



Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology, Haripur

KHYBER PAKHTUNKHWA

Tender Document FOR “Supply of Undergraduate Teaching Lab Equipment”

Submission of Bids: Tuesday the March 8, 2022 @ 11:30 noon

Opening of Bids: Tuesday the March 8, 2022 @ 12:30 pm

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Section 1. Letter of Invitation

The Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology (PAF- IAST), Haripur invites sealed bids from interested firms for the “Supply of Undergraduate Lab Equipment” under the following Lots.

- Lot. 1: Particulate Technology Lab**
- Lot. 2: Water Quality Testing Lab**
- Lot. 3: Air Quality Testing Lab**
- Lot. 4: Instrumentation and Process Control Lab**
- Lot. 5: Chemical Reaction Engineering (CRE) Lab**

The bidder must be registered and duly recognized in Pakistan and be registered with FBR; possess Manufacturer’s status or Distributor/ Dealer status with authorization from Manufacturer/ Principal specific for this tender, with sufficient financial, technical and human resources to take up the task assigned and complete the same within prescribed time limit on the finalization of contract with PAF- IAST.

Tender document containing instructions to bidders covering definitions, introduction/ background of the Project, scope of work, general terms and conditions, and special terms, procedure for submission of bids, opening of bid, evaluation criteria, and other related information, can be obtained against a written request on company’s letterhead, from Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology, Haripur – Pakistan. Cost of the document is Rs. 2000/- Non-refundable (Stationery charges) for each LOT separately. Tender document can also be downloaded from <http://www.paf-iastr.edu.pk/> free of cost, however, interested bidders will be required to submit the Tender Fee in shape of Demand draft/ Pay Order in the name of Rector, PAF-IAST Haripur, along with the Bid of each LOT separately, in order to participate in tender process.

Bidder(s) interested in participating in the tender process are advised to submit their Bid Proposal(s), along with the Earnest Money amounting 2% of their Total Bid Value including Extended Warranty in the shape of CDR, in accordance with the instructions in this tender document. Bid Proposal(s) must reach PAF-IAST, Haripur on Tuesday **the March 8, 2022, by 1130 hrs**. Any late Bid(s) shall not be accepted and returned unopened. Accepted Bids will be opened on the same day at 1230 hrs, in presence of bidders who chose to attend. In case of sudden holiday on bid opening day, bids will be opened on next working day. The Tender shall be executed in accordance with KPPRA Rule 6 (2)(a) “Single Stage, One Envelope Procedure”.

This advertisement is also available on PAF: IAST and KPPRA websites <http://www.paf-iastr.edu.pk/> & <http://www.kppra.org.pk>.

Rector

Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology (PAF-IAST)

Hairpur – Khyber Pakhtunkhwa

Phone: 0995-645113-18 E-Mail: info@paf-iastr.edu.pk

Section 2. Instruction to Bidders (ITB)

A. GENERAL TERMS	
1. Introduction	<p>1.1 Bidders shall adhere to all the requirements of this ITB, including any amendments made in writing by PAF-IAST. This ITB will be governed under Clause 6 (2)(a) “Single Stage, One Envelope Procedure” of Khyber Pakhtunkhwa Public Procurement Rules, 2014, as amended from time to time and instructions of the Government of Khyber Pakhtunkhwa received during the completion of the project.</p> <p>1.2 Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the Bid by PAF-IAST. The Institute is under no obligation to award a contract to any Bidder as a result of this ITB.</p> <p>1.3 PAF-IAST reserves the right to cancel the procurement process at any stage without any liability of any kind for PAF-IAST, upon notice to the bidders or publication of cancellation notice on PAF- IAST website.</p>
2. Fraud & Corruption, Gifts and Hospitality	<p>2.1 PAF-IAST strictly enforces a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of PAF-IAST vendors and requires all bidders/ vendors observe the highest standard of ethics during the procurement process and contract implementation.</p> <p>2.2 Bidders/ vendors shall not offer gifts or hospitality of any kind to PAF-IAST staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches or dinners.</p> <p>2.3 In pursuance of this policy, PAF-IAST:</p> <p>(a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question;</p> <p>(b) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a PAF- IAST contract; or counseling or canvassing staff or elected representatives; or engaging in collusion with other bidders.</p>
3. Eligibility	<p>3.1 A Bidder should not be suspended, debarred, or otherwise identified as ineligible by any Government/ Semi-government/ or any other international Organization. Bidders are therefore required to disclose to PAF-IAST whether they are subject to any sanction or temporary suspension imposed by these organizations.</p> <p>3.2 It is the Bidder’s responsibility to ensure that its employees, sub-contractors, service providers, suppliers and/ or their employees meet the eligibility requirements as established by PAF-IAST.</p>
4. General Terms	<p>4.1 The Bidder should be registered with Sales Tax and Income Tax Department as well as with the Khyber Pakhtunkhwa Revenue Authority.</p> <p>4.2 The Bidder should have not been blacklisted by any Government/ semi Government organization.</p> <p>4.3 There should be no litigation against the bidder/ firm.</p>

B. PREPARATION OF BIDS	
5. General Considerations	<p>5.1 In preparing the Bid, the Bidder is expected to examine the ITB in detail. Material deficiencies in providing the information requested in the ITB may result in rejection of the Bid.</p> <p>5.2 The Bidder will not be permitted to take advantage of any errors or omissions in the ITB. Should such errors or omissions be discovered, the Bidder must notify the Project Director, PAF-IAST accordingly.</p>
6. Cost of Preparation of Bid	6.1 The Bidder shall bear all costs related to the preparation and/ or submission of the Bid, regardless of whether its Bid is selected or not. PAF-IAST shall not be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.
7. Language	7.1 The Bid, as well as any, and all related correspondence exchanged by the Bidder and PAF- IAST, shall be written in the language(s) specified in the BDS.
8. Documents Comprising the Bid	<p>8.1 The Bid shall comprise of the following documents and related forms of which details are provided in the BDS. All pages of the Bid shall be signed, stamped and properly paginated.</p> <p>a) Returnable Forms as referred in Section 6 shall be properly filled in Ink or Typed. Forms filled in using a pencil shall not be considered and substantiate the annulment of the Bid Proposal.</p> <p>b) Documents Establishing the Eligibility and Qualifications of the Bidder;</p> <p>c) Bid covering Technical Specifications in detail, and covering Price Schedule;</p> <p>d) Bid Security, if required by BDS;</p> <p>e) Any attachments and/ or appendices to the Bid.</p>
9. Documents Establishing the Eligibility and Qualifications	9.1 The Bidder shall furnish documentary evidence of its status as an eligible and qualified supplier, using the Forms provided under Section 6 and providing documents required in those forms. In order to award a contract to a Bidder, its qualifications must be documented to PAF-IAST's satisfaction.
10. Technical Bid Format and Content	<p>10.1 The Bidder is required to submit a Bid using the Standard Forms and templates provided in Section 6 of the ITB. Non-compliance to the this requirement may lead to rejection of Bid without further evaluation.</p> <p>10.2 Samples of items, when required as per Section 5, shall be provided within the time specified and unless otherwise specified by the Purchaser, at no expense to the Institute. If not destroyed by testing, samples will be returned at Bidder's request and expense, unless otherwise specified.</p> <p>10.3 When applicable and required in Section 5, the Bidder shall describe the necessary training program available for the maintenance and operation of the equipment offered as well as the cost to the Institute. Unless otherwise specified, such training as well as training materials shall be provided in the language of the Bid as specified in the BDS.</p> <p>10.4 When applicable and required in Section 5, the Bidder shall certify the availability of spare parts for a period of at least five (5) years from date of delivery, or as otherwise specified in this ITB.</p>
11. Price Schedule	<p>11.1 The Price Schedule shall be prepared using the Forms provided in Section 6 of the ITB and taking into consideration the requirements in the ITB.</p> <p>11.2 Any requirement described in this ITB but not priced in the Price Schedule, shall be assumed to have been included in the prices of other activities or items, as well as in the final total price.</p>

<p>12. Bid Security</p>	<p>12.1 A Bid Security shall be provided in the amount and form indicated in the BDS. The Bid Security shall be valid for the duration as referred in BDS.</p> <p>12.2 The Bid Security shall be included along with the Bid. If Bid Security not found in the Bid, the Bid shall be rejected.</p> <p>12.3 If the Bid Security amount or its validity period is found to be less than what is required, PAF-IAST shall reject the Bid.</p> <p>12.4 In the event an electronic submission is allowed in the BDS, Bidders shall include a copy of the Bid Security in their bid and the original of the Bid Security must be sent via courier or hand delivery as per the instructions in BDS.</p> <p>12.5 The Bid Security will be forfeited by PAF-IAST, and the Bid rejected, in the event of any, or combination, of the following conditions:</p> <ul style="list-style-type: none"> a) If the Bidder withdraws its offer during the period of the Bid Validity specified in the BDS, or; b) In the event the successful Bidder fails: <ul style="list-style-type: none"> i. to sign the Contract after PAF-IAST has issued an award; or ii. to furnish the Performance Security, insurances, or other documents that PAF-IAST may require as a condition precedent to the effectivity of the contract that may be awarded to the Bidder.
<p>13. Currencies</p>	<p>13.1 All prices shall be quoted in the currency indicated in the BDS. Where prices are quoted in different currencies, for the purposes of comparison:</p> <ul style="list-style-type: none"> a) PAF-IAST will convert the currency quoted into the currency indicated in BDS, in accordance with the prevailing Inter Bank rate of exchange on the last day of submission of Bids; and b) In the event that PAF-IAST selects a Bid for award that is quoted in a currency different from the preferred currency in the BDS, PAF-IAST shall reserve the right to award the contract in the currency of PAF-IAST's preference, using the conversion method specified above.
<p>14. Joint Venture, Consortium or Association</p>	<p>14.1 If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the JV, Consortium or Association jointly and severally, which shall be evidenced by an intent letter or an Agreement among the legal entities duly notarized, and submitted with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between PAF-IAST and the designated lead entity, who shall be acting for and on behalf of all the member entities comprising the joint venture.</p> <p>14.2 After the Deadline for Submission of Bid, the lead entity identified to represent the JV, Consortium or Association Or any change in the constitution of the JV, Consortium or Association shall not be altered without the prior written consent of PAF-IAST/ Procurement Committee.</p> <p>14.3 The lead entity and the member entities of the JV, Consortium or Association shall abide by the provisions of Clause 15 herein in respect of submitting only one Bid.</p> <p>14.4 The description of the organization of the JV, Consortium or Association must clearly define the expected role of each of the entities in the joint venture in delivering the requirements of the ITB, both in the Bid and the JV, Consortium or Association Agreement or Intent Letter. All entities that comprise the JV, Consortium or Association shall be cumulatively subject to the eligibility and technical qualification assessment by PAF-IAST as defined in Section 4: Evaluation Criteria.</p> <p>14.5 A JV, Consortium or Association in presenting its track record and experience should clearly differentiate between:</p> <ul style="list-style-type: none"> a) Those that were undertaken together by the JV, Consortium or Association; and

	<p>b) Those that were undertaken by the individual entities of the JV, Consortium or Association.</p> <p>14.6 Previous contracts completed by individual experts working privately but who are permanently or were temporarily associated with any of the member firms cannot be claimed as the experience of the JV, Consortium or Association or those of its members, but should only be claimed by the individual experts themselves in their presentation of their individual credentials.</p>
15. Only One Bid	<p>15.1 The Bidder (including the individual members of any Joint Venture) shall submit only one Bid, either in its own name or as part of a Joint Venture.</p> <p>15.2 Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following:</p> <ul style="list-style-type: none"> a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or c) they have the same legal representative for purposes of this ITB; or d) they are subcontractors to each other's Bid, or a subcontractor to one Bid also submits another Bid under its name as lead Bidder; or some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this ITB process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.
16. Bid Validity Period	<p>16.1 Bids shall remain valid for the period specified in the BDS, commencing on the Deadline for Submission of Bids. A Bid valid for a shorter period may be rejected by PAF-IAST and rendered non-responsive.</p> <p>16.2 During the Bid validity period, the Bidder shall maintain its original Bid without any change, including the availability of the Key Personnel.</p>
17. Extension of Bid Validity Period	<p>17.1 In exceptional circumstances, prior to the expiration of the Bid validity period, PAF-IAST may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing and shall be considered integral to the Bid.</p> <p>17.2 If the Bidder agrees to extend the validity of its Bid, it shall be done without any change to the original Bid.</p> <p>17.3 The Bidder has the right to refuse to extend the validity of its Bid, in which case, the Bid shall not be further evaluated.</p>
18. Clarification on ITB (from the Bidders)	<p>18.1 Bidders may request clarifications on any of the ITB documents no later than the date indicated in the BDS. Any request for clarification must be sent in writing in the manner indicated in the BDS. If inquiries are sent other than specified channel, even if they are sent to a PAF-IAST staff member, PAF-IAST shall have no obligation to respond or confirm that the query was officially received.</p> <p>18.2 PAF-IAST will provide the responses to clarifications through the method specified in the BDS.</p> <p>18.3 PAF-IAST shall endeavor to provide responses to clarifications in an expeditious manner, but any delay in such response shall not cause an obligation on the part of PAF-IAST to extend the submission date of the Bids, unless PAF-IAST deems that such an extension is justified and necessary.</p>
19. Amendment in ITB	<p>19.1 At any time prior to the deadline of Bid submission, PAF-IAST may for any reason, such as in response to a clarification requested by a Bidder, modify the ITB in the form of an amendment to the ITB. Amendments will be made available to all prospective bidders.</p> <p>19.2 If the amendment is substantial, PAF-IAST may extend the Deadline for submission of Bid to give the Bidders reasonable time to incorporate the amendment into their Bids.</p>

20. Alternative Bids	<p>20.1 Unless otherwise specified in the BDS, alternative Bids shall not be considered. If submission of alternative Bid is allowed by BDS, a Bidder may submit an alternative Bid, but only if it also submits a Bid conforming to the ITB requirements. Where the conditions for its acceptance are met, or justifications are clearly established, PAF-IAST reserves the right to award a contract based on an alternative Bid.</p> <p>20.2 If multiple/ alternative bids are being submitted, they must be clearly marked as “Main Bid” and “Alternative Bid”</p>
21. Pre-Bid Conference	21.1 When appropriate, a pre-bid conference may be conducted at the date, time and location specified in the BDS. All Bidders are encouraged to attend. Nonattendance, however, shall not result in disqualification of an interested Bidder. Minutes of the Bidder’s conference will be disseminated on the procurement website and/ or shared by email as specified in the BDS. No verbal statement made during the conference shall modify the terms and conditions of the ITB, unless specifically incorporated in the Minutes of the Bidder’s Conference or issued/ posted as an amendment to ITB.
C. SUBMISSION AND OPENING OF BIDS	
22. Bid Proposal Submission	<p>22.1 The Bidder shall submit a duly signed and numbered all pages of the complete Bid in an Envelope sealed and marked as per ITB 22.6, and in accordance with KPPRA Rule 6 (2)(a).</p> <p>22.2 The Envelope should contain all the Returnable Forms (A – G) along with Technical Specifications meeting or exceeding the requirements as stipulated in this ITB, and supporting documents in accordance with requirements in the BDS.</p> <p>22.3 The Bid Security as referred in BDS must be placed in the Bid Envelope.</p> <p>22.4 Bid can be delivered either personally, or by courier as specified in the BDS.</p> <p>22.5 The Bid shall be signed by the Bidder or person(s) duly authorized to commit the Bidder. The authorization shall be communicated through a document evidencing such authorization issued by the legal representative of the bidding entity, or a Power of Attorney, accompanying the Bid. There should not be errors and/ or over-writings. Corrections (if any) should be made clearly and initialed with dates.</p> <p>22.6 Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder fully accepts the General Contract Terms and Conditions.</p> <p>22.7 Hard copy submission by courier or hand delivery allowed or specified in the BDS shall be governed as follows:</p> <p style="padding-left: 40px;">a) The signed Bid shall be marked “Original”, and its copies marked “Copy” as appropriate. The number of copies is indicated in the BDS. All copies shall be made from the signed original only. If there are discrepancies between the original and the copies, the original shall prevail.</p> <p style="padding-left: 40px;">(b) The Bid Proposals must be sealed and submitted in an envelope, which shall:</p> <p style="padding-left: 80px;">i. Bear the name of the Bidder;</p> <p style="padding-left: 80px;">ii. Be addressed to PAF - IAST as specified in the BDS; and</p> <p style="padding-left: 80px;">iii. Bear a warning not to open before the time and date for Bid opening as specified in the BDS.</p> <p style="padding-left: 40px;">If the envelope with the Bid is not sealed and marked as required, PAF-IAST shall assume no responsibility for the misplacement, loss, or premature opening of the Bid.</p>
23. Deadline for Submission of Bids and Late Bids	<p>23.1 Complete Bids must be received by PAF-IAST in the manner, and no later than the date and time, specified in the BDS. PAF-IAST shall only recognize the actual date and time that the bid was received by PAF-IAST.</p> <p>23.2 PAF-IAST shall not consider any Bid that is received after the deadline for the submission of Bids.</p>

<p>24. Withdrawal, Substitution, and Modification of Bids</p>	<p>24.1 A Bidder may withdraw, substitute or modify its Bid after it has been submitted at any time prior to the deadline for submission.</p> <p>24.2 A bidder may withdraw, substitute or modify its Bid by sending a written notice to PAF-IAST, duly signed by an authorized representative, including a Power of Attorney. The corresponding substitution or modification of the Bid, must accompany the respective written notice. All notices must be submitted in the same manner as specified for submission of Bids, by clearly marking them as “WITHDRAWAL” “SUBSTITUTION,” or “MODIFICATION”</p> <p>24.3 Bids requested to be withdrawn shall be returned unopened to the Bidders, except if the bid is withdrawn after the bid has been opened.</p>
<p>25. Bid Opening</p>	<p>25.1 The Procurement Committee of PAF- IAST will open the Bid in the presence of Bidders’ representative(s) who choose to attend.</p> <p>25.2 The Bidders’ names, modifications, withdrawals, the condition of the envelope labels/ seals, the number of folders/ files and all other such other details as PAF-IAST may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submissions, in which case, the Bid shall be returned unopened to the Bidders.</p> <p>25.3 In case of public holiday on bid opening day, bids will be opened on next working day.</p>

<p>D. EVALUATION OF BIDS</p>	
<p>26. Confidentiality</p>	<p>26.1 Information relating to the examination, evaluation, and comparison of Bids, and the recommendation of contract award, shall not be disclosed to Bidders, even after publication of the contract award.</p> <p>26.2 Any effort by a Bidder to influence PAF-IAST in the examination, evaluation and comparison of the Bids or contract award decisions may, at PAF-IAST’s decision, result in the rejection of its Bid and may subsequently be subject to consequences.</p>
<p>27. Preliminary Examination</p>	<p>27.1 PAF-IAST shall examine the Bids to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, and whether the Bids are generally in order, among other indicators that may be used at this stage. PAF-IAST reserves the right to reject any Bid at this stage.</p>
<p>28. Evaluation of Eligibility and Technical Qualification</p>	<p>28.1 Eligibility and Technical Qualification of the Bidder will be evaluated against the Minimum Eligibility/ Qualification requirements specified in the Section 4: Evaluation Criteria.</p> <p>28.2 In general terms, Bidders that meet the following criteria may be considered qualified:</p> <ul style="list-style-type: none"> a) They are not included in the list of blacklisted or barred companies published on KPPRA website, any federal or provincial government department; b) They have a good financial standing and have access to adequate financial resources to perform the contract and all existing commercial commitments, c) They have the necessary experience, technical expertise, production capacity, quality certifications, quality assurance procedures and other resources applicable to the supply of goods and/ or services required; d) They are able to comply fully with the General Terms and Conditions of Contract; e) They do not have a consistent history of court/ arbitral award decisions against the Bidder; and f) They have a record of timely and satisfactory performance with their clients.
<p>29. Evaluation of Bid Proposals</p>	<p>29.1 The evaluation team shall review and evaluate the Bids on the basis of their responsiveness to the Schedule of Requirements and Technical Specifications and other documentation provided, applying the procedure indicated in the BDS and other ITB documents. When necessary, and if stated in the BDS, PAF- IAST may invite</p>

	<p>technically responsive bidders for a presentation related to their Bids. The conditions for the presentation shall be provided in the bid document where required.</p>
<p>30. Due diligence</p>	<p>30.1 PAF- IAST reserves the right to undertake a due diligence exercise, aimed at determining to its satisfaction, the validity of the information provided by the Bidder. Such exercise shall be fully documented and may include, but need not be limited to, all or any combination of the following:</p> <ul style="list-style-type: none"> a) Verification of accuracy, correctness and authenticity of information provided by the Bidder; b) Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team; c) Inquiry and reference checking with Government entities with jurisdiction on the Bidder, or with previous clients, or any other entity that may have done business with the Bidder; d) Inquiry and reference checking with previous clients on the performance on on-going or completed contracts, including physical inspections of previous works, as deemed necessary; e) Physical inspection of the Bidder’s offices, branches or other places where business transpires, with or without notice to the Bidder; f) Other means that PAF-IAST may deem appropriate, at any stage within the selection process, prior to declaring the Bidder as Qualified.
<p>31. Clarification of Bids</p>	<p>31.1 To assist in the examination, evaluation and comparison of Bids, PAF- IAST may, at its discretion, request any Bidder for a clarification of its Bid.</p> <p>31.2 PAF- IAST’s request for clarification and the response shall be in writing and no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by PAF-IAST in the evaluation of the Bids in accordance with the ITB.</p> <p>31.3 Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by PAF-IAST, may not be considered during the review and evaluation of the Bids.</p>
<p>32. Responsiveness of Bid</p>	<p>32.1 PAF-IAST’s determination of a Bid’s responsiveness will be based on the contents of the bid itself. A substantially responsive Bid is one that conforms to all the terms, conditions, specifications and other requirements of the ITB without material deviation, reservation, or omission.</p> <p>32.2 If a bid is not substantially responsive, it may be rejected by PAF-IAST and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.</p>
<p>33. Right to Accept, Reject, Any or All Bids</p>	<p>33.1 PAF-IAST reserves the right to accept or reject any proposal in response to the ITB, to render any or all of the proposals as non-responsive, and to reject all Proposals in response to the ITB at any time prior to award of contract, while assigning the reason(s) thereof.</p> <p>33.2 PAF- IAST shall not be obliged to award the contract to the lowest priced offer.</p>
<p>34. Nonconformities, Repairable Errors and Omissions</p>	<p>34.1 Provided that a Bid is substantially responsive, PAF-IAST may waive any nonconformities or omissions in the Bid that, in the opinion of PAF-IAST, do not constitute a material deviation.</p> <p>34.2 PAF-IAST may request the Bidder to submit the necessary information or documentation, within a reasonable period, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price. Failure of the Bidder to comply with the request may result in the rejection of its Bid.</p>

	<p>34.3 For the Price Schedule that are submitted, PAF-IAST shall check and correct arithmetical errors as follows:</p> <ul style="list-style-type: none"> a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of PAF-IAST there is an obvious misplacement of the decimal point in the unit price; in which case, the line item total as quoted shall govern and the unit price shall be corrected; b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. <p>34.4 If the Bidder does not accept the correction of errors made by PAF- IAST, its Bid shall be rejected.</p>
35. Bidder Grievance	35.1 PAF- IAST's grievance readdress procedure provides an opportunity for appeal to those persons or firms not awarded a contract through a competitive procurement process. In the event that a Bidder believes that it was not treated fairly, the Bidder may lodge a complaint to the PAF-IAST's Grievance Readdress Committee.
E. AWARD OF CONTRACT	
36. Evaluation	<p>36.1 PAF-IAST will conduct the evaluation solely on the basis of response to this tender received from the firms.</p> <p>36.2 Evaluation shall be undertaken in the following steps:</p> <ul style="list-style-type: none"> a) Preliminary Examination including Technical Specifications and other compliances b) Arithmetical check and ranking of bidders who passed preliminary examination by price. c) Evaluation of prices <p>36.3 Price comparison shall be based on the landed price, including transportation, insurance and the total cost of ownership (including spare parts, consumption, installation, commissioning, training, special packaging, etc., where applicable)</p>
37. Integrity Pact	37.1 Bidders will also be required to submit a signed Integrity Pact on a stamp paper of appropriate value as part of their response. The text of Integrity Pact is available at Annex – I.
38. Award Criteria	<p>38.1 Prior to expiration of the period of Proposal validity, PAF-IAST shall award the contract to the Bidder that is found to be responsive to the requirements of the Technical Specifications and has offered the lowest price.</p> <p>38.2 PAF-IAST shall not be obliged to award the contract to the lowest priced offer, if the response is found deficient to the Technical Specifications and other compliances.</p> <p>38.3 In case of tie in Financial Bid Value, the Contract will be awarded to the bidder having more closest match to the Technical Specifications.</p>
39. Contract Signing	<p>39.1 After the approval of any Work Award, a Contract Agreement on the stamp paper of appropriate value, shall be executed by PAF-IAST with Selected Bidder (i.e. Contractor) within 15 days from the date of issuance of Lol (Letter of Intent)/ Work Order.</p> <p>39.2 Failure to signing of Contract Agreement by the selected Bidder Firm with PAF-IAST within the stipulated time may constitute sufficient grounds for the annulment of the award, and forfeiture of the Bid Security, if any, and on which event, PAF- IAST may award the Contract to the Second highest rated or call for new Proposals.</p>
40. Right to Vary quantity at the Time of Award	40.1 At the time of award of Contract, PAF-IAST reserves the right to vary the quantity of goods and/ or services, without any change in the unit price or other terms and conditions.

41. Sample draft Contract	41.1 A sample draft Contract to be signed, containing applicable General Terms and Conditions can be found at Annex – II.
42. Performance Security	42.1 A performance security, if required in the BDS, shall be provided in the amount specified in BDS, well prior to the Contract signing by both parties. Where a performance security is required, the receipt of the performance security by PAF-IAST shall be a condition for rendering the contract effective.
43. Bank Guarantee for Advanced Payment	43.1 No Payment will be released in advance.
44. Liquidated Damages	44.1 PAF-IAST shall apply Liquidated Damages for the damages and/ or risks caused to PAF-IAST resulting from the Contractor's delays or breach of its obligations as per Contract. a) In case of delay, the Procurement Committee, PAF-IAST reserves the right to impose a penalty not exceeding 10% of the total amount of the Contract Value at the rate as referred in the Sample Contract at Annexure – II. b) If the Contractor fails to complete work as per PAF-IAST requirement, the Rector, PAF-IAST reserves the right to reject it altogether or impose a penalty not exceeding 50% of the total amount of the Contract. c) If the Contractor fails to provide supplies/ services as per PAF-IAST requirements, PAF-IAST may forfeit his earnest money as well as Performance Security, and the work will be done at the risk and cost of Contractor. d) In case of any dispute, matter will be referred to Rector, PAF-IAST whose decision will be binding on both the parties.
45. Force Majeure	45.1 "Force Majeure" means an event which is beyond the reasonable control of a party and which makes a party's performance of its obligations under the Purchase Order/ Work Order/ Contract impossible or so impractical as to be considered impossible under the circumstances, and includes, but is not limited to, War, Riots, Storm, Flood or other industrial actions (except where such strikes, lockouts or other industrial issues are within the power of the party invoking Force Majeure), confiscation or any other action by Government agencies. In all disputes between the parties as to matters arising pursuant to this Purchase Order/ Work Order/ Contract, the dispute will be referred to Project Director, PAF-IAST whose decision will be final.
46. Delivery of Goods	46.1 Contractor will be required to deliver the goods as per the Delivery Schedule referred in BDS without claiming any additional cost to the PAF-IAST at the designated site(s) and in quantities as referred in the Contract.
47. Payment Provisions	47.1 Payment will be made only upon PAF- IAST's acceptance of the goods and/ or services performed. The terms of payment shall be within thirty (30) days, after receipt of invoice, and certification of acceptance of goods and/ or services issued by the proper authority in PAF: IAST. Payment will be affected by bank transfer in the currency of the contract. 47.2 The Contractor shall provide all necessary supporting documents along with GST invoice, delivery challan and any other relevant documents as required by the PAF-IAST.

Section 3. Bid Data Sheet

The following data for the goods and/ or services to be procured shall complement, supplement, or amend the provisions in the Invitation to Bid. In the case of a conflict between the Instructions to Bidders, the Bid Data Sheet, and other annexes or references attached to the Bid Data Sheet, the provisions in the Bid Data Sheet shall prevail.

BDS No.	Ref. to Section.2	Data	Specific Instructions / Requirements
1.		Background of the Project	Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF: IAST) is novel in its content and holistic in approach. The project concept is based on the slogan of "Skilling Pakistan" to create a high-quality technical education infrastructure. This unique educational institution in Pakistan will closely collaborate with several institutions in Austria and China and award multiple foreign degrees. This is a historic and visionary initiative as it is probably the first time that an institution will be established in Pakistan with many foreign universities giving degrees to students who study in it.
2.		Objective	The main objective of this Tender is to equip the PAF-IAST with necessary and advanced level of laboratory facilities, providing enabling environment to the students and faculty to perform their academic and research work in a conducive and productive environment and deliver beyond the expectations.
3.		Scope of Work	<p>Supply of undergraduate Lab Equipment The required items in various Lots as referred in Section – 5 have been sought by PAF-IAST from a reputed Firms/ Companies. The supplier is expected to supply high quality products meeting the specification as stipulated in this ITB, which conforms to the international quality standards. The time specified for delivery, Installation and Commissioning in the tender form will be deemed to be the essence of the contract and the Successful Bidder shall arrange within the specified period.</p> <p>Post-Delivery Warranty and Support Services It is required that Manufacturer's Warranty and Post-delivery Bidder's Support Services for at least One (01) year from the date of delivery to PAF-IAST be provided by the Supplier within the quoted cost of items. Moreover, additional Warranty and Support Services for next four (04) years should be quoted year-wise separately by the Bidder on annual payment basis. However, it will be at sole discretion of PAF-IAST to avail additional Warranty and Support Services in subsequent year(s) or otherwise.</p>
4.	7	Language of the Bid	English
5.	22, 23, 27	Submitting Bids for Parts or subparts of the Schedule of Requirements (partial bids)	The Purchase Committee shall consider the Bids Lot-wise (i.e. package against each of the Lots) as referred in Section – 5. Any item not quoted in the respective Lot shall have reasonable grounds to reject the Bid for that Lot.
6.	20	Alternative Bids	Not Allowed.

7.	21	Pre-Bid conference	N/A
8.	16	Bid Validity Period	90 days
9.	13	Bid Security/ Earnest Money (Refundable)	<p>Required in the amount of: 2% of the Total Bid Value of each Lot including extended warranty (separately) against which the Bidder is participating. In case of options, earnest money shall be based on the maximum quoted price of the same items in the Lot.</p> <p><u>Acceptable Forms of Bid Security:</u> Denominated in Pak Rupees duly issued by a Pakistani Bank or branch of a Foreign Bank, in the form of CDR in favor of the Project Director, PAF-IAST</p>
10.	42	Liquidated Damages	<p>Will be imposed as follows:</p> <p>Percentage of contract price per day of delay: as referred in Draft Contract Sample in Annexure – II.</p>
11.	40	Performance Security	Within one week of issuance of LoI/ Purchase Order and well prior to the signing of Contract, as 10% of the Contract value for the duration of Warranty period referred in RFP.
12.	12	Currency of Bid	Pakistani Rupees (PKR)
13.	31	Deadline for submitting requests for clarifications/ questions	5 days before the submission deadline
14.	31	Contact Details for submitting clarifications/ questions	<p>Focal Person in PAF: IAST:</p> <p>Lot 1: Dr. Rizwan Ahmad, rizwan.ahmad@fcm3.paf-iaست.edu.pk</p> <p>Lot 2&3: Dr. Fida Hussain, fida.hussain@fcm3.paf-iaست.edu.pk</p> <p>Lot 4: Dr. Amir Muhammad, amir.muhammad@fcm3.paf-iaست.edu.pk</p> <p>Lot 5: Dr. Muhammad Muqheet muhammad.muqheet@fcm3.paf-iaست.edu.pk 0995-645112</p>
15.	18, 19, and 21	Manner of Disseminating Supplemental Information to the ITB and responses/ clarifications to queries	<p>Direct communication to prospective Bidders by email and/ or Posting on the PAF: IAST website:</p> <p>Fida.hussain@fcm3.paf-iaست.edu.pk procurement@paf-iaست.edu.pk labs@paf-iaست.edu.pk http://www.paf-iaست.edu.pk/</p>
16.	23	Deadline for Submission	Tuesday March 08, 2022, on or before 11:30 AM (PST)
17.	22	Number of Set(s) of Bid	<p>Bid Proposal(s)</p> <ul style="list-style-type: none"> - One (01) Original - One (01) Copy - One Soft Copy in USB flash drive

			<p>Note: Bidders are required to prepare and submit the Proposal(s) against the Lot(s) separately in separate envelopes, in which they intend to participate.</p> <p>Submission of Bid document in soft is mandatory.</p>								
18.	22	Allowable Manner of Submitting Bids	<input checked="" type="checkbox"/> Courier/ Hand Delivery								
19.	22	Bid Submission Address	<input checked="" type="checkbox"/> By Courier / Hand Delivery: Convener Procurement Committee, PAF- IAST, Mang, Haripur								
20.	22	Electronic submission (email) requirements	Not Allowed								
21.	25	Date, time and venue for the opening of bid	Date and Time: Tuesday March 08, 2022 at 12:00 PM Venue: Conference Room, PAF-IAST, Mang, Haripur								
22.	27, 36	Evaluation Method	Eligible and qualified bids meeting the PAF- IAST requirements and technically responsive as stipulated in this ITB								
23.		Evaluation Method for the Award of Contract	Lowest priced technically responsive.								
24.		Expected date for commencement of Contract	April 2022								
25.		Maximum expected duration of Contract	60 months								
26.	35	PAF: IAST will award the contract to:	One Bidder Only against each Lot								
27.	39	Type and Contract Terms and Conditions that will apply	PAF-IAST General Terms and Conditions for Contracts for Goods and/ or Services as per Sample at Annex – II.								
28.	46	Delivery, Installation and Testing/ Training	<table border="1"> <thead> <tr> <th></th> <th>Delivery</th> <th>Installation</th> <th>Testing/ Training</th> </tr> </thead> <tbody> <tr> <td>LOT # 1-5</td> <td>6 - 8 weeks</td> <td>2 weeks</td> <td>1 week</td> </tr> </tbody> </table>		Delivery	Installation	Testing/ Training	LOT # 1-5	6 - 8 weeks	2 weeks	1 week
	Delivery	Installation	Testing/ Training								
LOT # 1-5	6 - 8 weeks	2 weeks	1 week								

Section 4. Evaluation Criteria

Preliminary Examination Criteria

Bids will be examined to determine whether they are complete and submitted in accordance with ITB requirements as per below criteria on a Yes/ No basis:

- Appropriate signatures
- Power of Attorney
- Minimum Bid documents provided
- Bid Validity
- Bid Security submitted as per ITB requirements with compliant validity period

Minimum Eligibility Criteria

Eligibility will be evaluated on a Pass/ Fail basis. If the Bid is submitted as a Joint Venture, there should be no more than two (02) companies in the Joint Venture and each company should meet the minimum criteria, unless otherwise specified.

ELIGIBILITY			
S. #	Subject	Criteria	Reference Returnable Form(s)
1.	Bidder's Status	Participating as <input type="checkbox"/> Individual Company <input type="checkbox"/> JV/ Consortium	Form B: Joint Venture/ Consortium/ Association Information Form
2.	Legal Status	Bidder is a legally registered entity in Pakistan. Bidder is/ are also registered with FBR for Income Tax and Sales Tax	Form C: Bidder Information Form
3.	Location of Offices	Bidder (Lead Bidder) has either declared office(s) in Islamabad/ Rawalpindi/ Peshawar or in Haripur. Alternately, if the Contract is awarded, the Bidder shall establish office in either of these cities.	Form C: Bidder Information Form
4.	Principal's Authorization	Bidder or at least one member of JV/ Consortium/ Association must be Authorized Partner/ Reseller/ Dealer for the supply and services of quoted goods/ services.	Form C: Bidder Information Form
5.	Company in Operation	Bidder (Lead Bidder) is in operation for at least three (03) years.	Form C: Bidder Information Form
6.	Financial Strength	Average annual turnover over last 3 years no less than Rs. 60 million <i>(For JV/ Consortium/ Association, all Parties cumulatively should meet requirement).</i>	Form C: Bidder Information Form
7.	Relevant Experience	Minimum No. of Projects of similar nature, value, and complexity in last 3 years Two (02) projects <i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i>	Form C: Bidder Information Form
8.	Eligibility	Bidder(s) is not suspended, nor debarred, nor otherwise identified as ineligible by any Government/ Semi-government/ Autonomous organization in Pakistan, in accordance with ITB clause 3. Non-Blacklisting certificate will be required.	Form A: Bid Submission Form
9.	Bankruptcy	Bidder(s) has not declared bankruptcy, is not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against the vendor that could impair its operations in the foreseeable future.	Form A: Bid Submission Form

Section 5a: Technical Specifications of the Required Goods

LOT No. 01: Particulate Technology Lab		
01	Sieve Shaker for Sieves	The shaker should accept sieves having diameter 200mm, 300mm and 8", 12". Sieve shaker should be activated by an electric motor and can hold up to 8 sieves diameter 200 mm or 7 sieves diameter 300 mm plus pan and lid. It should also be used to perform both dry and wet sieving tests. Shaking frequency: 500 times/min. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practical /Experimental Manuals must be included.
02	8" Diameter Fine Sieve Set	Set of 12 sieves made of stainless steel according to American Society for Testing and Materials (ASTM) standards.
03	8" Diameter Coarse Sieve Set	Set of 7 or 8 sieves made of stainless steel according to American Society for Testing and Materials (ASTM) standards.
04	Computer Controlled Drum Cell Filter	Main metallic elements should be made of steel. Suspension tank: 250 L, stirrer in suspension tank, rotating perforated drum controlled by computer (area: 0.1 m ²), adjustable revolutions (0-3rpm), tank of drum: 4 L, tank for filtering cake: 30 L, filtrate vacuum tank: 30 L, stirrer controlled with computer, vacuum pump, pressure sensors for each tank and compressed air, real time SCADA, real time control, open and multi control. It should also contain a control interface box, data acquisition board, and computer control, data acquisition and management software. Furthermore, 1 bag of Diatomaceous earth (50 kg). A computer i7 (latest generation), 500 GB storage (SSD) and 16 GB RAM, 8 GB graphic card NVIDIA or MSI, keyboard, mouse. A 32 GB USB should also be included for data acquisition. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practical /Experimental Manuals must be included. A complete labeled process flow diagram should be labeled on equipment.
05	Jaw Crusher	Two jaws of manganese steel. The moveable jaw could produce two blows for every revolution. <ol style="list-style-type: none"> 1. Max. feeding size: <80 mm 2. Discharge opening: <6-25 mm 3. Capacity: 550 kg/hour or more 4. Hopper with lid

		5. All required accessories must be included, including 4 digital vernier calipers (Measurement range: 50-500 mm). An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included.
06	Roller Mill	<p>Having features:</p> <p>Precise Adjustment System: Extraordinary design helps the system work without any loose.</p> <p>Total Sealing: There is a sealing cover and easily operated by hand isolates particles for keeping the bearing system clean</p> <p>Roll Changing System: Roll set with all components can be moved out effortlessly without any disassembling and lifting up.</p> <p>Bearing Lubrication: For more efficiency, innovative vent points on bearing enables to relieve heat and pressure inside. Also, lubrication point re-located for equal wear protection inside surfaces of bearing.</p> <p>Technical Data: Roller Diameter: 120mm Roller Length: 500mm</p> <p>It can be used for grains and corn. All required accessories must be included. An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included.</p>
07	Floatation Machine	<p>Removal of solids from raw water using dissolved air flotation, conditioning of the raw water by flocculation, 3 Metering pumps for chemicals flocculation tank with 3 chambers and 4 stirring machines, flotation tank with electrically driven scraper, pressure tank and 2 circulation pumps relief valve separate supply unit with tank and pump for raw water electromagnetic flow rate sensor, measurement of flow rate, pressure and pH value control of the pH value.</p> <p>Measuring ranges: flow rate: 0-10 L/min (raw water), floatation tank: 150 L pH value: 1-14 pressure: 0-6 bar (recycle water)</p>

		All required accessories must be included. An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manuals must be included. A complete labeled process flow diagram should be labeled on equipment.
08	Cone Crusher	<p>Rugged fabricated/cast steel construction with reinforced joints and internal welds and joints ground and polished</p> <p>Specification: Diameter of Large end of crushing cone: 100mm Max. Feeding Size: 5mm</p> <p>Including base assembly equipped with sample collector (one drawer). Mounting hardware should also be included. A complete tool kit for maintenance and all necessary accessories should be included. An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included.</p>
09	Double Cone Mixer	<p>Specification: Volume: 5-150 L Mixing barrel made of polished stainless steel or corundum liner or polyurethane liner. An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included.</p>
10	Hydrocyclone Apparatus	<p>Specification Solid separation from liquids with a hydro cyclone, hydro cyclone with tangential inlet stirred tank for preparation of suspensions, centrifugal pump to deliver the suspension adjustment of flow rate by valve in bypass, electromagnetic flow meter at inlet sampling points on the overflow and underflow to determine the flow rates and solid concentrations manometer to determine the pressure loss at the cyclone.</p> <p>Technical data: Cyclone (height: greater than 700mm, \varnothing: approx. 114mm, vortex finder: \varnothing 40mm), Stirred tank (capacity: 200L, material: stainless steel, Overflow tank, capacity: 5L, material: PMMA)</p> <p>Measuring ranges Pressure: 0-4bar Flow rate: 0-200L/min</p> <p>An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included. A complete labeled process flow diagram should be labeled on equipment.</p>

11	Solids Handling Study Unit	The unit should cover different aspects of solid behaviors including materials storage, transport, size reduction, mixing, particle separation. Main components to be included are Ball mill with different ball sizes (total volume: 5 l), V-Blender (total volume: 1 l), gas cyclone and pneumatic conveyor, compressor, vibratory shaker with set of 8 sieves from 0.2 cm to 0.006 cm, blowing and ejector, collecting tray, weight balance, graduated test tube. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manuals must be included. A complete labeled process flow diagram should be labeled on equipment.
12	Ball Mill	Horizontal roller ball mill Structure: Double Tier Grinding Tools: Horizontal Grinding Jar with Zr or SS balls Rotational rod's structure: 03 rods per tier Capable to accommodate no. of Grinding Jars: Minimum of 08 (04 upper tier and 04 lower tier) Grinding Jar Volumes 0.5 to 1L (upper tier) 1L to 5L (Lower tier) Rotational Speed of Grinding Jar 0-500 rpm (adjustable, each tier should have separate adjustment) Roller Spacing 1-4 inches as per design Electrical Details Preferably single phase Overall Dimensions (WxDxH) ft3 Approx. 5x3x3 ft3
13	Heavy Duty Weight Balance	Digital display Maximum weight: 150 kg Accuracy: Approximately 20 g
14	Computer Controlled Plate and Frame Filtration Assembly	Suspension tank made of polyethylene. Capacity: 250 L. Computer controlled centrifugal pump Plate and frame filter press, four types of filter cloths, Filtrate tank made of polyethylene. Pressure and Temperature sensors, Portable turbidity meter. A computer i7 (latest generation), 500 GB storage (SSD) and 16 GB RAM, 8 GB graphic card NVIDIA or MSI, keyboard, mouse. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practices Manuals must be included. A complete labeled process flow diagram should be labeled on equipment. A 32 GB USB should also be included for data acquisition. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manuals must be included. A complete labeled process flow diagram should be labeled on equipment.

15	Liquid/Solid Mixing Unit	Dynamic brake motor with speed regulator, 0-3000rpm, vertical platform, torque meter, agitator holder, agitator (Two blade, two propellers, two turbine), tanks (5 and 21 L), control panel. All cables, accessories, assembly, and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manuals must be included. A complete labeled process flow diagram should be labeled on equipment.
16	Digital Overhead Stirrer	Include universal plate stand Speed: 50-2200 RPM Handling capacity: 20 L All cables, accessories, assembly including stand should be included.
17	Lab Scale Screw Press for oil extraction	Capacity: 0-50 kg/h Power: nearly 5.5 kW Purpose: Oil Etraction An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included. All accessories, including suitable containers for storage of raw materials as well as products, should also be provided.
18	Lab Scale Screw Press with round crusher	Capacity: 500 kg/h Purpose: Vegetable & Fruit Juice Etraction An assembly and Installation, Starting-up, Safety, Maintenance and Practical/Experimental Manual must be included. All accessories, including suitable containers for storage of raw materials as well as products, should also be provided.
Lot No. 2: Water Quality Testing Lab		
01	Water Purification system including Reverse Osmosis	Spiral wound membrane module <ul style="list-style-type: none"> ▪ Capacity: 3000 GPD ▪ With Pre-treatment system (Carbon, Sand, and Cartridge filtration), Pressure gages, flow meters, PLC based system, UV light (3 extra), Chlorine dosing system and ozone generator, extra spiral wound RO membrane (1 extra), product storage tank 1000L, raw water tank 1000L, With all accessories and consumables With best quality piping system, fittings, cablings, Chemicals, and consumables
02	Ion Exchange Unit	Softening and desalination of water by ion exchange Ion exchanger

		<ul style="list-style-type: none"> ▪ material: network polymer ▪ Cation exchanger: H⁺ form ▪ anion exchanger: OH⁻ form <p>Diaphragm pump flow rate: 300mL/min</p> <ul style="list-style-type: none"> ▪ head: 10m <p>Tank</p> <p>Measuring ranges</p> <ul style="list-style-type: none"> ▪ flow rate: 27...270ml/min ▪ conductivity: 0...2000μS/cm <p>Chemicals Needed Caustic soda, hydrochloric acid, distilled water</p>
03	COD measurement system	<p>COD Digester: Temp ambient to 150 C Number of cuvettes:(15 vials x 2 Double block)</p> <p>COD analyzer Wavelength range: 420nm and 610nm or above Wavelength accuracy: ± 1 nm Wavelength Selection: Automatic selection according to the measurement program number Photometric Linearity: ± 0.002 A (0-1 A) Photometric Repeatability: ± 0.005 A (0-1 A) Photometric accuracy: rated 1.0 ABS under ± 0.005 A LCD/LED data display Reading mode: % transmittance, absorbance, concentration External Output: printer computer communications and micro- Power adopter and 20 sets of Alkaline batteries COD vails: 500 each for low, Medium and high range</p>
04	BOD Measurement System	<p>BOD Sensor: set of six. (3 sets) Manometric; electronic pressure sensor Ranges 0 - 40, 0 - 80, 0 - 200, [mg/l O₂] 0 - 400, 0 - 800, 0 - 2000, 0 - 4000 mg/l</p>

		<p>Accuracy* 0.5 % full scale at 20°C Applications BOD5, BOD7, User-selectable, between period 1 and 28 days Auto result Up to 28 results Result BOD [mg/l]; LED display BOD Sampling Bottles, stirring unit and accessories: set of six (3 sets) BOD sample bottle: Brown glass, 500 ml BOD sample bottles, set of 6 bottles with complete stirring unit + Cable for connection to a PC and Inductive stirring system for 6 samples, Stirring rod and Stirring rod remover Rubber gasket Chemicals: Potassium hydroxide solution Nitrification inhibitor, Test set, BOD test tablets, BOD Incubator: (01) Temperature Range: 5 °C to 60 °C Temperature Accuracy: ± 0.2 °C Temp Uniformity: ± 2.0 °C Number of trays (set of six BOD bottles with sensor and stirring unit) to accommodate: 03 Electric socket: at least 03 inside the incubator for the stirring units</p>
05	UV-Vis Spectrophotometer specifically programed for Water Quality Analysis	<p>Wavelength range:190 - 1100 nm Wavelength accuracy: ± 1 nm Wavelength reproducibility:< 0.1 nm Wavelength resolution:0.1 nm Wavelength selection: automatic Cuvette compatibility:10, 20, 30, 50 mm rectangular cell 1 inch rectangular and round cell and 100 mm rectangular cell with additional adapter Data storage, Internal storge: (result, date, time, sample-ID, user-ID) Display: TFT, color touch, display Optical system: Reference beam, spectral Photometric accuracy: 5 mAbs @ 0.0 - 0.5 Abs Photometric linearity:1 % at > 2 Abs with neutral glass at 546 nm</p>

		<p>0.5 % - 2 Abs Photometric measuring range: \pm Abs Pre-programmed methods: > 250 Scanning speed:900 nm/min (in 1 nm steps) Source lamp: Tungsten (visible range), deuterium (UV range) Spectral Bandwidth: 2 nm User programmes:200 Reagents for 500 samples each (NO₂, NO₃, SO₄, Fluoride Cyanides), Quartz Cuvette: 10 pairs, Disposable Polystyrene Cells for UV-Vis Cuvettes (3.5 ml and 1.5 ml, 500 each)</p> <p>The reagent should not have less than 18 months in expiry date from the date of delivery. With PC (A computer i7 (latest generation), 500 GB storage (SSD) and 16 GB RAM, 8 GB graphic card NVIDIA or MSI, keyboard, mouse), including 32GB USB.</p>
06	Turbidity meter	<p>Accuracy: Ratio on: \pm2% of reading plus 0.01 NTU from 0 - 1000 NTU, Ratio off: \pm2% of reading plus 0.01 NTU from 0 - 40 NTU Accuracy 3: Absorbance: \pm0.01 Abs from 0 - 0.5 Abs at 455 nm, \pm2% Abs from 0.5 - 1 Abs at 455 nm Transmittance: 2% T from 10 - 100% T at 455 nm Data Logging: 2000 total logs, includes reading log, verification log and calibration log Display: color touch screen Interface: 2 USB-A ports for USB flash drive, external printer, keyboard and barcode scanner Light Source: Tungsten filament lamp Measurement Method: Nephelometric Range:0 - 1000 NTU Absorbance (auto range): 0 - 1.0 Transmittance (%): 1.0 - 100 Degree (mg /L): 1 - 100 Repeatability: \pm1% of reading or 0.01 NTU, whichever is greater (under reference conditions) Units: NTU, EBC, Abs (absorbance), %T (% transmittance) and mg/L Should include: Turbidimeter, silicone oil, oiling cloth, filter assembly, sample cells (30 mL) with caps (6Nos), turbidity standardization kit, turbidity standards.</p>

07	Chlorine meter	Wavelength Accuracy $\pm 2\%$ FS Wavelength Bandwidth 10 nm typical Light Sources LED Detectors Silicon photodiode with integrated interference filter Modes Pre-programmed test, absorbance, %T, With standard solutions and reagents	
Lot No. 3: Air Quality Testing Lab			
01	Noise Meter	Rang: 30 ... 130 dB Resolution: 0.1 dB Accuracy: ± 1.4 dB incl. software	
02	Air Sampler	Measurement Principle	Programmable-event filter sampler for determination of particulate matter concentrations
		Resulting Data Units	Micrograms per actual or standard cubic meter $\mu\text{g}/\text{m}^3$. Calculated from lab filter weights and actual or standard sampled volumes.
		Design Specifications	Title 40 CFR, Part 50 Appendix L
		U.S. EPA Designations	Must have USEPA designations
		Inlet	TSP
		Filter Type	47mm PTFE disc filters standard. Other filter material types available.
		Filter Holder	Accommodates standard EPA-pattern white Delrin filter cassettes
		Filter Temperature Control	Filter Temp within 5°C of ambient during sampling and standby. Logged in data.

		Operating Temperature	-30 to +50°C Ambient
		Operating Pressure	400 to 800 mm Hg, Ambient
		Sample Events	24 hour samples standard. Programmable start date, time and duration.
		Flow Rate	16.67 L/min (1 m3/hr.). With flow sensor and real-time actual flow control.
		Flow Accuracy	±2% (±.33 L/min)
		Flow Records	Flow rate, temperature, pressure logged in 5 minute intervals.
		Vacuum Pump	Single-head diaphragm 12 VDC pump
		Data Collection	RS-232 port (9-pin). USB data port. USB flash drive port. Software supplied.
		Memory Capacity	24 sample events
03	Portable Gas Analyzer	<p>Components Measured: NO_x/SO₂/CO/CO₂/O₂</p> <p>Analyzer should have or better than the following Specifications</p> <p>Analysis Principal:</p> <p>NO_x: Chemiluminescence Detection Method (CLD) with cleaning of measurement cell by purified reference gas after every Measurement. (Optical system)</p> <p>SO₂, CO: Non-Dispersive Infrared Absorption Method with with cleaning of measurement cell by purified reference gas after every Measurement (Optical System)</p> <p>CO₂: Non-Dispersive Infrared Absorption Method</p> <p>O₂: Paramagnetic Method or Galvanic Cell</p> <p>Ranges:</p> <p>NO_x: 0-25/50/100/250/500/1000/2500 ppm</p> <p>SO₂: 0-200/500/1000/3000 ppm</p> <p>CO: 0-200/500/1000/2000/5000 ppm</p> <p>CO₂: 0-10/20/30 vol%</p> <p>O₂: 0-5/10/25 vol%</p> <p>Repeatability:</p>	

		<p>±0.5% of Full scale Linearity: ±2.0% of Full scale Drift: ±1.0% of Full scale / day Display: Measurement (3 or 4-digit display), range, flow rate, etc. Should be capable to use for RATA, CD/RA test, AST, QAL 2 in EN14181 Certifications: Should be able to have Certifications of Measurement Act (for Japan, China and Korea) TUEV (for Europe: Technischer Ueberwachungsverein) MCERTS (for UK: Monitoring Certification Scheme), Also meet or exceed the regulatory requirement established by USEPA</p>																
04	Ambient Air Quality Monitoring System with Calibration System mounted on movable trolley:	<p>Ambient Air Quality Monitoring System with Calibration System mounted on movable trolley: Should be inclusive of:</p> <ol style="list-style-type: none"> 1. Noise meter, weather station, CO, SO₂, NO_x and O₃, PM10 and PM2.5 analyzers, calibration system with required calibration gases with extra 2 years consumable 2. Air Sampling System for Air Gases Analyzers 3. Trolley with Shelter and 5KVA Online UPS 4. Data Acquisition System with Latest PC <p>Specifications of Gases Analyzers:</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>CO Analyzer</th> <th>SO₂ Analyzer</th> <th>NO_x Analyzer</th> <th>O₃ Analyzer with built in Span and zero calibration system</th> <th>PM10 and PM 2.5 separate and independent analyzers</th> </tr> </thead> <tbody> <tr> <td>Measuring principle</td> <td>Microprocessor controlled NDIR</td> <td>Microprocessor controlled UV Fluorescence</td> <td>Microprocessor controlled Chemiluminescence</td> <td>Cross flow modulation type, Ultra-violet-absorption method (NDUV)</td> <td>Mass Concentration of Ambient Particulate Matter by Beta Attenuation</td> </tr> </tbody> </table>					Parameter	CO Analyzer	SO ₂ Analyzer	NO _x Analyzer	O ₃ Analyzer with built in Span and zero calibration system	PM10 and PM 2.5 separate and independent analyzers	Measuring principle	Microprocessor controlled NDIR	Microprocessor controlled UV Fluorescence	Microprocessor controlled Chemiluminescence	Cross flow modulation type, Ultra-violet-absorption method (NDUV)	Mass Concentration of Ambient Particulate Matter by Beta Attenuation
Parameter	CO Analyzer	SO ₂ Analyzer	NO _x Analyzer	O ₃ Analyzer with built in Span and zero calibration system	PM10 and PM 2.5 separate and independent analyzers													
Measuring principle	Microprocessor controlled NDIR	Microprocessor controlled UV Fluorescence	Microprocessor controlled Chemiluminescence	Cross flow modulation type, Ultra-violet-absorption method (NDUV)	Mass Concentration of Ambient Particulate Matter by Beta Attenuation													

		Detector and Optical components	Single beam light source & single measurement cell	PMT System (without cooling functional)	Silicon photodiode sensor	photodiode	Photomultiplier tube with plastic scintillator
		Operation Principle	After every Measurement the measurement cell should be cleaned by purified reference gas.	HC Cutter should be built-in installed to get the maximum measurement accuracy.	After every Measurement the measurement cell should be cleaned by purified reference gas.	After every Measurement the measurement cell should be cleaned by purified reference gas.	Instrument must generate 1 reading after each hour of operation
		Certifications	U.S. EPA, CE, TÜV (EU), FCC, China, Korea, MCERTS (UK), GOST (Russia)	U.S. EPA, CE, TÜV (EU), FCC, China, Korea, MCERTS (UK), GOST (Russia)	U.S. EPA, CE, TÜV (EU), FCC, China, Korea, MCERTS (UK), GOST (Russia)	U.S. EPA, CE, TÜV (EU), FCC, China, Korea, MCERTS (UK), GOST (Russia)	US-EPA, MCERTS, CE, NRC, TUV, CNEMC, Korea
		Ranges	5/10/20/50 ppm Must be User selectable 4 ranges Must be Auto range	0-0.05/0.1/0.2/0.5 ppm Must be User selectable 4 ranges Must be Auto	0 - 0.1 / 0.2 / 0.5 / 1 ppm Must be User selectable 4 ranges Must be Auto range switching for all available 4 ranges	0 - 0.1 / 0.2 / 0.5 / 1 ppm Must be User selectable 4 ranges Must be Auto range	0 - 0.1, 0.2, 0.5, 1, 2, 5, 10 mg/m3

			switching for all available 4 ranges	range switching for all available 4 ranges		switching for all available 4 ranges	
		Calibration	Auto calibration function should be provided. Only Single point calibration must cover all 4 ranges.	Auto calibration function should be provided. Only Single point calibration must cover all 4 ranges.	Auto calibration function should be provided. Only Single point calibration must cover all 4 ranges.	Auto calibration function should be provided. Only Single point calibration must cover all 4 ranges.	Must be manual and optionally as automatic.
		Concentration display	ppb, ppm, µg/m3, mg/m3	ppb, ppm, µg/m3, mg/m3	ppb, ppm, µg/m3, mg/m3	ppb, ppm, µg/m3, mg/m3	µg/m3 or mg/m3
		Display	LCD touch screen	LCD touch screen	LCD touch screen	LCD touch screen	Graphic color touch screen display
		Operating Temperature Range	5-40 degree C	5-40 degree C	5-40 degree C	5-40 degree C	0° to +50°C

		Lower Detectable Limit	0.5% FS must be 3 sigma	0.5% FS must be 3 sigma	0.5% FS must be 3 sigma	0.5% FS must be 3 sigma	Less than 1.0 $\mu\text{g}/\text{m}^3$. Auditable with zero filter test (24hrs)
		Linearity/ Accuracy	+/-1% full scale	+/-1% full scale	+/-1% full scale	+/-1% full scale	Exceeds all US-EPA designation requirements for PM10, PM2.5, and PM10-2.5
		Zero drift for 24 hrs	< 0.02ppm /24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	
		Span drift for 24 hrs	< 0.02ppm /24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	<0.5ppb/24 hrs at lowest range	
		Pump & dust filter	Built in diaphragm pump and fine dust filter should be provided	Built in diaphragm pump and fine dust filter should be provided	Built in diaphragm pump and fine dust filter should be provided	Built in diaphragm pump and fine dust filter should be provided	Pump 115 VAC \pm 10 %, 60 Hz, MEDO or 115-230 VAC Gast
		Communication port	RS-232C or TCP/IP or equivalent	RS-232C or TCP/IP or equivalent	RS-232C or TCP/IP or equivalent	RS-232C or TCP/IP or equivalent	RS-232 2-way serial ports for PC or modem

					communications, USB
Analog output	4-20mA or 0-1V	4-20mA or 0-1V	4-20mA or 0-1V	4-20mA or 0-1V	2 channels, voltage range 0-1 VDC, 0-2.5 VDC, 0-5 VDC
Analyzer body	19" Rack mount should be metallic body	19" Rack mount should be metallic body	19" Rack mount should be metallic body	19" Rack mount should be metallic body	19" Rack mount should be metallic body
Accessories	Must have associated tubing and railings with 2 years consumables	Must have associated tubing and railings with 2 years consumables	Must have associated tubing and railings with 2 years consumables	Must have associated tubing and railings with 2 years consumables	PM10 analyzer must have PM10 accessories and PM 2.5 must have PM2.5 accessories along with 2 years consumables
<p>Specifications of Calibration System for Gases Analyzers:</p> <ol style="list-style-type: none"> 5. Ozone Analyzer must have built-in zero and Span calibration system. 6. CO Analyzer must have built in system for zero and Span calibration programmed using the required cylinders 7. Calibration System for NOx and SO2 Analyzer must be separate with internal zero air generation and Span dilution with compatible to the NOx and Sox analyzers. <p>Calibration Gases:</p>					

		<p>Required 10liters separate Cylinders for the Calibration of all Gases analyzers must be provided by the Vender like CO (minimum validity of 60 months) , NO (minimum validity of 36 months), SO2(minimum validity of 36 months) and N2 (99.999% pure). Each cylinder should be provided with two stage stainless steel regulators.</p> <p>Allied Accessories:</p> <ol style="list-style-type: none"> 1. AQMS must also have weather sensors of Wind Speed, Wind Direction, Ambient Temperature, Relative Humidity and Barometric Pressure. 2. AQMS must have built in data acquisition system as per following specifications: <ol style="list-style-type: none"> a. Data Acquisition System must be hardware-based data logger to connect with latest system/computer provided with AQMS and should be accessible through LAN and WAN b. Data Acquisition System must have sufficient COM ports to accommodate all analyzers and Data should be available Locally through analyzers interface or data logger PC. c. Data Logger must have following hardware ports; Voltage: depending on the interface type: 0 ... 24 V DC, 4x D-Sub, 9 pin male; COM2 to COM6, 1x D-Sub, 25 pin male; Analog in, Opto-Koppler in, Relais out ,1x Ethernet interface RJ-45, 8 pin, PC standard; LAN1, 3x USB interface, 2x USB-A, 1x USB-B, 4-pin, female 3. Air Sampling System 4. AQMS must be mounted on trolley-based system to easily toe with any vehicle and insulated shelter must have following specifications. <p>Insulated Shelter</p> <ol style="list-style-type: none"> a. Dimensions: H x W x D 7 x 6 x 8 ft b. Construction: Ring type steel frame structure, mounted on an under frame as a structural member c. Air Conditioner invertor 1 Ton d. 5KVA Online UPS e. Teflon Piping f. Total Number of Racks x 2
LOT No. 4: Instrumentation and Process Control Lab		
1	Level Control	<p>Level Control Trainer</p> <p>Fixed Supply DC: +15V, -15V</p> <p>Process Tank:</p>

Top and Bottom Plate: Stainless Steel Shell: Cylindrical Acrylic
Water Circulation Pump (European Origin): Automatic Gear Pump (Brass Gears) Pressure: 36.3 psi
Flow Rate: 15L/min
With pressure limit switch and non-return valve
Piping: uPVC
Level Sensor:

- **LVDT:**
Outer Diameter: 20mm 304 Stainless Steel Shell Separate Core
Range: upto 200mm Output Voltage: 0~10VDC Input Voltage: 15~28VDC
- **Float Switch:**
Switching Type: Normally Open Material: SS 304
Contact Rating: 10W

Valves: Drain Valve, Needle Valve

- **Solenoid Valve:**
Pressure: 0~16 bar Normally Close Orifice: 4.5mm Voltage: 24 VDC

Level Sensor Interface: Precision Rectifier and DC Amplifier with Offset and Gain Control
ON/OFF Control: Comparator with Hysteresis Control
Analog Source: 0 ~ +10V, 0 ~ ±10V
PID Controller: Proportional, Integral & Differential Control with Feedback
Pump Driver: DC to PWM Driver with DC Level Offset Control
Solenoid Valve Driver: ON/OFF Control with Driver
Digital PID Controller with
Data Acquisition Unit / Interface Software

- **Digital PID Controller:**
Input Accuracy: 0.2%
50ms Sampling
2 DOF PID Control 4 PID Groups
USB Interface

		<p>Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding</p> <ul style="list-style-type: none"> • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
2	Temperature Control	<p>Fixed Supply DC: +15V, -15V Process Tank: Top and Bottom Plate: Stainless Steel Shell: Cylindrical Acrylic Heater Element: 400W Water Circulation Pump (European Origin): Automatic Gear Pump (Brass Gears) Pressure: 36.3 psi Flow Rate: 15L/min With pressure limit switch and non-return valve Piping: uPVC Thermal Sensors: K-Type Thermocouple, PT100, Bi-metallic Direct Reading Valves: Drain Valve Manual Type Level Sensor: Float Switch Cooling Temperature Controller: Auto Control with PID Cooling Apparatus: Heat Exchanger with Fan Operation Mode: Internal & External Temperature Sensor Interface: T/V converter and DC Amplifier with Offset and Gain Control ON/OFF Control: Comparator with Hysteresis Control Analog Source: 0 ~ +10V, 0 ~ ±10V PID Controller: Proportional, Integral & Differential Control with Feedback Pump Driver: DC to PWM Driver with DC Level Offset Control Heater Driver: DC to PWM Driver with DC Level Offset Control Digital PID Controller with Data Acquisition Unit / Interface Software</p> <ul style="list-style-type: none"> • Digital PID Controller: Input Accuracy: 0.2% 50ms Sampling <p>2 DOF PID Control 4 PID Groups USB Interface</p> <ul style="list-style-type: none"> • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding

		<ul style="list-style-type: none"> • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
3	Flow Control	<p>Fixed Supply DC: +15V, -15V</p> <p>Process Tank: Top and Bottom Plate: Stainless Steel Shell: Cylindrical Acrylic</p> <p>Water Circulation Pump (European Origin): Automatic Gear Pump (Brass Gears) Pressure: 36.3 psi Flow Rate: 15L/min With pressure limit switch and non-return valve</p> <p>Piping: Plastic</p> <p>Flow Sensor: 2200 pulses/ liter Operating Pressure: 25 bar max</p> <p>Valves: Manual,</p> <ul style="list-style-type: none"> • Motorized Valve: Max. Torque: 2NM Control: ON/OFF Angle of Rotation: 90° Direction of Rotation: Double Acting <p>Flow Sensor Interface: F/V Converter and DC Amplifier with Offset and Gain Control ON/OFF Control: Comparator with Hysteresis Control</p> <p>Analog Source: 0 ~ +10V, 0 ~ ±10V</p> <p>PID Controller: Proportional, Integral & Differential Control with Feedback</p> <p>Pump Driver: DC to PWM Driver with DC Level Offset Control</p> <p>Motor Valve Driver: ±10V ON/OFF Control Digital PID Controller with Data Acquisition Unit / Interface Software</p> <ul style="list-style-type: none"> • Digital PID Controller: Input Accuracy: 0.2% 50ms Sampling 2 DOF PID Control 4 PID Groups USB Interface

		<ul style="list-style-type: none"> • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
4.	Pressure Control	<p>Fixed Supply DC: +15V, -15V Piping: uPVC Pressure Sensor: Strain Gauge Type High impedance Bridge 0~2 bar Valves: Manual Valve , No Return Valve, Safety set at 2.0 Bar Solenoid Valve: Pressure: 0~16 bar Normally Close Orifice: 4.5mm Voltage: 24 VDC</p> <p>Water Circulation Pump (European Origin): Automatic Gear Pump (Brass Gears) Pressure: 36.3 psi Flow Rate: 15L/min With pressure limit switch and non-return valve Pressure Sensor Interface: P/V converter and Differential Amplifier with Offset and Gain Control ON/OFF Control: Comparator with Hysteresis Control Analog Source: 0 ~ +10V, 0 ~ ±10V PID Controller: Proportional, Integral & Differential Control with Feedback Pump Driver: DC to PWM Driver with DC Level offset Control Solenoid Valve Driver: ON/OF Control with Driver Digital PID Controller with Data Acquisition Unit / Interface Software</p> <ul style="list-style-type: none"> • Digital PID Controller: Input Accuracy: 0.2% 50ms Sampling 2 DOF PID Control 4 PID Groups USB Interface <p>Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding</p>

		<ul style="list-style-type: none"> • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
5.	Pressure Control (pneumatic control)	<p>Fixed Supply DC: +15V, -15V</p> <p>Piping: Plastic</p> <p>Pressure Sensor Strain Gauge Type High impedance Bridge 0~2 bar</p> <p>Valves: Manual No Return, Safety set at 2.0 Bar</p> <p>Solenoid Valve: Pressure: 0~16 bar Normally Close Orifice: 4.5mm Voltage: 24 VDC</p> <p>Diaphragm Air Pump Power: 29W Max. Flow Rate: 27L/ min Maximum Pressure: 5 bar Brushless Type</p> <p>Pressure Sensor Interface: P/V converter and Differential Amplifier with Offset and Gain Control</p> <p>ON/OFF Control: Comparator with Hysteresis Control</p> <p>Analog Source: 0 ~ +10V, 0 ~ ±10V</p> <p>PID Controller: Proportional, Integral & Differential Control with Feedback</p> <p>Pump Driver: DC to PWM Driver with DC Level offset Control</p> <p>Solenoid Valve Driver: ON/OF Control with Driver</p> <p>Digital PID Controller with Data Acquisition Unit / Interface Software</p> <ul style="list-style-type: none"> • Digital PID Controller: Input Accuracy: 0.2% 50ms Sampling 2 DOF PID Control 4 PID Groups USB Interface • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
6.	Water Quality Control	<ul style="list-style-type: none"> • Control of water parameters; pH value, redox potential, oxygen concentration and electrical conductivity

		<ul style="list-style-type: none"> • pH Sensor 0~14pH, pH meter and transmitters • Conductivity Sensor upto 20ms/cm, Conductivity meter and transmitters • ORP Sensor -2000mV to 2000mV, ORP meter and transmitters • DO Sensor 0 to 20mg/L, DO Meter and Transmitter including Air pumping • Process Controller Module with dosing pumps • A pH Control Module • An ORP Control Module • A DO Control Module • A Conductivity Control Module <p>Specifications: Product tank: 20L Chemicals tank: 2x 5L Metering pumps Max. flow rate: each 2L/h Max. head: each 160m</p> <ul style="list-style-type: none"> • PID Controller • Data Acquisition Software and interface • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
7.	Process Control Engineering Plant Trainer	<p>Process Unit The unit must include a wide range of instrumentation for temperature and flow measurement. It must also include a conductivity sensor, enabling simple process concentration experiments to be performed.</p> <p>The unit comprises:</p> <ul style="list-style-type: none"> • Control of level, flow rate, temperature, pH and cascade control with water as working medium • Feed system with peristaltic pump • Water heating unit with peristaltic pump • Water cooling system • Plate heat exchanger with holding tube • Flow sensor in feed line

		<ul style="list-style-type: none"> • Conductivity sensor 20mS/cm • Four temperature sensors • Level sensor in product tank • High/low level switches in washing/reagent tank • 2-way solenoid valves for filling feed tanks and cooling water to exchanger • 3-way solenoid valves for selecting feed tank and diverting waste product • Connections to the electrical console <p>Control Console</p> <ul style="list-style-type: none"> • The control console provides the electrical interface and signal conditioning for the process module. It also includes a USB interface for a Windows® computer. The process module sensor outputs can be displayed in engineering units on an integral display. The outputs are also available for external monitoring. Controller parameter is able: P, PI or PID controller <p>The unit must be comprised of:</p> <ul style="list-style-type: none"> • Product feed pump speed control • Heating fluid pump speed control • Heater power measurement and control • Temperature (x4), flow, level & conductivity measurement • Digital inputs/outputs (from switches/to solenoid valves) • Simultaneous connection of all signals to PC via USB port • DAQ • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI, with all accessories. • All other required accessories
8.	Sensor Conditioning and Calibration Trainer	<p>Fixed Supply DC: +5V, -5V, +12V, -12V</p> <p>Pneumatic Supply: Internal Pneumatic Pump with Air Valve</p> <p>Signal Conditioning Circuits: 2X Buffers Inverter</p>

		<p>Comparator with Switchable Hysteresis 2X Amplifiers with Switchable Gain and Offset Control Current Amplifier Summing Amplifier Differential Amplifier Instrumentation Amplifier AC amplifier X100 Amplifier Filter 40KHz Oscillator 40KHz Low-Pass Filter with Switchable Time Constant Precision Full-Wave Rectifier Sample and Hold Circuit Integrator with Switchable Time Constant Differentiator with Switchable Time Constant V/F and F/V Converters V/I and I/V Converters Alarm Oscillator with Switchable Latching Power Amplifier Electronic Switch Level Converter Schmitt Trigger Wheatstone Bridge</p> <p>Input / Output Transducers: Rotary Carbon Track Rotary Wirewound Precision Rotary Potentiometer Slide Potentiometer Linear Variable Differential Transformer (LVDT) Linear Variable Capacitor Load Cell 150g Dynamic Microphone Ultrasonic Receiver Ultrasonic Transmitter Buzzer 8 Ohm Speaker Relay Solenoid Tacho Generator</p> <p>Sensors: NTC Thermistors Type 'K' Thermocouples I.C. Temperature Sensor Photoconductive Cell Photovoltaic Cell Phototransistor PIN Diode Air-Flow Sensor Air Pressure Sensor Slotted Opto-Sensor Reflective Opto-Sensor Inductive Proximity Sensor Hall Effect Sensor Humidity Sensor</p> <p>Measuring Devices: Counter / Timer</p>
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		<p>10-Point LED Bar Display Moving Coil Meter 3 ½-Digit Digital Voltmeter 3 ½-Digit Digital Ammeter</p> <p>Output Devices: Heater Filament Lamp DC Motor Solenoid Air Valve Single H-Bridge with PWM Control</p> <ul style="list-style-type: none"> • DAQ • Equipment manual, outlining the detailed description of each part, troubleshooting and step by step procedures of all experiments. The manual must be color printed on a quality paper with proper binding • PC, Core i7, 24" display, 11th generation, memory 500GB/SSD, 16 GB RAM, 8 GB graphic card NVIDIA or MSI with all accessories. <p>All other required accessories</p>
LOT No. 05: Chemical Reaction Engineering (CRE) Lab		
01	Service unit for reactors	Supply unit with connection of the reactors via hoses with quick-release couplings, water circuit with tank, heater, temperature controller, pump and low water cut-off for heating and cooling, temperature control of the reactants and reactors, peristaltic pumps to deliver the reactants and product, combined sensors for measuring the conductivity and temperature, software for data acquisition, computer (cori5, latest generation), 32 GB USB. All required accessories must be included.
02	Continuous Stirred tanks reactor	Continuous stirred tank reactor for connection to service unit, glass tanks, height-adjustable overflow for changing the reactor volume, chambered bottom made of stainless steel as heat exchanger for connection to service unit, sensors for measuring the conductivity and temperature, temperature control in the reactor. All required accessories must be included.
03	Tubular reactor	Continuous tubular heat exchangers as reactor, pumps to convey the reactants, adjustment of the volumetric flow rates of the reactants at the pumps, preheating of the reactants with required stainless steel coiled tubes, T-piece for mixing the preheated reactants, measurements for electrical conductivity: at the inlet, centre and at the outlet of the reactor, hot water tank with temperature control, measurement of conductivity and temperature with required combined sensors, Software for data acquisition via USB under Windows 8.1, 10. All required accessories must be included.

04	Stirred tanks in series.	Stirred tanks in series for connection to service unit, 3 identical stirred tank reactors made of glass connected in series, chambered bottom made of stainless steel as heat exchanger, delivery between stirred tanks via required peristaltic pumps of the supply unit, small reactor capacity for less consumption of chemicals, sensors for measuring the conductivity and temperature, digital display of conductivity and temperature, temperature control provision in the reactors. All required accessories must be included.
05	Batch stirred tank reactor	Discontinuous stirred tank reactor for connection to supply unit, reactor with stirrer, chambered bottom made of stainless steel as heat exchanger, sensor for measuring the conductivity and temperature, temperature control provision in the reactor. All required accessories must be included.
06	Plug-flow reactor	Plug-flow reactor for connection to service unit, air vessel for damping of pulsation, T-piece with nozzle for mixing the reactants, straight glass tube with fixed bed from glass spheres as reactor, transparent double jacket from PMMA for cooling and heating, sensor for measuring the conductivity and temperature control in the reactor. All required accessories must be included.
07	Laminar flow reactor	Laminar flow reactor for connection to service unit, air vessel for damping of pulsation, T-piece with nozzle for mixing the reactants, special inlet for reducing the inlet length, straight glass tube with laminar flow, transparent double jacket for cooling and heating, sensor for measuring the conductivity, and temperature control provision in the reactor. All required accessories must be included.
08	Peristaltic pump	Speed range= 0-500 rpm, flow range = 0.5-1500 mL/min, tubing range 1.6 mm (ID 0.8-7.9), roller material= stainless steel; polypropylene, silicon and polyurethane tubing.
09	Air compressor	Capacity: 5 HP Compressor Technology: Reciprocating Maximum Flow Rate (CFM): 18 Maximum Flow Rate: 0-20 cfm Air Tank Capacity: 270 L

Note:

1. PAF-IAST may re-adjust the quantities within the total quantities specified against the specifications of same genre in any of the Lots Or increase the quantities as per provision in KPPRA Rules.
2. The Bidder shall indicate in their offer,
 - a. detailed specifications of their offered product(s),
 - b. standard accessories,
 - c. make and origin, as part of confirming Compliance as per the format given in Form – D.
3. The Unit Price, Total Bid Price, and Additional Warranty Price of the quoted items shall be indicated as per the given format in Form – G.
4. Additionally, Poster with all equipment: Wall mount, color, dimensions: 4 ft * 2.5 ft, printed on semi-gloss paper and pasted on wooden structure, plastic laminated should be included. It should contain main features, technical specifications, safety instructions, applications, process flow diagram, working principle etc.

Section 5b: Special Terms and Conditions

Standard

- The goods supplied must be capable of functioning properly under the climatic conditions of Haripur.
- There shall be no deviation from specification and country of make as provided with each item. In case of any ambiguity in specification/ accessories needed for the full functioning of the equipment, the firm must clear it with the Procurement Committee. However, the decision of the Procurement Committee will be final.
- The goods with standard accessories supplied under this tender shall confirm to the standard maintenance in the technical specification.

Training

- The firm supplying the item/ equipment(s) will demonstrate the operation/ working of the supplied goods to the satisfaction of PAF- IAST and provide training. Suppliers are advised to provide details on formal training for the LOT(s) covering aspects as mentioned below, but not limited to, as required in Form – E (Section 3).

LOT(s)	
Level	1 to 5
Basic	Demonstrate the operations/ working to end users; Identify the do’s and don’ts; and aspects deem necessary for long-life functioning of supplied goods.
Hands-on	Demonstrate technical features; Elaborate technical configuration(s) performed for integration with the overall setup; Documented guidelines for generating reports using software and/ or systems’ interface
Advanced	Provide trainings to Operators for troubleshooting and smooth operations using system manuals

Calibration of item/equipment

- The supplier will install the good(s) in the presence and satisfaction of the Procurement Committee, if need be. In case of any defect in the supplied good(s) or if it is not in accordance with the desired specification(s), the goods will be changed at the cost of the supplier.

Warranty/ Guarantee

- The Supplier will give comprehensive onsite warranty/guarantee that the goods/stores/articles

would continue to conform to the description and quality as specified for a period of at least One (01) year and additional Four (04) years as Extended Warranty from the date of delivery, installation and commissioning of the said goods/ stores/ articles to be purchased and that notwithstanding the fact that the purchaser may have inspected and/ or approved the said goods/ stores/ article, if during the aforesaid period, the said goods/ stores/ articles, be discovered not to conform to the description and quality aforesaid or have determined (and the decision of the Procurement Committee in that context will be final and conclusive), the PAF: IAST will be entitled to reject the said goods/ stores/ articles or such portion thereof as may be discovered not to conform to the said description and quality, on such rejection the goods/ articles/ stores will be at the supplier's risk and all the provisions relating to rejection of goods etc. shall apply.

- The Supplier shall, if so called upon to do, replace the goods etc., or such portion thereof as is rejected by Procurement Committee, otherwise the supplier shall pay such damage as may arise by the reason of the breach of the condition herein contained. Nothing herein contained shall prejudice any other right of the Procurement Committee in that behalf under this contract or otherwise.
- The Supplier shall also replace equipment, in case it is found defective which cannot be put to operation due to manufacturing defect, etc. In case of equipment specified by the Procurement Committee, the supplier shall be responsible from carrying out annual maintenance and repairs on the terms and conditions as may be agreed. The supplier shall also be responsible to ensure adequate regular supply of spare parts needed for a specific type of equipment whether under their annual maintenance and repairs contract or otherwise. In case of change of model, supplier will give sufficient notice to the Procurement Committee who may like to purchase spare parts from them to maintain the equipment in perfect condition.

Section 6: Returnable Bidding Forms / Checklist

This section serves as a checklist for preparation of your Bid. Please complete the Returnable Bidding Forms in accordance with the instructions in the forms and return them as part of your Bid submission. No alteration to format of forms shall be permitted and no substitution shall be accepted.

Before submitting your Bid, please ensure compliance with the Bid Submission instructions of the BDS 22.

Bid Proposal:

Have you duly completed all the Returnable Bidding Forms?	
▪ Form A: Bid Submission Form	<input type="checkbox"/>
▪ Form B: Joint Venture/Consortium/ Association Information Form	<input type="checkbox"/>
▪ Form C: Bidder Information Form	<input type="checkbox"/>
▪ Form D: Qualification Form	<input type="checkbox"/>
▪ Form E: Bid Proposal Form	<input type="checkbox"/>
▪ Form F: Specifications Compliance Form	<input type="checkbox"/>
▪ Form G: Price Schedule Form	<input type="checkbox"/>
Have you provided the required documents to establish compliance with the evaluation criteria in Section 4?	<input type="checkbox"/>

Form A: Bid Submission Form

(To be Submitted in an envelope duly sealed and marked as Technical Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-UGLE-ITB-107-21		

We, the undersigned, submit our Bid for the award of contract to supply the goods and related services required for [Insert Title of goods and services] in accordance with your Invitation to Bid No. [Insert ITB Reference Number]. We hereby submit our Bid, which includes this Bid proposal.

We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/ Consortium/ Association members or subcontractors or suppliers for any part of the contract:

- a) is not under procurement prohibition by any of the Government/ Semi-government/ Autonomous organization;
- b) have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any Organization in Pakistan;
- c) have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against us that could impair our operations in the foreseeable future;
- d) undertake not to engage in proscribed practices, including but not limited to corruption, fraud, coercion, collusion, obstruction, or any other unethical practice, with the PAF: IAST, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the PAF: IAST.

We declare that all the information and statements made in this Bid are true and we accept that any misinterpretation or misrepresentation contained in this Bid may lead to our disqualification and/ or sanctioning by the PAF-IAST.

We offer to supply the goods and related services in conformity with the Bidding documents, including the PAF-IAST General Conditions of Contract and in accordance with the Schedule of Requirements and Specifications.

Our Bid shall be valid and remain binding upon us for the period specified in the Bid Data Sheet.

We understand and recognize that you are not bound to accept any Bid you receive.

I, the undersigned, certify that I am duly authorized by [Insert Name of Bidder] to sign this Bid and bind it should PAF-IAST accept this Bid.

Name: _____

Title: _____

Date: _____

Signature: _____

[Stamp with official stamp of the Bidder]

Form B: Joint Venture/ Consortium/ Association Information Form

(To be Submitted in an envelope duly sealed and marked as Technical Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-UGLE-ITB-107-21		

To be completed and returned with your Bid if the Bid is submitted as a Joint Venture/Consortium/Association.

No	Name of Partner and contact information (address, telephone numbers, fax numbers, e-mail address)	Proposed proportion of responsibilities (in %) and type of goods and/or services to be performed
1	[Complete]	[Complete]
2	[Complete]	[Complete]
3	[Complete]	[Complete]

Name of leading partner (with authority to bind the JV, Consortium, Association during the ITB process and, in the event a Contract is awarded, during contract execution)	[Complete]
--	------------

We have attached a copy of the below referenced document signed by every partner, which details the likely legal structure of and the confirmation of joint and severable liability of the members of the said joint venture:

Letter of intent to form a joint venture **OR** JV/Consortium/Association agreement

We hereby confirm that if the contract is awarded, all parties of the Joint Venture/Consortium/Association shall be jointly and severally liable to PAF: IAST for the fulfillment of the provisions of the Contract.

Name of partner: _____ Name of partner: _____

Signature: _____ Signature: _____

Date: _____ Date: _____

Name of partner: _____ Name of partner: _____

Signature: _____ Signature: _____

Date: _____ Date: _____

Form C: Bidder Information Form

(To be Submitted in an envelope duly sealed and marked as Technical Proposal)

Legal name of Bidder	[Complete]
Legal address & Branch Offices	[Complete]
Year of registration	[Complete]
Bidder's Authorized Representative Information	Name and Title: [Complete] Telephone numbers: [Complete] Email: [Complete]
Are you a PAF: IAST registered vendor?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, [insert PAF- IAST vendor number]
Countries of operation	[Complete]
No. of full-time employees	[Complete]
No. of Technical Staff	
Quality Assurance Certification (e.g. ISO 9000 or Equivalent) (If yes, provide a Copy of the valid Certificate):	[Complete]
Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment? (If yes, provide a Copy of the valid Certificate):	[Complete]
Does your Company have a written Statement of its Environmental Policy? (If yes, provide a Copy)	[Complete]
Does your organization demonstrates significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies, education, vocational trainings, social responsibility towards people with Special needs, or membership of trade institutions promoting such issues	[Complete]
Contact person that PAF: IAST may contact for requests for clarifications during Bid evaluation (Only Lead Bidder)	Name and Title: [Complete] Telephone numbers: [Complete] Email: [Complete]

Please attach the following documents:

1. Company Profile, which should not exceed fifteen (15) pages, including printed brochures and product catalogues relevant to the goods and/ or services being procured.
2. Proposed timetable for delivery, installation and commissioning plan for the required and quoted items to PAF: IAST after the award of Contract.
3. Certificate of Registration of the business.
4. Principal's Authorization Letter in favor of Bidder to participate in this Tender.
5. A proofing document confirms the offered warranty for at least One (01) year, supported by the manufacturer's certificates, if applicable.
6. A proofing document confirming supply of same or similar items of this magnitude to various clients/ customers in Pakistan.
7. Proven records of no less than the required Projects of similar nature/ value/ complexity in which delivery and services were extended.
8. Full detailed description of the specifications of the proposed items in addition to catalogues clearly showing the proposed specifications responding to the requirements.
9. Supporting photos of the proposed items, if applicable.
10. Quality certifications: ISO 9001:2015 (if applicable)
11. Latest Audited Financial Statements (Income Statement and Balance Sheet) including Auditor's Report for the past (3 years).

Note: To be filled in by each partner in case Bid is submitted as a JV/ Consortium/ Association

Form D: Qualification Form

(To be submitted in an envelope duly sealed and marked as Technical Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-LE-ITB-107-21		

If JV/ Consortium/ Association, to be completed by each partner.

Previous Relevant Experience

Please list all Projects successfully completed in the last 3 years, covering following aspects;

- Scope of the projects/ assignments.
- Activities performed for the successful completion of the project.
- Support Services Contracts in hand with SLA for the supplied goods.

List only those assignments for which the Bidder was legally contracted or sub-contracted by the Client as a company or was one of the Consortium/ JV partners. Assignments completed by the Bidder's individual experts working privately or through other firms cannot be claimed as the relevant experience of the Bidder, or that of the Bidder's partners or sub-consultants, but can be claimed by the Experts themselves in their CVs. The Bidder should be prepared to substantiate the claimed experience by presenting copies of relevant documents and references if so requested by PAF- IAST.

Project name & Country of Assignment	Client & Reference Contact Details	Contract Value	Period of activity and status	Types of activities undertaken

Bidders may also attach their own Project Data Sheets with more details for assignments above.

History of Non-Performing Contracts

<input type="checkbox"/> Non-performing contracts did not occur during the last 3 years			
<input type="checkbox"/> Contract(s) not performed in the last 3 years			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value in US\$)
		Name of Client: Address of Client: Reason(s) for non-performance:	

Financial Standing

Annual Turnover for the last 3 years	Year	PKR
	Year	PKR
	Year	PKR
Latest Credit Rating (if any), indicate the source		

Financial information (in PKR equivalent)	Historic information for the last 3 years		
	Year 1	Year 2	Year 3
	<i>Information from Balance Sheet</i>		
Total Assets (TA)			
Total Liabilities (TL)			
Current Assets (CA)			
Current Liabilities (CL)			
	<i>Information from Income Statement</i>		
Total / Gross Revenue (TR)			
Profits Before Taxes (PBT)			
Net Profit			
Current Ratio			

Attached are copies of the audited financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following condition:

- a) Must reflect the financial situation of the Bidder or party to a JV, and not sister or parent companies;
- b) Historic financial statements must be audited by a certified public accountant;
- c) Historic financial statements must correspond to accounting periods already completed and audited. No statements for partial periods shall be accepted.

Form E: Technical Bid Proposal Form

(To be submitted in an envelope duly sealed and marked as Technical Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-UGLE-ITB-107-21		

The Bidder's Bid should be organized to follow this format of the Technical Bid Proposal. Where the bidder is presented with a requirement or asked to use a specific approach, the bidder must not only state its acceptance, but also describe how it intends to comply with the requirements. Where a descriptive response is requested, failure to provide the same may be viewed as non-responsive.

SECTION 1: Qualification, capacity and expertise

- 1.1 Bidder's general organizational capability: management structure, financial stability and project financing capacity, project management controls, extent of work to be subcontracted (if so, provide details).
- 1.2 Bidder's relevance of specialized knowledge and experience on similar engagements done in the region/ country. Bidder should submit a detailed description of the projects executed (quantities, value, beneficiary)
- 1.3 Manufacturer's strengths covering the regional/ global market presence, hi-tech products portfolio, manufacturing capacity, R&D activities resulting in national and international patents, quality control and assurance practices, and international certifications in relevant areas.

SECTION 2: Management Structure and Key Personnel

- 2.1 Describe the overall management approach toward planning and implementing the project. Include an organization chart for the management of project describing relationship of key positions and designations.
- 2.2 Provide CVs for key personnel that will be provided to support the implementation of this project using the format below. CVs should demonstrate qualifications in areas relevant to scope of goods and/or services.

Format for CV of Proposed Key Personnel

Name of Personnel	[Insert]
Position	[Insert]
Nationality	[Insert]
Language proficiency	[Insert]
Education/Qualifications	<i>[Summarize college/university and other specialized education of personnel member, giving names of schools, dates attended, and degrees/qualifications obtained.]</i> [Insert]
Professional certifications	<i>[Provide details of professional certifications relevant to the scope of goods and/or services]</i> <ul style="list-style-type: none"> ▪ Name of institution: [Insert] ▪ Date of certification: [Insert]
Employment Record/Experience	<i>[List all positions held by personnel (starting with present position, list in reverse order), giving dates, names of employing organization, title of position and location of employment.]</i> [Insert]

I, the undersigned, certify that to the best of my knowledge and belief, the data provided above correctly describes my qualifications, my experiences, and other relevant information about myself.

Signature of Personnel

Date (Day/Month/Year)

SECTION 3: Scope of Supply, Technical Specifications and Training(s)

This section should demonstrate the Bidder's responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the requirements/specifications. All important aspects should be addressed in sufficient detail.

- 3.1 A detailed description of how the Bidder will deliver the required goods and services, keeping in mind the appropriateness to local conditions and project environment. Details how the different service elements shall be organized, controlled and delivered.
- 3.2 Explain whether any work would be subcontracted, to whom, how much percentage of the requirements, the rationale for such, and the roles of the proposed sub-contractors and how everyone will function as a team.
- 3.3 Implementation plan including a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.
- 3.4 Details on post-deployment trainings on-site hands-on training for all LOTS.

SECTION 4: Registration & Certifications

This section should demonstrate the Bidder's responsiveness towards its registration with the relevant national body and international organizations Certifying the bidder's qualifications with respect to Quality and Project Management.

- 4.1 Provide a copy of valid registration with the Pakistan Engineering Council (if applicable).
- 4.2 Provide a copy of valid Certificate issued by International Organization for Standardization certifying the bidder's compliance and practices towards quality management principles and standards in their offered products/ solutions and services.
- 4.3 Provide a copy of valid Certificate issued by International Organization for Standardization certifying the bidder's compliance and practices towards information security management principles and standards in their offered products/ solutions and services.

SECTION 5: Warranty and Support Services

This section should demonstrate the Bidder's responsiveness to the post-commissioning warranty and support services of the goods supplied, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the requirements. All important aspects should be addressed in sufficient detail.

- 5.1 A detailed description of how the Bidder will provide the Warranty claims to the users, keeping in mind the span and complexity of the project in context of local conditions and project environment.
- 5.2 Explain whether any services or work would be subcontracted, to whom, how much percentage of the requirements, the rationale for such, and the roles of the proposed sub-contractors and how everyone will function as a team.
- 5.3 Details how the post-delivery/ deployment Support Services will be provided to the users keeping in consideration the criticality of systems, and dependency of university administration and operations on such systems.

Form F: Specifications Compliance Form

(To be submitted in an envelope duly sealed and marked as Technical Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-UGLE-ITB-107-21		

The Bidder's Bid should be organized to follow this format of the Technical Bid Proposal. Where the bidder is presented with a requirement or asked to use a specific approach, the bidder must not only state its acceptance, but also describe how it intends to comply with the requirements. Where a descriptive response is requested, failure to provide the same may be viewed as non-responsive.

		Your response Compliance with specifications	
Goods and services to be Supplied <i>(based on the Technical Specifications provided in Section 5a & Section 5b)</i>	Comply (Yes/ No) <i>(If No, indicate discrepancies)</i>	Quoted Specifications	Type/ Model no. & Country of Origin
Required Items		Offered Items	
LOT No. 1: Particulate Technology Lab			
		(Bidders are required to attach Compliance Comparison Sheet supported by Product Data Sheet against the Specifications provided in Section – 5a)	
LOT No. 2: Water Quality Testing Lab			
		(Bidders are required to attach Compliance Comparison Sheet supported by Product Data Sheet against the Specifications provided in Section – 5a)	
LOT No. 3: Air Quality Testing Lab			
		(Bidders are required to attach Compliance Comparison Sheet supported by Product Data Sheet against the Specifications provided in Section – 5)	
LOT No. 4: Instrumentation and Process Control Lab			
		(Bidders are required to attach Compliance Comparison Sheet supported by Product Data Sheet	

		<p>against the Specifications provided in Section – 5)</p>	
<p>LOT No. 5: Chemical Reaction Engineering (CRE) Lab</p>			
		<p>(Bidders are required to attach Compliance Comparison Sheet supported by Product Data Sheet against the Specifications provided in Section – 5)</p>	

Form G: Price Schedule Form

(To be Submitted in a separate and sealed envelope duly marked as Financial Proposal)

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	PAF: IAST-UGLE-ITB-107-21		

[The Bidder is required to prepare the Price Schedule following the below format. The Price Schedule must include a detailed cost breakdown of all goods and related services to be provided.]

We, the <<Name of Bidder>>, hereby submit our Financial Bid for the Supply of Items as below. We assure you of our full compliance to the required specifications, delivery schedule and other terms without any deviation and/ or reservations. We reiterate our acceptance to the terms and conditions of the RFP. Our Financial proposal as below is submitted for your kind consideration.

Quoted Items in compliance to the Technical Specifications as referred in Section – 5a and Section – 5b		Quantity (a)	Unit Price [in Rs.] (b)	GST [in Rs.] (c)	Total Price [in Rs.] $d=a*[b+c]$
LOT No. 1: Particulate Technology Lab					
1.	Sieve Shaker for Sieves	2			
2.	8" Diameter Fine Sieve Set	2			
3.	8" Diameter Coarse Sieve Set	2			
4.	Computer Controlled Drum Cell Filter	1			
5.	Jaw Crusher	1			
6.	Roller Mill	1			
7.	Floatation Machine	1			
8.	Cone Crusher	1			
9.	Double Cone Mixer	1			
10.	Hydro cyclone Apparatus	1			
11.	Solids Handling Study Unit	1			
12.	Ball Mill	1			
13.	Heavy Duty Weight Balance	1			
14.	Computer Controlled Plate and Frame Filtration Assembly	1			
15.	Liquid/Solid Mixing Unit	2			
16.	Digital Overhead Stirrer	5			
17.	Lab Scale-Screw Press for oil extraction	1			
18.	Lab Scale-Screw Press with round crusher	1			
LOT No. 2: Water Quality Testing Lab					
1	Water Purification system including Reverse Osmosis	1			
2	Ion Exchange Unit	1			
3	COD measurement system	1			
4	BOD Measurement System	1			
5	UV-Vis Spectrophotometer specifically programed for Water Quality Analysis	1			
6	Turbidity meter	1			
7	Chlorine meter	1			
LOT No. 3: Air Quality Testing Lab					
1	Noise Meter	1			
2	Air Sampler	1			
3	Portable Gas Analyzer	1			

4	Ambien Air quality monitoring system	1			
LOT No. 4: Instrumentation and Process Control Lab					
1	Level Control	1			
2	Temperature Control	1			
3	Flow Control	1			
4	Pressure Control	1			
5	Pressure Control (pneumatic control)	1			
6	Water Quality Control	1			
7	Process Control Engineering Plant Trainer	1			
8	Sensor Conditioning and Calibration Trainer	1			
LOT No. 5: Chemical Reaction Engineering (CRE) Lab					
1	Service unit for reactors	1			
2	Continuous Stirred tanks reactor	1			
3	Tubular reactor	1			
4	Stirred tanks reactor in series	1			
5	Batch stirred tank reactor	5			
6	Plug-flow reactor	1			
7	Laminar flow reactor	1			
8	Peristaltic pump	2			
9	Air compressor	1			

Extended Warranty Price (at discretion of PAF-IAST) (Note: All bidders should include the extended warranty amount, if they are proving it FAC, however, PAF-IAST will decide whether to include or exclude the amount of extended warranty of any or all item/s at the time of contract)

			2 nd Year (in PKR)	3 rd Year (in PKR)	4 th Year (in PKR)	5 th Year (in PKR)
LOT No. 1: Particulate Technology Lab						
1.		Sieve Shaker for Sieves				
2.		8" Diameter Fine Sieve Set				
3.		8" Diameter Coarse Sieve Set				
4.		Computer Controlled Drum Cell Filter				
5.		Jaw Crusher				
6.		Roller Mill				
7.		Flootation Machine				
8.		Cone Crusher				
9.		Double Cone Mixer				

10.		Hydro cyclone Apparatus				
11.		Solids Handling Study Unit				
12.		Ball Mill				
13.		Heavy Duty Weight Balance				
14.		Computer Controlled Plate and Frame Filtration Assembly				
15.		Liquid/Solid Mixing Unit				
16.		Digital Overhead Stirrer				
17.		Lab Scale-Screw Press for oil extraction				
18.		Lab Scale-Screw Press with round crusher				
Lot # 2, Water Quality Testing Lab						
1.		Water Purification system including Reverse Osmosis				
2.		Ion Exchange unit				
3.		COD measurement system				
4.		BOD measurement system				
5.		UV-Vis Spectrophotometer specifically programed for Water Quality Analysis				
6.		Turbidity unit				
7.		Chlorine meter				
Lot # 3, Air Quality testing Lab						
1.		Noise meter				
2.		Air Sampler				
3.		Portable Gas Analyzer				
4.		Ambien Air quality monitoring system				
LOT #4: Instrumentation and Process Control Lab						
1.		Level Control				
2.		Temperature Control				
3.		Flow Control				
4.		Pressure Control				
5.		Pressure Control (pneumatic control)				
6.		Water Quality Control				
7.		Process Control Engineering Plant Trainer				
8.		Sensor Conditioning and Calibration Trainer				
LOT #5 Chemical Reaction Engineering (CRE) Lab						
1.		Service unit for reactors				

2.		Continuous Stirred tanks reactor				
3.		Tubular reactor				
4.		Stirred tanks reactor in series				
5.		Batch stirred tank reactor				
6.		Plug-flow reactor				
7.		Laminar flow reactor				
8.		Peristaltic pump				
9.		Air compressor				

Total Bid Value in Figures (including Extended Warranty Price): _____

Total Bid Value in words (including Extended Warranty Price): _____

Name & Designation of Authorized Person: _____

Signature: _____ (Please affix company stamp here)

Note: Quoted price must be inclusive of all taxes and duties.

Annex – I: Integrity Pact

The Bidders will be required to submit the below text on stamp paper after filling in the details and duly signed as well as stamped, as part of their Technical Proposal.

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC
PAYABLE BY THE SUPPLIER OF GOODS, SERVICES & WORK IN CONTRACTS WORTH
RS. 10.0 MILLION OR MORE

(To be filled by the bidder as a part of technical proposal)

Contract Number: _____

Dated: _____

Contract Value: _____

Contract Title: _____

_____ hereby declare that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoP) through any corrupt business partner.

Without limiting the generality of the forgoing, _____ represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any nature or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultant fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatever from GoP, except that which has been expressly declared pursuant hereto.

_____ certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

_____ accept full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other right and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, _____ agrees to identify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by _____ as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever from GoP.

[Buyer]

[Seller / Supplier]

Annex – II: **Draft Contract Sample**

Available at PAF: IAST website at <http://www.paf-iastr.edu.pk/downloads>