



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**  
**Chennai 600 036**



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The Manager (Project Purchase)

Date:20.03.2023

Open Tender Reference No: CE/ARUN/90/2023/SSMSB2

GEM NAR ID: GEM/GARPTS/20032023/YOL2CMHZSY7U

Due Date/Time: 27.03.2023@ 3:00 PM

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, Tenders are invited in two bid system from Class-I local suppliers and Class II local suppliers, for the supply of **“Video recording Equipment for in-classroom lecture hall”** Conforming to the specifications given in **Annexure -A**.

Tender Documents may be downloaded from Central Public Procurement Portal <https://etenders.gov.in/e procure/app>. Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website <https://etenders.gov.in/e procure/app>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at **“Help for contractors”**. [Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this eProcurement Portal”]

Bidders can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type ‘IIT’. Thereafter, click on “GO” button to view all IIT Madras tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://etenders.gov.in/e procure/app> as per the schedule attached.

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| <b>1)</b> | <b>Pre-bid Meeting Details</b>  | : | NA   |
| <b>2)</b> | <b>ICSR Vendor Registration</b> | : | <p><b>Vendor registration code.</b> Vendor registration with IC&amp;SR (IITM) is mandatory for bidders to participate in tenders.</p> <p><b>** For Vendor Registration &amp; Guidelines, Please follow the website :</b><br/> <a href="https://icandsr.iitm.ac.in/vendorportal">https://icandsr.iitm.ac.in/vendorportal</a>;<br/>                     Helpdesk: <a href="mailto:vendorhelpdesk@icsrpis.iitm.ac.in">vendorhelpdesk@icsrpis.iitm.ac.in</a></p> |

**No manual bids will be accepted.** All tender documents including Technical and Financial bids should be submitted in the E-procurement portal.

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| <b>Last date for receipt of tender</b>      | : | <b>27.03.2023 @ 3:00 PM</b> |
| <b>Date &amp; time of opening of tender</b> | : | <b>28.03.2023 @ 3:00 PM</b> |

### 3. Instructions to the Bidder:

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| <u>A)</u> | <b>Searching for tender documents</b> | : | <ul style="list-style-type: none"> <li>• There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.</li> <li>• Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective “<b>My Tender</b>” folder. This would enable the CPP Portal to intimate the bidders through SMS / email in case there is any corrigendum issued to the tender document.</li> <li>• The bidder should make a note of the <b>unique Tender ID</b> assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.</li> </ul>   |
| <u>B)</u> | <b>Assistance to bidders</b>          | : | <ul style="list-style-type: none"> <li>• Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.</li> <li>• Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is [0120-4200462, 0120-4001002, 0120-4001005]</li> </ul>   |
| <u>C)</u> | <b>Enrollment Process to Bidders</b>  | : | <p><b><u>REGISTRATION</u></b></p> <ul style="list-style-type: none"> <li>• Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal <a href="https://etenders.gov.in/eprocure/app">URL:https://etenders.gov.in/eprocure/app</a> by clicking on “Online Bidder Enrollment”. Enrollment on the CPP Portal is free of charge.</li> <li>• As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.</li> <li>• Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.</li> <li>• Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.)</li> <li>• Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.</li> <li>• Bidder then may log in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.</li> <li>• Possession of a Valid Class II/III Digital Signature Certificate</li> </ul> |

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|                  |                            |   | <p>(DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <a href="https://etenders.gov.in/eprocure/app">https://etenders.gov.in/eprocure/app</a></p> <ul style="list-style-type: none"> <li>Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <a href="https://etenders.gov.in/eprocure/app">https://etenders.gov.in/eprocure/app</a> under the “Information about DSC”.</li> </ul>   |
| <b><u>D)</u></b> | <b>Preparation of bids</b> | : | <ul style="list-style-type: none"> <li>Bidder should take into account any corrigendum published on the tender document before submitting their bids.</li> <li>Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.</li> <li>Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender document / schedule and generally shall be in PDF / XLS formats as the case may be. Bid documents may be scanned with 100 dpi with black and white option.</li> <li>To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, GSTIN Details, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “<b>My Documents</b>” area available to them to upload such documents. These documents may be directly submitted from the “<b>My Documents</b>” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.</li> </ul> |
| <b><u>E)</u></b> | <b>Submission of bids</b>  | : | <ul style="list-style-type: none"> <li>Bidder should log into the site well in advance for bid submission so that he/she can upload the bid in time i.e. on or before the bid submission date and time. Bidder will be responsible for any delay due to other issues.</li> <li>The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.</li> <li>Bidder has to select the bid security declaration. Otherwise, the tender will be summarily rejected.</li> <li>A standard BOQ format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BOQ file, open it and complete the detail with their respective financial quotes and other details (such as name of the bidder). If the BOQ file is found to be modified by the bidder, the bid will be rejected.</li> <li>The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The</li> </ul>  |

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|           |                                 | <p>bidders should follow this time during bid submission.</p> <ul style="list-style-type: none"> <li>• The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to local issues.</li> <li>• The uploaded tender documents become readable only after the tender opening by the authorized bid openers.</li> <li>• Upon the successful and timely submission of bids, the portal will give a successful bid submission message &amp; a bid summary will be displayed with the bid no. and the date &amp; time of submission of the bid with all other relevant details.</li> <li>• Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.</li> <li>• More information useful for submitting online bids on the CPP Portal may be obtained at: <a href="https://etenders.gov.in/eprocure/app">https://etenders.gov.in/eprocure/app</a>.</li> <li>• All tender documents including pre-qualification bid, Technical Bid &amp; Financial Bid should be submitted separately in online CPP portal as per the specified format only. Right is reserved to ignore any tender which fails to comply with the above instructions. <b>No manual bid submission will be entertained.</b></li> </ul> |
| <b>F)</b> | <b>Marking on Technical Bid</b> | <ul style="list-style-type: none"> <li>• The bidder eligibility criteria, technical specification and supply of item for this tender is given in Annexure A.</li> <li>• The Bidders shall go through the specification and submit the technical bid.</li> <li>• The Technical bid should be submitted in the proforma as per Annexure-B in pdf format only through online (e-tender). No manual submission of bid will be entertained.</li> <li>• The technical bid should have a page-wise heading as “Technical Bid” and page no. in all pages with seal and signature of authorized signatory. The total no. of pages should be mentioned at the last page of the documents.</li> <li>• The technical bid should consist of bidder eligibility criteria details and all technical details along with catalogue/ pamphlet which will give a detailed description of product with technical data sheet so that technical compliance can be verified.</li> </ul>   |
| <b>G)</b> | <b>Marking on Price Bid</b>     | <ul style="list-style-type: none"> <li>• Financial bid (BoQ) should be submitted in the prescribed proforma format as per Annexure-C in xls format through e-tender only. No manual or other form of submission of Financial Bid will not be entertained</li> </ul>  |

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| <b>4)</b> | <p><b>Preparation of Tender:</b> The bidders should submit the bids in two bid system as detailed below.</p> <p><b>Bid I _Technical Bid</b></p> <p>The technical bid should consist of bidder eligibility criteria and technical specification compliance sheet as per Annexure-B.</p> <p><b>Bid II _Price Bid</b></p> <p>The price bid should be submitted in excel format (BoQ) as per the proforma (Annexure C) uploaded in the e-Tender web site. The Quoted price should be for supply and installation of the item and inclusive of all cost and statutory levies at IIT Madras.</p> |
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| 5) | <p><b>Price:</b></p> <ul style="list-style-type: none"> <li>a) The price should be quoted only in INR net per unit (after breakup) and must include all packing, transit insurance and delivery charges to the ent of <b>Department of Chemical Engineering</b> .</li> <li>b) The rate quoted shall be all inclusive of all taxes and no extra payment will be made other than statutory revisions as per the terms and conditions stipulated in this contract document.</li> <li>c) The percentage of tax &amp; duties should be clearly indicated separately. IIT Madras is eligible for custom duty (5.5%). Relevant certificates will be issued wherever necessary.</li> <li>d) The offer/bids should be submitted through online only in two bid system i.e. Technical Bid and Financial Bid separately.</li> </ul>  |
| 6) | <p><b>Tenderer shall submit along with this tender:</b></p> <ul style="list-style-type: none"> <li>(i) Proof of having ISO or other equivalent certification given by appropriate authorities.</li> <li>(ii) Name and full address of the Banker and their swift code and PAN No. and GSTIN number.</li> <li>(iii) GST registration proof showing registration number, area of registration etc.</li> <li>(iv) All of your future correspondences including Invoices should bear the GST No. and Area Code.</li> </ul>  |
| 7) | <p><b>Terms of Delivery:</b></p> <p>Supplier will be fully responsible for the safe carriage, Installation/Commissioning of goods up to the <b>Department of Chemical Engineering</b> , IIT Madras or named place as per PO, Insurance coverage will be in the scope of the supplier.</p> <p>The tenderer should indicate clearly the time required for delivery of the item (subject to the approval of the Executive Committee-IIT-Madras). In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.</p> <p>In the event of delay or non-supply of materials/execution of Contract beyond the date of delivery/completion of job. The penalty will be levied @1% per week of delay subject to a max of 10% of the value of purchase order and if the delay is more than accepted time frame by IIT M, the PO would be partially or fully cancelled and liquidated damages will be enforced accordingly.</p> |
| 8) | <p><b>Period for which the offer will remain open:</b></p> <p>The Tender shall remain open for acceptance/validity till: 120 days from the date of opening of the tender. However, the day up to which the offer is to remain open being declared closed holiday for the Indian Institute of Technology Madras, the offer shall remain open for acceptance till the next working day.</p>   |
| 9) | <p><b>EMD:</b></p> <p>The EMD of <b>Rs.86,000</b> to be transferred to the account details mentioned in Annexure D and proof should be enclosed in the Technical Bid. Any offer not accompanied with the EMD shall be rejected summarily as non-responsive.</p> <p>The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited, if the tenderers withdraw their offer after the opening during the bid validity period. The Institute shall not be liable for payment of any interest on EMD.</p> <p>EMD is exempted for Micro and Small Enterprises (MSE) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) and Startups as recognized by Department of Industrial Policy &amp; Promotion (DIPP). (MSE/MSME/DIPP PROOF should be enclosed in the cover containing technical bid)</p>   |

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| 10) | <p><b>Performance Security: -</b></p> <p>The successful bidder should submit Performance Security for an amount of 3% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt in the name of “The Registrar, IIT Madras” from any scheduled commercial bank or Bank Guarantee from any scheduled commercial bank in India. The performance security should be furnished within 14 days from the date of the purchase order.</p> <p>Performance Security in the form of Bank Guarantee: - In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed directly to IIT Madras from the Bank.</p> <p>The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.</p> |
| 11) | For the same tender, either the OEM or the authorized dealer/service provider can only quote. But both of them cannot quote separately for the same tender.   |
| 12) | The offers/bids should be sent only for a item/Equipments of latest version that is available in the market and supplied to a number of customers. A list of customers in India with details must accompany the quotations. Quotations for a prototype machine will not be accepted   |
| 13) | Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid.   |
| 14) | Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal/OEM.   |
| 15) | <p><b>Risk Purchase Clause</b></p> <p>In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.</p>  |
| 16) | <p><b>Payment:</b></p> <p>(i) No Advance payment will be made. However, 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved.</p> <p>(ii) Advance Payment: No advance payment is generally admissible. In case a specific percentage of advance payment is required, the Vendor has to submit a Bank Guarantee from a scheduled commercial bank in India equivalent to the amount of advance payment.</p>  |
| 17) | <p><b>On-site Installation:</b></p> <p>The equipment/item or Machinery has to be installed or commissioned by the successful bidder within the number of days (as prescribed by PI) from the date of receipt of the item at the site of IIT Madras.</p>   |
| 18) | <p><b>Warranty/Guarantee:</b></p> <p>The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately (For more details please refer our Technical Specifications).</p> <p><b>** Note: PO which involves installation, warranty/guarantee shall be applicable from date of installation.</b></p>  |
| 19) | <p><b>Acceptance and Rejection:</b></p> <p>Failure to comply with any of the instructions stated in this document or offering unsatisfactory explanations for non-compliance will likely to lead to rejection of offers.</p> <p>I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the</p>   |

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|     | quantity offered or reject it in full without assigning any reason.  |
| 20) | <p><b>Debarment from Bidding:</b></p> <p>In case of breach of Terms &amp; Conditions, Bidder may be suspended from being eligible for bidding in any contract with the IIT Madras up to 2 Years [as per Rule 151(iii) of GFR] from the date of Tender.</p>   |
| 21) | <p><b>Disputes and Jurisdiction:</b></p> <p><b>Settlement of Disputes:</b> Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate an arbitrator. The Dean IC&amp;SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceeding shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&amp;SR IIT Madras, Chennai.</p> <p>a. <b>The Applicable Law:</b> The Purchase Order shall be construed, interpreted and governed by the Laws of India. Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.</p> <p>b. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.</p> |
| 22) | <p><b>Force Majeure:</b> The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <p>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.</p> <p>If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser 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.</p>  |
| 23) | <p><b>Eligibility Criteria:</b></p> <ul style="list-style-type: none"> <li>➤ <b>As per the Government of India Order, only “Class - I Local Suppliers” and “Class - II Local Suppliers” <u>can participate in this tender.</u></b></li> <li>➤ <b><u>Bidder should confirm their acceptance that they comply with the provisions with report to “Guidelines for eligibility of a bidder from a country which shares a land border with India as detailed at Annexure-F. The bidder should submit Certificate for “Bidder from/ Not from Country sharing Land border with India &amp; Registration of Bidder with Competent Authority” as per Order of DoE F.No.6/18/2019-PPD dated 23.07.2020 as mentioned.</u></b></li> </ul>  |
| 24) | <p><b>Preference to “class I Local Suppliers”:</b> preference will be given to “class 1 local suppliers” (subject to class -I local supplier’s quoted price falling within the margin of purchase preference ) as per public procurement (preference to make in India) order 2017 .O.M No P- 45021/2/2017 – pp(BE - 11) dt 04/06/2020 subject to the conditions that the “class 1 Local Supplier” should agree to supply goods /</p>   |

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|     | <p>provide service at L1 rate and furnish a certificate with the technical bid document that the goods/service provided by them consists local content equal to or more than 50%.( certificate from Chartered Accountant in case value of contract exceeds Rs 10 crore).</p> <ul style="list-style-type: none"> <li>➤ <b>‘Class - I local supplier’</b> means a supplier or service provider whose goods, services or works offered for procurement consists of local content equal to or more than 50% as defined under the above said order. <b>Declaration to be provided as per Annexure-II per item/service/work.</b></li> <li>➤ <b>‘Class - II local supplier’</b> means a supplier or service provider whose goods, services or works offered for procurement consists of local content equal to 20% but less than 50% as defined under the above said order. <b>Declaration to be provided as per Annexure-II per item/service/work.</b></li> <li>➤ <b>‘Margin of purchase preference’:</b> - The margin of purchase preference shall be 20%. The Definition of the margin of purchase preference is defined in the Govt. of India Order No: <b>P-45021/12/2017-PP (BE-II) Dt.4th June, 2020) Order 2017. As per the Government of India Order – “Margin of Purchase Preference” means the maximum extent to which the price quoted by a “Class-I local supplier” may be above the L1 for the purpose of purchase preference.</b></li> </ul> <p><b>**Note: Local content percentage to be calculated in accordance with the definition provided at clause 2 of revised public procurement preference to Make in India Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020) MOCI order No. 45021/2/2017-PP (BE II) Dt.16th September 2020 &amp; P-45021/102/2019-BE-II-Part(1) (E-50310) Dt.4th March 2021</b></p> |
| 25) | <p><b>Evaluation of Bids</b></p> <p>Bid evaluation will take place in two stages.</p> <p><b>Stage I Technical Bid evaluation</b></p> <p>All bidders who have fully complied with bidder eligibility criteria I, II and technical evaluation (Annexure A) will only be considered for opening of price bid.</p> <p><b>Stage II: Price Bid Evaluation</b></p> <p>The price bid evaluation will be based on price quoted by the bidder. The rate quoted for <b>“Video recording Equipment for in-classroom lecture hall”</b> unit will alone be taken up for arrival of Lowest Bid (L1) value.</p>  |
| 26) | <p><b>Selection of successful bidder and Award of Order</b></p> <p>The order will be directly awarded to the technically qualified bidder as per the condition in para 3A of DIPP, MoCI Order No. 45021/2/2017-PP (BE II) dated 16th September 2020.</p>   |
| 27) | <p>All information including selection and rejection of technical or financial bids of the prospective bidders will be communicated through e-Tender portal. In terms of Rule 173(iv) of General Financial Rule 2017, the bidder shall be at liberty to question the bidding conditions, bidding process and/or rejection of bids.</p>   |
| 28) | <p>The tenderer shall certify that the tender document submitted by him / her are of the same replica of the tender document as published by IIT Madras and no corrections, additions and alterations made to the same. If any deviation found in the same at any stage and date, the bid / contract will be rejected / terminated and actions will be initiated as per the terms and conditions of the contract.</p>  |
| 29) | <p>Due to Covid-19 pandemic pre-bid meeting will be conducted through online. Clarification to the queries and doubts raised by the bidders will be issued as a corrigendum/addendum in the e-tenders portal.</p>  |
| 30) | <p>Due to Covid-19 pandemic the bidders will not be entertained to participate in opening of Bids. Since the tender is e-tender, the opening of the bids may be checked using the respective logins of the bidders.</p>  |



## **ACKNOWLEDGEMENT**

It is hereby acknowledged that I/We have gone through all the points listed under “Specification, Guidelines, Terms and Conditions” of tender document. I/We totally understand the terms and conditions and agree to abide by the same.

**SIGNATURE OF TENDERER ALONG WITH SEAL OF  
THE COMPANY WITH DATE**

**Bidder Eligibility Criteria and Technical Specification for “Video recording Equipment for in-classroom lecture hall**

Tender No. CE/ARUN/90/2023/SSMSB2

**Bidder Eligibility Criteria – I (Public Procurement – Preference to Make in India)**

Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE-II) dated 16<sup>th</sup> September 2020 and other subsequent orders issued therein.

**Bidder Eligibility Criteria – II**

- The bidder/OEM should have supplied at least 3 similar items to IITs, NITs, IISERs, CSIR Labs or other Govt. R&D organizations in the last 5 years, PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims.

**II. Technical Specification For “Video recording Equipment for in-classroom lecture hall”**

| SNO | ITEM NAME                                       | SPECIFICATIONS  |                              | QTY |
|-----|---|---|------------------------------|-----|
| 1   | Ceramic Green Board                             | 12X4 Feet Resin coated Ceramic Green Board for Class Room with chalk and duster holder.   |                              | 1   |
|     |   | The Board should be suitable for academic purpose and framed in double sided curved anodized and chrome plated ABS Corners for good aesthetics and longevity. |                              |     |
| 2   | Motorized Green Matt Screen                     | 12X8 feet motorized green matt with remote  |                              | 1   |
| 3   | Liights for Board for Pelmut                    | Pelmut with flicket free lights for the board ( quantity depending on the size of the board / make and model)   |                              | 1   |
| 4   | Tiltable and Rotateable Interactive Pen Display | Display Type  | LCD                          | 1   |
|     |   | Display Panel Diagonal size (mm)  | 59.94 cm (23.6 in) or better |     |
|     |   | Width of The Effective Display Area of The Panel (mm)   | 677mm/26.65" or better       |     |
|     |   | Height of The Effective Display Area of The Panel (mm)  | 394mm/15.5" or better        |     |

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|  | Display Technology                      | IPS or better  |
|  | Aspect Ratio                            | 16:9 or better   |
|  | Display Resolution (Pixels)             | 4K or higher   |
|  | Colour Performance                      | 1.07 billion colours (10 bit) or more  |
|  | Display Brightness (cd/m2)              | ≥350 cd/m2   |
|  | Viewing Angle                           | 176° (88°/88°) H, 176° (88°/88°) V or better   |
|  | Contrast Ratio                          | 1000:1 or higher   |
|  | Connectivity                            | 4 x USB 3 ports, 1 x USB C port, 1 x HDMI2.0 port, 1 x Display Port, 2 USB-A Ports or better   |
|  | Graphics Input                          | USB type C port, DisplayPort, HDMI2.0 port or better   |
|  | Finger Touch                            | Must be available  |
|  | Touch Technology                        | Projected capacitive - on touch or better  |
|  | Pen                                     | Battery-free Pro Pen 2 with 2 customizable side switches and 8192 pressure levels in both pen tip and eraser (patented electromagnetic resonance method) |
|  | Number of touch points                  | 10 or higher   |
|  | Response Rate                           | 14 ms (typ.)   |
|  | Pen technology                          | Electromagnetic Resonance  |
|  | Pen Tilt Recognition / Range            | ±60 levels / 60 degrees  |
|  | Built-in Microphone, Audio Headset Jack | Yes  |
|  | Multi-Touch                             | Yes  |

|   |  |   |  |   |
|---|--|---|--|---|
|   |  | Stand   | Raise, tilt and rotate and counter weight base for stability |   |
| 5 | Lapel Wireless Microphone with matching receivers from same make as that of transmitters                   | <p>Wireless lapel mic unidirectional system with belt pack transmitter and rack mount type receiver.</p> <ul style="list-style-type: none"> <li>- The transmitter supports lapel and mic</li> <li>- The transmitter should operate on AA size batteries rechargeable</li> <li>- RF Power 30 mw or better</li> <li>- The working range between transmitter and receiver should be a minimum of 30 mtr.</li> <li>- Receiver</li> <li>- S/N ratio 110 dB at 40 kHz or better</li> <li>- Total harmonic dispersion less than 0.9%</li> <li>- Frequency response-18Hz to 18 KHz or better.</li> <li>- Transmitter</li> </ul> <p>Microphone element Cardioid - Cardioid dynamic</p> |  | 2 |
| 6 | <b>Professional LED Lights (Approved Makes: Canara Lighting/Leksa Lighting/Ilfords) with ceiling mount</b> | Power   | 120/180 Watts or better                                      | 3 |
|   |  | Dimmable  | Yes  |   |
|   |  | The LED Lights should include all the accessories such as Barn Door, Cables, Heavy Duty Light Stand, Dimmer Control Panel etc., with required filters and defusers  |  |   |
|   |  | Installation Charges should also be quoted along with the LED Lights  |  |   |
| 7 | Tiltable and Rotateable Interactive Pen Display  | Display Type  | LCD  | 1 |
|   |  | Display Panel Diagonal size (mm)  | 59.94 cm (23.6 in) or better                                 |   |
|   |  | Width of The Effective Display Area of The Panel (mm)   | 677mm/26.65" or better                                       |   |
|   |  | Height of The Effective Display Area of The Panel (mm)  | 394mm/15.5" or better  |   |
|   |  | Display Technology  | IPS or better  |   |
|   |  | Aspect Ratio  | 16:9 or better   |   |

|   |                    |   |  |   |
|---|--------------------|---|--|---|
|   |                    | Display Resolution (Pixels)                       | 4K or higher   |   |
|   |                    | Colour Performance                                | 1.07 billion colours (10 bit) or more  |   |
|   |                    | Display Brightness (cd/m2)                        | ≥350 cd/m2   |   |
|   |                    | Viewing Angle                                     | 176° (88°/88°) H, 176° (88°/88°) V or better   |   |
|   |                    | Contrast Ratio                                    | 1000:1 or higher   |   |
|   |                    | Connectivity                                      | 4 x USB 3 ports, 1 x USB C port, 1 x HDMI2.0 port, 1 x Display Port, 2 USB-A Ports or better   |   |
|   |                    | Graphics Input                                    | USB type C port, DisplayPort, HDMI2.0 port or better   |   |
|   |                    | Finger Touch                                      | Must be available  |   |
|   |                    | Touch Technology                                  | Projected capacitive - on touch or better  |   |
|   |                    | Pen   | Battery-free Pro Pen 2 with 2 customizable side switches and 8192 pressure levels in both pen tip and eraser (patented electromagnetic resonance method) |   |
|   |                    | Number of touch points                            | 10 or higher   |   |
|   |                    | Response Rate                                     | 14 ms (typ.)   |   |
|   |                    | Pen technology                                    | Electromagnetic Resonance  |   |
|   |                    | Pen Tilt Recognition / Range                      | ±60 levels / 60 degrees  |   |
|   |                    | Built-in Microphone, Audio Headset Jack           | Yes  |   |
|   |                    | Multi-Touch                                       | Yes  |   |
|   |                    | Stand   | Raise, tilt and rotate and counter weight base for stability   |   |
| 8 | Hand-held Wireless | Frequency response 80-18000 Hz; Nominal impedance |  | 4 |

|  |   |   |  |   |
|--|---|---|--|---|
|  | Microphone with matching rack mount receivers from same make as that of transmitter | 150 Ohm; or better power supply AA Batteries, Sensitivity in free field – 40mV/Pa; Min terminating impedance – 1000 Ohm. XLR interface. RF power 30 milliwatt or more.<br>Working range 30 metres or more.  |  |   |
| 9  | Passive speakers  | Professional compact powered speakers of minimum 40 watts RMS. 8"/10" (2-way active speaker system) with minimum one XLR input & Loop through.<br>Frequency Response- 45Hz- 20 KHz or better<br>Power Handling Capacity 100 watt (60 watt LF & 40 watt HF)<br>SPL 110 dB or better  | 6  |   |
| 10   | Power Amplifier   | Dynamic output power 4 ohms: 2 x 120 watts<br>Dynamic output power 8 ohms: 2 x 60 watts<br>Dynamic output power bridged 8 ohms: 240 watts<br>Output power RMS 100 volts: 2 x 120 watts<br>Minimum impedance load per channel: 4 ohms<br>Power consumption (max): 300 watts<br>Height- rack units (1U=44 mm): 1 U<br>Power supply: 115 - 230 VAC | 1  |   |
| 11   | <b>4K NDI PTZ Camera with NDI (Approved Makes: Sony/Panasonic/Datavideo)</b>        | Type  | 4K PTZ Video Camera                                    | 3 |
|  |   | Image Sensor  | Min 1/1.8" or 1/2" type Exmos/MOS/CMOS or better       |   |
|  |   | Effective Pixel   | >8 Mega Pixels   |   |
|  |   | Zoom Ratio  | 20x Optical, 16x Digital Zoom or higher                |   |
|  |   | Output  | HDMI and SDI Interfaces                                |   |
|  |   |   | SDI X 1  |   |
|  |   |   | HDMI x 1   |   |
|  |   |   | NDIHX x 1  |   |
|  |   |   | Max. Output Resolution:- HDMI: 2160p@60, SDI: 1080p@60 |   |
|  |   | Input   | Tally  |   |
|  |   |   | Audio  |   |
| Streaming  | Dual Channel  |   |  |   |
| FOV  | Horizontal FOV 60° (Wide) or higher   |   |  |   |
| Required Signal format:(i) 2160/60p (ii) 1080/60p ,2160p 60/59.94/50/30/29.97/25<br>1080p 60/59.94/50/30/29.97/25<br>1080i 60/59.94/50 |   |   |  |   |

|    |  |  |  |
|----|--|--|--|
|    |  | 720p 60/59.94/50   |  |
|    |  | Electronic shutter speed   | Up to 1/10000 or better                                  |
|    |  | Focus Mode   | Auto/Manual  |
|    |  | Minimum illumination:  | 3.0 or better  |
|    |  | Gain   | Auto/Manual(0 to 36dB or better)                         |
|    |  | Sync System  | Internal / External sync                                 |
|    |  | Remote Control Interface   | IR, Web UI, RS-422, DVIP and NDI or better               |
|    |  | Panning Range  | 300° or better   |
|    |  | Tilting Range  | 130° to -15° or better                                   |
|    |  | Supported protocols  | IPv4, IPv6, UDP/IP, TCP/I                                |
|    |  | Image transmission / Video Compression Format  | H.264/H.265/MJPEG  |
|    |  | Supported Streaming Protocols  | TCP/IP, HTTP, RTSP, RTMP(S), SRT, ONVIF, DHCP, Multicast |
|    |  | The PTZ Camera should have NDI Interface & Protocol  |  |
|    |  | The Camera should be supplied along with Wall Mounting Kit and other accessories for 2 Nos. of PTZ Camera & Hydraulic Ceiling Mount with Height adjustable Option & Remote Control for 1 No. of PTZ Camera (Focused on the Students) |  |
|    |  | OEM Warranty   | 3 Years or More  |
| 12 | <b>4K Tracking PTZ Camera (Approved Makes: Sony/Panasonic/Datavideo)</b> | Image Sensor   | Min 1/2.8" /type CMOS or higher                          |
|    |  | Effective Pixel  | >8 Mega Pixels   |
|    |  | Max. Output Video Resolution   | HDMI: 2160p@60, SDI: 1080p@60                            |
|    |  | Zoom Ratio   | 20x Optical, 16x Digital Zoom or higher                  |
|    |  |  | AI/Voice Tracking including Multi/Single Person Mode     |
|    |  | FOV  | Horizontal FOV 60° (Wide) or higher                      |
|    |  |  | 1  |

|    |   |  |   |   |
|----|---|--|---|---|
|    |   | Panning Range  | 300° or better                                    |   |
|    |   | Tilting Range  | 130° to -15° or better                            |   |
|    |   | External Control   | DVIP/IP/RS-422/RS-232C control                    |   |
|    |   | Streaming Protocols  | TCP/IP, HTTP, RTSP, RTMP(S), DHCP, SRT, Multicast |   |
|    |   | Video Compression Formats  | H.264 and H.265                                   |   |
|    |   | Mounting Type  | Desktop and ceiling mountable                     |   |
|    |   | OEM Warranty   | 3 Years or More                                   |   |
|    |   | Dual/Multiple streaming outputs including 4K   |   |   |
|    |   | 100 preset memories for pan-tilt-zoom-camera settings  |   |   |
|    |   | PoE compatible   |   |   |
|    |   | Remotely control Pan, Tilt, and Zoom from PCR/NOC,   |   |   |
|    |   | Should have good video quality even in low light conditions  |   |   |
|    |   | Embedded audio should be available in , IP Stream ,HDMI and SDI output   |   |   |
|    |   | Wall/ceiling mount support for indoor cameras and pole mount support for outdoor cameras   |   |   |
| 13 | <b>PTZ Camera Controller (Approved Makes: Sony/Panasonic/Datavideo)</b> | Remote control of up-to four Pan,Tilt & Zoom cameras with speed control by large joystick  | Yes   | 1 |
|    |   | Control of Pan, Tilt and Zoom as well as Iris, Focus, Gain, AWB and other functions over standard CAT5/CAT6 cable with RJ45 connectors | Yes   |   |
|    |   | Multiple preset for Pan, Tilt & Zoom for each individual   | Yes   |   |



|    |  |  |     |
|----|--|--|-----|
|    |  | camera   |     |
|    |  | Full remote control of each camera via serial communication over affordable network cabling  | Yes |
|    |  | Automatic camera position presets  | Yes |
|    |  | Supports Sony Visca Control Protocol   | Yes |
|    |  | Tally Input  | Yes |
|    |  | XYZ Joystick Operation for Live Video Production   | Yes |
| 14 | HD Portable Video Streaming Switcher with built-in monitor all in compact closed box | Video Format:1080p 50/59.94/60Hz,1080i 50/59.94/60Hz,720p 50/59.94/60Hz  |     |
|    |  | Video Input:8x SDI, 4x HDMI  |     |
|    |  | Video Output: 5x SDI, 1x HDMI assignable: Multiview, PGM, PVW, PGM+DSK, Clean PGM, Clean PVW, Input 1-12, STILL 1, STILL 2, Flex source 3x HDMI PGM only |     |
|    |  | Analogue Audio Input:4x Balanced XLR   |     |
|    |  | Analogue Audio Output: 2x Balanced XLR   |     |
|    |  | Audio Delay Calibration:Up to 16 frames  |     |
|    |  | USK:4  |     |
|    |  | DSK:2, support Lumakey & Linear key (Key / Fill)   |     |
|    |  | Title Creator:Yes  |     |
|    |  | Logo Insertion:2   |     |
|    |  | Built-in Monitor Display:17.3" HD TFT LED backlit, 1920x1080 pix   |     |
|    |  | Streaming:H.264 / AVC, Main/ High ProfileConfigurable Bit-rate up to 10Mbps  |     |
|    |  | Streaming Protocol:TS over TCP/UDP (unicast & multicast)RTSP over HTTP/TCP/UDP (RTSP Elementary Streaming)RTMP/RTMPS (Publish),HLS,SRT                   |     |
|    |  |  | 1   |

|   |   |  |  |   |
|---|---|--|--|---|
|   |   | Recording File System:FAT, exFAT, NTFS   |  |   |
|   | Analog audio mixer  | 12 input analogue audio mixer with mic/line input, 2 x Stereo input, input gain control, HF/MF/LF Frequency, minimum 6 XLR balanced inputs and mixer should have phantom power and USB port for recording and playback and 2 XLR output. |  | 1 |
| 15  | <b>HDR Dual Monitor 4K Rackmount Recorder (Approved Makes: Atomos/Equivalent)</b> | Video Resolution   | Max. 4K@60p  | 1 |
|   |   | Type   | Rack Mountable   |   |
|   |   | Video/Audio Inputs   | 1xHDMI 2.0 (Embedded audio) or more  |   |
|   |   |  | 1x3G/6G/12G-SDI (Embedded audio)   |   |
|   |   | Video Sampling   | 4:0:0 or 4:2:2 or 4:4:4  |   |
|   |   | Video/Audio outputs  | 1xHDMI 2.0 or more   |   |
|   |   |  | 3G/6G/12G SDI Loop Out & Play Out or better  |   |
|   |   |  | 1xHeadphone Out  |   |
|   |   | HDMI to SDI and Vice-Versa Video Signal Conversion   | Yes  |   |
|   |   | Display  | Dual Monitor not less than 7" with Resolution more than FHD, Brightness: >1200 Cd/m <sup>2</sup> , Aspect Ratio: 16:9 or better. |   |
|   |   | Web Streaming  | USB UVC (Optional via Connect 4K)  |   |
|   |   | Recording & Playback from full or sub clips should be available  |  |   |
|   |   | Multi Input Switching should be available upto 3G/6G/12G SDI per input   |  |   |
|   |   | Recording Media  | SSDmini or better  |   |
|   |   | Onboard Signal Processing  | Yes  |   |
| Supported Applications                                  | XML, Apple ProRes RAW and Video Codecs or better                                  |  |  |   |
| Waveform, RGB Parade, Vector Scope, False Colour, Zebra | Yes   |  |  |   |

|    |   |  |                        |   |
|----|---|--|------------------------|---|
|    |   | Display Flip   | Vertical or Horizontal |   |
|    |   | The Recorder shall be quoted along with the Storage Device compatible with the same.   |                        |   |
| 16 | Tripod with rugged matching dolly                 | 3stage tripod friction/ fluid head with a pan handle and a dolly for the tripod. Loading capacity not less than 10kg.  |                        | 2 |
| 17 | Professional Monitor                              | Min 17". Full HD (1920x1080) LED Broadcast / professional monitor.<br>Should have minimum- 2 x HD-SDI inputs (auto detect) with active loop through output , 1x HDMI input , 1 x composite input, 1x Stereo analog audio input,  |                        | 1 |
| 18 | USB 3.0 - SDI Capture Dongle for virtual meetings | Input Interface & Loop-through Interface<br>->One SD/HD/3G/2K/6G SDI input + embedded audio<br>->One SDI loop-through<br>->Support input & loop-through resolution up to 4096x2160 pixels  |                        | 3 |
|    |   | Audio Input/Output Interface<br>-> 3.5mm audio jack for Line In/ Line Out  |                        |   |
|    |   | Host Interface<br>->USB 3.0, compatible with USB 2.0   |                        |   |
|    |   | OS<br>->Windows, Linux, Mac, Chrome OS   |                        |   |
|    |   | Capture format<br>->Support capture resolutions up to 3840x2160p 30fps or 1920x1080p90<br>->Capture 2-channel embedded audio or analog audio via 3.5mm unbalanced Line In interface<br>->Capture SDI signals transmitted a long distance away: up to 150m for 3G-SDI signals, 75m for 6G-SDI signals |                        |   |
| 19 | Up Down Cross Convertor                           | 3G SDI/HDMI/VGA Up/Down/Cross Converter (3G supported, up to 1080 50P/59.94P/60P) (Reclock & Equalizer), 3G/HD/SD-SDI/HDMI/VGA In to HDMI/SDI Up Down Cross Converter with 11 selectable output format between SD, HD & 3G resolutions up to 1080p60,  |                        | 3 |

|    |  |   |      |
|----|--|---|------|
|    |  | support 8-CH embedded audio (SDI/HDMI) or replace the audio by RCA input, scales, converts, and outputs video to 3 ports (2xSDI & 1x HDMI) simultaneously   |      |
| 20 | Cables & Connectors<br>(Approved Makes:<br>Belden/Kramer/Extron) | Assorted Cables & Connectors - 4K High-speed HDMI2.0 cable, SDI cable, CAT6A Cable, Microphone Cable, Audio Cable, USB Cable etc., as per the System Integration requirement  | 1 LS |
| 21 | Studio Headphones  | Studio Headphone to monitor the recordings Minimum (500 MW) with 6.5 mm/ 3.5mm Audio jack with passive noise cancellation   | 4    |
| 22 | Installation & Commissioning                                     | installation & integration charges including Video Cables, Audio Cables, Converter, Connectors, Rack and other installation materials. The installation should be executed by professionals and verified by OEMs authorized personnel.. | 1    |

**TECHNICAL BID PROFORMA**  
Tender No. CE/ARUN/90/2023/SSMSB2

**Item Name: “Video recording Equipment for in-classroom lecture hall”**

**Bidder Eligibility Criteria:**

| I   | Bidder Eligibility Criteria-I<br>(Public Procurement – Preference to Make in India)  | Class I /<br>Class II          | Local<br>Content<br>value     | Reference,<br>Page No.     |
|-----|--|--------------------------------|-------------------------------|----------------------------|
| I   | Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16 <sup>th</sup> September 2020 and other subsequent orders issued therein.   |                                |                               |                            |
| 2.0 | <b>Bidder Eligibility Criteria-II</b>  | <b>Compliance<br/>(Yes/No)</b> | <b>Reference<br/>Page No.</b> | <b>Remarks, If<br/>any</b> |
| 1   | The bidder/OEM should have supplied at least 3 similar items to IITs, NITs, IISERs, CSIR Labs or other Govt. R&D organizations in the last 5 years, PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims. |                                |                               |                            |

**2.0 Technical Compliance:**

| S<br>N<br>O | ITEM<br>NAME                              | SPECIFICATIONS  |                              | QTY | COMPLIED/<br>NOT<br>COMPLIED | REFERENCE<br>PG NO |
|-------------|---|---|------------------------------|-----|------------------------------|--------------------|
| 1           | Ceramic<br>Green Board                    | 12X4 Feet Resin coated Ceramic Green Board for Class Room with chalk and duster holder.   |                              | 1   |                              |                    |
|             |   | The Board should be suitable for academic purpose and framed in double sided curved anodized and chrome plated ABS Corners for good aesthetics and longevity. |                              |     |                              |                    |
| 2           | Motorized<br>Green Matt<br>Screen         | 12X8 feet motorized green matt with remote  |                              | 1   |                              |                    |
| 3           | Liights for<br>Board for<br>Pelmut        | Pelmut with flicket free lights for the board ( quantity depending on the size of the board / make and model)   |                              | 1   |                              |                    |
| 4           | Tiltable and<br>Rotateable<br>Interactive | Display<br>Type   | LCD                          | 1   |                              |                    |
|             |   | Display   | 59.94 cm (23.6 in) or better |     |                              |                    |

|             |  |  |  |  |
|-------------|--|--|--|--|
| Pen Display | Panel Diagonal size (mm)                               |  |  |  |
|             | Width of The Effective Display Area of The Panel (mm)  | 677mm/26.65" or better   |  |  |
|             | Height of The Effective Display Area of The Panel (mm) | 394mm/15.5" or better  |  |  |
|             | Display Technology                                     | IPS or better  |  |  |
|             | Aspect Ratio   | 16:9 or better   |  |  |
|             | Display Resolution (Pixels)                            | 4K or higher   |  |  |
|             | Colour Performance                                     | 1.07 billion colours (10 bit) or more  |  |  |
|             | Display Brightness (cd/m2)                             | ≥350 cd/m2   |  |  |
|             | Viewing Angle  | 176° (88°/88°) H, 176° (88°/88°) V or better   |  |  |
|             | Contrast Ratio   | 1000:1 or higher   |  |  |
|             | Connectivity   | 4 x USB 3 ports, 1 x USB C port, 1 x HDMI2.0 port, 1 x Display Port, 2 USB-A Ports or better |  |  |
|             | Graphics Input   | USB type C port, DisplayPort, HDMI2.0 port or better   |  |  |

|   |  |  |  |   |  |
|---|--|--|--|---|--|
|   |  | Finger Touch   | Must be available  |   |  |
|   |  | Touch Technology   | Projected capacitive - on touch or better  |   |  |
|   |  | Pen  | Battery-free Pro Pen 2 with 2 customizable side switches and 8192 pressure levels in both pen tip and eraser (patented electromagnetic resonance method) |   |  |
|   |  | Number of touch points   | 10 or higher   |   |  |
|   |  | Response Rate  | 14 ms (typ.)   |   |  |
|   |  | Pen technology   | Electromagnetic Resonance  |   |  |
|   |  | Pen Tilt Recognition / Range   | ±60 levels / 60 degrees  |   |  |
|   |  | Built-in Microphone , Audio Headset Jack   | Yes  |   |  |
|   |  | Multi-Touch  | Yes  |   |  |
|   |  | Stand  | Raise, tilt and rotate and counter weight base for stability   |   |  |
| 5 | Lapel Wireless Microphone with matching receivers from same make as that of transmitters | Wireless lapel mic unidirectional system with belt pack transmitter and rack mount type receiver.<br>- The transmitter supports lapel and mic<br>- The transmitter should operate on AA size batteries rechargeable<br>- RF Power 30 mw or better<br>- The working range between transmitter and receiver should be a minimum of 30 mtr.<br>- Receiver<br>- S/N ratio 110 dB at 40 kHz or better<br>- Total harmonic dispersion less than 0.9%<br>- Frequency response-18Hz to 18 KHz or |  | 2 |  |

|   |  |  |                              |   |  |  |
|---|--|--|------------------------------|---|--|--|
|   |  | better.<br>- Transmitter<br>Microphone element Cardioid - Cardioid dynamic   |                              |   |  |  |
| 6 | <b>Professional LED Lights (Approved Makes: Canara Lighting/Le ksa Lighting/Ilford) with ceiling mount</b> | Power  | 120/180 Watts or better      | 3 |  |  |
|   |  | Dimmable   | Yes                          |   |  |  |
|   |  | The LED Lights should include all the accessories such as Barn Door, Cables, Heavy Duty Light Stand, Dimmer Control Panel etc., with required filters and defusers |                              |   |  |  |
|   |  | Installation Charges should also be quoted along with the LED Lights   |                              |   |  |  |
| 7 | Tiltable and Rotateable Interactive Pen Display  | Display Type   | LCD                          | 1 |  |  |
|   |  | Display Panel Diagonal size (mm)   | 59.94 cm (23.6 in) or better |   |  |  |
|   |  | Width of The Effective Display Area of The Panel (mm)  | 677mm/26.65" or better       |   |  |  |
|   |  | Height of The Effective Display Area of The Panel (mm)   | 394mm/15.5" or better        |   |  |  |
|   |  | Display Technology   | IPS or better                |   |  |  |
|   |  | Aspect Ratio   | 16:9 or better               |   |  |  |
|   |  | Display Resolution   | 4K or higher                 |   |  |  |



|  |   |  |  |  |
|--|---|--|--|--|
|  | (Pixels)                                |  |  |  |
|  | Colour Performance                      | 1.07 billion colours (10 bit) or more  |  |  |
|  | Display Brightness (cd/m2)              | ≥350 cd/m2   |  |  |
|  | Viewing Angle                           | 176° (88°/88°) H, 176° (88°/88°) V or better   |  |  |
|  | Contrast Ratio                          | 1000:1 or higher   |  |  |
|  | Connectivity                            | 4 x USB 3 ports, 1 x USB C port, 1 x HDMI2.0 port, 1 x Display Port, 2 USB-A Ports or better   |  |  |
|  | Graphics Input                          | USB type C port, DisplayPort, HDMI2.0 port or better   |  |  |
|  | Finger Touch                            | Must be available  |  |  |
|  | Touch Technology                        | Projected capacitive - on touch or better  |  |  |
|  | Pen                                     | Battery-free Pro Pen 2 with 2 customizable side switches and 8192 pressure levels in both pen tip and eraser (patented electromagnetic resonance method) |  |  |
|  | Number of touch points                  | 10 or higher   |  |  |
|  | Response Rate                           | 14 ms (typ.)   |  |  |
|  | Pen technology                          | Electromagnetic Resonance  |  |  |
|  | Pen Tilt Recognition / Range            | ±60 levels / 60 degrees  |  |  |
|  | Built-in Microphone, Audio Headset Jack | Yes  |  |  |

|    |  |   |  |   |  |  |
|----|--|---|--|---|--|--|
|    |  | Multi-Touch   | Yes  |   |  |  |
|    |  | Stand   | Raise, tilt and rotate and counter weight base for stability |   |  |  |
| 8  | Hand-held Wireless Microphone with matching rack mount receivers from same make as that of transmitter | Frequency response 80-18000 Hz; Nominal impedance 150 Ohm; or better power supply AA Batteries, Sensitivity in free field – 40mV/Pa; Min terminating impedance – 1000 Ohm. XLR interface. RF power 30 milliwatt or more. Working range 30 metres or more.   |  | 4 |  |  |
| 9  | Passive speakers   | Professional compact powered speakers of minimum 40 watts RMS. 8"/10" (2-way active speaker system) with minimum one XLR input & Loop through. Frequency Response- 45Hz- 20 KHz or better Power Handling Capacity 100 watt (60 watt LF & 40 watt HF) SPL 110 dB or better   |  | 6 |  |  |
| 10 | Power Amplifier  | Dynamic output power 4 ohms: 2 x 120 watts<br>Dynamic output power 8 ohms: 2 x 60 watts<br>Dynamic output power bridged 8 ohms: 240 watts<br>Output power RMS 100 volts: 2 x 120 watts<br>Minimum impedance load per channel: 4 ohms<br>Power consumption (max): 300 watts<br>Height- rack units (1U=44 mm): 1 U<br>Power supply: 115 - 230 VAC |  | 1 |  |  |
| 11 | <b>4K NDI PTZ Camera with NDI (Approved Makes: Sony/Panasonic/Datavideo)</b>                           | Type  | 4K PTZ Video Camera  | 3 |  |  |
|    |  | Image Sensor  | Min 1/1.8" or 1/2" type Exmos/MOS/CMOS or better             |   |  |  |
|    |  | Effective Pixel   | >8 Mega Pixels   |   |  |  |
|    |  | Zoom Ratio  | 20x Optical, 16x Digital Zoom or higher                      |   |  |  |
|    |  | Output  | HDMI and SDI Interfaces<br>SDI X 1                           |   |  |  |

|  |   |   |  |  |
|--|---|---|--|--|
|  |   | HDMI x 1  |  |  |
|  |   | NDIHX x 1   |  |  |
|  |   | Max. Output Resolution:-<br>HDMI: 2160p@60, SDI:<br>1080p@60  |  |  |
|  | Input   | Tally   |  |  |
|  |   | Audio   |  |  |
|  | Streaming                                     | Dual Channel  |  |  |
|  | FOV   | Horizontal FOV 60° (Wide) or higher   |  |  |
|  |   | Required Signal format:(i) 2160/60p (ii) 1080/60p ,2160p 60/59.94/50/30/29.97/25 1080p 60/59.94/50/30/29.97/25 1080i 60/59.94/50 720p 60/59.94/50 |  |  |
|  | Electronic shutter speed                      | Up to 1/10000 or better   |  |  |
|  | Focus Mode                                    | Auto/Manual   |  |  |
|  | Minimum illumination :                        | 3.0 or better   |  |  |
|  | Gain  | Auto/Manual(0 to 36dB or better)  |  |  |
|  | Sync System                                   | Internal / External sync  |  |  |
|  | Remote Control Interface                      | IR, Web UI, RS-422, DVIP and NDI or better  |  |  |
|  | Panning Range                                 | 300° or better  |  |  |
|  | Tilting Range                                 | 130° to -15° or better  |  |  |
|  | Supported protocols                           | IPv4, IPv6, UDP/IP, TCP/I   |  |  |
|  | Image transmission / Video Compression Format | H.264/H.265/MJPEG   |  |  |

|    |  |  |  |   |  |  |
|----|--|--|--|---|--|--|
|    |  | Supported Streaming Protocols  | TCP/IP, HTTP, RTSP, RTMP(S), SRT, ONVIF, DHCP, Multicast |   |  |  |
|    |  | The PTZ Camera should have NDI Interface & Protocol  |  |   |  |  |
|    |  | The Camera should be supplied along with Wall Mounting Kit and other accessories for 2 Nos. of PTZ Camera & Hydraulic Ceiling Mount with Height adjustable Option & Remote Control for 1 No. of PTZ Camera (Focused on the Students) |  |   |  |  |
|    |  | OEM Warranty   | 3 Years or More  |   |  |  |
| 12 | <b>4K Tracking PTZ Camera (Approved Makes: Sony/Panasonic/Datavideo)</b> | Image Sensor   | Min 1/2.8" /type CMOS or higher                          | 1 |  |  |
|    |  | Effective Pixel  | >8 Mega Pixels   |   |  |  |
|    |  | Max. Output Video Resolution   | HDMI: 2160p@60, SDI: 1080p@60                            |   |  |  |
|    |  | Zoom Ratio   | 20x Optical, 16x Digital Zoom or higher                  |   |  |  |
|    |  |  | AI/Voice Tracking including Multi/Single Person Mode     |   |  |  |
|    |  | FOV  | Horizontal FOV 60° (Wide) or higher                      |   |  |  |
|    |  | Panning Range  | 300° or better   |   |  |  |
|    |  | Tilting Range  | 130° to -15° or better                                   |   |  |  |
|    |  | External Control   | DVIP/IP/RS-422/RS-232C control                           |   |  |  |
|    |  | Streaming Protocols  | TCP/IP, HTTP, RTSP, RTMP(S), DHCP, SRT, Multicast        |   |  |  |
|    |  | Video Compression Formats  | H.264 and H.265  |   |  |  |
|    |  | Mounting Type  | Desktop and ceiling mountable                            |   |  |  |

|    |   |  |                 |   |  |
|----|---|--|-----------------|---|--|
|    |   | OEM Warranty   | 3 Years or More |   |  |
|    |   | Dual/Multiple streaming outputs including 4K   |                 |   |  |
|    |   | 100 preset memories for pan-tilt-zoom-camera settings  |                 |   |  |
|    |   | PoE compatible   |                 |   |  |
|    |   | Remotely control Pan, Tilt, and Zoom from PCR/NOC,   |                 |   |  |
|    |   | Should have good video quality even in low light conditions  |                 |   |  |
|    |   | Embedded audio should be available in , IP Stream ,HDMI and SDI output   |                 |   |  |
|    |   | Wall/ceiling mount support for indoor cameras and pole mount support for outdoor cameras   |                 |   |  |
| 13 | <b>PTZ Camera Controller (Approved Makes: Sony/Panasonic/Datavideo)</b> | Remote control of up-to four Pan,Tilt & Zoom cameras with speed control by large joystick  | Yes             | 1 |  |
|    |   | Control of Pan, Tilt and Zoom as well as Iris, Focus, Gain, AWB and other functions over standard CAT5/CAT6 cable with RJ45 connectors | Yes             |   |  |
|    |   | Multiple preset for  | Yes             |   |  |

|    |  |  |     |   |  |
|----|--|--|-----|---|--|
|    |  | Pan, Tilt & Zoom for each individual camera  |     |   |  |
|    |  | Full remote control of each camera via serial communication over affordable network cabling  | Yes |   |  |
|    |  | Automatic camera position presets  | Yes |   |  |
|    |  | Supports Sony Visca Control Protocol   | Yes |   |  |
|    |  | Tally Input  | Yes |   |  |
|    |  | XYZ Joystick Operation for Live Video Production   | Yes |   |  |
| 14 | HD Portable Video Streaming Switcher with built-in monitor all in compact closed box | Video Format:1080p 50/59.94/60Hz,1080i 50/59.94/60Hz,720p 50/59.94/60Hz  |     | 1 |  |
|    |  | Video Input:8x SDI, 4x HDMI  |     |   |  |
|    |  | Video Output: 5x SDI, 1x HDMI assignable: Multiview, PGM, PVW, PGM+DSK, Clean PGM, Clean PVW, Input 1-12, STILL 1, STILL 2, Flex source 3x HDMI PGM only |     |   |  |
|    |  | Analogue Audio Input:4x Balanced XLR   |     |   |  |
|    |  | Analogue Audio Output: 2x Balanced XLR   |     |   |  |
|    |  | Audio Delay Calibration:Up to 16 frames  |     |   |  |
|    |  | USK:4  |     |   |  |
|    |  | DSK:2, support Lumakey & Linear key  |     |   |  |

|  |   |   |   |   |  |
|--|---|---|---|---|--|
|  |   | (Key / Fill)  |   |   |  |
|  |   | Title Creator:Yes   |   |   |  |
|  |   | Logo Insertion:2  |   |   |  |
|  |   | Built-in Monitor Display:17.3" HD TFT LED backlit, 1920x1080 pix  |   |   |  |
|  |   | Streaming:H.264 / AVC, Main/ High ProfileConfigurable Bit-rate up to 10Mbps   |   |   |  |
|  |   | Streaming Protocol:TS over TCP/UDP (unicast & multicast)RTSP over HTTP/TCP/UDP (RTSP Elementary Streaming)RTMP/RTMPS (Publish),HLS,SRT  |   |   |  |
|  |   | Recording File System:FAT, exFAT, NTFS  |   |   |  |
|  | Analog audio mixer  | 12 input analogue audio mixer with mic/line input, 2 x Stereo input, input gain control, HF/MF/LF Frequency, minimum 6 XLR balanced inputs and mixer should have phantom powerand USB port for recording and playback and 2 XLR output. | 1   |   |  |
| 15   | <b>HDR Dual Monitor 4K Rackmount Recorder (Approved Makes: Atomos/Equivalent)</b>                         | Video Resolution  | Max. 4K@60p                                 | 1 |  |
|  |   | Type  | Rack Mountable                              |   |  |
|  |   | Video/Audio Inputs  | 1xHDMI 2.0 (Embedded audio) or more         |   |  |
|  |   |   | 1x3G/6G/12G-SDI (Embedded audio)            |   |  |
|  |   | Video Sampling  | 4:0:0 or 4:2:2 or 4:4:4                     |   |  |
|  |   | Video/Audio outputs   | 1xHDMI 2.0 or more                          |   |  |
|  |   |   | 3G/6G/12G SDI Loop Out & Play Out or better |   |  |
|  |   |   | 1xHeadphone Out                             |   |  |
| HDMI to SDI and Vice-Versa Video Signal Conversion | Yes   |   |   |   |  |
| Display  | Dual Monitor not less than 7" with Resolution more than FHD, Brightness: >1200 Cd/m <sup>2</sup> , Aspect |   |   |   |  |

|    |   |   |  |   |  |
|----|---|---|--|---|--|
|    |   |   | Ratio: 16:9 or better.                           |   |  |
|    |   | Web Streaming   | USB UVC (Optional via Connect 4K)                |   |  |
|    |   | Recording & Playback from full or sub clips should be available   |  |   |  |
|    |   | Multi Input Switching should be available upto 3G/6G/12G SDI per input  |  |   |  |
|    |   | Recording Media   | SSDmini or better                                |   |  |
|    |   | Onboard Signal Processing   | Yes  |   |  |
|    |   | Supported Applications  | XML, Apple ProRes RAW and Video Codecs or better |   |  |
|    |   | Waveform, RGB Parade, Vector Scope, False Colour, Zebra   | Yes  |   |  |
|    |   | Display Flip  | Vertical or Horizontal                           |   |  |
|    |   | The Recorder shall be quoted along with the Storage Device compatible with the same.  |  |   |  |
| 16 | Tripod with rugged matching dolly                 | 3stage tripod friction/ fluid head with a pan handle and a dolly for the tripod. Loading capacity not less than 10kg.   |  | 2 |  |
| 17 | Professional Monitor                              | Min 17". Full HD (1920x1080) LED Broadcast / professional monitor.<br>Should have minimum- 2 x HD-SDI inputs (auto detect) with active loop through output , 1x HDMI input , 1 x composite input, 1x Stereo analog audio input, |  | 1 |  |
| 18 | USB 3.0 - SDI Capture Dongle for virtual meetings | Input Interface & Loop-through Interface<br>->One   |  | 3 |  |



|    |                         |   |   |  |  |
|----|-------------------------|---|---|--|--|
|    |                         | <p>SD/HD/3G/2K/6G SDI input + embedded audio</p> <p>-&gt;One SDI loop-through</p> <p>-&gt;Support input &amp; loop-through resolution up to 4096x2160 pixels</p>  |   |  |  |
|    |                         | <p>Audio Input/Output Interface</p> <p>-&gt; 3.5mm audio jack for Line In/ Line Out</p>   |   |  |  |
|    |                         | <p>Host Interface</p> <p>-&gt;USB 3.0, compatible with USB 2.0</p>  |   |  |  |
|    |                         | <p>OS</p> <p>-&gt;Windows, Linux, Mac, Chrome OS</p>  |   |  |  |
|    |                         | <p>Capture format</p> <p>-&gt;Support capture resolutions up to 3840x2160p 30fps or 1920x1080p90</p> <p>-&gt;Capture 2-channel embedded audio or analog audio via 3.5mm unbalanced Line In interface</p> <p>-&gt;Capture SDI signals transmitted a long distance away: up to 150m for 3G-SDI signals, 75m for 6G-SDI signals</p>  |   |  |  |
| 19 | Up Down Cross Convertor | <p>3G SDI/HDMI/VGA Up/Down/Cross Converter (3G supported, up to 1080 50P/59.94P/60P) (Reclock &amp; Equalizer), 3G/HD/SD-SDI/HDMI/VGA In to HDMI/SDI</p> <p>Up Down Cross Converter with 11 selectable output format between SD, HD &amp; 3G resolutions up to 1080p60, support 8-CH embedded audio (SDI/HDMI) or replace the audio by RCA input, scales, converts, and outputs video to 3 ports (2xSDI &amp; 1x HDMI) simultaneously</p> | 3 |  |  |

|    |  |   |      |  |  |
|----|--|---|------|--|--|
| 20 | Cables & Connectors (Approved Makes: Belden/Kramer/Extron) | Assorted Cables & Connectors - 4K High-speed HDMI2.0 cable, SDI cable, CAT6A Cable, Microphone Cable, Audio Cable, USB Cable etc., as per the System Integration requirement  | 1 LS |  |  |
| 21 | Studio Headphones  | Studio Headphone to monitor the recordings Minimum (500 MW) with 6.5 mm/ 3.5mm Audio jack with passive noise cancellation   | 4    |  |  |
| 22 | Installation & Commissioning                               | installation & integration charges including Video Cables, Audio Cables, Covertor, Connetors, Rack and other installation materials. The installation should be executed by professionals and verified by OEMs authorized personnel.. | 1    |  |  |

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the above points with document proof as required. Failing which bidders will be technically disqualified)

**SIGNATURE OF BIDDER ALONG WITH  
SEAL OF THE COMPANY WITH DATE**

**FINANCIAL BID (PROFORMA) - BILL OF QUANTITIES (BOQ)**

**Item Name: "Video recording Equipment for in-classroom lecture hall"**  
**Tender No. CE/ARUN/90/2023/SSMSB2**

| It. No | Description of work  | Quantity | Units | Basic Rate in INR | GST in Percentage | Total Amount with taxes in INR |
|--------|--|----------|-------|-------------------|-------------------|--------------------------------|
| 1      | <b>Video recording Equipment for in-classroom lecture hall</b> | 1        | Nos.  |                   |                   |                                |
|        | Grand Total  |          |       |                   |                   |                                |

Total Amount Rupees in words \_\_\_\_\_



CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
CHENNAI 600 036



**ELECTRONIC CLEARING SERVICE (Credit Clearing)/ REAL TIME GROSS SETTLEMENT (RTGS) FACILITY FOR RECEIVING PAYMENTS**

**A. Details of Account Holder**

|                                 |   |
|---------------------------------|---|
| Name of the Institution         | Indian Institute of Technology - Madras   |
| Complete Contact Address        | Industrial Consultancy and Sponsored Research<br>Indian Institute of Technology-Madras,<br>IIT- Madras Campus Post Office,<br>Sardar Patel Road,<br>Guindy, CHENNAI - 600 036 |
| Telephone No./ Fax No.          | Tel - 044-2257 8356   |
| E- mail ID of the FO/AO/REG/DIR | dricsr@iitm.ac.in   |

**B. Bank Account Details:**

|   |  |
|---|--|
| Institution Account Name (As per Bank Record) | The Registrar, Indian Institute of Technology - Madras   |
| Account No.                                   | 2722101003872  |
| Account Print Name                            | IIT F A/C , The Registrar IIT Madras   |
| IFSC CODE                                     | CNRB0002722  |
| Bank Name (in full)                           | Canara Bank  |
| Branch Name                                   | IIT-Madras Branch  |
| Complete Branch Address                       | Canara Bank,<br>IIT-Madras Branch,<br>IIT- Madras Campus Post Office,<br>Sardar Patel Road,<br>Guindy, CHENNAI - 600 036 |
| MICR No.                                      | 600015085  |
| Account Type                                  | Savings Account  |

Certified that the Institute's account is in an RTGS enabled branch.

I hereby declare that the particulars given above are correct and complete.

Date:

Signature of the Competent Authority  
of the Institution with seal.

**FORMAT FOR AFFIDAVIT OF SELF-CERTIFICATION UNDER PREFERENCE TO MAKE IN INDIA – PER ITEM**

**Tender Reference Number:**

**Name of the item / Service:**

Date: \_\_\_\_\_

I/We \_\_\_\_\_ S/o, D/o, W/o, \_\_\_\_\_

Resident of \_\_\_\_\_

Hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020) MOCI order No. 45021/2/2017-PP (BE II) Dt.16th September 2020 & P- 45021/102/2019-BE-II-Part (1) (E-50310) Dt.4th March 2021 and any subsequent modifications/Amendments, if any and

That the local content for all inputs which constitute the said item/service/work has been verified by me and I am responsible for the correctness of the claims made therein.

| <b>Tick (✓) and Fill the Appropriate Category</b> |  |
|---|--|
| <input type="checkbox"/>                          | I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to or more than 50% and come under “ <b>Class-I Local Supplier</b> ” category.       |
| <input type="checkbox"/>                          | I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to 20% but less than 50% and come under “ <b>Class-II Local Supplier</b> ” category. |

- The details of the location (s) at which the local value addition is made and the proportionate value of local content in percentage

Address \_\_\_\_\_ Percentage of Local content: \_\_\_\_\_%

For and on behalf of ..... (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

[Note: In case of procurement for a value in excess of Rs. 10 Crores, the bidders shall provide this certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.]

**This letter should be on the letterhead of the quoting firm and should be signed by a competent authority. Non-submission of this will lead to Disqualification of bids.**

(To be given on the letter head of the bidder)

No. \_\_\_\_\_

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

**CERTIFICATE**

*(Bidders from India)*

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I am not from such a country.

**OR (*whichever is applicable*)**

*(Bidders from Country which shares a land border with India)*

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I from \_\_\_\_\_ (Name of Country) and has been registered with the Competent Authority. I also certify that I fulfil all the requirements in this regard and is eligible to be considered. *(Copy/ evidence of valid registration by the Competent Authority is to be attached)*

Place:

Date:

Signature of the Tenderer  
Name & Address of the  
Tenderer with Office Stamp