



**Tender Issued M/s.** \_\_\_\_\_

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

**TENDER DOCUMENT**

**FOR**

**SUPPLY AND INSTALLATION OF REMAINING**

**LAB EQUIPMENT**

**FOR**

**CHEMICAL ENGINEERING DEPARTMENT**

**AT**

**QUAID-E-AWAM UNIVERSITY**  
**OF**  
**ENGINEERING, SCIENCE & TECHNOLOGY,**  
**NAWABSHAH.**



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**B.O.Q FOR SUPPLY AND INSTALLATION REMAINING LAB EQUIPMENT  
FOR CHEMICAL ENGINEERING DEPARTMENT AT QUEST, NAWABSHAH.**



**QUAID-E-AWAM UNIVERSITY  
OF ENGINEERING SCIENCE & TECHNOLOGY NAWABSHAH.**

Procurement Office  
+92 (0244) 930389



**QUAID-E-AWAM UNIVERSITY  
OF ENGINEERING, SCIENCE AND TECHNOLOGY, NAWABSHAH**  
Sakrand road, Nawabshah, 67450

**PROCUREMENT OFFICE**

No: QUEST/NH/PROC/388

Dated: 30.08.2023

**NOTICE INVITING TENDER**

Sealed bids are invited from well reputed firms meeting eligibility criteria for below mentioned works. The details of tenders are as under:

S. #	Name of Work	Tender Fee	Completion time	Date of issuance	Submission date and time	Opening date and time
1.	Supply and Installation of Remaining Lab Equipment for Telecommunication Engineering Department at QUEST, Nawabshah.	5000	06 Months	07.09.2023	26.09.2023 up to 10:00 am	26.09.2023 at 10:20 am
2.	Supply and Installation of Remaining Lab Equipment for Chemical Engineering Department at QUEST, Nawabshah.	5000	06 Months		26.09.2023 up to 10:00 am	26.09.2023 at 10:50 am
3.	Supply and Installation of Desktop Computers Core i7 required for various Labs of Telecommunication and Chemical Engineering Department at QUEST, Nawabshah.	5000	06 Months		26.09.2023 up to 11:00 am	26.09.2023 at 11:20 am
4.	Supply and Installation of Air Conditioners required for various Labs of Telecommunication and Chemical Engineering Department at QUEST, Nawabshah.	5000	06 Months		26.09.2023 up to 11:00 am	26.09.2023 at 11:50 am

<b>Procurement Procedure:</b>	Single Stage Two Envelope
<b>Award Criteria</b>	Item-wise Most advantageous bid
<b>Contact details:</b>	Procurement Manager, at Postgraduate Center (PGC building), Quaid-e-Awam University (QUEST), Nawabshah S.B.A Sindh. Phone # 0244-930389, email address: pm@quest.edu.pk
<b>Bid Security:</b>	5% of bid amount at the time of bid submission in the shape of Pay Order only in the name of Director Finance, QUEST Nawabshah
<b>Bid Validity Period:</b>	90 days
<b>Un-responded Tenders:</b>	Un-responded Tenders will be again issued / submitted / opened on following dates. a) Issue date 27.09.2023 to 18.10.2023 b) Submission & opening up to 18.10.2023. Time and place will remain same.
<b>Eligibility:</b>	All the interested Contractors / Firms / Parties / Suppliers, Manufacturers and Sole Distributors meeting following eligibility criteria are invited to participate in sealed percentage / item rate tender. 1. Valid registration with Federal Board of Revenue (FBR) for Income tax and sales tax with active taxpayer status 2. The Bidders should have at least 03 years of experience of same services in any university or large organization. 3. The Bidders should not be Blacklisted in any procuring agency. (Affidavit is required) 4. The average Annual Financial Turnover should not be less than equivalent cost of the work during last three years. (Attached Annual Turnover Certificate to be issued by the concerned bank). 6. Other eligibility and evaluation criteria is mentioned in the bidding document.
<b>Terms and conditions:</b>	1. The contract documents and other terms & Conditions can be seen, and blank tenders be obtained from the office of the undersigned on any working day and also downloaded from QUEST (www.quest.edu.pk) and SPPRA (PPMS) websites from the day of issuance mentioned in this NIT. The bids will be opened on the date and time as mentioned above in the office of the undersigned in the presence of bidders or their authorized representative who wish to attend. 2. The cost of bid should be inclusive of all government taxes. 3. The Procuring Agency reserves the right to reject any or all bids subject to relevant provisions of SPP Rules, 2010 (Amended 2019) and may cancel the bidding process at any time prior to the acceptance of a bid or proposal under Rule-25" of said Rules. 4. In case of any unforeseen situation resulting in closure of office on the date of opening or if Government declares Holiday the tender shall be submitted / opened on the next working day at the same time & venue. 5. Under following conditions tender will be rejected: <ul style="list-style-type: none"> <li>• Conditional bids / tenders.</li> <li>• Bids not accompanied by the bid security of required amount and form.</li> <li>• Bid received after specified date and time.</li> <li>• Blacklisted firms.</li> <li>• In case the applicant does not fulfill SPPRA or aforesaid conditions, the applications for issuance of bidding document will not be entertained.</li> </ul>

Note :The details including selection criteria are available in the Bid document.

**Procurement Manager**



**QUAID-E-AWAM UNIVERSITY**  
**OF ENGINEERING SCIENCE & TECHNOLOGY NAWABSHAH.**

Procurement Office  
+92 (0244) 930389

**AA-01**  
**ARTICLES OF AGREEMENT**

**This Agreement** made this \_\_\_\_\_ day of \_\_\_\_\_ 2023, by and between the Vice-Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, located at Nawabshah, Sindh, including his successors in office and Assignees / Agents, acting through the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology, hereinafter called the “**University**”, of the one part,

**And** \_\_\_\_\_ of \_\_\_\_\_ (name and designation of the authorized person), located at \_\_\_\_\_, hereinafter called the “**Contractor**” which expression shall include their successors, legal representatives of the second part.

Whereas the **University** requires Equipment at Nawabshah, and whereas the **Contractor** has agreed to supply, install, put into operation and demonstrate the working of the said Equipment valued at Rs. \_\_\_\_\_ (in figures and words) in the period of \_\_\_\_\_ months, subject to the terms and conditions set forth, hereinafter, which have been accepted by the **Contractor**.

(amount in figures and words)

**Now this Agreement witnesses as follows:**

1. In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the **Conditions of Contract** hereinafter referred to.
2. The following documents which, for the purpose of identification, have been signed by \_\_\_\_\_ on behalf of the **Contractor**, and by \_\_\_\_\_ (name and designation of the authorized person) on behalf of the **University**, all of which shall be deemed to form and be read and construed as a part of this **Agreement** viz.:

- a) Articles of Agreement;
- b) Instructions to Tenderers;
- c) Conditions of Contract;
- d) Contractor’s Offer including the relevant correspondence prior to signing of this Agreement with all Annexures duly filled in;
- e) The specifications of the equipment; and
- f) Bill of Quantity with prices.



**QUAID-E-AWAM UNIVERSITY**  
**OF ENGINEERING SCIENCE & TECHNOLOGY NAWABSHAH.**

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**AA-02**

3. In consideration of the payment to be made to the Contractor, the **Contractor** hereby **covenants** with the University to supply, deliver, install, put into operation and demonstrate the working of the Equipment in conformity in all respects of the Contract & the order form No. \_\_\_\_\_.
  
4. The **University** hereby **covenants to pay** the Contractor in consideration of the supply, delivery, installation, putting into operation and demonstration of the working of the Equipment the contact price in the manner prescribed by the Contract and approved by the University.

**In Witness Thereof** the parties have hereunto set their respective hands and seals, the day, month and year first above written.

**WITNESSES:**

University \_\_\_\_\_

Contractor \_\_\_\_\_

Witness No.1:

Witness No.1:

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Designation: \_\_\_\_\_

Witness No.2:

Witness No.2:

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Designation: \_\_\_\_\_



## INSTRUCTIONS TO TENDERERS

The Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh, intends to purchase Equipment under the approved schemes. The purchase will be financed through the cash provided by the Government of Pakistan. This tender is issued for the supply, installation, putting into operation and demonstration of the working of the Equipment as per the Schedule of requirements given in this Tender Document.

### **PREPARATION OF TENDER.**

#### **1. Language of Tender**

The **Tender** along with any accompanying literature shall be prepared in **English** language only:

#### **2. Submission of Tender**

- a) The **Tender** shall be enclosed in a double cover. The outer cover shall bear the address of the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh, without any indication that it encloses a tender. The inner cover shall be marked with the title of the Tender, number of invitations to the Tender and the date of opening of the Tender, and **must be sealed**.
- b) The **Form for Tender**, (Annexure-A) **Tender Particulars (Annexure-B)** and **Forms of Schedule to Tender** (Annexure "C1"&"C2") enclosed herewith, shall be submitted in duplicate. The authorized person signing the tender documents must state his full name and authorized position designation underneath his signature.
- c) The **erasing and/or alterations**, if any, in the Tender shall be authenticated by the authorized person by his full signature.
- d) The **Tender** shall be accompanied with the **original quotations** from the manufacturers, in case the Tender is submitted through their authorized agents or distributors and shall be supported by credentials establishing the experience and standing of the manufacturers and / or their authorized agents or distributors.
- e) A **Corporate Certificate / Competency Certificate of the Manufacturer** regarding installation, testing, commissioning & training of equipment be attached
- f) **Ambiguous and incorrect answers** and/or incorrect filling of Tender Documents will render the tender liable to rejection.
- g) **Quotations** through cable, telegraph, telex, fax, or e-mail will not be considered.
- h) The tenders shall not rely on any **interpretation or correction** given by any person except the written **addenda and/or corrigenda** to documents issued by the Procurement Manager Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh.



### 3. Bid Bond and Contract Performance Bond

- a) The tenderer shall enclose with his/her tender a **Bid Bond** on requisite stamp paper, as per **Annexure “D”** to this Tender Document, issued by a scheduled/commercial bank doing business in Pakistan, for an amount equivalent to **5% of the total cost** of the Lab Equipment offered as per the Tender submitted by him/her. The Bid Bond shall be in favor of the Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, including his successor in office and assignees acting through the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology. The bond so furnished shall remain **valid for a period 28 days beyond the period of validity of the Tender** or till it is revalidated/extended for a period mutually agreed upon by the tenderer and the Procurement Manager Quaid-e-Awam University of Engineering, Science & Technology.
- b) As soon as an award is made, the provisions in paragraphs **c),d) and e)**, hereunder, shall **operate**.
- c) If the Tender is **rejected**, the Bid Bond will be returned to the tenderer as soon as possible after rejection.
- d) The **successful bidder** shall have to give a **Contract Performance Bond**, as per **Annexure “E”** to this Tender Document, to the extent of **5% of the total value** of the contract on the same conditions as the Bid Bond. The Performance Bond shall be retained by the Procurement Manager Quaid-e-Awam University of Engineering, Science & Technology, till the completion of the guarantee period as per Clause 23 of the Conditions of Contract. The contractor will have the option to get his Bid security converted to performance security. However, the contractor shall make such request in writing after getting the acceptance letter.

### 4. Quality of Stores.

- a) The Equipment and other relevant materials (hereinafter called “**Stores**”) quoted and supplied against this “Invitation to Tender” shall be strictly in accordance with the **Specifications** attached with this Tender Document. The Stores shall be the product of an established manufacturer shall conform to internationally acceptable commercial standards, and shall be a model that has been successfully operated over a reasonable period of time in educational institutions R&D organizations, or relevant industry.
- b) In Tenderers must also warrant the use of best material in the making of the stores. by the find that the Specifications for any items of the Stores are lacking in details, they may give their own proposals with detailed specifications, preferably three alternate proposals if possible, for such items in Annexure “F”.



- c) The Stores offered by the tenders must be of a quality suitable for the purposes and operations for which they are required, and must be capable of rendering the required performance and services at site in the local conditions of extreme tropical climate, air, dust, water, power and fuel at Nawabshah.
- d) The Hardware for operation of the Stores will be made available by University.
- e) The electric supply for operation of the Stores will be made available at 220-volt single phase, or 380 volt three phase, and 50 cycles.
- f) The Stores offered shall be complete with their standard accessories and must be accompanied by their normal instructions book/manual.
- g) Wherever possible or feasible, each item of Stores offered must have its own protection devices, e.g., overload protection by circuit breakers or fuses, or voltage stabilizer for electric equipment.
- h) Unless stipulated otherwise in the specifications for any item, the Stores conforming to ASA, SAE, SSI or DIN will be acceptable.
- i) The successful bidders may be asked to supply list of spares for 5 years satisfactory operation of any item of the Stores, prior to award of the contract.

**5. Literature.**

The tenderers must furnish with their bids catalogues giving full technical details of the Stores to enable the University to check their offers technically against the prescribed specifications failing which the offers will be liable to rejection.

**6. Principals Name, Certificate and Invoice.**

- a) The tenderers are required to mention in their quotations/offers the name and address of their Principals along with a certificate authorizing them (tenderers) to quote on their (Principals) behalf as under:  
“This is to certify that M/s \_\_\_\_\_ located at \_\_\_\_\_ have obtained quotations from us against tender inquiry No. \_\_\_\_\_ dated \_\_\_\_\_ from Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, due for opening on \_\_\_\_\_ and have agreed to make available the Equipment on the quotations and terms and conditions of the tender”.

The above condition does not apply to the manufacturers bidding directly.

- b) The tenderers must also furnish along with their offers their Principals original Proforma Invoice failing which their offers will be rejected.

**7. Country of Origin.**

The tenderers must state in his Tender the country of origin of the Stores offered.

**8. Alternative Proposal.**

If any tenderer elects to submit alternative proposal(s) complete information on the alternative items including all data relating to technical specifications in Vol. I, II & III shall be given as per Annexure “F”.





9. **Prices.**

a) **CATEGORY-‘A’ Stores Manufactured/Available in Pakistan without Involving Import.**

The prices quoted must be total per unit in Pakistani Rupees as shown in **Annexure “C-1”** and shall include:

- i. All charges for packing, marking, handling, insurance, inspection, guarantees, freight/transportation, agent’s commission; and all duties, taxes, levies, octrois etc.; and.
- ii. The cost of installation, putting into operation and demonstration of the working of the Equipment mentioned in the B.O.Q of this bidding document.

b) **CATEGORY-“B” Stores Imported from approved Countries.**

The prices must be quoted for each item of Stores in **Annexure-“C2”** separately for each of the PARTS given below:

**PART-1. Payment in Foreign currency.**

The C&F prices quoted by the Principals in the currency of the country of origin.

For the purpose of comparison, the prices quoted shall be converted to equivalent prices in Pakistani Rupees on the basis of the official bank rate prevalent on the date of opening of the Tender.

**PART-2 Payment in Pakistani Rupees.**

- (i) The agent’s/supplier’s commission in Pakistani Rupees.
- (ii) The insurance charges. The insurance will be arranged by the Contractor through the University with Pakistan Insurance Corporation. The University will assist the Contractor in obtaining the insurance at concessional rates, if any, as allowed by the Government.
- (iii) The cost of installation, putting into operation and demonstration of the working of the equipment in the Laboratories of the University in Pakistani Rupees.
- (iv) All the charges pertaining to handling and clearance of the Stores at the port including all taxes, levies, octrois etc. but excluding the customs duties for the payment of which the University is exempted by the Government. However, if the customs duties are charged for any items of the Stores for which the Government the exemption, the University will make the payment.



**IT-05**

- (v) The transportation charges for transporting the Stores from the port to the Chemical Engineering Department of the University including the charges for loading the Stores at the port and unloading the same at the University.

For the purpose of evaluation/comparison of bids, as stated in Clause-15, the total price for the Stores under this Category shall be the sum of the amounts mentioned for Parts 1 & 2 above.

- (c) In addition to what is stated in para a) & b) above, the prices given in Annexure C1 & C2 shall also include the following for the Stores of both the Categories-A & B.
  - (i) Supply, detailing, manufacture, factory testing, export preparation and all costs incidental to shipping/transport up to the stage of installation in the Chemical Engineering Department of the University.
  - (ii) Responsibility for any loss and/or damage at any stage from manufacture to installation in the Chemical Engineering Department of the University.
  - (iii) Provision for clean on boards bills of landing.
  - (iv) The cost of export taxes, fees and charges levied and outgoing incurred on exporting goods in the country of origin.
  - (v) The expenses on account of the certificate of origin, invoices or any other documents issued in the country or origin.

**10. Validity of Prices/Tender**

- a) The prices quoted shall be valid for a period of at least 90 days from the date of opening of the tender.
- b) Until the final Contract is executed, the successful bidder shall be bound by the terms and conditions of this Tender Document.

**11. Acceptance of the Terms**

- a) The submission of the tender against this tender inquiry by the tenderer means that the tenderer has read and accepted the terms and conditions relating to all the tender documents and annexures, and that he/she have thoroughly examined the specifications and particulars in the tender inquiry. Further the tender shall be deemed to be fully aware of the nature of the Stores and the purpose for which they are required and shall be bound to accept the Contract if placed with him/her on the basis of the prices and of the delivery schedule as indicated in Clause 12 hereof within the validity of his/her Tender.



- b) If the Tender is awarded in favour of Proprietor/Principals who has no authorized agent or distributor in Pakistan, he/she shall have to appoint a distributor or nominee for the purpose of successful completion of the contract and to provide after-sales service.

## **12. Delivery Period.**

### **i. Shipment of Imported Items.**

- a) The shipment of the items of Stores which are to be imported shall be started as early as possible, the shipment schedule shall be submitted to the Procurement Manager and the procurement manager, Quaid-e-Awam University and shall be negotiable and subject to approval by the University.
- b) The tenderer must indicate in his/her offer the port from where the Stores will be shipped.

### **ii. Delivery Period.**

- a) The entire Stores must be delivered, installed and put into operation in the Chemical Engineering Department of the University as early as possible after receiving the letter of award of the Contract.
- b) The Tenderer shall give in the offer his/her own schedule for the delivery and installation of various items of the Stores which shall be negotiable and subject to approval of the University.

### **iii. Delay in the Delivery of the Stores.**

- a) For the Stores delayed beyond the delivery period, as specified in the Contract, or as approved by the University as stated in Clause 12 ii b) above, there shall be levied liquidated damages as specified in Clause 22 of the Conditions of Contract given in this Tender Document.
- b) The liquidated damages may be waived fully or partially by the Procurement Manager with the approval of the Vice Chancellor of the University, if there are reasonable grounds for such a delay.

## **13. Negotiations.**

Under no circumstances will the negotiations take place with any tenderer with regard to Specifications and Prices quoted and read out at the public opening of the tenders and with regard to the substance of the offer. The tenderers cannot revise their prices after the public opening of the tenders.

## **14. Rights of the University**

- (a) The University reserves the right to reject any or all bids without any reason whatsoever, or not waive minor irregularities or errors in any offer. If it appears to the University that such irregularities or errors must be corrected in the offer in which they occur, the same will be corrected prior to issue of the letter of intent which may be awarded thereupon.



- (b) The University is neither bound to accept the lowest or any other offer nor is it bound to assign reason for rejection of any offer.
- c) The University reserves the right to award the contract to one bidder or divide it among several bidders.
- d) The University reserves the right to increase or decrease the quantity of the Stores at its discretion without assigning any reason whatsoever.
- e) The University reserves the right to cancel the offer of the tenderer whose bid has been found/evaluated to be the lowest if it is revealed to the University that the tenderer does not have the capability or financial resources or facilities to carry out the Contract in accordance with the terms and conditions of this Tender Document.

**15. Evaluation of Bids.**

- a) In comparing bids, the University will consider, besides the prices quoted, such other factors as compliance with specifications, relative quality of Stores, past experience of the tenderer, after-sales services facilities available in Pakistan and the tenderer's capacity to perform.
- b) The evaluation criteria specifically mentioned in the specifications will also be considered for evaluation of the bids.
- c) For the purpose of evaluation, the prices to be compared shall be the total prices inclusive of all duties, taxes, freight charges etc. as stated in clause 9 titled "Prices" above.
  - (i) For the items quoted in Annexure-C-1, the total prices as mentioned in Clause-9(b) shall be compared.
  - (ii) For comparison of the items quoted in Annexure C-1 with those quoted in Annexure C-2, the total prices as mentioned in Clause-9(a) including the charges/cost packing, making, handling, insurance, inspection guarantees, clearance, freight/transportation up to the University's Chemical Engineering Department duties, taxes, levies, octrois etc.

**16. Errors in the Bids.**

- (i) Any arithmetic errors found during evaluation of bids will be rectified on the following basis:
  - a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected by the University.
  - b) If there is a discrepancy between the words and figures, the amount in figures shall prevail.



- c) If there is any discrepancy between the total tender price entered in the Articles of Agreement and the total shown in the Schedule of Prices, the amount stated in the Articles of Agreement shall be corrected by the University in accordance with the corrected schedule of Prices.
- (ii) If the tenderer does not accept the corrected amount of tender, his/her Tender will be rejected, and the Bid Bond submitted with the tender shall be forfeited.

**17. Foreign Exchange for Items of Stores to be imported.**

For the items of Stores which are to be imported and for which the prices have been quoted on C&F basis in Annexure C-2, the University will arrange payment in the foreign currency, to the extent of the C&F amount, as stated in Clause 9(b), through its bank in Pakistan in accordance with the prevailing foreign exchange control rules/regulations of the Government of Pakistan.



## CONDITIONS OF CONTRACT

### 1. Scope of the Contract

- a) The **Scope of the Contract** shall be the supply, delivery, installation, putting into operation and demonstration of the working of the Stores in the Chemical Engineering Department of the University at Nawabshah, Sindh, in accordance with the technical Specifications and Bill of Quantities enclosed in this Tender Document.
- b) The Contractor shall within a period of one month of the execution of the agreement furnish to the University a **detailed program** for supply and delivery of various items of the Stores for necessary approval by the University.

### 2. Definition of Terms

In writing these Conditions of Contract, Specifications and Bill of Quantities, the following words shall have the meanings hereby indicated, unless there is something in the subject matter or Contract inconsistent with such constructions:

- i. **The University** shall mean the Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh.
- ii. **The Vice Chancellor** shall mean the Vice Chancellor of Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh, including his successor in office and assignees, empowered to act in all matters pertaining to the University either directly or through the Procurement Manager Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah.
- iii. **The Contractor or Supplier** shall mean the Tenderer(Bidder) whose Bid has been accepted by the University and shall include the Bidder's executors, administrators, successors and permitted assignees.
- iv. **The Stores** shall mean and include all the Equipment, literature, materials and articles to be provided by the Contractor under the Contract.
- v. **The Contract** shall mean the agreement signed by the Contractor for the supply, delivery, installation, putting into operation and demonstration for the working of the Stores, as stated under the Scope of the Contract above.
- vi. **The Contract Price** shall mean the sum mentioned in or calculated in accordance with the provisions of the Contract, which is to be paid to the Contractor for satisfactory execution of the Contract in accordance with these Conditions of Contract.



vii. **The Specifications** shall mean the specifications annexed to or issued, herewith, and shall include the schedule and drawings attached hereto as well as the samples and patterns if any.

viii. **Month** shall mean the Calendar month.

ix. **Writing** shall include any manuscript, type-written, printed or other statement reproduced in any visible form and whether under seal or under hand.

### 3. **Contract Documents.**

a) The term **Contract Document** shall mean the following documents which shall be deemed to form an integral part of the Contract:

- i. Articles of Agreement;
- ii. Instructions to Tenderers;
- iii. Conditions of Contract;
- iv. Contractor's Proposal / Offer including the relevant correspondences prior to signing of the agreement with all Annexures duly filled in;
- v. The Specifications of the Stores; and
- vi. Bill of Quantities with prices.

b) In the event of any **conflict** between the above mentioned documents, the present Articles of Agreement and Conditions of Contract shall prevail.

### 4. **Signing of the Contract Agreement**

Within 30 days of the issue of the letter of intent, the successful bidder (bidders) will be required to **sign an agreement** with the University for the supply of such quantity, in whole or in part, of the tendered Stores as will be communicated to him / her (them) in the letter of intent.

### 5. **Packing, Marking and Handling**

a) All the Stores, whether imported or locally manufactured / available, shall be delivered to the University at Nawabshah in **safe and secure condition** at the risk and cost of the Contractor.

b) The packing, marking and handling shall be so arranged by the Contractor as to **prevent any loss of or damage** to the Stores.



c) In case any of the items of the Stores are to be imported by the Contractor, the **import** shall be **arranged by the Contractor** himself / herself with such packing and marking and through such means as deemed fit by him / her for safe and secure delivery at Nawabshah. The packing of the equipment shall be the usual export packing to ensure safe journey by air, sea, rail and road, as the case may be, of the Stores to destination. Each packing shall be clearly marked in English with the following:

i. Port of Destination: **KARACHI.**  
ii. Name of the Ship: \_\_\_\_\_  
iii. Name of the Consignee: PROCUREMENT MANAGER  
QUAID-E-AWAM UNIVERSITY OF  
ENGINEERING, SCIENCE & TECHNOLOGY  
NAWABSHAH, SINDH, PAKISTAN

i. Name of the Contractor: **CONTRACTOR'S NAME & ADDRESS**  
ii. Case Number & Contents: \_\_\_\_\_  
iii. Net Weight & Dimensions: (length, Breadth & Height)  
iv. Gross Weight: (Kg.)  
v. Number & Date of Contract: \_\_\_\_\_

vi. Marking: **QUEST** in a 6 in. x 4 in. rectangle  
**QUEST**

## 6. Transportation and Shipment

### a. For Stores to be Imported

- i. All those items of Stores which are to be imported by the Contractor shall be **shipped** by whatever means the Contractor deems fit **at his / her risk and cost**. The Contractor must keep the University informed of the shipping arrangements, schedule of shipping, arrival at the port, clearance from the port, and transportation from the port to the University.
- ii. **All costs** of loading of the Stores from the wharves at port of shipment and also the cost of ship wharf age / berthing, demurrage charges, stevedoring, handling charges and other port and river dues in respect of shipment companies' vessels at the port of shipment and all other expenditure up to the stage of placing the Stores at rest on board the ship and the freight charges shall be **borne by the Contractor**.
- iii. Similarly all costs of unloading the Stores at the wharves, wharf age / berthing, demurrage, stevedoring, handling charges and other port dues at the port of arrival in Pakistan and transportation from the port up to the stage of placing the Stores position in the Chemical Engineering Department of the University shall be borne by the **Contractor**. In order to facilitate the clearance of the Stores at the port of arrival, a clearing agent will be engaged by the University, in consultation with the Contractor, who will get the Stores cleared with the assistance of the University and the Contractor, and the clearing agent's charges shall be **borne by the Contractor**.





- iv. All things being equal, **Pakistan flag ships** should be used, as far as possible, for shipment of the Stores. If no such ship is available, such other ships may be used consistent with the execution of this Contract with economy and efficiency.
- v. The Stores must be shipped **under deck**
- vi. The Contractor shall send by air mail/courier service or personally deliver 4(four) sets of non-negotiable shipping documents direct to the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh, so as to reach him at least 8(eight) days before arrival of the ship at the port in Pakistan.

**b. For Stores Manufactured / Available in Pakistan**

- i. All those items of the Stores which are to be manufactured in Pakistan, or are to be supplied from the locally available stocks (whether imported or manufactured in Pakistan), may be transported from the place of manufacture or availability to Nawabshah by **any mode of transportation** as deemed convenient and suitable by the Contractor at his / her risk and cost.
- ii. **All costs** of handling, loading, transportation, unloading and placing the Stores in position in the Chemical Engineering Department of the University shall be **borne by the Contractor**.

**7. Pre-shipment and After-fabrication Inspection**

- a) The **pre-shipment inspection** and / or the inspection of the Stores Principals/Proprietor at the premises, if desired by the Contractor, shall be arranged by the Contractor at his / her own cost. The responsibility for the quality, quantity, correctness and adherence to the Specifications etc. of the Stores shall lie solely and squarely on the Contractor.
- b) The University may, at its discretion, waive pre-shipment inspection and hence issue the waiver in writing so that the Stores could be shipped under manufacturer's test certificate. This waiver shall be deemed as authorization to ship for the purpose of negotiating the letter of credit under Clause 13(b)ii.
- c) The pre-shipment inspection and/or the waiver thereof shall in no any above the Contractor of any of his obligations under this Contract.



## 8. Insurance

The **Contractor shall arrange** the insurance for the Stores in whatever way he / she deems fit at his / her risk and cost. The prices quoted in the offer of the Contractor shall include the cost of insurance. The Contractor shall have to inform the University of the Insurance Arrangements made by him / her for the Stores.

## 9. On-arrival Inspection

There shall be inspection of the Stores by the representatives of the University after arrival in the Chemical Engineering Department of the University in presence of the Contractor or his authorized representatives and the representatives of the insurance company. The **inspection report**, which, inter-alia, should indicate the condition in which each item of the Stores has been received, shall be signed by the above representatives. The Contractor shall coordinate with the Procurement Manager, Quaid-e-Awam University, and the insurance company for arranging the inspection at such date and time as is convenient to the above representatives.

## 10. Taking Over

Upon receipt of the equipment in the Chemical Engineering Department of the University and after inspection, as stated in Clause 9 above, the University will issue a **taking-over certificate** in respect of those items of Stores which are received in acceptable condition. The taking-over of the damaged items will be with-held until the same are repaired / replaced and are re-inspected and found in acceptable condition.

## 11. Installation and Demonstration of Stores

### a). Installation

- i) After inspection and taking over of the Stores, as stated in Clauses 9 and 10 above, the **Contractor shall install** those items of Stores which are to be permanently positioned in place in the laboratories of the University. For this purpose, the Contractor shall co-ordinate with the Procurement Manager, Quaid-e-Awam University, for making arrangements for the Hardware needed for the installation.
- ii) The Contractor shall provide, along with his offer, the details of the hardware needed for each item of the Stores separately. The technical and other personnel needed for installation of the Stores shall be provided by the Contractor at his cost. The entire cost of installation, configuration, application except that of the needed hardware, shall be borne by the Contractor.



**b) Demonstration**

- i)** After installation of the Stores, as stated in Clause **11 a)** above, the complete **working of each item** of Stores for the purpose of performing the intended Chemical Engineering Department experiments, testing of specimens and recording of the test results etc., shall be demonstrated fully to the designated staff of the University by the Contractor or his technical personnel.
- ii)** The entire **cost**, including the T.A. / D.A. of the personnel involved in the demonstration, shall be **borne by the Contractor**.

**12. Completion Certificate**

After completion of the installation and demonstration, as stated in Clause **11** above, a certificate is to be obtained by the Contractor from the concerned **Head of the Department / Director of the Institute** stating that the Stores (item-wise) have been satisfactorily installed and demonstrated by the Contractor.

**13. Terms of Payment**

The Contractor shall be paid for Stores in the following manner:

- a) CATEGORY A: Stores Manufactured/Available in Pakistan without involving import.**
  - i.** For all those items of Stores for which the completion certificate has been issued by the University, as stated in Clause **12** above, the University will pay to the Contractor total price of the items quoted by the Contractor.
  - ii.** The payment for those items of Stores for which the completion certificate has not been issued by the University, as stated in Clause **12** above, will be with-held and released only after the damaged items are replaced / repaired, re-inspected and found in satisfactory condition with consequent issuance of the completion certificate. The payment will be made in the same manner as stated in Clause **13 a) i** above
- b) CATEGORY-B Stores Imported from Approved Countries.**

The payment for this category of Stores will be made in two parts as under:-

**PART-I. Payment in Foreign currency**

- i.** An irrevocable **letter of credit** of one hundred percent (**100%**) of the C&F price, in the currency quoted by the Principals, will be opened in a bank in the country of origin in favor of the Principals/Contractor within 30 days after signing the Contract.



- ii. One hundred percent (**100%**) of the letter of credit amount will be paid against presentation of the shipping documents to the bank through the above letter of credit. The required shipping documents include:
- Clean on board bill of lading;
  - Contractor's detailed invoice showing description of the Stores, specifications, quantity, unit price and total price;
  - Detailed packing list;
  - Certificate of origin of the Stores' and
  - Certificate of pre-shipment/after-fabrication inspection or authorization to ship the Stores as per Clause-7.

#### PART-2.      **Payment in Pakistani Rupees**

The Rupee component of the price of the Stores, as stated in Clause **9 b)** of “**Instructions to Tenderers**” will be paid to the Contractor in the following manner:

- i. For all those items of Stores for which the taking over certificate has been issued by the University, as stated in Clause **10** above, the University will pay to the Contractor seventy percent (70%) of the total price of the items quoted by the Contractor, the remaining thirty percent (30%) will be paid after presentation of the completion certificate, as stated in Clause 12 above.
- ii. The payment for those items of Stores for which the completion certificate has not been issued by the University, as stated in Clause **10** above, will be withheld and released only after the damaged items are replaced/repared, re-inspected and found in satisfactory condition with consequent issuance of the completion certificate. The payment will be made in the same manner as stated in Clause **13 a) I** above

#### **14. Warranty / Guaranty**

- a) The Contractor shall **warranty** that the Stores shall be fit for the purposes and operation mentioned in the relevant clauses of the “Instructions to the Tenderers” and “Conditions of Contract”, notwithstanding the fact that the entire Stores, or any item or part of the Stores, bear or are found to bear a patent or trademark.
- b) The Contractor shall guarantee supply of good quality Stores in accordance with the Specifications and as stated in Clauses 4 and 5 of the “Instructions to the Tenderers”. Further, the Stores shall be brand new and absolutely free from all defects in material, quality and workmanship. In case of defects, the defective Stores, or the defective parts / components of the Stores thereof, shall be replaced by the Contractor free of cost to the University within reasonable time.



**15. Breach of Contract**

In case of breach of warranty /guarantee or Contract, the **damages** suffered by the University shall be **recovered from the Contractor** out of any payment due to the Contractor and / or in accordance with the terms and conditions of the Contract Performance Bond given at Annexure “E” enclosed with this Tender Document, without notice to the Contractor.

**16. Contractor’s Default Liability**

a) The University may upon written notice of default to the Contractor **terminate the Contract** in the circumstances detailed hereunder:

- i. If in the judgment of the University, the Contractor fails to make delivery of the Stores within the time specified in the Contract Agreement or within the period for which extension has been granted by the University; and
- ii. If, in the judgment of the University, the Contractor fails to comply with any of the other provisions of the Contract.

b) In the event the University terminates the Contract, in whole or in part, as provided in Clause **16 a)** above, the University reserves the right to **purchase**, on such terms and conditions as it may deem appropriate, Stores similar to the one terminated, and the Contractor will be liable to the University for any additional costs for such **similar Stores**, and / or for liquidated damages for delay, as defined in Clause **22** of the Conditions of Contract until such reasonable time as may be required for the final supply of the Stores.

c) If the Contract is terminated, as provided in Clause **16 a)** above, the University, in addition to any other rights provided in this Clause, may require the Contractor to **transfer title** and deliver to the University under any of the following cases in the manner and as directed by the University:

- i) Any **completed Stores**; and
- ii) Such **partially completed Stores**, drawings, information and contract right (hereinafter called manufacturing material) as the Contractor has specifically produced or acquired for the performance of such parts of the Contract as has been terminated.

d) The University will **pay to the Contractor** the Contract Price for the completed Stores delivered to and accepted by the University and also for the manufacturing materials delivered and accepted.

e) In the event the University does not terminate the Contract, as provided in Clause **16 a)** above, the Contractor shall continue with the performance of his / her Contract, in which case the Contractor shall be liable to the University for **Liquidated Damages for delay** as set out in Clause 22 until the Stores are accepted.



**17. Bankruptcy**

If the **Contractor** shall become **bankrupt** or have a receiving order made against him / her or compound with his / her creditors, or being a corporation commence to be wound up, not being a voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a receiver for the benefit of its creditors or any of them, **the University shall** be at liberty to:

- a) **Terminate the Contract** forthwith by a notice in writing to the Contractor or to the liquidator or receiver or to any person in whom the Contract may become vested, and to act in the manner provided in Clause 16 above as though the last mentioned notice has been the notice referred in such Clause and the Stores have been taken out of the Contractor's hand; and / or
- b) Give such liquidator, receiver, or other person the **option of carrying out the Contract** subject to his / her providing a guarantee for the due and faithful performance of the Contract up to an amount to be determined by the University.

**18. Termination of Contract**

- a) If, for any cause as set forth in Clause **19** hereafter, the Contractor finds it impracticable to continue operation or, if owing to force majeure or to any cause beyond its control, the University finds it impossible to continue operation, then **prompt notification** in writing shall be given by the party affected to the other.
- b) If the delay or difficulties so caused cannot be expected to cease or become avoidable, or if operation cannot be resumed within six months, then either party shall have the right to terminate the Contract by giving ten **(10) days written notice** to the other.
- c) In the event of termination of the Contract under this Clause, **payment** will be made to the Contractor as follows:
  - i) The Contractor shall be paid for all the Stores for which the completion certificate has been issued, as stated in Clause 12, and for all the reimbursable expenses due and unpaid.
  - ii) The Contractor shall also be paid reasonably for any work done during the said six months period as well as for settlement of any financial commitment made in connection with proper performance of the Contract and which are not reasonably defrayed by payments under i) above.
  - iii) On termination of the contract for any cause, the Contractor shall see to the orderly suspension and termination of operations with due consideration to the interests of the University with respect to completion, safeguarding or storing of the Stores produced for the performance of the Contract and the salvage and resale thereof;



## 19. Force Majeure.

**The Contractor shall not be liable** for any additional cost or for liquidated damages for delay or any failure to perform the Contract arising out of force majeure or cause beyond his / her control including acts of God, or of the public enemy, or of the Government, fires, floods, epidemic quarantine restrictions, strikes, freight embargoes and default of subcontractors due to any such cause (unless the University shall determine that the Stores to be furnished by the Contractor might reasonably have been obtained from other sources in sufficient time to allow the Contractor to meet the required time schedule), provided that the Contractor shall within ten (10) days from the beginning of such delay notify the University in writing of the **causes of the delay**. The University shall ascertain the facts and the extent of the delay and **extend the time** for completing the supplies as in its judgment the findings justify.

## 20. Rejection

- a) In the event any portion of the Stores supplied by the Contractor is found before taking over to be **defective in material or workmanship**, or otherwise not in conformity with the requirements of the Contract, the University shall have the right to either reject or require, in writing, rectification of the Stores. In the later case, the Contractor shall with utmost diligence, and at his own expense, make good the defects so specified or replace the defective Stores. If the Contractor fails to rectify or replace the rejected Stores, the University may adopt any of the following options:
- i) **Replace or rectify**, at its option, such defective Stores and charge to the Contractor the excess cost occasioned to the University plus (15%) fifteen percent; or
  - ii) Acquire the said Stores **at a reduced price** considered equitable under the circumstances; or
  - iii) **Terminate the Contract** as provided in Clause **18** of these Conditions of Contract.
- b) Nothing in this Clause shall affect any claim by the University under Clause **22** hereafter.

## 21. Extension of Time

If the completion of the Contract is delayed due to reason beyond the control of the Contractor, the Contractor shall without delay request the University, in writing, of his **claim** for an extension of time. The University on receipt of such request may agree to **extend the completion date** as may be reasonable in the circumstances of the case but without prejudice to other terms and conditions of the Contract.



## 22. Delay in Delivery - Liquidated Damages

- a) Should the **progress** of the Contract at any time be **lagging behind** the program agreed between the University and the Contractor, the University will notify the Contractor in writing and the Contractor shall there upon take such steps as he / she may deem fit to **expedite the progress** of the Contract. Non-issuance of this notice by the University shall not in any way absolve the Contractor of the liquidated damages as stated in Clause **22 b)** below.
- b) If the Contractor **fails to complete the Contract**, in full or part, within the time laid down in the Contract Agreement or any extension thereof, there shall be deducted from the Contract Price, as **liquidated damages**, a sum of one half of one percent (**0.5%**) of **the Contract price** of each unit of the delayed Stores for each calendar week of delay subject to the maximum of five percent (5%) of the Contract Price of the unit or units so delayed, and such deduction shall be in full satisfaction of the Contractor's liability for the said failure.

## 23. Period of Guarantee

- a) The term **period of guarantee** shall mean the period of twelve(**12**) **months** from the date on which the Stores have been put into operation and demonstrated to University staff. In any case this period shall not exceed eighteen (18) months from the date of taking-over certificate.
- b) During the period of guarantee, the Contractor shall **remedy**, at his / her expense, **all defects** in design, materials, and workmanship that may develop or are revealed under normal use of the said Stores upon receiving written notice from the University; the notice shall indicate in what respect the Stores are faulty.
- c) The provisions of this Clause include all the **expenses** that the Contractor may have to incur for delivery and installation of such replacement parts, material, and equipment as are needed for satisfactory operation of the Stores at the University premises.

## 24. Non-assignment

The Contractor shall **not have the right to assign or transfer** without the prior approval of the University the benefit and obligations of the Contract or any part thereof.

## 25. Expenditure Under Contract

The Contractor shall not make any expenditure for the purpose of this Contract in any **country not authorized** by the Government of Pakistan





**26. Certificate Not to Affect the Rights of the University or the Contractor**

No certificate of the University on account nor any sum paid on account by the University nor any extension of time for the delivery of the Stores pursuant to Clause 19 shall affect or **prejudice the rights of the University** against the Contractor nor relieve the Contractor of his obligation for due performance of the Contract or be interpreted as approval of the Stores supplied, and no certificate shall create liability of the University to pay for the alterations, amendments, variations etc. not ordered in writing by the University or discharge the Contractor for the payment of damages or of any sum against the payment of which he / she is bound to indemnify the University nor shall such certificate nor the acceptance by him / her of any sum paid affect or **prejudice the rights of the Contractor** against the University.

**27. Payments Due from the Contractor**

**All costs** ascertained damages or expenses for which under the Contract the Contractor is liable to the University may be deducted by the University from any money due or may become due to the Contractor under the Contract or may be recovered by action of law or otherwise from the Contractor.

**28. Legal Proceedings**

The Contract and the Tender Documents are governed by the **laws of Pakistan** and no proceedings to or arising out of any of them shall be instituted in any courts other than those situated at Hyderabad and Karachi, Sindh Pakistan.

**29. Dispute**

Should any question or dispute arise as to the material, design, construction or delay in the supply of the Stores or the purpose or the performance for which they are required or are warranted, the University shall nominate an independent **certifier / expert** having knowledge of Equipment, etc., who will, after affording the parties to the dispute an opportunity to present their contention, and after having tests made as the certifier deems fit, certify whether there has been any breach of Contract or warranty and, if so, what sum shall be paid to the University in diminution or extinction of price, and such certificates shall be final and binding and shall not be questioned and shall be acted upon in arbitral or other legal proceedings. The award of the costs of the certifier will be within his / her own discretion and shall be recoverable from the party against which the costs are awarded.

**30. Arbitration**

All disputes and matters of difference whatsoever (other than those relating to the certificate of expert certifier) between the University and the Contractor relating to and arising out of the Contract and Tender Documents shall be referred to arbitration under the arbitration act 1940 with amendments and re-amendments thereof, each party nominating its own arbitrator. The umpire will be nominated by the arbitrators within the first three arbitral hearings. The **award of the arbitrators or of the umpire shall be final and binding** upon the parties. The arbitral proceedings shall be held at Nawabshah, Sindh Pakistan.



## Bid Data Sheet

### Notes on the Bid Data Sheet

Section II is intended to assist the Procuring agency in providing the specific information in relation to corresponding clauses in the Instructions to Bidders included in Part one Section I, and has to be prepared for each specific procurement.

The Procuring agency should specify in the Bid Data Sheet information and requirements specific to the circumstances of the Procuring agency, the processing of the procurement, the applicable rules regarding bid price and currency, and the bid evaluation criteria that will apply to the bids. In preparing Section II, the following aspects should be checked:

- (a) Information that specifies and complements provisions of Part One Section I must be incorporated.
- (b) Amendments and/or supplements, if any, to provisions of Part One Section I as necessitated by the circumstances of the specific procurement, must also be incorporated.



**QUAID-E-AWAM UNIVERSITY**  
**OF ENGINEERING SCIENCE & TECHNOLOGY NAWABSHAH.**

Procurement Office  
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**BIDDING DATA**

(This section should be filled in by the Engineer/Procuring Agency before issuance of the Bidding Documents).

a)	Name & Address of the procuring agency.	Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah.
b)	Brief Description of Works	Supply and Installation of Remaining Lab Equipment for Chemical Engineering Department, QUEST, Nawabshah
c)	Estimated Cost	<b>59.980 (M)</b>
d)	Amount of Bid Security	<b>5%</b>
e)	Period of Bid Validity	<b>90 days.</b>
f)	Amount of Performance Security:	<b>5%</b> ( <i>The successful bidder can get his bid security converted to performance security by making a written request after getting the acceptance letter</i> )
g)	Percentage if any, to be deducted from bill	N.A.
h)	Tender Document Issuance date:	07.09.2023
i)	Deadline of submission of Bids along with time	26.09.2023 up to 10:00 (A.M.) Bidders do not have the option of submitting their bids electronically. Unsealed bids will not be entertained / received.
j)	Venue, Date & Time of Bid opening	Procurement Office, PGC Building, QUEST, Nawabshah 26.09.2023, 10:50 (AM)
k)	Time for Completion from written order of commence	06 Months
l)	Liquidity damages	(0.05% of Estimated cost or Bid cost)
m)	Stamp duty	<b>0.35%</b> or notified by the Govt. of Sindh, will be paid by successful bidder as stamp duty.



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**BID DATA SHEET**

**Introduction**

ITB 1.1	<b>Quaid-e-Awam University of Engineering, Science &amp; Technology, Nawabshah</b>
ITB 1.1	Loan or credit or Project allocation number. Loan or credit or Project allocation amount.
ITB 1.1	<b>Procurement of Goods:</b>
ITB 1.1	Supply and Installation of Remaining Lab Equipment for Chemical Engineering Department at QUEST, Nawabshah.
ITB 4.1	<b>Quaid-e-Awam University of Engineering, Science &amp; Technology, Nawabshah</b>
ITB 6.1 Address	Procurement Manager, PGC Building QUEST, Nawabshah. <b>PTCL # 0244-930389</b>
ITB 8.1	English

**Bid Price and Currency**

ITB 11.2	The price quoted shall be FOR basis. The price quoted shall be in Pak Rupees.
ITB 11.5	The price shall be fixed,

**Preparation and Submission of Bids**

ITB 13.3 (d)	Qualification requirements.  The Bidder/s should have Minimum <b>Three years</b> of experience in the supply of similar type of Goods. The Bidder/s should be the taxpayer and registered with GST. Other detailed evaluation criteria are provided in this bidding document (Annexure-0)
ITB 14.3 (b)	Spare parts required for.... Not Applicable
ITB 15.1	Amount of bid security: 5% of the total bid quoted.
ITB 16.1	The bid should be valid for 90 days
ITB 17.1	Number of copies. ONE Original and ONE Copy
ITB 18.2 (a)	Procurement Manager, QUEST Nawabshah
ITB 18.2 (b)	IFB Procurement of Goods.
ITB 19.1	Deadline for bid submission: 26.09.2023 up to 10:00 am Bids received after the due date and time will not be entertained.
ITB 22.1	Time, date, and place for bid opening: 26.09.2023 at 10:50 am in the office of Procurement Manager, PGC building , QUEST, Nawabshah.



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<b>Bid Evaluation</b>	
<b>ITB 25.3</b>	The QUEST will accept best evaluated bid prices (Item-wise Most advantageous bid) as per Rule 48 & 49 of SPPRA Rules, 2010 (Amended 2019).
<b>ITB 25.4 (a)</b> <b>ITB 25.4 (b)</b>	Incomplete and conditional quotations will be rejected forthwith. No cutting / overwriting in the offered prices will be accepted.
<b>Option (i)</b>  <b>Option (ii)</b>  <b>Option (iii)</b>	adjustment expressed as a percentage, <b>or</b> adjustment expressed in an amount in the currency of bid evaluation, <b>or</b> adjustment expressed as a percentage
<b>ITB 25.4 (c) (ii)</b>	Deviation in payment schedule. Annual interest rate.
<b>ITB 25.4 (d)</b>	Cost of spare parts.
<b>ITB 25.4 (e)</b>	Spare parts and after sales service facilities in the Procuring agency's country.
<b>ITB 25.4 (f)</b>	Operating and maintenance costs. Factors for calculation of the life cycle cost: (i) number of years for life cycle; (ii) operating costs; (iii) maintenance costs; and (iv) rate, as a percentage, to be used to discount all annual future costs calculated under (ii) and (iii) above to present value. <b>or</b> Reference to the methodology specified in the Technical Specifications or elsewhere in the bidding documents.
<b>ITB 25.4 (g)</b>	Performance and productivity of equipment.
<b>ITB 25.4 (h)</b>	Details on the evaluation method or reference to the Technical Specifications.
<b>ITB 25.4 Alternative</b>	Specify the evaluation factors.

<b>Contract Award</b>	
<i>Item-wise Most Advantageous Bid</i>	
<b>ITB 29.1</b>	Percentage for quantity increase or decrease. <b>(15) percent.</b>



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**ANNEXURE-0**

**SELECTION METHODOLOGY:**

The bidders shall be evaluated first on the basis of mandatory required documents. Failing to provide any of the mandatory documents shall disqualify the bidder from further processing. Only bidders qualifying mandatory criteria shall be considered for a score-based technical evaluation.

**A. Mandatory Criteria**

S#	Clause	Documentary Evidence
	Registered with the concerned Federal and Provincial Tax Departments. 1. National Tax Registration Certificate (NTN) 2. General Sales Tax Registration Certificate 3. Active Taxpayer Status on FBR. 4. Office Address of firm should be same as declared to FBR 5. Valid Authorization certificate showing that Bidder is currently a Principal or an authorized partner of the Principal, for the proposed equipment in Pakistan. 6. Undertaking for the firm is not Blacklisted previously by any executing agency / organization.	Relevant documentation should be submitted (Mandatory)

**B. Technical Evaluation Criteria**

Following score-based evaluation will be used to evaluate the bidders who have qualified the mandatory criteria. A bidder who scores a minimum of 60% marks (60 marks out of 100) will be eligible for further processing i.e., Financial Bid opening.

S#	Clause	Marks	Documentary Evidence
1.	Bidder should be in possession of a consistently valid Principal's authorization certificate for last 03 (Three) consecutive years.	20	Relevant documentation should be submitted.
2.	Bidders must be authorized by the Principal specifically for this procurement. (Manufacturers Authorization Letter addressed to Quaid-e-Awam University for this Project. This certificate is required from Equipment Manufacturer whose products are being offered.	15	Manufacturer Authorization Letter to be submitted.
3.	Bidders must provide Principal's confirmation that the similar Equipment has been installed at a minimum three (03) verifiable organizations in Pakistan during last 03 (Three) years.	15	Relevant documentation should be submitted.
4.	Annual Sales volume / Gross Turnover of the bidder firm should be at least 10 Million rupees per year in the last 03 (Three) years.	10	Relevant documentation should be submitted.
5.	Bidder must have verifiable presence / support / branch offices in at least two major cities of Pakistan to provide support and must have technical strength on permanent basis. (05 marks for each support / branch offices)	10	Relevant documentation should be submitted.
6.	Compliance of technical specifications mentioned in the BoQ of this Bidding Document for Supply and Installation of remaining Lab Equipment for Chemical engineering Department. (As per Bidding Documents / Advanced Technology)	20	Will be evaluated by Technical Experts.
7.	Audited financial statements of last three years	10	Annual audited reports should be submitted.
	<b>Total Marks</b>	<b>100</b>	

**Qualifying marks = (60 Marks) 60% and above.**



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**C. Award of contract**

A bidder who has qualified i) Mandatory criteria, and ii) technical evaluation by scoring minimum of 60% marks, will be considered responsive bidder. A responsive bidder whose bid is found to be the lowest evaluated bid / Most Advantageous Bid shall be awarded the contract on item-wise basis.



**FORM OF TENDER**  
(LETTER OF OFFER)

Tender Reference No. \_\_\_\_\_ Dated \_\_\_\_\_

Name of Contract: **Supply, Installation, Putting into Operation and Demonstration of Equipment at laboratories of Chemical Engineering Department of Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh**

The Procurement Manager,  
Quaid-e-Awam University of Engineering, Science & Technology  
Nawabshah, Sindh

Dear Sir,

1. Having examined the Tender Documents including Instructions to Tenderers, Conditions of Contract, Specifications, Drawings, Schedule of Prices and Addenda Nos. \_\_\_\_\_ for the execution of the above-named Contract, we, the undersigned, being a company doing business under the name and address \_\_\_\_\_ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Contract and remedy any defects therein in conformity with the said Documents including Addenda thereto for the Total Tender Price of Rs. \_\_\_\_\_ (in figures and words) or such other sum as may be ascertained in accordance with the said Documents.
2. We understand that all the Schedules attached hereto form part of this Tender.
3. As security for due performance of the undertakings and obligations of this Tender, we submit herewith a Bid Bond referred to in Clause 3 of the Instructions Tenderers and as per Annexure "D", in the amount of Rs. \_\_\_\_\_ (in words and figures) drawn in favor of or made payable to Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, and valid for a period of 28 days beyond the period of validity of this Tender.
4. We undertake, if our Tender is accepted, to complete the whole of the work comprised in the above-named Contact within the time stated in Clause 12 of the Instructions to Tenderers.
5. We agree to abide by this Tender for the period of 90 days beyond the date of opening of the Tender, and it shall remain binding upon us and may be accepted at any time before the expiration of this period.
6. Unless and until a formal Contract Agreement is signed, this Tender, together with your acceptance thereof, shall constitute a binding contract between us.
7. We undertake, if our Tender is accepted, to execute the Contract Performance Bond referred to in Clause 3 of the Instructions to Tenderers and as per Annexure "E" for the due performance of the Contract.





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8. We understand that you are not bound to accept the lowest or any Tender you may receive.
9. We do hereby declare that this Tender is made without any collusion, comparison of figures or arrangement with any other person or persons making a Tender for the above-named Contract.
10. We confirm, if our Tender is accepted, that all partners of the joint venture shall be liable jointly and severally for the execution of the Contract and the composition or the constitution of the joint venture shall not be altered without the prior consent of the Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah. (Please delete this clause in case of Tender from a single firm)

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 2023

Signature \_\_\_\_\_ in the capacity of \_\_\_\_\_ duly authorized

to sign Tender for and on behalf of \_\_\_\_\_  
(Name of Tenderer in Block Capitals)

Address: \_\_\_\_\_  
\_\_\_\_\_

**Witness:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Occupation: \_\_\_\_\_



**TENDER PARTICULARS**

**THE TENDERERS MUST SUPPLY THE FOLLOWING SPECIFIC INFORMATION FOR EACH ITEM OR GROUP OF ITEMS OF THE STORES:**

**1. Conformation of Stores:**

Whether the Stores offered conform to the particulars specified in the Schedules; if not, details of deviations must be stated in Annexure "F".

**2. Manufacturing Details:**

- (i) Brand of Equipment.
- (ii) Name and address of Manufacturer; and
- (iii) Country of origin of Stores.

**3. Delivery Schedule:**

- (i) Earliest date by which delivery can be affected;
- (ii) Complete schedule of delivery; and
- (iii) If the delivery period is different for different items, it must be indicated item wise.

**4. Packing Specification:**

Whether the specifications for packing given in the Tender Documents will be adhered to.



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**ANNEXURE “C1”**

**FORM OF SCHEDULE TO TENDER FOR STORES MANUFACTURED/AVAILABLE**  
**IN PAKISTAN WITHOUT INVOLVING IMPORT.**

Due by \_\_\_\_\_ hours on \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_  
(time) (date) (month) (year)

SCHEDULE TO TENDER NO. \_\_\_\_\_ DATED \_\_\_\_\_

The Tender will be opened at \_\_\_\_\_ hours on \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_  
(time) (date) (month) (year)

Delivery on or before \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_  
(date) (month) (year)

**Rates and amount to be quoted in Pakistani Rupees**

S.No.	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Quantity Of Stores.	Unit	Rate Per Unit	Total Price.
1	2	3	4	5	6	7	8

**It is certifies that:**

- i) The Stores offered above conform in all respects with the particulars/specifications given in the Tender Documents' and
- ii) All the terms and conditions of the Tender Documents are acceptable to us.

\_\_\_\_\_  
(signature of the authorized person)

\_\_\_\_\_  
(name of the authorized person)

**SEAL**

\_\_\_\_\_  
(name of the Tenderer)



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**ANNEXURE "C2"**

**FORM OF SCHEDULE TO TENDER FOR STORES  
IMPORTED FROM APPROVED COUNTRIES.**

Due by \_\_\_\_\_ hours on \_\_\_\_\_  
(time) (date) (month) (year)

SCHEDULE TO TENDER NO. \_\_\_\_\_ DATED \_\_\_\_\_

The Tender will be opened at \_\_\_\_\_ hours on \_\_\_\_\_  
(time) (date) (month) (year)

Delivery on or before \_\_\_\_\_  
(date) (month) (year)

**PART 1.** The rates quoted in the Table below must be on C&F basis.

S. No.	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Quantity Of Stores.	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
1	2	3	4	5	6	7	8	9	10

**PART 2.** The rates quoted in the Table below must be in Pakistani Rupees

S.No.	Code/ Item No.	Description of Stores	Quantity Of Stores.	Unit	Rate Per Unit	Total Price.
1	2	3	5	6	7	8

(Continued on the next page)



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**ANNEXURE "C2"**

**NOTE:**

In the Table below, the columns 1 to 5 and 8 are to be filled in by the Tenderer before submitting the Tender, while the columns 6,7 and 9 are to be filled in jointly by the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology, or his representative, and the Tenderer, or his representative, after opening of the Tender.

S. No.	Code/ Item No.	Description of Stores	Total C&F Price for Part 1	Currency	Exchange Rate	Total Price for Part 1 (Rs.)	Total Price for Part II (Rs.)	Total Cost (Rs.)
1	2	3	4	5	6	7	8	9

**It is certified that:**

- i) The Stores offered above conform in all respects with the particulars/specifications given in the Tender Documents; and
- ii) All the terms and conditions of the Tender Documents are acceptable to us.

\_\_\_\_\_  
(name of the Tenderer)

\_\_\_\_\_  
(signature of the authorized person)

\_\_\_\_\_  
(name of the authorized person)

**SEAL**



ANNEXURE “D”

**BID BOND**  
(Bank Guarantee)

Guarantee No \_\_\_\_\_  
Executed on \_\_\_\_\_  
Expiry date \_\_\_\_\_

**Letter by the Guarantor (Bank) to the Employer (University)**

Name of Guarantor (Bank) with address: \_\_\_\_\_  
\_\_\_\_\_

Name of Principal (Tenderer) with address: \_\_\_\_\_  
\_\_\_\_\_

Penal sum of Security (Bond),(in figures and words): \_\_\_\_\_  
\_\_\_\_\_

Tender Reference No. \_\_\_\_\_ Date of Tender \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Tender and at the request of the said Principal (Tenderer), we the Guarantor above-named are held and firmly bound unto the Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, acting through the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology, {hereinafter called The “Employer” (“University”)} in the sum stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal (Tenderer) has submitted the accompanying Tender numbered and dated as above for supply, installation, putting into operation and demonstration of equipment in the laboratories Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, to the said Employer (University); and

WHEREAS, the Employer (University) has required as a condition for considering the said Tender that the Principal (Tenderer) furnish a Bid Bond in the above said sum to the Employer (University), conditioned as under:

- 1) that the Bid Bond shall remain valid for a period of 28 days beyond the period of validity of the Tender;



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- 2) that in the event of;
- a) the Principal (Tenderer) withdraws his Tender during the period of validity of the Tender;
  - b) the Principal (Tenderer) does not accept the correction of his Tender Price, pursuant to Clause 16 of “Instructions to Tenderers”; or
  - c) failure of the successful Tenderer to:
    - i) furnish the required Contract Performance Bond, in accordance with Clause 3 of “Instructions to Tenderers”; or
    - ii) sign the proposed Contract Agreement, in accordance with Clause 4 of the “Conditions of Contract”;

Then the entire sum be paid immediately to the said Employer (University) as liquidated damages and not as penalty for the successful Tenderer’s failure to perform.

NOW THEREFORE, if the successful tenderer shall, within the period specified therefore, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer (University) in accordance with his Tender as accepted and furnish within twenty eight (28) days of his being required to do so, a Contract Performance Bond with good and sufficient surety, as may be required, upon the form prescribed by the said Employer (University) for the faithful performance and proper fulfillment of the said Contract or in the event of rejection of the said Tender by the Employer (University) within the time specified then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT, the Guarantor shall forthwith pay to the Employer (University) the said sum stated above upon first written demand of the Employer (University) without cavil or argument and without requiring the Employer (University) to prove or to show grounds or reasons for such demand notice of which shall be sent by the Employer (University) by registered post duly addressed to the Guarantor at its address given above.

PROVIDED ALSO THAT, the Employer (University) shall be the sole and final judge for deciding whether the Principal (Tenderer) has duly performed his / her obligations to sign the Contract Agreement and to furnish the required Contract Performance Bond within the time stated above, or has defaulted in fulfilling the said requirements and the Guarantor shall pay without objection the sum stated above upon first written demand from the Employer (University) forthwith and without reference to the Principal (Tenderer) or any other person.

IN WITNESS WHEREOF, the above bounden Guarantor has executed the instrument under its seal on the date indicated above, the name and seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative pursuant to the authority of its governing body.

\_\_\_\_\_  
Guarantor (Bank)



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**Witness:**

1. \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Name, Title, Address and Seal)

\_\_\_\_\_  
(Name)

2. \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name, Title, Address and Seal)

\_\_\_\_\_  
(Corporate Guarantor Seal)





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**ANNEXURE “E”**

**CONTRACT PERFORMANCE BOND**  
**(Bank Guarantee)**

Guarantee No. \_\_\_\_\_  
Executed on \_\_\_\_\_  
Expiry Date \_\_\_\_\_

**Letter by the Guarantor (Bank) to the Employer (University)**

Name of Guarantor (Bank) with Address: \_\_\_\_\_  
\_\_\_\_\_

Name of Principal (Contractor) with address: \_\_\_\_\_  
\_\_\_\_\_

Penal Sum of Security (Bond), (in words and figures) \_\_\_\_\_  
\_\_\_\_\_

Letter of Acceptance No. \_\_\_\_\_ Dated \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the Tender Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal (Contractor) we, the Guarantor above named, are held and firmly bound unto the Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh, acting through the Procurement Manager, Quaid-e-Awam University of Engineering, Science & Technology {hereinafter called the Employer (University)} in the penal sum of amount stated above for the payment of which sum well and truly to be made to the said Employer (University), we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal (Contractor) has accepted the Employer's (University's) above said Letter of Acceptance for the supply, installation, putting into operation and demonstration of Equipment of Laboratories of Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh.

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer (University), with or without notice to the Guarantor, which notice is hereby waived and shall also well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till the expiry of the guaranty period as per Clause 23 of the Conditions of Contract.



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Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, \_\_\_\_\_ (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer (University) without delay upon the Employer's (University's) first written demand without cavil or arguments and without requiring the Employer (University) to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's (University's) written declaration that the Principal (Contractor) has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to the Employer's (University's) designated Bank and Account Number.

PROVIDED ALSO THAT the Employer (University) shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling the said obligations, and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer (University) forthwith and without any reference to the Principal (Contractor) or any other person.

IN WITNESS WHEREOF, the above bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body

	_____ Guarantor (Bank)
<b>Witness:</b>	
1. _____ (Signature)	_____ (Signature)
_____ Name, Title and Address (Seal)	_____ (Name)
2. _____ (Signature)	_____ (Title)
_____ Name, Title and Address (Seal)	_____ Corporate Guarantor (Seal)



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**ANNEXURE "F"**

**Statement Describing Deviation from Specifications.**

<b>S.No.</b>	<b>Code No.</b>	<b>Description of Stores</b>	<b>Statement of Variation from Specifications</b>	<b>Reasons for Variations.</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

\_\_\_\_\_  
(signature of the authorized person)

\_\_\_\_\_  
(name of the authorized person)

**SEAL**

**On behalf of**

\_\_\_\_\_  
(name and address of the Tenderer)



BL-1

ANNEXURE-G

**(INTEGRITY PACT)**

**DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC; PAYABLE BY CONTRACTORS.**

Contract No. \_\_\_\_\_ Dated \_\_\_\_\_

Contract Value: \_\_\_\_\_

Contract Title: **Procurement of Remaining Lab Equipment for Chemical Engineering Department at QUEST, Nawabshah.**

M/s \_\_\_\_\_ hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Sindh (GoS) or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoS) through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Contractor] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and 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 natural 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 consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from, from Procuring Agency (PA) except that which has been expressly declared pursuant hereto.

[name of Contractor] accepts full responsibility and strict liability 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 PA and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Contractor] accepts 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 rights and remedies available to PA under any law, contract or other instrument, be voidable at the option of PA.

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

**Procurement Manager  
QUEST, Nawabshah**

**Contractor**



**BILL OF QUANTITIES FOR**  
**SUPPLY AND INSTALLATION OF**  
**REMAINING LAB EQUIPMENT**  
  
**FOR**  
  
**DEPARTMENT OF CHEMICAL**  
**ENGINEERING**

**ITEM CODE**

**CH/QUEST**



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**Bill of Quantities (B.O.Q)**

Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
<b>1.</b>	<b>SIMULTANEOUS HEAT &amp; MASS TRANSFER LAB</b>				
CH / QUEST /01	<p><b>BENCH TOP COOLING TOWER</b></p> <p>The Bench Top Cooling Tower, has been perfectly designed to offer the students the opportunity of exploring the design, construction and operating characteristics of a modern water evaporation cooling system</p> <p>Bench-top unit. Anodized aluminum frame and panels made of painted steel. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. Water propeller pump, maximum flow of water of 120 l/h. Air propeller with a fan with speed control: 145 m<sup>3</sup>/h max, 3000 rpm. Heating element: 60 °C max. Water tank, capacity: 14 l. Level switch in the tank. Flow meter, range: 0.2 – 2 l/min. Two inclined manometers, length: 300 mm. Up to sixteen temperature sensors, “J” type (of dry bulb, wet bulb and water temperature), according to the column supplied. It included an optional column type B: N° of levels: 8. N° of sheets by level: 10. Total surface: 1.013 m<sup>2</sup>. Height of packaging: 650 mm. Density Area/volume: 58 m<sup>2</sup>/m<sup>3</sup>.</p> <p><b>EXERCISES AND PRACTICAL POSSIBILITIES</b></p> <ol style="list-style-type: none"> <li>1.- Process observation inside a bench top cooling tower.</li> <li>2.- Determination of evaporation velocity.</li> <li>3.- Mass balance. Use of psychrometric charts.</li> <li>4.- Energy balance.</li> <li>5.- Effect of cooling load against "Wet bulb approach".</li> <li>6.- Relation between air velocity, wet bulb approach and head loss.</li> <li>7.- Determination of the cooling capacity.</li> <li>8.- Determination of the cooling capacity for different cooling towers.</li> <li>9.- Thermodynamic properties.</li> <li>10.- Evaporation from a wet bed.</li> </ol>	EU/US/UK or Equivalent	01		



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Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
<b>2.</b>	<b>UNIT OPERATION LAB</b>				
<b>CH / QUEST /02</b>	<p><b>LIQUID/SOLID MIXING UNIT</b></p> <p>The Liquid/Solid Mixing Unit "EMLS" is made up of a main support frame, in which a dynamo brake motor of adjustable speed and mechanical connections are installed. Diverse types of agitators can be coupled to the motor.</p> <p>Metallic frame and panels made of painted steel.</p> <p>The unit includes wheels for its mobility.</p> <p>Main metallic elements of stainless steel.</p> <p>Diagram in the front panel with similar distribution to the elements in the real unit.</p> <p>Dynamo brake motor, with speed regulation:  Its purpose is to make the agitator turn at preset revolutions value.</p> <p>Power: 0.37 kW. Revolutions: from 0 to 3000 rpm.</p> <p>Torque meter (load cell):  Its objective is to measure the torque established between the motor and the solution.</p> <p>Crowbar: 18.3 cm.</p> <p>Force range: 0 to 39.2 N.</p> <p>Vertical platform:  It allows to displace the dynamo brake motor vertically. It is operated by a spindle and a steering wheel and its displacement is guided by lineal bearings.</p> <p>Agitators holder:  It is the element that allows to install different types of agitators. They are coupled with clamps.</p> <p>Agitators:  They are the elements in charge of the agitation of the fluid, and they can be of different shapes and sizes:</p> <p>Two blades agitators, diameters: 100 mm and 50 mm.</p> <p>Two propeller agitators, diameters: 100 mm and 50 mm.</p> <p>Two turbine agitators, diameters: 100 mm and 50 mm.</p> <p>The propeller agitators are used for mixing with viscosity higher than 2000 cp.</p> <p>Tanks:  Their purpose is to contain the fluid that we will use in the experiment. They are cylindrical and are made of transparent material, to facilitate the observation of the stage of agitation in the fluid. They have removable covers to avoid spills and splashes of the fluid.</p> <p>Tank of 300 mm diameter and 300 mm height, with deflectors.</p> <p>Tank of 300 mm diameter and 300 mm height, without deflectors.</p> <p>Tank of 150 mm diameter and 300 mm height, with deflectors.</p> <p>Tank of 150 mm diameter and 300 mm height, without deflectors.</p> <p>The capacity of the tanks is approx 2l and 5 l.</p> <p>1.- Visualization of fluid fields.  2.- Power required in the agitation process.  3.- Suspensions of solids in liquids.  4.- Formation of solid-liquid solutions.  5.- Emulsion of immiscible liquids.  6.- Mixing of miscible liquids.</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		



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Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
	7.- Heating process of liquid mass. 8.- Test with models at scale. 9.- Quality of mixing / mixing time. 10.- Power speed of the different agitators. 11.- Demonstration of the different factors (tanks, deflectors, agitators...), that affect the mixing, using visualization techniques and appropriate measurement.				
<b>CH / QUEST /03</b>	<p><b>COMPUTER CONTROLLED GAS CYCLONE</b></p> <p>The Computer Controlled Gas Cyclone, "PCGC", is a unit designed to study the separation of heterogeneous mixtures through a cyclone, specifically those made up of a thin material (4 <math>\mu\text{m}</math> – 400 <math>\mu\text{m}</math>) and an air flow. The cyclone, the main component of this system, separates the solid particles of the air flow so it comes out clean.</p> <p>Anodized aluminum frame and panels made of painted steel.            The unit includes wheels to facilitate its mobility.            Main metallic elements made of stainless steel.            Diagram in the front panel with distribution of the elements similar to the real one.            Cyclone separator made of transparent walls to visualize the process:                Height: 300 mm.                Diameter of the nozzles: 85 mm.            Computer controlled fan:                Maximum flow: 600 m<sup>3</sup>/h (free outlet).            Adjustable solid dispersion motor system with tank for solid particles with a capacity of 100 ml approx.            Two filters: one at the air inlet to avoid particles different from those of the mixture and other at the outlet to improve the air quality and guarantee that all the particles have been removed.            Additional control valve to regulate the air flow.            Vessel made of glass for the coarse material outlet of the cyclone, capacity: 500 ml.            Flow sensor at the clean air inlet, range: 0 – 400 m<sup>3</sup>/h.</p> <p><b>EXERCISES AND PRACTICAL POSSIBILITIES TO BE DONE WITH THE MAIN ITEMS</b></p> <ol style="list-style-type: none"> <li>1.- Study of the operation of a cyclone separator.</li> <li>2.- Study of the size of solids or air flow versus pressure drop in the cyclone.</li> <li>3.- Calculation of the cyclone separation efficiency and variation of this value in function of the air flow and the amount of added solids.</li> <li>4.- Comparison of the cyclone efficiency experimentally obtained with the theoretical calculations.</li> <li>5.- Study of the pressure drop at the inlet and outlet of the cyclone.</li> <li>6.- Comparison of the pressure drop experimentally obtained with the theoretical calculations.</li> <li>7.- Determination of the separation size (spectrophotometer required).</li> <li>8.- Influence of the air flow and the amount of added solids on the separation size (spectrophotometer required).</li> </ol> <p>Additional practical possibilities:            9.- Sensors calibration.            Other possibilities to be done with this Unit:            10.- Many students view results simultaneously.</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		





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Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
<b>3.</b>	<b>THERMODYNAMICS LAB</b>				
<b>CH / QUEST /04</b>	<p><b>THERMAL CONDUCTIVITY OF LIQUID AND GAS MODULE</b></p> <p>This unit has been designed to enable students to easily determine the thermal conductivity of liquids and gases. By the realization of the practices the student can determine the thermal conductivity of any suitable gas or compatible liquid with materials on construction. Anodized aluminum structure and panel of painted steel. Diagram in the front panel with similar distribution to the elements in the real unit. Aluminum body (cylinder) with brass jacket that contains the test fluid and the refrigeration water. Variable heating element (in the cylinder), computer controlled. Heating element power controlled from computer. The power is measured by a sensor. 6 Temperature sensors, "T" type (high precision). Water flow sensor, range: 0.25-6.5 l./min. Water flow regulation valve. Valves. Syringe. Power measurement from the computer.</p> <p align="center"><b>EXERCISES AND PRACTICAL POSSIBILITIES</b></p> <p><u>Some Practical Possibilities of the Unit:</u></p> <ul style="list-style-type: none"> <li>• Obtaining of the curve of thermal conductivity of the air.</li> <li>• Thermal conductivity in vacuum.</li> <li>• Water thermal conductivity determination.</li> <li>• Thermal conductivity determination of a mineral oil.</li> <li>• Calibration of the Unit</li> </ul>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>4.</b>	<b>CHEMICAL REACTION ENGINEERING LAB</b>				
<b>CH / QUEST /05</b>	<p><b>CONTINUOUS STIRRED TANK REACTOR:</b></p> <p><b>Unit:</b> Small scale Continuous Stirred Tank Reactor, computer controlled, designed to demonstrate the behavior of a reactor used for homogeneous reactions liquid-liquid. Anodized aluminum structure and panels in painted steel (epoxy paint). Main metallic elements in stainless steel. Diagram in the front panel with similar distribution</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		



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	<p>to the elements in the real unit. Reactor body made in borosilicate glass, with a maximum capacity of 2 liters, specially designed to work in continuous. It also allows batch operation. Adjustable volume from 0.4 to 1.5 l. Stainless steel heat transfer coil and a baffle (removable). Stirring system with speed control and indication, computer controlled. Stirrer range: 0-220 rpm. Reactor lip with connectors for the appropriate sensors. Temperature sensor “J” type to control the temperature into the reactor. Conductivity sensor to control the reaction. Measurement range up to 20 mS. Easy and quick assembly on the Service Unit. All elements of this unit are chemically resistant.</p> <p><b><u>EXERCISES AND PRACTICAL POSSIBILITIES</u></b></p> <ul style="list-style-type: none"> <li>• Determination of the ionic conductivities.</li> <li>• Batch operation. Obtaining of the reaction order respect to ethyl-acetate. Initial velocity method.</li> <li>• Batch operation. Obtaining of the reaction order respect to sodium hydroxide. Initial velocity method.</li> <li>• Batch operation. Velocity Constant Computation. Constant sodium hydroxide initial concentration.</li> <li>• Batch operation. Velocity Constant Computation. Constant ethyl-acetate initial concentration.</li> <li>• Velocity equation formulation.</li> <li>• Batch operation. Variation of the kinetic constant with temperature. Arrhenius Equation.</li> <li>• Batch operation. Theoretical and experimental conversion comparative. Deviation from ideality.</li> <li>• Batch operation. Mixture effects.</li> <li>• Continuous operation.</li> </ul>				
<p style="text-align: center;"><b>CH / QUEST /06</b></p>	<p><b>Service Unit ( Required for ALL) QUSC</b></p> <p>Anodized aluminum frame and panels made of painted steel. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. This unit is common for the required elements (at least one) (Not included). Accommodation and exchange system of the reactors, quick and easy to handle. It supplies all the services for the operation of each reactor. Safety, easy and quick connections. All elements of this unit are chemically resistant. The “QUS” unit mainly consists of: Two peristaltic dosing pumps, with variable speed. Flow rate up to 3 l/h (unit standard disp</p>	<p style="text-align: center;"><b>EU/US/UK or Equivalent</b></p>	<p style="text-align: center;"><b>01</b></p>		



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	<p>Electronic console: Metallic box. Temperature sensors connections. Digital display for temperature sensors. Selector for temperature sensors. Peristaltic pumps controllers and switches. Water pump switch. Stirrer switches. Heating element controller. Main switch. Cables and accessories, for normal operation</p>				
<p><b>CH / QUEST /07</b></p>	<p><b>BATCH REACTOR</b>  <b>Unit:</b>            Small scale Bath Reactor, computer controlled, designed for the kinetic study of homogeneous reactions liquid-liquid, both in adiabatic conditions and in isothermal conditions.            Anodized aluminum structure and panels in painted steel (epoxy paint).            Main metallic elements in stainless steel.            Diagram in the front panel with similar distribution to the elements in the real unit.            The reactor body is an isolated vessel with a stainless steel external casing. The working volume is 1liter.            Heat transfer coil made in stainless steel and reactor baffle, of 4.5 loops of 76 mm of diameter and 1250 mm length. The tube internal diameter is of 6 mm and the external one is of 8 mm.            Stirring system with speed control and indication, computer controlled. Stirrer range: 0-220 rpm.            Temperature sensor “J” type to control the temperature into the reactor.            Conductivity sensor to control the reaction.            Measurement range up to 20 mS.            Reactor lip with connectors for the appropriate sensors.            Easy and quick assembly on the Service Unit.            All elements of this unit are chemically resistant.</p> <p><b><u>EXERCISES AND PRACTICAL POSSIBILITIES</u></b></p> <ul style="list-style-type: none"> <li>• Determination of the ionic conductivities.</li> <li>• Batch work. Calculation of the order of the reaction referred to the ethyl-acetate. Initial velocity method.</li> <li>• Batch operation. Determination of the order of the reaction referred to the sodium hydroxide. Initial velocity method.</li> <li>• Batch operation. Determination of the speed constant, the initial concentration of the sodium hydroxide is constant.</li> <li>• Batch operation. Determination of the speed constant, the initial concentration of the ethyl acetate is constant.</li> <li>• Formulation of the speed equation.</li> <li>• Batch operation. Variation of the kinetic constant when the temperature is not</li> </ul>	<p><b>EU/US/UK or Equivalent</b></p>	<p><b>01</b></p>		



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	<p>constant: Arrhenius equation.</p> <ul style="list-style-type: none"> <li>• Batch operation. Comparison of the theoretical and the experimental conversion: Deviation from the ideality.</li> <li>• Calculation of the heat transference coefficient of the coil.</li> <li>• Calculation of the hydrolysis reaction enthalpy.</li> </ul>				
<b>5.</b>	<b>KINETICS LAB</b>				
<b>CH / QUEST /08</b>	<p><b>ISOTHERMAL REACTOR WITH STIRRER AND DISTILLATION</b></p> <p>Isothermal Reactor with Stirrer and Distillation. Anodized aluminum frame and panels made of painted steel.  Main metallic elements made of stainless steel.  Diagram in the front panel with distribution of the elements similar to the real one.  Safety, easy and quick connections.  All elements of this unit are chemically resistant.  Cylindrical reactor made of Pyrex-glass with water jacket, max. capacity: 2 l, diameter: 100 mm. It includes:</p> <p style="padding-left: 20px;">Cover with a gas outlet and a connection for the stirrer.  Water inlet and water outlet for the jacket, forming a close circuit with the Base Service Unit, "QRUBI". This allows to keep the temperature inside of the reactor.  Two inlets for the reagents of the reactive tanks of the Base Service Unit, "QRUBI".  Two outlets for the products, which are stored in the product tank of the Base Service Unit, "QRUBI".  Gas inlet and gas diffuser plate at the bottom of the reactor.  Connection at the bottom of the reactor for the sample collection.  Connection for the conductivity cell of the Base Service Unit, "QRUBI", and connection for a temperature sensor.</p> <p>Distillation system. It includes:</p> <p style="padding-left: 20px;">Distillation column, length: 300 mm, diameter: 30 mm.  Balls condenser, length: 300 mm.  Coil condenser, length: 250 mm.  Vacuum trap, length: 125 mm, diameter: 24 mm.  Graduated funnel, volume: 500 ml.  Computer controlled vacuum pump to decrease the mixture boiling temperature.  Four temperature sensors type "J":  Sensor to measure the temperature inside of the reactor.  Two sensors to measure the water temperature in the distillation system.  Sensor to measure the condensed product temperature of the distillation system.  Pressure sensor to measure the pressure inside of the reactor, range: 0 – 0.34 bar.</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		



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	<p>BASE UNIT: Anodized aluminum frame and panels made of painted steel. The unit includes wheels to facilitate its mobility. Main metallic elements made of stainless steel. Diagram in the front panel with distribution of the elements similar to the real one. This unit is common for the required elements (at least one) (Not included). Installation and exchange system of the reactors quick and easy to handle. It supplies all the services for the operation of each reactor. Safety, easy and quick connections. All elements of this unit are chemically resistant. The "QRUBI" unit mainly consists of: Three tanks of 10 l made of Pyrex-glass: two of them for the reagents and the other one for the product. Thermostatic bath of 6 l that regulates the temperature between (T<sup>room</sup> + 5°C) and 70°C. It includes a computer controlled heating element. Power: 600 W. PID control of the temperature. Three computer controlled pumps: Pump to impel the water from the thermostatic bath to the reactor, power: 0.37 KW, max. flow: 80 l/min – 12.8 m.w.c. Two dosing pumps, max. flow: 7 l/h. Temperature sensor type "J" to measure the water temperature of the thermostatic bath in a continuous way. Conductivity cell and a conductivity meter to measure the product conductivity during the reaction, range: 30 µS/cm – 20 mS/cm. Working temperature: 0 – 100 °C. The software includes a temperature compensation to remove the temperature effect of the conductivity measurement. Three flow meters to measure the gas and reagents flow: Flow meter to measure the CO<sub>2</sub> flow, range: 0 – 1440 Nl/h, max. pressure: 0.5 kg/cm<sup>2</sup>. Flow meter to measure the sodium acetate flow, range: 0.54 – 5.4 l/h. Flow meter to measure the ethyl acetate flow, range: 0.7 – 7 l/h. Two 3-way valves to divert the reagents between the reactor and the reactive tank (bypass).</p>				
<b>6.</b>	<b>FUEL AND COMBUSTION LAB</b>				
<b>CH / QUEST /09</b>	<p><b>BOMB CALORIMETER SET FOR TESTING CALORIFIC VALUE OF FUELS</b></p> <p>Calorimeter bomb in stainless steel. Working pressure: 30 atm. Calorimeter vessel: Made in stainless steel. Maximum volume: 4 l. Double walled outer jacket in stainless steel, with water inlet and outlet. Electric stirrer with one rod and two blades. (330 rpm). Control unit to switch on/off the stirrer and the ignition device.</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		



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Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
	<p>Beckman thermometer, range: 6°C. Magnifying glass. Charging unit with pressure gauges. One nickel crucible. Reel of Nickel-Chrome wire.</p> <p style="text-align: center;"><b>EXERCISES AND PRACTICAL POSSIBILITIES</b></p> <ul style="list-style-type: none"> <li>• Beckman thermometer adjustment.</li> <li>• Obtaining the calorific value of fuel.</li> <li>• Determination of the water value of the unit.</li> <li>• Performing experiments to measure heats of combustion.</li> <li>• Calculating the heats of combustion from experimental results.</li> <li>• Calculating internal energies of combustion from bomb calorimeter experiments.</li> <li>• Calculating enthalpies of combustion from bomb calorimeter experiments.</li> </ul>				
<b>CH / QUEST /10</b>	<p><b>ANAEROBIC TANK REACTOR</b></p> <p>Two packed bed reactors (Anaerobic digesters) that may be operated in series or parallel flow arrangement: Capacity: 5 l. Heating jacket. Reactor packing: 25 mm diameter Bio Balls. Two feed computer controlled peristaltic pumps. Water circulation computer controlled pump of the thermostatic bath. Computer controlled thermostatic bath up to 60°C. PID Control. Two volumetric tanks to measure and store the volume of gas generated. Damping vessel, capacity: 1 l. Two water flow meter; range: 0–50 cm<sup>3</sup>/min. Five temperature sensors "J" type. Two pH sensors; range: 0–14. The complete unit includes as well: Advanced Real-Time SCADA and PID Control. Open Control+ Multicontrol+ Real-Time Control.</p>	<b>EU/US/UK or Equivalent</b>	<b>01</b>		



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## 7. Environment Lab

Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
CH / QUEST /11	<p><b>Pen sky Martens flash point Apparatus</b> Full automatic measuring instrument for flash point, mainly used for petroleum products Determination of flash point value, the instrument adopts ARM microprocessor technology, color LCD, resistive touch screen technology, human-computer interaction more convenient; the instrument has the electricity storage function; instrument with automatic ignition, display, and print the results, automatic locking cooling function; the instrument has the advantages of accurate measurement, good repeatability, stable and reliable performance, simple operation. It is widely used in power, oil, chemical, commodity inspection, scientific research and other departments ,in line with the standard method requirements of ASTM D93 and GB/T 261-2008 TECHNICAL SPECIFICATIONS Power Supply220 V AC Frequency 50/60Hz Power Source Electric</p>	EU/US/UK or Equivalent	01		
CH / QUEST /12	<p><b>Oven</b> Oven Forced-Air Type, Standard, 105 lit. Thermo StableOF-105,230V in-stock Suitable for Drying, Baking, Conditioning, Curing, Pre-Heating and Aging Digital Fuzzy Control System Implementing Superior Temperature Accuracy High-Quality LCD Display with Back-Light Function UsedRS232C Interface for Remote Monitoring and Controlling with PC Ambient+5°Cto250°CRange withAccuracy of <math>\pm 0.3^{\circ}\text{C}</math></p>	EU/US/UK or Equivalent	01		
CH / QUEST /13	<p><b>Shaker for flask</b></p>	EU/US/UK or Equivalent	01		
CH / QUEST /14	<p><b>pH meter and Conductivity Meter</b> With this single laboratory bench meter you can measure pH, ORP, ISE, conductivity (EC), TDS, NaCl percentage and temperature. Technical Specs up to 5 point pH calibration, Log-on Stability Feature, PC connectivity, range: pH/ORP -2.00to16.00pH;-2.000to 16.000pH/<math>\pm 699.9\text{mV}</math>;<math>\pm 2000\text{mV}</math>,EC0.00to 29.99<math>\mu\text{S/cm}</math>;30.0 to299.9<math>\mu\text{S/cm}</math>;300 to2999 mS/cm 3.00 to 29.99.</p>	EU/US/UK or Equivalent	01		
CH / QUEST /15	<p><b>TDS meter</b> TDS Portable Meter1 mg/L resolution" On-screen tutorial messages for EC/TDS calibration Automatic Temperature Compensation BEPS- Battery Error Prevention System turns the meter off in the event that low battery power could adversely affect readings</p>	EU/US/UK or Equivalent	01		
CH / QUEST /16	<p><b>Weight balance</b> TECHNICAL SPECIFICATIONS Measure in different units including mg, g, kg 402 gram, 0.1 gram accuracy.</p>	EU/US/UK or Equivalent	01		



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<b>Item Code</b>	<b>Items Description</b>	<b>Model / Make</b>	<b>Qty</b>	<b>Rate</b>	<b>Amount (including all Government Tax)</b>
<b>CH / QUEST /17</b>	<b>Heating mantle</b> Temperaturerange500 <sup>o</sup> C	<b>EU/US/UK or Equivalent</b>	<b>05</b>		
<b>CH / QUEST /18</b>	<b>Jar Test Apparatus</b> TECHNICAL SPECIFICATIONS Six stirrers with 6 l liters Beakers 200 RPM maximum.	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>CH / QUEST /19</b>	<b>Mini centrifuge</b> TECHNICAL SPECIFICATIONS Max Speed 7000 rpm Max. gravitational field 16,500 g Height with open lid approximately 400 mm Dimensions(WxDxH) approximately 280x 500x 250 mm Deceleration curves 2 Minimum effective speed 200 Noise level at max. speed (approx.) 55dB	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>CH / QUEST /20</b>	<b>Hot Plate with Magnetic Stirrer</b>	<b>EU/US/UK or Equivalent</b>	<b>10</b>		
<b>CH / QUEST /21</b>	<b>UV-Visible Spectrophotometer</b> TECHNICAL SPECIFICATIONS Optical System Rowl and off-circle arrangement Single mono chromator Double beam type Light source Halogen lamp, Deuterium lamp Wavelength range 190 to 1100 nm Wave length accuracy+/-0.2 nm (at 656.1 nm) Wavelength repeatability +/-0.1 nm Spectral bandwidth (SBW) 1 nm	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>CH / QUEST /22</b>	<b>Ball Mill</b> TECHNICAL SPECIFICATIONS Speed- Variable from 0to 50 RPM Total volume – 3.5 litres Grinding medium – Porcelain balls –3.5kg supplied.	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>CH / QUEST /23</b>	<b>Crusher(hammer, jaw)</b> The Hammer Mill consists of a simple but sturdy over hung beater cross design with ase of accessibility and cleaning. The standard machine is of cast iron and occupies minimal bench space. TECHNICAL SPECIFICATIONS A self-contained mill using a reversible, high- grade steel beater cross. Supplied with perforated plate screens ranging from 0.8mm to 3.0mm.Fitted witha1.5kW motor giving operating speeds of 8,000rpm via a toothed belth. The units supplied with a detachable collection bag. Front case is simply lowered for easy cleaning. Safe design prevents accidental access of fingers, and the door in electronically interlocked. The arrangement has been specially designed to meet all the requirements of the UK Health and Safety at Work Act. An electrically interlocked door, which must be opened inorder to change the screens or to remove the collecting bag, disconnects the current. It is impossible to start the machine until this door has been closed. The inlet throat has been extended to prevent accidental injury to fingers as it is not possible to reach inside the	<b>EU/US/UK or Equivalent</b>	<b>01</b>		





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Item Code	Items Description	Model / Make	Qty	Rate	Amount (including all Government Tax)
	grinding chamber.				
<b>CH / QUEST /24</b>	<b>Sieve Shaker Apparatus</b> TECHNICAL SPECIFICATIONS <b>Vibratory shaker Process timer</b> – 1 to 60 mins. or continuous <b>Vibrations per min</b> – 3000 at50Hz, 3600 at 60 Hz. <b>Sieves Construction</b> – Brass frame with stainless steel mesh <b>Standards</b> – BS410-1 / ISO3310-1 <b>Mesh sizes</b> – 0.25mm, 0.355mm, 0.5mm, 0.71mm, 1mm, 2mm To determine and analyze the size distribution of a fixed granular solid by using a test sieve stack and a vibratory shaker.	<b>EU/US/UK or Equivalent</b>	<b>01</b>		
<b>Total Amount in Rs.</b>					

**Rupees in words:** \_\_\_\_\_  
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**Note:**

- All the lab equipment offered be of EU/UK/US Origin OR Equivalent
- The quantities can be decrease as per available funds position and can be increase as per allowable described by the SPPRA.
- The final supply order shall be issued enclosed with required quantities items
- The all taxes deductions as per government rules.

**Contractor Signature and Seal**

**Procurement Manager**  
**QUEST, Nawabshah**