigation of the thread efficiency of Square and V thread</p> <p>[2] Nuts made of cast iron, bronze and plastic</p> <p>[3] Spindles with trapezoidal thread, varying pitch</p> <p>[4] Generate torque using pulley with spring balance and cable</p> <p>[5] Load via graduated loads</p> <p><b>Technical data:</b></p> <p>Spindle thread</p> <p>- TR30x6 and TR30x12P6</p> <p>Rotary plate</p> <p>- diameter: 140mm</p> <p>Spring balance</p> <p>- 0...5N</p> <p>- graduation: 0.05N</p> <p>Weight</p> <p>- 1x 10N</p> <p>- 1x 20N</p> <p>- Weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</p> <p>-Material - Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</p> <p>Dimensions and weight</p> <p>LxWxH: 300x300x300mm</p> <p>Weight: approx. 15kg</p>
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**Procurement 13:**  
**Flywheel Apparatus**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>Flywheel Apparatus</p> <p><b>Experiment No. 07</b></p> <p><b>(As per IMU syllabus)</b></p>	<p><b>Objectives:</b></p> <p>- Determine the mass moment of inertia by experiment</p> <p>- Dynamic fundamental law of rotational movement</p> <p><b>Technical Specification:</b></p> <p>[1] Investigate the inertia of a flywheel</p> <p>[2] Generate a uniformly accelerated rotational motion of the flywheel</p> <p>[3] Driven by weights</p> <p>[4] Influence of weight on time taken to roll down</p> <p>[5] Measure the time and the acceleration distance</p> <p>[6] Determine the mass moment of inertia</p> <p>[7] Bracket for wall mounting</p>

	<p><b>Technical Data</b></p> <p>Flywheel</p> <ul style="list-style-type: none"> <li>- diameter: 300mm</li> <li>- thickness: 40mm</li> <li>- mass: @ 22 kg</li> </ul> <p>Shaft</p> <ul style="list-style-type: none"> <li>- diameter: 22mm</li> </ul> <p>Weight for the drive</p> <ul style="list-style-type: none"> <li>- 1x 1N (hanger)</li> <li>- 4x 1N</li> <li>- 3x 5N</li> </ul> <p>- weights should have Calibrated certificate from any national level certification authority e.g ISO 10012/ ISO 17025 or equivalent</p> <p>Material - Choice of material comprising non-magnetism of 316 grade/stainless steel of E1/E2/F1 class and 304 grade stainless steel</p> <p>Dimensions and Weight</p> <p>LxWxH: 250x350x1500mm</p> <p>Weight: approx. 30kg</p>
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**Procurement 14:**  
**Belt Friction Apparatus**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<p>Belt Friction Apparatus</p> <p><b>Experiment No. 08 (As per IMU syllabus)</b></p>	<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>[1] Function of a belt drive</li> <li>[2] Belt friction and comparison of different belt materials and types</li> <li>[3] Ball-bearing mounted pulley with 3 different belt grooves</li> <li>[4] 2 flat belts made of different materials, 1 v-belt and 1 cable</li> <li>[5] Wrap angle of the belts 30°...180°, graduation 15°</li> <li>[6] Force measurement with 2 spring balances</li> </ul> <p><b>Technical Data:</b></p> <p>Flat belts</p> <ul style="list-style-type: none"> <li>- 1x leather/polyamide, 15x2,2mm, Extremultus LT10</li> <li>- 1x polyamide, 15x0,6mm, Extremultus TT2</li> </ul> <p>V-belt</p> <ul style="list-style-type: none"> <li>- ISO 4184</li> <li>- profile: SPZ</li> <li>- 9.7x8.0mm, rubber/fabric</li> </ul> <p>Cable</p> <ul style="list-style-type: none"> <li>- hemp, Ø=3mm</li> </ul> <p>Pulley</p> <ul style="list-style-type: none"> <li>- Ø=300mm</li> </ul>

	- material: grey iron Dynamometer: 100N $\pm$ 1N Dimensions and weight LxWxH: 700x350x1100mm Weight: approx. 47kg
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**Procurement 15:**

**Bifilar/Trifilar Suspension Apparatus**

<b>Equipment</b>	<b>Objective and Technical Specification</b>
<b>Bifilar/Trifilar Suspension Apparatus</b>  <b>Experiment No. 11</b> <b>(As per IMU syllabus)</b>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>- Influence of thread length on the oscillation period</li> <li>- Determine the mass moment of inertia</li> </ul> <p><b>Technical Specification:</b></p> <ul style="list-style-type: none"> <li>[1] Investigation of the vibration behaviour of various pendulum bodies in bifilar and trifilar suspension</li> <li>[2] Investigation of a mathematical pendulum (bifilar) and a physical pendulum (trifilar)</li> <li>[3] Choice of three pendulum bodies: beam, cylinder, circular ring</li> <li>[4] Change the thread length with a clamping device</li> <li>[5] Stopwatch to measure the oscillation period</li> <li>[6] Determine the mass moment of inertia</li> <li>[7] Bracket for wall mounting</li> </ul> <p><b>Technical data</b></p> <p>Pendulum bodies</p> <ul style="list-style-type: none"> <li>• beam           <ul style="list-style-type: none"> <li>-LxWxH: 40x40x160mm</li> <li>-mass: 2kg</li> </ul> </li> <li>• cylinder           <ul style="list-style-type: none"> <li>-diameter: 160mm</li> <li>-height: 19mm</li> <li>-mass: 3kg</li> </ul> </li> <li>• circular ring           <ul style="list-style-type: none"> <li>-outer diameter: 160mm</li> <li>-inner diameter: 100mm</li> <li>-height: 41mm</li> <li>-mass: 4kg</li> </ul> </li> </ul> <p>Thread length: up to 2000mm</p> <p>As per ISO quality norms; Should be able to take up the load.</p> <p>Stopwatch: 1/100s</p> <p>LxWxH: 205x200x2000mm Weight: approx. 12kg</p>

**Procurement 16:**  
**Centrifugal governor**

Equipment	Objective and Technical Specification
<p><b>Centrifugal governor</b></p> <p>(a). Watt Governor,</p> <p>(b). Hartnell Governor,</p> <p>(c). Porter Governor</p> <p>(d). Proell Governors,</p> <p><b>Experiment No. 9 &amp; 10</b></p> <p><b>(As per IMU syllabus)</b></p>	<p><b>Learning Objectives</b></p> <ul style="list-style-type: none"> <li>- Kinetics and kinematics of the following centrifugal systems</li> <li>- Porter governor; proell governor; hartnell governor</li> <li>- Adjustment of centrifugal governors</li> <li>- Recording the governor characteristic curves and setting curves</li> <li>- Calculation of the structural design and adjustment of different governors</li> </ul> <p><b>Experiments :</b></p> <ul style="list-style-type: none"> <li>• Finding characteristic curves of governor speed against sleeve lift.</li> <li>• Comparison of governor types in terms of sensitivity, stability and effort.</li> <li>• On the Porter and Proell governors, the effects of varying centre sleeve mass.</li> <li>• On the Hartnell governor, the effect of varying: <ul style="list-style-type: none"> <li>– arm length</li> <li>– spring rate</li> <li>– spring compression</li> <li>– rotating mass</li> </ul> </li> <li>• Demonstration of the isochronous condition (Hartnell governor).</li> </ul> <p><b>Objectives:</b></p> <p>[1] How centrifugal systems work</p> <p>[2] Three different centrifugal governors: porter, proell and hartnell governors</p> <p>[3] Versatile range of variations on the governors: adjustment of the centrifugal mass, the sleeve force and the spring preload</p> <p>[4] Continuous adjustment of speed via a potentiometer</p> <p>[5] Drive with dc motor</p> <p>[6] Digital speed display</p> <p>[7] A sensor measures the position (lift) of each governor sleeve as it rises</p>

[8] Protective cover with electronic coupling to the drive ensures safe operation

**Technical Specification:**

A base unit contains a variable-speed motor oMaximum Velocity 300 rev.min-1

- The motor turns each of three different governors: Proell, Porter and Hartnell style
- Each governor uses rotating weights (masses) and levers to raise a 'sleeve'
  - Proell governor
    - sleeve mass: 3x 100g
    - centrifugal mass: 2x 150g
  - Porter governor
    - sleeve mass: 3x 100g
    - centrifugal mass: 2x 400g
  - Hartnell governor
    - centrifugal mass: 2x 400g
    - 2 compression springs, adjustable spring preload
- The Porter and Proell governors raise the sleeve against the action of gravity
- The Hartnell governor raises the sleeve against a compression spring
- Additional springs (supplied) allow the user to vary the spring rate of the Hartnell governor

Spring 1

- Outside Diameter 32 mm
- Length 102 mm
- Wire Diameter 2.64 mm
- Spring Rate 1.23 N.mm-1
- Mass 70g ;

Spring 2

- Outside Diameter 38 mm
- Length 102 mm
- Wire Diameter of 3.2 mm
- Spring Rate 2.07 N.mm-1
- Mass 130g

- A sensor measures the position (lift) of each governor sleeve as it rises
- Additional weights (supplied) allow the user to vary the mass of the sleeve of the Porter and Proell governors 4x 50 g

- Users may also adjust the arm length and rotating mass of the Hartnell governor.
- The clear safety dome includes an interlock that shuts off power to the motor
- The base unit includes a motor control and a multiline display
- The control includes unique direction, coarse and fine velocity adjustment and 'press to stop' functions
- The display shows governor velocity (speed) in units of revolutions per minute and radians per second, and also shows sleeve lift

Specifications of safety dome:

Net Dimensions and Weights:

Base Unit with safety dome:

600 mm wide x 600 mm front to back x 370 mm high and  
18 kg Governors and additional parts: 4 kg

Electrical Supply:

Single-phase 90 VAC to 264 VAC

50 Hz to 60 Hz; to run DC motor from AC;

DC motor

- max. power: 35W

Speed control: 60...400rpm

Operating Conditions:

Operating Environment: Laboratory

Storage Temperature Range: -25° C to + 55° C

Operating Temperature Range: +5° C to + 50° C

Operating Relative Humidity Range: 80 % at temperatures < 31° C  
decreasing linearly to 50% at 40° C

Sound Level: Less than 70 dB(A)

## Annexure II

(Technical Bid-Cover 1)

[On the Letter head of the Bidder and to be put in a separate sealed cover]

### Tender for “Procurement of Applied Mechanics Lab Equipments for School of Marine Engineering” at Indian Maritime University Kolkata Campus.

Ref: IMU/KC/AML/02 dated 12.02.2021

From  
Name & Address of the Bidder

Ph: Email:

To  
The Director,  
Indian Maritime University,  
P-19, Taratala Road ,  
Kolkata – 700088.

Dear Sir,

We hereby submit our Technical Bid for “Procurement of Applied Mechanics Lab Apparatus” at Indian Maritime University Kolkata Campus.

#### 1. Compliance Statement:

Sl. No	Item Description	Compliance to Specification Yes/No
1	Whether the bidder could supply the equipment as per the technical specification in Annexure I and as per bid	

#### 2. Experience in the business of providing Similar Supply Since 2016-2017 or earlier:

Sl	Eligibility Criteria details	Bidders Confirmation
1	Whether in the business of Providing Similar Supply Since 2016-2017 or earlier & meet this eligibility criteria (Yes / No)	
a)	Since which Year?:	
b)	Mode of Proofs enclosed:	Page No.
(i)		
(ii)		
(iii)**		

\*\* - May add more rows as required

**3. A. Similar Supply with minimum value specified in any one of the three set of values (a or b or c) carried out during the last five financial years (2016-17 to 2020-21):**

Sl. No	Eligibility Criteria details	Bidders Confirmation
A	Whether carried out similar supply with minimum value specified in any one of the three set of minimum value of contract (a or b or c) during 2016-17 to 2020-21 & thereby meet this eligibility criteria (Yes / No)	
a)	At least one similar supply with a minimum value of Rs.12 lakhs: (Yes / No)	
b)	At least two Similar Supply with a minimum value of Rs.9 lakhs each (Yes / No)	
c)	At least three Similar Supply with a minimum value of Rs.6 lakhs each (Yes / No)	

**3.B. Details of similar supply with minimum value specified in any one of the three set of values (a or b or c) carried out during the last five financial years (2016-17 to 2020-21) [in proof of sl. No. 3-A above]:**

Sl. No.	Client-Name Address	Equipment supplied commissioned	Work order ref	Value of supply (Rs. in Lakhs)	Date of commissioning by Bidder	Present Operational Status

\*\* - May add more rows as required

**4. Minimum Average Annual turnover:**

Sl. No.	Eligibility Criteria details	Bidders Confirmation	
(i)	Whether the bidder has an average annual turnover of at least Rs. 30 Lakhs during the past 3 financial years i.e. 2017-18, 2018-19 & 2019-20. (Yes / No)		
	Year / Proof enclosed	Turnover	Page No.
(ii)	2017-18		
(iii)	2018-19		
(iv)	2019-20		

**Other Eligibility Criteria & Essential requirements and details:**

Sl. No.	Particulars	Bidders Confirmation / Details	Details of Proof enclosed	Page No.
5.	Whether the Bidder have a valid PAN and GST Registration [YES / NO]		Copy of PAN & GST Registration Certificate enclosed	
6.	Whether the Bidder has been debarred or blacklisted by any Government department / agency so far on account of fraudulent or corrupt practices or inefficient / ineffective performance [YES/NO]		Declaration to this effect	
7.	Whether the Bidder has attached EMD for an amount of Rs.30,000.00 from Nationalized or scheduled bank [YES/NO]		Original DD No. _____ enclosed with technical bid	
8.	OEM Authorisation certificate – Annexure - III		Yes / No	
(c)	Other Modes of Proof enclosed			
	Name, Designation, Address and Telephone No. of Authorized person(s) of Firm / Agency:			
	Type of the Organisation (Sole Proprietorship / Partnership / Pvt Ltd Co / Public Ltd Co. etc.			
	Name of the Authorised Signatory with Designation			
	Address of the Bidders			
	Email Address			
	Contract Numbers			
	Any other Remarks from Bidders:			
	Specific site preparation / site infrastructure required for effective functioning of equipment required (Yes/ No). If yet to be detailed in this column or to be enclosed.			

I am also enclosing bidder memorandum and undertaking duly signed by me /us.

**Declaration**

I / We certify that all the particulars furnished above are true and correct and based on documentary evidence, and that I /we understand that if any of the above particulars is found to be false or misleading, our bid is liable to be summarily rejected at any stage and my /our firm is liable to be blacklisted / debarred by IMU for at least 3 years, in addition to any other right or remedy available to IMU including forfeiture of EMD, Security Deposit etc.

Date:  
Place:

Signature with Seal of Authorized Signatory

OEM'S AUTHORISATION CERTIFICATE TO THE BIDDER

To  
 The Director,  
 Indian Maritime University,  
 P-19, Taratala Road,  
 Kolkata – 700088.

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

Sir,

WHEREAS \_\_\_\_\_ who are official producers / authorized Sales and Service dealers, of \_\_\_\_\_ do hereby authorize \_\_\_\_\_ located at \_\_\_\_\_ (to submit a bid and sign Tender with you for resale and support of the following Products supplied by us, for the quantities, specifications and delivery schedule called for by the technical specifications associated with the above Invitation for Bids:

Product Description	Type

We hereby extend to you a full guarantee and warranty and maintenance support, availability of spares for 5 years from the date of submission of the tender, in accordance with the Conditions of Tender along with the standard product warranty, and duly authorize the Bidder to act on our behalf in fulfilling all warranty and support obligations with respect to the above-listed products offered for resale by the Bidder in relation to this Invitation for Bids.

Name \_\_\_\_\_ in the capacity of \_\_\_\_\_

Signed

Duly authorized to sign the authorization for and on behalf of \_\_\_\_\_

Dated on \_\_\_\_\_ day of \_\_\_\_\_

**Note: This letter of authorization must be on the letterhead of the supplier, must be signed by a person competent and having the power of attorney to bind the supplier, and must be included by the Bidder in its bid.**

**BIDDER MEMORANDUM & UNDERTAKING**

[to be signed enclosed with technical bid by the bidder.]

1. General Description:  
Tender for “Procurement of Applied Mechanics Lab Apparatus” at Indian Maritime University Kolkata Campus.  
Tender No. IMU/KC/AML/02 dated 12.02.2021
2. Period of Warranty: 6 Years
3. Forfeiture of Earnest Money Deposit & Undertakings by the Bidder
  - a) Should this tender be accepted in whole or in Part, I / we here agree:  
  
to terms and abide and fulfil all conditions annexed hereto and all the terms and provisions contained in the all parts of the tender documents so far as applicable and/or in default thereof the EMD paid by me will be forfeited in favour of IMU KC.
  - b) To execute all the supply and services referred to there in the tender documents upon the terms and conditions contained or referred to therein and carryout such deviations as may be ordered by IMU KC.
  - c) This is to certify that I/We before signing this bid have read and fully understood all the terms and conditions and instructions contained therein and undertake to abide by the all the terms and conditions laid down in the tender/bid documents.
4. I/We abide by all the laws and statutory provisions applicable to the contract.

SIGNATURE.....

FOR AND ON BEHALF OF .....

DATE.....

**Price Bid (Cover II)**  
**FORM OF TENDER**

Note: This Memorandum forms part of the Tender must be on the letterhead of the bidder, duly filled in, signed & sealed and enclosed along with the Tender.

To  
The Director,  
Indian Maritime University,  
P-19, Taratala Road,  
Kolkata – 700088.

Ref: Tender No. IMU/KC/AML/02 dated 12.02.2021

Sir,

WHEREAS \_\_\_\_\_ who are official producers / authorized Sales and Service dealers, of \_\_\_\_\_ do hereby authorize \_\_\_\_\_ located at \_\_\_\_\_ to submit a bid and sign Tender with you for sale and support of the following Products supplied by us, for the quantities, specifications and delivery schedule called for by the technical specifications associated with the above Invitation for Bids:

We hereby extend to you a full guarantee and warranty and annual maintenance support, availability of spares for the period covering warranty and annual maintenance contract period from the date of submission of the tender.

SIGNATURE.....

FOR AND ON BEHALF OF .....

DATE .....

## PRICE BID

“Procurement of Applied Mechanics Lab Apparatus” at Indian Maritime University designated Campus as per the tender document complying with all the conditions stipulated in various parts of the tender documents including its annexure and schedules.

Detailed Price Bid is enclosed as Schedule 1

Yours faithfully,

Date:

Place:

Signatory

Signature with Seal of Authorized

<b>PRICE BID</b>							
<b>SCHEDULE 1</b>							
<b>Procurement of Applied Mechanics Lab Apparatus at Indian Maritime University designated Campus as per the tender document complying with all the conditions stipulated in various parts of the tender documents including its annexure and schedules.</b>							
<b>Ref: Tender No. IMU/HQ/AML/02 dated 12.02.2021</b>							
<b>Sl. No</b>	<b>Equipment Name</b>	<b>Qty</b>	<b>Make &amp; Mode</b>	<b>Rate per unit (in Rs.)</b>	<b>GST rate and amount in Rs.</b>	<b>Total including Unit Rate and GST (in Rs.)</b>	<b>Total Amount (in Rs.)</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7=5+6</b>	<b>8=7×3</b>
<b>1</b>	Wall jib crane	4					
<b>2</b>	Shear Leg Apparatus	4					
<b>3</b>	Derrick Crane	4					
<b>4</b>	Bell crank lever	4					
<b>5</b>	Simply supported beam	6					
<b>6</b>	Inclined Plane Friction Apparatus	4					
<b>7</b>	Screw Jack	4					
<b>8</b>	Worm and Worm Wheel	4					

9	Compound Wheel and Axle	4					
<b>Sl. No</b>	<b>Equipment Name</b>	<b>Qty</b>	<b>Make &amp; Mode</b>	<b>Rate per unit (in Rs.)</b>	<b>GST rate and amount in Rs.</b>	<b>Total including Unit Rate and GST (in Rs.)</b>	<b>Total Amount (in Rs.)</b>
1	2	3	4	5	6	7=5+6	8=7×3
10	Single Purchase Crab	4					
11	Double Purchase Crab	4					
12	Thread Efficiency Testing Equipment	4					
13	Flywheel Apparatus	4					
14	Belt Friction Apparatus	4					
15	Bifilar/Trifilar Suspension Apparatus	4					
16	Governors Hartnell, Porter and Proell Governors, Centrifugal clutch to demonstrate the process of Power parameters of the Hartnell Governor	4					
<b>Total Amount in Figures</b>							
<b>Total Amount in Words</b>							
Name							Signature
Place							

## FORM OF BANK GUARANTEE

Bank Guarantee No: \_\_\_\_\_ Date: \_\_\_\_\_ Valid up to \_\_\_\_\_

To  
The Director,  
Indian Maritime University,  
P-19, Taratala Road  
Kolkata – 700088.

Sir,

In consideration of Indian Maritime University Kolkata Campus, P-19, Taratala Road , Kolkata – 700088, West Bengal (hereinafter referred to as “IMU KC”) which expression shall mean and include its successors and assignees and having an Order No. \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ (hereinafter called “The Contract”) which expression shall include all the amendments thereto with \_\_\_\_\_ having its Registered Office at \_\_\_\_\_ (hereinafter referred to as “The Supplier”), which expression shall unless repugnant to the context or meaning thereof, shall include all its successors, administrators, executors and assignees and IMU KC , having agreed that the Supplier shall furnish the IMU KC, a Bank Guarantee for of \_\_\_\_\_ (Rupees \_\_\_\_\_ only) as per the terms of Tender document No \_\_\_\_\_ dated \_\_\_\_\_ and Order dated \_\_\_\_\_.

We, \_\_\_\_\_ registered under the laws of India having its registered / head office at \_\_\_\_\_, (hereinafter referred to as the Bank) which expression shall unless repugnant to the context of meaning thereof, include all its successors, administrators, executors and permitted assignees do hereby guarantee and undertake to pay immediately on first demand in writing and any/all monies to the extent of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) without any demur, reservation, contest or protest and/or without any reference to the Supplier. Any such demand made by the IMU KC, on the Bank by serving return notice shall be conclusive and binding, without any proof, on the bank as regards the amount due and payable, notwithstanding any dispute pending before any Court, Tribunal, Arbitrators or any other Authority and/or any other matter or things whatsoever, as liability under these presents being absolute and unequivocal. We agree that Guarantee herein contained shall be irrevocable and shall continue to be enforceable until it is discharged by IMU KC, in writing. This guarantee shall not be determined, discharged or affected by liquidation, winding up, dissolution or insolvency of the Supplier and shall remain valid, binding and operating against the Bank.

The Bank also agrees that IMU KC, of its option shall be entitled to enforce this Guarantee against the bank as a principal debtor, in the first instance, without proceeding against the Supplier and notwithstanding any security or other guarantee that IMU KC may have in relation to the Supplier’s liabilities.

The Bank, further agrees that IMU KC , shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extent time of performance by the said Supplier from time to time or to postpone for any time or from time to time exercise of any of the powers vested in IMU KC , against the said the Supplier

and forebear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Supplier or for any forbearance, act or omission on the part of IMU KC , or any indulgence by IMU KC , to the said Supplier or any such matter or thing whatsoever which under the laws relating to the sureties would, but for this provision have effect of so relieving us.

The Bank further agrees that the guarantee herein contained shall remain in full force until \_\_\_\_\_ and all dues of IMU KC, under or by virtue of this contract have been fully paid and its claim satisfied or discharged or till IMU KC, discharges the guarantee in writing, whichever is earlier.

This guarantee shall not be discharged by any change in our constitution, in the constitution of IMU KC, of that of the Supplier.

The Bank confirms that this Guarantee has been issued with observance of the appropriate laws of the country of issue.

The Bank also agrees that this Guarantee shall be governed and construed in accordance with Indian Laws and subject to the exclusive jurisdiction of Indian Court of the place from where tenders have been invited.

We further agree that as between us and IMU KC, for the purpose of this Guarantee any notice given to us by IMU KC, that the money is payable by the Supplier and any amount claimed in such notice by IMU KC, shall be conclusive and binding on us notwithstanding any difference between IMU KC, and the Supplier or any dispute pending before any Court, Tribunal Arbitrator or any other authority. We further agree that this Guarantee shall not be affected by any change in our constitution or that of Supplier. We also undertake not to revoke this Guarantee during its currency.

Notwithstanding anything contained herein above, our liability under this Guarantee is limited to Rs. \_\_\_\_\_/- (Rupees \_\_\_\_\_ only) and Guarantee shall remain in force until \_\_\_\_\_.

We must receive any claim under this Guarantee before the expiry of this Bank Guarantee. If we have received no such claim by the said date, the rights of IMU KC, under this Guarantee will cease. However, if such a claim has been received by us within the said date, all the IMU KC's right under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

In witness whereof, the Bank through its authorized officer has set its hand and stamp on this \_\_\_\_\_ Day of \_\_\_\_\_ 2021 at \_\_\_\_\_.

Date:

Authorized Signatory of the bank

Place:

(with Bank Seal)

Witness No.1

Witness No.2