

Procurement Office +92 (0244) 930389

Tender Issued M/s.			
	-		
Dated:			

### TENDER DOCUMENT

#### **FOR**

# SUPPLY AND INSTALLATION OF REMAINING LAB EQUIPMENT FOR TELECOMMUNICATION 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 TELECOMMUNICATION ENGINEERING DEPARTMENT AT QUEST, NAWABSHAH.



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### **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		<b>26.09.2023</b> up to 10:00 am	<b>26.09.2023</b> at 10:20 am
2.		Remaining Lab Equipment g Department at QUEST,	5000	06 Months		<b>26.09.2023</b> up to 10:00 am	<b>26.09.2023</b> at 10:50 am
3.	required for various Labs	Desktop Computers Core i7 of Telecommunication and Department at QUEST,	5000	06 Months	07.09.2023	<b>26.09.2023</b> up to 11:00 am	<b>26.09.2023</b> at 11:20 am
4.	117	Air Conditioners required for numerication and Chemical t QUEST, Nawabshah.	5000	06 Months		<b>26.09.2023</b> up to 11:00 am	<b>26.09.2023</b> at 11:50 am
Р	rocurement Procedure:	Single Stage Two Envelope	9				
	Award Criteria	Item-wise Most advantage	eous bid				
	Contact details:	Procurement Manager, at Nawabshah S.B.A Sindh.					ersity (QUEST),
	Bid Security:	5% of bid amount at the Director Finance, QUEST	time of b	id submission			the name of
	Bid Validity Period: 90 days						
U	n-responded Tenders:  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.						
	Eligibility:	bility:  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.					
	Terms and conditions:  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 it 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:  • Conditional bids / tenders.  • Bids not accompanied by the bid security of required amount and form.  • Bid received after specified date and time.  • Blacklisted firms.  • In case the applicant does not fulfill SPPRA or aforesaid conditions, the applications for issuance of bidding document will not be entertained.			downloaded from ance mentioned in the office of the ish to attend.  vant provisions of y time prior to the e of opening or if ext working day at			

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

Procurement Manager



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#### AA-01 ARTICLES OF AGREEMENT

This .	Agreen	<b>nent</b> made this	day of	2023, by and between the Vice-
Chand Nawa	cellor, bshah,	Quaid-e-Awam Unive Sindh, including his su	rsity of Engineering ccessors in office and	g, Science & Technology, located at d Assignees / Agents, acting through the Engineering, Science & Technology,
		alled the "University",		Engineering, Science & Teemiology,
A J				. 6
And		(name and	designation of the authorized p	of , located at
		(name and	sesignation of the authorized p	, hereinafter called the
	tractor d part.	" which expression s	hall include their s	uccessors, legal representatives of the
agreed valued month	d to sup d at Rs	pply, install, put into op i ject to the terms and co	peration and demonst	shah, and whereas the <b>Contractor</b> has trate the working of the said Equipment and words) in the period ofereinafter, which have been accepted by
(amour	nt in figu	ares and words)		
Now 1	this Ag	greement witnesses as i	follows:	
1.			-	all have the same meanings as are of Contract hereinafter referred to.
2.	The f	following documents w		e of identification, have been signed by behalf of the <b>Contractor</b> , and by
		(name and designation of the	e authorized person)	n behalf of the <b>University</b> , all of
	(na	ame and designation of the a		in bolium of the chrycisty, an or
	whicl	h shall be deemed to fo	orm and be read and	construed as a part of this Agreement
	viz.:			
	a) /	Articles of Agreement;		
		Instructions to Tenderer	ç•	
	,	Conditions of Contract;	<b>3</b> ,	
	,	,	ding the relevant cor	respondence prior to signing of this
		Agreement with all Ann		
	e) 7	The specifications of the	e equipment; and	
	f) I	Bill of Quantity with pri	ces.	

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- 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. \_\_\_\_\_.
   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
- 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:

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#### 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 little 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.
- **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.

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#### 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 Quaide-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 accep[table 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".

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- 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. The tenderers are required to mention in their quotations/offers the name and

a)	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/slocated
	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 agredd 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".

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#### 9. **Prices.**

# a) <u>CATEGORY-'A'</u> Stores Manufactured/Available in Pakistan without. <u>Involving Import</u>.

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) <u>CATEGORY-"B"</u>. 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.



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(v) The transportation charges for transporting the Stores from the port to the Telecommunication 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 Telecommunication engineering Department of the University.
  - (ii)Responsibility for any loss and/or damage at any stage from manufacture to installation in the Telecommunication 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.



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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. <u>Shipment of Imported Items.</u>

- 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, 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. <u>Delivery Period.</u>

- a) The entire Stores must be delivered, installed and put into operation in the Telecommunication 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. It if 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.



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- (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 Telecommunication 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.

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- 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.

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#### **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 Telecommunication 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.



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- **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.

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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:

1.	Port of Destination:	I.	AKACHI.
ii.	Name of the Ship:	_	
iii. N	lame of the Consignee:	PROCU	JREMENT MANAGER
	<u> </u>	QUAID	O-E-AWAM UNIVERSITY OF
		ENGIN	EERING, SCIENCE & TECHNOLOGY
		NAWA	BSHAH, SINDH, PAKISTAN
i.	Name of the Contrac	tor: C0	ONTRACTOR'S NAME & ADDRESS
ii.	Case Number & Con	tents: _	
iii.	Net Weight & Dimer	nsions:	(length, Breadth & Height)
iv.	Gross Weight:		(Kg.)
v.	Number & Date of C	ontract:	
Mark	king:		ST in a 6 in. x 4 in. rectangle
		OUE	CST

6. Transportation and Shipment

vi.

- 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 Telecommunication 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**.

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- All things being equal, Pakistan flag ships should be used, as far as iv. 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.
- The Stores must be shipped under deck v.
- The Contractor shall send by air mail/courier service or personally deliver vi. 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.

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

- 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.
- All costs of handling, loading, transportation, unloading and placing the ii. Stores in position in the Telecommunication engineering Department of the University shall be borne by the Contractor.

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

- The pre-shipment inspection and / or the inspection of the Stores a) 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.
- The University may, at its discretion, waive pre-shipment inspection and hence b) 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.
- The pre-shipment inspection and/or the waiver thereof shall in no any above the c) Contractor of any of his obligations under this Contract.

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#### 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 Telecommunication 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 Telecommunication 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, Quaide-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.



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#### 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 Telecommunication 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: <u>Stores Manufactured/Available in Pakistan without involving import.</u>

- 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.

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- 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/repaired, reinspected 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.



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#### 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.



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#### 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;

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#### 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.

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#### 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



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#### 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.



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#### **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.



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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	Quaid-e-Awam University of Engineering, Science &
	procuring agency:	Technology, Nawabshah.
b)	Brief Description of Works:	Supply and Installation of Remaining Lab Equipment for
		Telecommunication engineering Department, QUEST,
		Nawabshah
c)	Estimated Cost:	38.613 (M)
d)	Amount of Bid Security:	5%
e)	Period of Bid Validity:	90 days.
f)	Amount of Performance	5% (The successful bidder can get his bid security
	Security:	converted to performance security by making a written
		request after getting the acceptance letter)
g)	Percentage if any, to be deducted	N.A.
	from bill:	
h)	Tender Document Issuance date:	07.09.2023
i)	Deadline of submission of Bids	26.09.2023 up to 10:00 (A.M.)
·	along with time:	Bidders do not have the option of submitting their bids
		electronically. Unsealed bids will not be entertained /
		received.
j)	Venue, Date & Time of Bid	Procurement Office, PGC Building, QUEST, Nawabshah
	opening:	26.09.2023, 10:20 (AM)
k)	Time for Completion from	06 Months
	written order of commence:	
1)	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	Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah	
ITB 1.1	Loan or credit or Project allocation number. Loan or credit or Project allocation amount.	
ITB 1.1	Procurement of Goods:	
ITB 1.1	Supply and Installation of Remaining Lab Equipment for Telecommunication engineering Department at QUEST, Nawabshah.	
ITB 4.1	Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah	
ITB 6.1 Address	Procurement Manager, PGC Building QUEST, Nawabshah. <b>PTCL</b> # 0244-930389	
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 10:20 am in the office of Procurement Manager, PGC building, QUEST, Nawabshah.		



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	Bid Evaluation		
ITB 25.3	The QUEST will accept Item-wise Most advantageous bid as per Rule 48 & 49 of SPPRA Rules, 2010 (Amended 2019).		
ITB 25.4 (a) ITB 25.4 (b)	Incomplete and conditional quotations will be rejected forthwith.  No cutting / overwriting in the offered prices will be accepted.		
Option (i) Option (ii)	adjustment expressed as a percentage,  or  adjustment expressed in an amount in the currency of bid evaluation,  or		
Option (iii)	adjustment expressed as a percentage		
ITB 25.4 (c) (ii)	Deviation in payment schedule. Annual interest rate.		
ITB 25.4 (d)	Cost of spare parts.		
ITB 25.4 (e)	Spare parts and after sales service facilities in the Procuring agency's country.		
ITB 25.4 (f)	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.  or  Reference to the methodology specified in the Technical Specifications or elsewhere in the bidding documents.		
ITB 25.4 (g)	Performance and productivity of equipment.		
ITB 25.4 (h)	Details on the evaluation method or reference to the Technical Specifications.		
ITB 25.4 Alternative	Specify the evaluation factors.		

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



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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	<b>Documentary Evidence</b>
	Registered with the concerned Federal and Provincial Tax Departments.	Relevant documentation
	National Tax Registration Certificate (NTN)	should be submitted
	2. General Sales Tax Registration Certificate	(Mandatory)
	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.	

#### **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 Bidding Document for Supply and Installation of remaining Lab Equipment for Telecommunication 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.
	Total Marks	100	

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.



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ANNEXURE "A"

#### FORM OF TENDER

(LETTER OF OFFER)

Tender Reference No		o Dated
Nam	e of Contract:	Supply, Installation, Putting into Operation and Demonstration of Equipment at laboratories of Telecommunication engineering Department of Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah, Sindh
Quai	Procurement M d-e-Awam Univ abshah, Sindh	anager, versity of Engineering, Science & Technology
Dear	Sir,	
1.	the undersi addressbeing duly in such Contract including Rssum as may	(in figures and words) or such other be ascertained in accordance with the said Documents.
2.	We understa	nd that all the Schedules attached hereto form part of this Tender.
3.	submit herever per Annexur and figures) Engineering,	for due performance of the undertakings and obligations of this Tender, we with a Bid Bond referred to in Clause 3 of the Instructions Tenderers and as e "D", in the amount of Rs (in words drawn in favor of or made payable to Quaid-e-Awam University of Science & Technology, Nawabshah, and valid for a period of 28 days eriod of validity of this Tender.
4.		e, if our Tender is accepted, to complete the whole of the work comprised in amed Contact within the time stated in Clause 12 of the Instructions to
5.	the Tender, a	abide by this Tender for the period of 90 days beyond the date of opening of and it shall remain binding upon us and may be accepted at any time before n of this period.
6.		intil a formal Contract Agreement is signed, this Tender, together with your nereof, shall constitute a binding contract between us.
7.		te, if our Tender is accepted, to execute the Contract Performance Bond on 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 abovenamed Contract.
- 10. We confirm, if our Tender is accepted, that all partners of the joint venture shall be liable jointly and severely 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 a	nd on behalf of(Name of Tenderer in Block	
Witness:		
Occupation:		



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**ANNEXURE-B** 

#### **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.

D	ue by(time)	hours on _	(date) (n	nonth)	(year)		
SCHEDUL	E TO TEND	ER NO		DATED			
The Tend	er will be	opened at(time)	hours on	(date) (	month)	(year)	
Delivery	on or befor	re(date)	(month)	(year)			
Rates and	d amount	to be quoted i	n Pakistani Rup	oees			
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
	The Store given in t	he Tender Doc	e conform in all a cuments' and ions of the Tendo	-	-	-	
(signature of	the authorized	d person					
(name of the	authorized pe	erson)	SEAL				
(name of	the Tenderer)						



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**ANNEXURE "C2"** 

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

(month)

(year)

(date)

\_\_\_\_ hours on \_

(time)

SCHED	ULE TO T	TENDER NO.			DATI	ED			
The Te	ender wil	l be opened	at ho	ours on	(date)	(month)	(year)		
Delive	ry on or		late) (mon	nth) (	year)				
<u>PART</u>	<u>1.</u> The	e rates quote	d in the Table t	oelow mus	st be on (	C&F bas	is.		
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
			1						

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

S.No.	Code/	Description	Quantity	Unit	Rate	Total
	Item No.	of Stores	Of Stores.		Per Unit	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)	SEAL
(name of the authorized person)	



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**ANNEXURE "D"** 

## **BID BOND**

(Bank Guarantee)

	Guarantee No Executed on Expiry date
Latter by the Cycenator (Dank) to the Employer (	
Letter by the Guarantor (Bank) to the Employer (Name of Guarantor (Bank) with address:	•
Name of Principal (Tenderer) with address:	
Penal sum of Security (Bond),(in figures and words):	
Tender Reference No D	Pate of Tender
KNOW ALL MEN BY THESE PRESENTS, that in	pursuance of the terms of the Tender and

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 severely, 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)	



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 NoExecuted onExpiry Date	
Letter by the Guarantor (Bank) to the Em	ployer (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 severely, 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

Witness:	Guarantor (Bank)
1.	
(Signature)	(Signature)
Name, Title and Address (Seal)	(Name)
2(Signature)	(Title)
(Signature)	(Title)
Name, Title and Address (Seal)	Corporate Guarantor (Seal)



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**ANNEXURE "F"** 

## **Statement Describing Deviation from Specifications.**

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

(signature of the authorized person)	
(name of the authorized person)	SEAL
On behalf of	

(name and address of the Tenderer)



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**ANNEXURE-G** 

## (INTEGRITY PACT)

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

Contract No.	Dated	d		
Contract Value:				
e		tment at QUEST	, Nawabshah.	r Telecommunication obtained or induced the
procurement of an Sindh (GoS) or an	y contract, right, int	terest, privilege or o odivision or agency		nefit from Government of entity owned or controlled
fully declared the give and shall not through any natural director, promoter, or kickback, whethe procurement of the procuremen	brokerage, commiss give or agree to give ral or juridical per shareholder, spons her described as conf f a contract, right, in	tion, fees etc. paid of the to anyone within the son, including its sor or subsidiary, an asultation fee or other therest, privilege or	r payable to anyone a or outside Pakistan e affiliate, agent, asso y commission, gratif erwise, with the object	ts and warrants that it has and not given or agreed to ither directly or indirectly ciate, broker, consultant, ication, bribe, finder's fee t of obtaining or inducing enefit in whatsoever form ed pursuant hereto.
disclosure of all ag	greements and arran	gements with all pe	rsons in respect of or	made and will make full related to the transaction ent the above declaration,
making full disclodeclaration, represobligation or bene	sure, misrepresenting entation and warrantifit obtained or proc	ng facts or taking a nty. It agrees that a cured as aforesaid sl	ny action likely to only contract, right, in hall, without prejudice	any false declaration, not defeat the purpose of this nterest, privilege or other te to any other rights and le at the option of PA.
Supplier/Contractor of its corrupt busing the sum of any corraforesaid for the	or/Consultant] agrees ness practices and fu numission, gratification purpose of obtaining	s to indemnify PA for arther pay compensa on, bribe, finder's fe	or any loss or damage tion to PA in an amo- te or kickback given be procurement of any	his regard, [name of e incurred by it on account ount equivalent to ten time by [name of Contractor] as a contract, right, interest,
Procurement Ma QUEST, Nawab	_			Contractor

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## **BILL OF QUANTITIES FOR**

# SUPPLY AND INSTALLATION OF REMAINING LAB EQUIPMENT

## **FOR**

# DEPARTMENT OF TELECOMMUNICATION ENGINEERING

## **ITEM CODE**

**TL/QUEST** 



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# SUPPLY AND INSTALLATION OF REMAINING LAB EQUIPMENT FOR TELECOMMUNICATION ENGINEERING DEPARTMENT AT QUEST, NAWABSHAH.

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

Item Code	Name of Equipment	Specification	Qty.	Model /Make	Rate	Amount (Including all
TL/QUEST/01	Antennas Demonstrator	<ul> <li>Antennas set</li> <li>Positioning mount for antennas mounting</li> <li>Power supply for positioning mount</li> <li>Specialized software</li> <li>User manual, DVD, All necessary and optional accessories</li> <li>COMPUTER CONTROLLED ANTENNA UNIT advanced system that operates in conjunction with a computer which allows the control and data acquisition of the antenna measurement</li> <li>RF-Generator:</li> <li>SWR-meter:</li> <li>Stepper motor controller</li> <li>Spectrum analyzer</li> <li>Two towers of antennas:</li> <li>Receiver antenna tower</li> <li>Monopole antenna with ground plane:</li> <li>Drooping monopole antenna:</li> <li>Straight dipole antenna (short λ/2):</li> <li>Straight dipole antenna (adapted 50 Ω):</li> <li>Folded dipole antenna (adapted 50 Ω):</li> <li>Helical antenna (right-hand circular polarization):</li> <li>Helical antenna (left-hand circular polarization):</li> <li>Circular loop antenna:</li> <li>Square loop antenna:</li> <li>Square loop antenna:</li> <li>Microstrip patch antenna:</li> <li>Yagi-Uda antenna:</li> <li>Antennas expositor which allows the access of different antennas easily.</li> <li>Space required between antennas: 2 - 3 m.</li> <li>Control Interface Box</li> <li>Computer Control +Data Acquisition</li> <li>Cables and Accessories</li> <li>Manuals</li> <li>Experiments.</li> <li>I Familiarization with the unit.</li> <li>2 Installation, connection and familiarization with the computer control software.</li> <li>3 Basic principles of radiation pattern parameters measurement.</li> <li>4 Study of the surrounding signals.</li> <li>5 Distance effect over radiation power.</li> <li>6 Direction of maximum radiation and gain of an antenna.</li> <li>And many more</li> </ul>	05	EU/US/UK or Equivalent		Government Tax)
TL / QUEST/ 02	Communicati ons Transmission Lines	Equipment with all necessary parts including cables, cords, manuals, software  TRANSMISSION LINES UNIT	06	LabVolt or equivalent		



					1
		The Transmission Lines Unit has been designed as integrated unit for help the student to understand the basic principles of the transmission line measurement theory.  The coaxial cable is the most common way to build a transmission line, because they allow a reliable communication from low frequencies to microwaves frequencies. The unit has been designed to study a standardized coaxial line to analyze realistic measurements.			
		Square signal generator block: Sine signal generator block: Triangle signal generator block: Each signal generator contains an encoder to change the signal frequency and four BNC connectors with different output impedance. Transmission lines block: Two transmission lines. Two BNC connectors for each transmission line. Five test points along of each transmission line. The first and the last test point are straight connected with the BNC connectors and there is 10 m of coaxial cable between test points.			
		40 m of RG-174 coaxial cable in each line, a total of 80 m in the two lines. Load block: Type of loads: resistive, inductive and capacitive loads. First group of loads: 1 KΩ potentiometer. 33 Ω resistance. 1 nF capacitor.			
		<ul> <li>4.7 μH inductance.</li> <li>Short circuit/open circuit.</li> <li>Second group of loads:</li> <li>1 ΚΩ potentiometer.</li> <li>50 Ω resistance.</li> <li>10 nF capacitor.</li> <li>4.7 μH inductance.</li> <li>Short circuit/open circuit.</li> <li>Switches to connect and disconnect each load.</li> <li>Three BNC connectors.</li> <li>Cables and accessories, for normal operation.</li> </ul>			
TL / QUEST /03	RF and Microwave Technology Training System	Microwave study, VSWR-Power Output- Microwave characteristics analysis Noise impact study-propagation study-Return Loss- Polarization study etc. Equipment with all necessary parts including cables, cords, manuals, software, DVDs etc.	7	EU/US/UK or Equivalent	
TL / QUEST/ 04	Mobile and Wireless Communicati ons	Mobile and wireless communication Basic concepts GSM TDMA, FDMA, CDMA, OFDM, LTE, 5G/6G, Path losses, SNR/BER etc. equipment with all necessary parts including cables, cords, manuals, software, DVD etc.  COMPUTER CONTROLLED GSM COMMUNICATIONS UNIT	07	EU/US/UK or Equivalent	
		The Cellular Mobile Trainer operates in conjunction with a computer, which is connected with the interface box through a USB connector. The software allows the students to visualize in an easy			



		way the AT commands sent and received to the SIM card to perform the different mobile phone services.  The unit allows to use the basic mobile services and visualize the steps needed to it, through the computer. The unit also allows to study the management of the SIM card memory for SMS inbox, phonebook, etc.  GSM transceiver:				
		850 MHz / 900 MHz: E-GSM. Out power: class 4 (2 W). Fully compliant with ETSI GSM phase 2 + normal MS. 1800 MHz / 1900 MHz: Out power: class 1 (1 W). Fully compliant with ETSI GSM phase 2 + normal MS. GPRS class 10. SIM interface 1.8 / 3 V. SMA main antenna. Antenna and SIM socket: SIM slot to SIM card. SMA connector to GSM antenna. GSM antenna: GSM 900 / 1800. Cable 2.6 m. Phone: RJ-11 connector to telephone handset. Telephone handset. Two controls buttons and status led indicator. USB connector to computer.				
TL / QUEST/ 05	IoT Development Training Kit	IoT Sensors-Teaching Material-Communication modules (Wifi, Zigbee, etc.) Sensors modules -Development platform for open ended labs-Connecting material and accessories etc. Equipment with all necessary parts including cables, cords, manuals, software, DVD etc.	7	EU/US/UK or Equivalent		
TL / QUEST/ 06	Digital Communicati on Trainer	PRODUCT MODULES LINE CODE ENCODER & LINE CODE DECODER - CODE 145-551 Line Encoder • CODE Decoder • PWM MODULATOR & PWM DEMODULATOR - CODE 145-552PWM Modulator - PWM Demodulator • PCM MODULATOR & PCM DEMODULATOR - CODE 145-553PCM Modulator - PCM Demodulator - DELTA MODULATOR & DELTA DEMODULATOR - Delta Demodulator • ADAPTIVE DELTA MODULATOR & ADAPTIVE DELTA DEMODULATOR - CODE 145-555Adaptive Delta Modulator • Adaptive Delta Demodulator • ASK MODULATOR & ASK DEMODULATOR - CODE 145-556ASK Modulator - ASK Demodulator • FSK MODULATOR & FSK DEMODULATOR - CODE 145-557FSK Modulator •FSK Demodulator • FSK Demodulator (II) (Using LM566 as the modulated FSK signal) Data Rate: 200 bps ~ 400 bps.PSK MODULATOR & PSK DEMODULATOR - CODE 145-558	5	EU/US/UK or Equivalent		



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## DIGITAL MODULATIONS UNIT

The Digital Modulations Unit, is a complete digital communications Unit designed to explain the basic concepts of digital modulation. It covers the principles of many of the modulation and demodulation techniques used in modern digital communication systems.

The unit provides a basic understanding of the concepts behind digital communications techniques: Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK) and Quadrature Phase Shift Keying (QPSK). It allows students to study some of the line coding techniques like NRZ(L), NRZ(M), RZ, RB, etc.

Line Coding:

Non Return to Zero Level line coding circuit (NRZL).

Non Return to Zero Mark line coding circuit (NRZM).

Biphase Manchester line coding circuit.

Biphase Mark circuit line coding circuit.

Return to Zero line coding circuit (RZ).

Return to Bias line coding circuit (RB).

Alternate Mark Inversion line coding circuit (AMI).

Modulators and demodulators:

Amplitude-Shift Keying (ASK):

Mixer.

Filter.

Frequency-Shift Keying (FSK):

Phase-Locked Loop detector (PLL).

Phase-Shift Keying (PSK):

Unipolar to Bipolar converter.

Mixers.

Carrier recovery circuit:

Multiplier and divider circuits.

Squarer circuit.

Voltage Controlled Oscillator (VCO).

Sampler.

Filter.

Level-Crossing detector.

Quadrature Phase-Shift Keying (QPSK):

Dbit encoder circuit.

Unipolar to Bipolar converters.

Mixers.

Carrier recovery circuit:

Multiplier and divider circuits.

Squarer circuit.

Voltage Controlled Oscillator (VCO).

Samplers circuits.

Filter.

Level-Crossing detectors.

Dbit decoder circuit.

Analog Generators:

Carrier signal.

**Digital Generators:** 

A byte (8 bits, serial).

Six analog Inputs.

Eigth analog Outputs.

28 test points.

Two controls.

Cables and Accessories, for normal operation.



TL/	Basic	Complete Kit with following trainers:	07	EU/US/UK or	
QUEST/	Electricity	1. Basic Electronics Trainers 12-300-8 Series		Equivalent	
07	and	2. Self-Construction Trainers EEC470, 92-445ac/dc			
	Electronics	supply, EEC471-2, EEC473-4, EEC475, EEC476,			
		EEC477 3. Premounted Training Board 12-100 & LT345			
		OAT343, 12-100, LT345, Analogue & Digital			
		Trainer CK342 A&B			
		4. Applications Board 24-200, 24-201, 24-202, 24-			
		160-161 ARM7S Microcontroller, 24-170			
		5. Microcontroller Trainers, 68HC11 & 8051, 24-102, 24-104			
		6. Microprocessor Trainers, 68000 Microcontroller			
		Trainer -24-141, Programmable Logic Development			
		& Training system - 28-107			
		7. Microprocessor Trainers, Z80 Microprocessor			
		Trainer 24-121, 8086 Microprocessor Training & Development system - 24-131			ļ
		8. Training system boards, PIC development &			
		Training system - 28-122, PC Applications Training			
		system -25-151-USB			ļ
		9. Teknikit Console 92-300			ļ
		Basic Electronics and Electricity Laboratory			ļ
		Basic Electronics and Electricity Eaboratory			
		Power Supply			ļ
		DC Fixed outputs: $+ 5 \text{ V}, \pm 12 \text{ V}, 1 \text{ A}$ . DC Variable			ļ
		outputs: ± 12 V, 0.5 A. AC Outputs: 12 V or 24 V.			ļ
		Outputs through 2 mm terminals, or connectors Sub-D of 25 pins (2 outputs). Voltage LED			
		indicators. Robust construction. Power: 110/220			
		VAC Frequency: 50/60 Hz.			ļ
		Base Unit, with built-in power supply			
		Hardware support and power supply. Modules supporting unit. DC Fixed outputs: + 5 V, + 12 V, -			
		12 V. DC Variable outputs: ± 12 V. AC Outputs: 12			
		V or 24 V. Outputs through either 2 mm contact			
		terminals, or through 25 pins Sub-D connector.			
		Voltage LED indicators. Robust construction.			
		Power: 110/220 VAC. Frequency: 50/60 Hz.			
		Direct Current (DC) Circuits Module			
		Circuit blocks: Resistance circuit. (Circuit#1).			
		Series/parallel resistors. (Circuit#2). Series/parallel			
		resistors circuit with source. (Circuit#3). Intensity regulation. (Circuit#4). Wheatstone bridge.			
		(Circuit#5). Faults study. (Circuit#6).			
		,			
		Alternating Current (AC) Circuits Module			
		Circuit blocks: Waveforms. (Circuit#1).			
		Transformers. (Circuit#2). Reactive mixed circuits. (Circuit#3). Channels.			
		(Cheuters). Chamicis.			
		Oscillators Module			
		Circuit blocks: RC and LC oscillators. (Circuit#1).			
		Wien bridge. (Circuit#2). Colpitts, Hartley			
		oscillators. (Circuit#3). Astable multivibrator. (Circuit#4). 555 Timer. (Circuit#5).			
		Cheuitπ-1. 333 Tillici. (Cheuitπ3).			
		Operational Amplifiers Module			



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		Circuit blocks: Operational amplifier. Inverting amplifier. Non-inverting amplifier. Adder. Differential amplifier. Comparator. Channels. Sources.  Analog/Digital Converters Circuit blocks: Generators. D/A converter. A/D converter. Adder. Sample & Hold. Leds. Logic control. Integrator. Counter. Flash converter  Digital/Analog Converters Circuit blocks: Generators. R-2R converter. Weighted converter. D/A converter. Serial converter. Amplifier. Adder. Sample/Hold. Frequency-voltage converter.			
TL / QUEST/ 08	Fiber Optics Trainer	Equipment with all necessary parts including cables, cords, manuals, software, PCs and Latest modules Bases	06	EU/US/UK or Equivalent	
TL / QUEST/ 09	Multi- purpose OTDR + MTDR for optic & metallic cables (OMTDR)	Equipment with all necessary parts including cables, cords, manuals	05	EU/US/UK or Equivalent	
TL / QUEST / 10	Computer Networking WorkStation (Switches, Routers, Networking Tools and Modules)	Routers/Switches/cabling kits/testing tools/complete equipment racks/networking wires etc.	04	EU/US/UK or Equivalent	
TL / QUEST /11	Computer Desktop / Workstations for Integrated Lab equipment	PC - 11/12th Gen Ci7, 8GB RAM, 1TB HDD/512SSD, DVD RW, LED Standard size, Keyboard, Mouse with pad (Complete in all respects as per requirement of the department with 1-2 Years Warranty)	30	HP/ Dell or equivalent	


#### **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

**Contractor Signature and Seal** 

Procurement Manager QUEST, Nawabshah