

**TENDER PROPOSAL****Tender Notice # G-25/04-01****Desktop Computers/Multimedia/Firewall/Furniture/Miscellaneous Items**

National Textile University, Sheikhupura Road, Faisalabad-37610

[www.ntu.edu.pk](http://www.ntu.edu.pk)

**M/S.....**

**Introduction:**

The idea of establishing a Textile Institute of world fame was conceived by a group of visionary industrialists in 1954. To realize this idea the Government of Punjab joined hands with the leading textile industrialists to form an Institute of Textile Technology in Faisalabad (then Lyallpur) and provided sixty-two acres of state-owned land free of cost. Kohinoor Industries, Colony Textile Mills, Dawood Foundation and Lyallpur Cotton Mills provided funds to the tune of Rs.2.5 million, which were utilized for the construction of building and provision of other infrastructure. The Government of U.K. provided the bulk of equipment and machinery, along with the services of experts under Colombo Plan. Field Marshall Muhammad Ayub Khan, the then President of Pakistan, laid the foundation stone of the Institute, on the 12th of October 1959.

A Board of Trustees, with the Minister of Industries as chairman and nominees of the donor companies as members was constituted to manage the affairs of the Institute. In order to meet the recurring expenses of the Institute a Cess was levied by the government on the Textile industry of Pakistan. Later, in 1965, the Institute was granted affiliation by the University of Engineering & Technology, Lahore, and it was renamed as "National College of Textile Engineering". The first batch of graduate engineers was passed out in 1966. In 1973 the administrative control of the Institute was transferred to Federal Government, and it was renamed as "National College of Textile Engineering".

In 1992, the college received a comprehensive assistance worth 650 million yen from the Japanese Government, through JICA program, in the form of latest machinery and equipment for all the departments of the Institution. The college was upgraded as National Textile University on 15 November 2002 through promulgation of Ordinance No. CXXIV of 2002 by the President of Islamic Republic of Pakistan.

Ever since its inception National Textile University has been the premier Institute of textile education in the country, meeting the technical and managerial human resource needs of almost entire textile industry of Pakistan. It always retained a close relationship with the industry and industrialists.

## ADVERTISEMENTS OF THE TENDER # G-25/04-01

Last date: 21-04-2025

i.	PPRA website dated	03-04-2025
ii.	NTU website dated	28-03-2025
iii.	The News	30-03-2025
iv	Daily Dunya	29-03-2025

Advertisement as it is:



# NATIONAL TEXTILE UNIVERSITY, FAISALABAD

(Federally Chartered Public Sector University)

## Tender Notice #. G-25/04-01

**Desktop Computers/Multimedia/Firewall/Furniture/Miscellaneous Items**

1. Tender will be processed through EPADS (e-Pak Acquisition & Disposal System) <https://www.eprocure.gov.pk>, otherwise, Tender will not be accepted.
2. National Textile University, Faisalabad invites bids as per PPRA Rule-36(b), FOR basis in sealed envelopes from the original Manufacturers, Authorized Agents/Distributors, Firms, Suppliers (GST, PST, Income Tax Registered) for the purchase of following items. Delivery of all items will be made at NTU Faisalabad Campus except Serial No. 14 i.e. for NTU Karachi Campus. Detail is in tender document.

Sr. #.	Description	Earnest Money (Fixed) Amount (Rs.)
1.	Different Type of 33 Networking Items	19,450/-
2.	Installation of 04 Networking Items	1,950/-
3.	Installation of 03 Networking Items	5,200/-
4..	Network Layer-2 Switch (PoE)	45,000/-
5	Wi-Fi at SET Department (Turnkey Solutions)	78,750/-
6.	Different Type of 05 IT Equipment	98,000/-
7.	Forti Gate 600-F UTM Bundle	54,000/-
8.	02 UPS-10 KVA	157,500/-
9.	Different Type of 06 Furniture Items for SOAD	48,500/-
10.	Different Type of 02 Furniture Items for FBS	27,000/-
11.	03 Desktop Computer	21,300/-
12.	01 Printer Duplex	2,000/-
13.	Different Type of 06 Items/Equipment	74,250/-
14.	16 Desktop Computer Systems for NTU Karachi Campus	112,500/-
15.	Different Type of 06 Air Conditioners	47,700/-

3. Tender Document may be downloaded from the official website of NTU ([www.ntu.edu.pk](http://www.ntu.edu.pk)) or may be obtained from the office of Convener Purchase. The fee of Tender Document is non-refundable **Rs. 1,000/- (One Thousand Only)**. The tender document fee will be accepted in shape of Pay Order/Demand Draft drawn on Faisalabad in the name of **“National Textile University, Faisalabad”**.
4. Eligible firms should submit their bids along with earnest money (fixed) amount in sealed envelope of Technical Bid as mentioned against each serial in above table in the shape of CDR/Bank Draft in favor of **National Textile University, Faisalabad**, drawn on Faisalabad.
5. **Date, Time, and Venue:** Sealed bids should reach in the office of Convener Purchase by or before **02:30 pm on 21-04-2025**. Bids received within the stipulated time and date **will be opened** by the Purchase Committee in the **Meeting Room of NTU Faisalabad** on the same day at **03:00 pm** in the presence of the bidders or their authorized representatives.
6. The names of contact persons for any technical queries are given in tender document.

**Convener Purchase**

National Textile University, Faisalabad-37610, Tel: 041-9230081-5 Ext: 113, 281, [www.ntu.edu.pk](http://www.ntu.edu.pk)

**15x4**

<b>IMPORTANT NOTE</b>	
i.	<ul style="list-style-type: none"> <li>a) Technical bid and Financial bid shall be accepted through EPADS, additionally dispatch the same in hard form on original letterhead pad of the company dully sign and stamped by authorized officials.</li> <li>b) Photocopy of such document (s) (as hard copy of technical and financial bids) shall not be accepted even with original stamp &amp; signature.</li> </ul>
ii	<ul style="list-style-type: none"> <li>a) Only and only: existing Machine/Equipment/Item /part/Accessory which is indicated on the Manufacturer's web/catalogue /brochure with model number/catalogue number will be accepted where applicable.</li> </ul>
iii	<ul style="list-style-type: none"> <li>a) Any Special prepared model of Machine/Equipment/Item or its part / accessory to meet the requirement of NTU shall not be accepted.</li> <li>b) Any Special prepared model of Machine / Equipment / Item or its part / accessory shall be accepted if it is specifically asked / indicated / mentioned in technical specification(s).</li> </ul>
iv	<ul style="list-style-type: none"> <li>a) Any type of alteration /modification to meet the requirement of NTU in any existing model of Machine /Equipment/Item or any part/Accessory will not be accepted.</li> <li>b) Any type of alteration /modification to meet the requirement of NTU in any existing model of Machine /Equipment/Item or any part/Accessory will be accepted if it is specifically asked/indicated/mentioned in technical specification(s) or mentioned in tender document in specific item detail.</li> </ul>
v	<ul style="list-style-type: none"> <li>a) The catalogue/brochure of the quoted model must be on the web of principal manufacturer /company etc. Self-made catalogue/brochure by the bidder will be considered as cheating and this attitude can create serious problems (as per PPRA rules) in the business of the bidder.</li> </ul>
vi	<ul style="list-style-type: none"> <li>a) A fake website or a fake advertisement of the quoted model (to make money from NTU or to meet the requirement of NTU) on the genuine web site of the principal manufacturer /company will be considered cheating and the case will be proceeded as per PPRA rules.</li> </ul>
vii	<ul style="list-style-type: none"> <li>a) Complete machine/equipment/item in its original packing (as in the country of origin) will be accepted. Its any specific part/Accessory (locally made) will not be accepted unless categorically mentioned (locally made) in the final technical specifications.</li> </ul>
vii	<ul style="list-style-type: none"> <li>a) Any part of the equipment/machine (even it is compulsory to make equipment /machine operational) if it is as per requirement of NTU then do not write the word "optional". Please quote optional item separately if categorically requested.</li> </ul>
ix	<ul style="list-style-type: none"> <li>a) Successful bidder is bound to provide <i>only and only</i> the exact quoted model number of machine / equipment/ items. Justification(s) such as: (quoted model is not available right now, its manufacturing for NTU will take long time, it is outdated, company has stopped its manufacturing) will not be accepted. Bidder's offer such as "Latest model with better/similar technical specifications can be delivered in the same price and time" shall <b>not be accepted</b> of this tender document.</li> <li>b) Situation will be declared as "failure in delivery of machine /equipment /item". Case will be forwarded to the blacklisting committee to proceed further as per PPRA rules-19.</li> </ul>

## Special Conditions.

### For Tender Serial no. 1 & 2

1. The vendor who shall participate in tender serial No. 1, shall also quote in Tender serial no.2 This is associated passive networking installations associated with tender Serial no. 1.
2. Any vendor who shall participate in tender serial no. 1 but shall not participate in tender serial no. 2 shall not be consider only for tender serial no. 1.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.
4. Every vendor shall quote the separate technical and Financial proposal for each serial (For serial no.1 and Serial no. 2).

### For Tender Serial no. 3 & 5

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1. The vendor who shall participate in tender serial No. 5, shall also quote in Tender serial no.3 This is associated passive networking installations associated with tender Serial no. 5.
2. Any vendor who shall participate in tender serial no. 5 but shall not participate in tender serial no. 3 shall not be consider only for tender serial no. 5.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.
4. Every vendor shall quote the separate technical and Financial proposal for each serial (For serial no.3 and Serial no. 5).

<b>Mandatory Clauses for Switches (Serial no. 4), WLAN Controller and Access Points (Serial no. 5)</b>
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100% technical compliance is must

All equipment should be of the same OEM (Switches, WLAN Controller and Access Points)

Valid Certificate from Manufacturer (MAL/MAF) for the current year should be provided

OEM must be legally present and SECP registered in Pakistan for at least 5 years

OEM must have Local Registered Office, Local Warehouse presence in Pakistan preferably Islamabad, Lahore & Karachi and Also local OEM Support Team

All bidders /suppliers are requested to participate independently I each item / serial / lot as indicated in the advertisement. Each item / serial / lot shall be compared for prices independently to calculate the most advantageous bidder.

## 2. Deadline and Procedure for Bids:

- i. Tender Proposals required under PPRA Rule 36(b), FOR Basis.
- ii. **PPRA Rule 36(b): Single stage two envelope procedure.** Technical & Financial Bids must be sealed (separately) with covering letter. There must be clearly mentioned on each envelope “Technical proposal” / “Financial Proposal”.  
**NOTE:** 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> option(s) of any complete item or its any part shall not be considered in any case. Only 1<sup>st</sup> option will be considered for healthy competition under this rule.

## 3. Bidder's Eligibility and Qualification

- i. Bidding firm must be registered with EPADS, Govt. tax authorities (GST, PST and Income Tax etc.) and shall submit the certificates of registration.
- ii. Bidders are required to submit the certificate along with their offer i.e. “Certified that the prices quoted in the tender are firm, final and the prices will not change in any case.

iii.	An Affidavit duly attested by the Oath Commissioner/Notary Public showing that the firm <b>is not Blacklisted</b> from any Govt./Semi Govt. Department of the Pakistan.																																																
iv.	Bidder will provide address of nearest office to Faisalabad (mandatory) and Web page address (mandatory where applicable).																																																
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i.	Terms and conditions published in this Tender document are final. Any condition(s) imposed by the bidder in contradiction of the published document shall not be accepted.																																																
<b>6.</b>	<b>Bid Security (PPRA Rule-25):</b>																																																
i.	Eligible firms should submit their bids along with earnest money (fixed) amount, independently /separately as explained above in advertisement, in sealed envelope of <b>Technical Bid</b> in the shape of CDR / Bank Draft in favor of National Textile University, Faisalabad, drawn on Faisalabad. Details of fixed bid security as per advertisement is given below:																																																
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	In case of failure to attach the bid security mentioned as above, the tender shall not be accepted. The bidder shall be treated a disqualified from the competition.																																																
<b>7.</b>	<b>Performance Guarantee (PPRA rule 39):</b>																																																
i.	<ul style="list-style-type: none"> <li>a) Successful bidder shall provide an amount of 06% of the quoted price in the form of CDR/Pay order within the 03 working days after the issuance of the intimation letter along with the contract agreement {A contract agreement on stamp paper as per Punjab Govt. finance act 2018 (Sr. # 2C(b)} will be signed by the bidder / supplier).</li> <li>b) Supply order will be issued after the fulfillment of the above requirements.</li> </ul>																																																
ii.	<ul style="list-style-type: none"> <li>a) Performance guarantee will be retained only for the items in serial No. 4, 5, 6 7, 8, 9, 10, 11, 12, 13, 14, 15 for the given warranty period (01 year) that will start from the date of commissioning/ installation / supply.</li> <li>b) An amount of 06% excluding serial No. (Item # 1 to 3), will be returned / reimbursed back after the comments from the end user at the time of job completion.</li> <li>c) As stated, “All chemicals / consumables and other items are as per given specifications and are without any breakages /cracks /exact quantity /weight and expiry date. Bidders are requested to hand over the chemical s/ breakable items to the personally instead of luggage carrier /TCS etc.</li> <li>d) The supply of items or any part must be <b>BRANDED</b> (originally manufactured &amp; assembled) &amp;</li> </ul>																																																

	<p>complete in all respects with original manufacturer's packing and strictly conforming to given specifications.</p> <p>e) Any used part /component (inner or outer) will not be accepted.</p> <p>f) The parts if applicable for manufacturing, or alterations required / modifications relating to task for research project will be performed under the recommendation / guidance provided by principal investigator.</p>
<b>8.</b>	<b>Taxes/Duties:</b>
i.	<b>FOR basis:</b> Applicable all Govt. Taxes will be paid by the bidder.
ii.	All payments will be made after the supply of items.
iii.	A contract agreement on stamp paper as per the Punjab finance act 2018 (Sr. # 2C(b), (i.e., 25 paisas for everyone hundred rupees)} shall be signed by the bidder /supplier before providing services.
<b>9.</b>	<b>Bid Validity Period:</b>
i.	All pricings shall be guaranteed not to increase, based on an order placed. The offer should be valid for 90 days from the date of opening of the tender in case of PPRA rule 36(b).
<b>10.</b>	<b>All Expenditures like: Freight/Loading/Unloading/Commissioning/Installation on site:</b>
i.	All expenditures like: Freight/Loading/Unloading/Installation/Training (on site for operation, maintenance & troubleshooting etc. as well as for other items/equipment etc.) and testing of equipment/item/machine <b>on site</b> will be provided by the bidder.
ii.	<p>All expenditures up to the place of installation / supply at NTU Faisalabad of item(s) / equipment / items will be paid by the bidder and this should be included in the bid price.</p> <p>All items shall be delivered in NTU Faisalabad except Items of serial No. 14 (16 Desktop Computer Systems for NTU Karachi Campus).</p> <p>The said serial no. 14 shall be delivered in National textile university Karachi campus.</p>
<b>11.</b>	<b>Requirement:</b>
i.	The items /services must be according to the specifications provided.
ii.	<p><b>Training /Trainer (foreign/local)</b> where applicable,</p> <p>Training of equipment /machine will be on site (at NTU through qualified engineers local / foreigner). Please make sure about the availability of your trainer (local / foreign) to train our lab. Engineers, MS and PhD students as well as faculty members then quote your offer.</p> <p><b>NOTE:</b> Make sure about the foreign trainer availability (if applicable) as per travel (to Pakistan) rules &amp; regulations of that country before quoting your price</p>
iii.	<p><b>Redressal of Grievances (PPRA rule-48)</b></p> <p>Please follow PPRA rule-48 in case of any Grievance(s) and contact NTU grievances committee.</p>
iv.	<p><b>Warranty:</b></p> <p>Warranty only for the items, For serial No. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, should be <b>one year</b>. One year will be considered from the date of supply / commissioning / installation (operational on site). The items or any part must be <b>BRANDED</b> (originally manufactured &amp; assembled) &amp; complete in all respects with original manufacturer's packing and strictly conforming to given specifications. Any used part /component (inner or outer) will not be accepted.</p>
v.	<p><b>Penalty for late delivery:</b></p> <p>a) In case of late delivery on the part of bidder / supplier to supply the equipment's as per specifications / quantity within the stipulated time (without extension / approval from the competent authority i.e., Rector of National Textile University), a penalty at least 0.25% but not exceeding 10% per month will be imposed after the approval of competent authority.</p> <p>b) Tender with any cuttings, over writings and erasing shall not be entertained.</p>
<b>12.</b>	<b>Prices:</b>
i	<b>FOR</b> prices must be in Pak rupees. All payments of equipment / item(s) / services will be made after the supply, installation, commissioning and operational onsite. No advance cash payment /or advance payment through cheque / cash will be made in any case).
ii	<b>EXAMPLE-1</b>
	The bidder/supplier should quote unit price of each optional / compulsory accessory (as per technical

	<p>specification of the tender); however, all such prices will be incorporated in the price of main equipment / machine / item/serial as named in the given (advertisement) equipment/item list for the price comparative statement.</p> <p><b>Every Serial No. / Item will be offered with rate independently including each item in the main serial where applicable.</b></p> <p><b>Example:</b> Each item will be compared independently for competition.</p>
<b>13.</b>	<b>Payments:</b>
i.	The Payment will be made on the availability of funds (approvals from Government planning agencies etc., other relevant authorities and University management). If payment is delayed (from Government planning agencies, other relevant authorities, and University management) due to any reason; no extra interest/mark-up will be paid to the supplier/bidder.
<b>14.</b>	<b>Expenditures:</b>
i.	All expenditures {technical, personnel, any transportation, or any type of charges of repair/replacement of any part(s) of the item(s)/equipment etc. during the supply/service period/guarantee period will be borne by the supplier/bidder.
<b>15.</b>	<b>Conformity with given Specifications:</b>
i.	Equipment/items/supply etc. will be inspected on site (at National Textile University) in the presence of the supplier/bidder/their representative. Equipment/item or any part will be rejected if not found according to the given specifications.
ii.	In case any material / item is found not in conformity with the specifications provided in the tender, either on account of inferior quality, defective workmanship, faulty design, or is short supplied, or wrongly supplied, the supplier will replace the short supplied wrongly supplied, faulty or defective part /material free of charges including transport charges etc.
iii.	In case of failure on the part of supplier to supply /provide the services/equipment/item as per specifications / quantity within the stipulated time, the case will be forwarded to the NTU blacklisting committee (Blacklisting policy can be downloaded from the NTU web.). Tender with any cuttings, over writings and erasing shall not be entertained.
<b>16.</b>	<b>Notification of award:</b>
i.	The university will award the contract to the technically successful bidders/suppliers whose tender has been determined to be substantially responsive and has been determined as the most advantageous financial proposal.
ii.	The University will display the official comparative statement on EPADS, or the notice board for which such date will be notified to all bidders/suppliers accordingly.
<b>17.</b>	<b>Blacklisting:</b>
i.	In case the offer is withdrawn, amended, or revised during the validity period of the tender, failure in the delivery (of equipment/item/service or its part/accessory), the case will be sent to NTU blacklisting committee. The Blacklisting policy can be downloaded from the NTU website url: <a href="https://www.ntu.edu.pk/tender-details.php?id=3102">https://www.ntu.edu.pk/tender-details.php?id=3102</a> as per PPRA rule-19.
<b>18.</b>	<b>Mandatory Signature &amp; Stamp:</b>
i.	Bidder or its authorized representative must sign & stamp each page of the bid documents (technical & financial). Also bidder/supplier will provide the certificate that is provided at the end of this document named as Declaration Certificate (Mandatory).
<b>19.</b>	<b>Rights of the University:</b>
i.	In case of conflicts, it is fundamental that issue will be resolved as per PPRA rule, Govt. of Pakistan.
ii.	The University reserves the right to reject any or all bids with assigning reason(s).
iii.	The University reserves the right to ignore or waive off minor irregularities or errors in any offer.
iv.	The University reserves the right to award the contract to one bidder or divide it among several bidders. (if applicable)
v.	The University reserves the right to cancel the offer of the Bidder whose bid has been found financially to be the lowest if it is revealed to the University that the Bidder 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 Documents.
<b>20.</b>	<b>Breach of Contract:</b>
i.	In case of breach of warranty by the supplier/bidder, the damages suffered by the University shall be recovered

	from the supplier/bidder out of any payment due to the supplier/bidder and / or in accordance with the terms and conditions of the Contract Performance Bond mentioned without notice to the Contractor.
<b>21. Force Majeure:</b>	
i.	The supplier/bidder 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 any uncontrollable circumstances. The supplier/bidder shall within one day 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.
<b>22. Legal proceedings:</b>	
i.	The law of Pakistan shall govern the contract and the tender documents. Any dispute arising out shall be decided by Competent Authority of the University as per PPRA rules.
For any technical query even for any confusion in understanding tender document/technical specifications, pl contact following persons.	
<b>23. Contact Person(s):</b>	
Sr.# 1 to 8, 11, 12 and 14	Mr. M. Shahzad Arshad: 041-9230081-85, Ext. 281
Sr.# 9 and 13	Dr. Zafar Javed: 041-9230081-85, Ext. 230
Sr.# 10	Dr. Sajjad Baig: 041-9230081-85, Ext. 264
Sr.# 15	Mr. M. Aslam (Dy. Dir. P&D): 041-9230081-85, Ext. 179

**Declaration Certificate  
(Mandatory)**

"I, ..... on behalf of (company name) ....., hereby solemnly declare that I have thoroughly read and understood all the terms and conditions outlined in the tender document (Tender Notice # G-25/04-01) issued for National Textile University, Faisalabad. I confirm that all the information provided by the undersigned in the tender proposal for the said tender is accurate, complete, and true to the best of my knowledge.

I fully accept the responsibility for the correctness of the information provided in the proposal and understand that any discrepancies or inaccuracies may result in disqualification from the tender process."

Signature

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

Company name address & stamp.

Technical Specifications Serial no. 1				
Hardware	Specification / Description		Unit	Qty.
Arduino Nano 33 BLE Sense Rev2	Microcontroller	nRF52840	No.	15
	Operating Voltage	3.3V		
	Input Voltage (limit)	21V		
	DC Current per I/O Pin	15 mA		
	Clock Speed	64MHz		
	CPU Flash Memory	1MB (nRF52840)		
	SRAM	256KB (nRF52840)		
	EEPROM	None		
	Digital Input / Output Pins	14		
	PWM Pins	All digital pins		
	UART	1		
	SPI	1		
	I2C	1		
	Analog Input Pins	8 (ADC 12-bit 200 k samples)		
	Analog Output Pins	Only through PWM (no DAC)		
	External Interrupts	all digital pins		
	LED_BUILTIN	13		
	USB	Native in the nRF52840 Processor		
	IMU	BMI270 and BMM150		
	Microphone	MP34DT06JTR		
	Gesture, light, proximity, colour	APDS9960		



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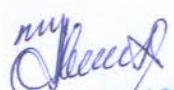
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	Barometric pressure	LPS22HB		
	Temperature, humidity	HS3003		
<b>Silicone Sleeve for Arduino Nano 33 BLE Sense</b>	The Silicone Rubber has a smooth texture, and it's flexible enough to allow the insertion of the board with headers. It is made of three pieces: the board housing and two additional pin sockets.		No.	15
<b>USB-A to Micro-USB Cable</b>	Size: 50cm		No.	15
	Connector Type A: USB			
	Connector Type B: Micro USB			
	Gold-plated			
	24 AWG shielded cable			
<b>Breadboard – Transparent</b>	This transparent 400-point solderless breadboard features two 50-point power rails and a 30x10 point prototyping grid.		No.	15
<b>Half-Sized</b>	Pins are spaced by 2.54mm with a center separation for separating DIP package chips. The rear of the board is self-adhesive for sticking.			
<b>Male/Male Jumper Wires</b>	Length: 40 wires x 6 inch, Weight: 15g, Each wire is 28 AWG (7 strands @ 36 AWG)		No.	8
<b>Plastic Storage Box</b>	To store the Arduino Nano 33 BLE Sense board, half sized bread board and wires, Size: 235x165x60mm		No.	15
<b>Pi Camera Module 3<sup>rd</sup> Generation</b>	Back-illuminated and stacked CMOS 12-megapixel image sensor (Sony IMX708) with HDR for up to 3-megapixel output		No.	2
	High-quality Image Output: 4608 x 2592 pixels, carrying IR cut filter, along with built-in 2D DPC and QBC Re-mosaic function, offering high SNR			
	Autofocus System: Phase detection autofocus			



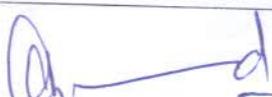
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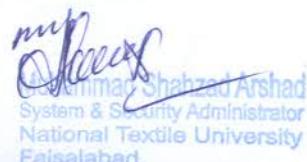
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<b>24 Port Network Layer 2 Ethernet Gigabit switch with 4 SFP</b>	CSI-2 serial Data Output: 2-wire serial communication, supporting I2C fast mode and fast-mode plus	No. 1
	24x 1G Rj45 ports	
	Forwarding performance - 41 Mpps or higher	
	Switching Capacity - 54 Gbps or higher	
	Vlans – 512 or higher	
	Mac address table size - 8,150 or higher	
	Support for advance QoS, rate limiting, 802.1p	
	Support for Radius/TACACS+	
	Maximum power rating - 33W	
	Support for 802.1ab – LLDP	
	Support for sFlow	
	Support for Dual stack - IPv4 and IPv6	
	Support for SNMPv1/2/3	
	Support for 802.3x	
	Support for STP/RSTP/MSTP/RPVST+	
	Support for access control lists	
	Support for 802.1x	
	Support for MAC Based authentication	
	Support for Port Security	
	Support for Port mirroring	
	Support for Source port filtering	
	Support for IP Source guard	
	Support for dynamic ARP inspection	
	Support for Voice Vlan	
	Support for 802.3az	
	Support for SSHv2 and Web GUI	
	Minimum 1 years principal warranty of HW/SW including Power Supplies	
CAT-VI UTP Cable (Reel=305meter)	Cat 6 UTP 4 pair cables. Conductor: Solid Bare Copper AWG 23. Insulation: HDPE. Conductor Dia	Reel=305 meter 2



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	Norm: 0.57. Outer Sheath: PVC. Outer Diameter: At-least $6.3 \pm 0.3$ mm. Standard Compliance: ISO / IEC 11801, ANSI/TIA.EIA- 568.2-D, IEC 61156-5, EN 50399, EN 50173-1. Filler: PE. At least 305-meter reel. – Per role		
CAT-VI UTP Patch Panel 24 Ports	24 port UTP patch panel with fully loaded RJ-45 I/O. Material: power coated. Front traceable LED indicator. Rear cable manager. IDC: Phosphor bronze. RJ-45 pin physical characteristics: 50 microinch gold plating. RJ-45 supported AWG: 22~26AWG. Supported standards: ANSI/TIA 568.2-D Category 6. – Per unit	No.	1
Cable Organizer in metal material	Front Cable Organizer with Metal Fingers and Plastic Cover. Should have Metal base powder coated to provide protection against scratches and dust., RoHS, REACH Compliant	1	1
CAT-VI UTP I/O (Information Outlet)	CAT-6 RJ-45 tool-less (I/O). Housing: Zinc alloy. IDC: Phosphor bronze. RJ45 Pin: At least 50 microinch gold plating. Supported AWG: 22~26AWG. Plug insertion: $\geq 1000$ times. – Per unit	No.	25
CAT-VI UTP Dual Port Shuttered Face Plate	Dual shutter faceplate. Dust proof shutter. Label management.	No.	20
Backbox Material PVC Size	(H=3.5" W=3.5" D=1.5") with thickness of 1/8" brass female bush for screw	No.	20
Network Cabinet 12-U Double Section with 8 Port PDU	12-U Double Section Local Made with Cooling fans - Per unit	No.	1
Duct	PVC Duct 16x38	Feet	150
	PVC Duct 40x40	Feet	100
	PVC Duct 60x60	Feet	50



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Cable Tie	Cable Tie 18" Nylon Netural White Color	PKT	1
	Cable Tie 12" Nylon Netural White Color	PKT	1
	Cable Tie 10" Nylon Netural White Color	PKT	1
	Cable Tie 08" Nylon Netural White Color	PKT	1
	Cable Tie 06" Nylon Netural White Color	PKT	1
Rawal Bolt	Pipe Shape (1/2"x3")	No.	10
Electrical insulation tape	(19mm x 0.18mm x 20m) Red Color	No.	5
Screw	1.5" 8mm with Top of +	100/PKT	5
Screw Anchor (Gati)	PVC	100/PKT	5
washer	with inner diameter of 1/8"	100/PKT	5
Flexible	pipe dia=0.5"	Feet	50
	Flexible pipe dia=1"	Feet	30
	Flexible pipe dia=2"	Feet	30
	Flexible pipe dia=3"	Feet	10
	Flexible pipe dia=4"	Feet	10

**Note:**

1. The vendor who shall participate in tender serial No. 1, shall also quote in Tender serial no.2 This is associated passive networking installations associated with tender Serial no. 1.
2. Any vendor who shall participate in tender serial no. 1 but shall not participate in tender serial no. 2 shall not be consider only for tender serial no. 1.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.
4. Every vendor shall quote the separate technical and Financial proposal for each serial (For serial no.1 and Serial no. 2).



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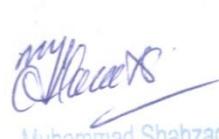
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**Technical specifications  
Installation of 04 networking items  
Tender Serial no. 2**

S/No.	Description	QTY
1	Laying of Duct (Running feet)	300
2	Laying of UTP Cable (Running feet)	2000
3	Installation of Face plate, Back Box, and I/O (Information Outlet). The quantity is No. (No. of face plates, No. of Back Box, No. of I/O's)	25
4	Installation of CAT-VI UTP Patch Panel (No. of Patch panel)	01

**Note:**

1. This is associated passive networking installations associated with tender Serial no. 1 (Different types of 33 networking Items). The vendor interested in quoting in tender serial no. 2 is bound to participate in Tender serial no. 1.
2. Any vendor who shall not participate in tender serial no. 1 shall not be consider only for tender serial no. 2.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.

  
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**Technical specifications  
Installation of 03 networking items  
Tender Serial no. 3**

S/No.	Description	QTY
1	Laying of Duct (Running feet)	1200
2	Laying of UTP Cable (Running feet)	5000
3	Fiber Optic Cable Splicing (No. of Splicing's)	50

**Note:**

1. This is associated passive networking installations associated with tender Serial no. 5 (Wi-Fi at SET Department). The vendor interested in quoting in tender serial no. 3 is bound to participate in Tender serial no. 5.
2. Any vendor who shall not participate in tender serial no. 5 shall not be consider only for tender serial no. 3.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.



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**Technical Specifications**  
**Network Switch**  
**(Serial no. 4)**

<b>Technical Specifications</b>	<b>QTY</b>
24 x 1G Ethernet PoE+ Ports with 370W PoE power budget at least	
4 x 10G SFP+ Ports	
Switch console cable must be included	
Should have 127 Gbps or more port switching capacity	
Should have 590 Gbps or more box switching capacity	
The forwarding rate should be more than 95 Mpps	
Must include dual fan or higher	
Should be a Manageable Enterprise grade Switch with Layer-3 features such as RIP, RIPng, OSPF & OSPFv3 and IS-IS	
Should support Spanning Tree Protocol, 802.1D STP, 802.1W RSTP & 802.1S MSTP	
Should support Stacking of local and remote devices through standard Ethernet interfaces. Should support stacking of 9 switches or more	
Enterprise Switch CPU must be Dual Core, 990MHz or higher	
Should Support Link Aggregation Protocol	
Should have 4K or more VLANs support and 32K MAC address entries	08
Broadcast, Multicast and Unicast Storm Control Support	
Port Mirroring, RSPAN or equivalent must be supported	
Should support IPv4 routing entries 6012 or higher	
Should support IPv4 ARP entries 4012 or higher	
Should Support Time & Vlans Based ACLs. In addition, the switch must be capable of configuring the bidirectional ACLs	
Should support SNMP v1, 2 & 3	
Switch RAM must be 1GB or higher	
Switch Flash must be 512MB or higher	
Should support security features like IP Source Guard, AAA, RADIUS, 802.1x and Centralized MAC Based Authentication, DHCP Snooping etc.	
Support 12000 Jumbo Frame size or higher	
QoS Support 8 Queues Per Port, Traffic classification based on IEEE 802.1p DSCP, CAR, Access Control List	
3- Years NBD Equipment warranty from OEM	

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**Technical Specifications  
(Wi-Fi Turnkey Solution at SET Department)  
Serial No. 5**

The vendor shall quote a complete turnkey solution in installing and configuring Wi-Fi setup in the School of Engineering and Technology (SET) with the given minimum specifications of Wi-Fi equipment.

There is almost all applicable equipment is covered in the specifications, however any additional accessory, which is mandatory / recommended / technology specific / vendor's specific if any, and proposed in solution, shall be mentioned by the vendor / bidder with solid justifications,

The vendor who shall participate in serial no. 5 shall also participate in tender serial no. 3

<b>WLAN Controller Technical Specifications</b>		<b>QTY</b>
<b>Throughput</b>	The quoted wireless controller must have 19.5Gbps or higher throughput	
<b>Interfaces</b>	Wireless controller must have 6 x GE SFP ports, 15 x GE Copper ports and 2 x 10G SFP+ ports Support for 1 x management interface along with 1 x USB ports	01
<b>Power Supplies</b>	Quoted controller must include dual power supplies	
<b>Maximum number of Clients</b>	Users to be supported by the wireless controller must be 15350 at least or more	
<b>Licenses</b>	The quoted Controller must have license for 32 APs at least or more The quoted controller must have a capacity to manage at least 765 APs	
<b>Wireless user isolation</b>	Supports wireless users 2-Layer isolation based on VLANs and SSIDs	
<b>CAPWAP</b>	The quoted controller must assign basic AP network parameter through WLAN controller via Static IP, VLAN & connected AC address Controller must be able to establish L2/L3 connection between AP and WLAN controller The controller must be able to discover the APs automatically and make it visible over the controller for the control	

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	Controller must support WLAN controller discovery using DHCP option 43 and must provide NAT traversal between AP and Controller	
Roaming	The controller must be efficient enough to handle the roaming clients and hand off the clients to the other AP seamlessly and ensure the end user experience is uninterrupted upon both layer 2 and layer 3 (Inter and Intra AP)	
Gateway	The controller must provide gateway features in order to allow the internal users to communicate with the outer world. The controller must support PPPoE, NAT, SSL VPN, IPSEC VPN & GRE	
Access Control	The controller must provide multiple users/AP on boarding mechanisms mainly, WEP-64/128, dynamic WEP, WPA, WPA2, WPA3, 802.1x, LDAP and Portal authentication.	
QoS	The controller must be able to perform L2-L4 packet filtering, traffic classification and mark the priorities over them. The controller must also provide Intelligent bandwidth limit (equal bandwidth share algorithm)/ (user specific) in order to ensure the end-user experience	
RF Management	Load balancing must be supported based on traffic, user & frequency. Intelligent and AP group Load balancing support must be provided as well  The Controller must be able to provide Static and Auto channel and power configuration. In addition, controller must be able to adjust the transmission rate automatically	
Security	The Controller must be efficient enough to detect and provide countermeasure for Rogue AP/s  Controller must defend the network against multiple types of attacks mainly Flooding, Spoof & Weak IV attacks  The controller must provide Layer 7 Wireless Intrusion Prevention Systems (WIPS)	
Redundancy	Support 1+1 Failover between wireless controller  Intelligently APs must be shared among WLAN controllers in order to provide optimized AP and its related traffic handling	
Power Saving	The controller must support the Scheduled shutdown of AP RF interface & wireless service and must be able to provide Per-packet power adjustment for minimizing the power usage	



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<b>Storage</b>	Quoted controller support 2 x SSD drive slots for third party OS/Application installation. SSD Drives currently not required	
<b>Warranty Hardware/Software</b>	3- Years NBD OEM Standard Equipment warranty/Support	

<b>Access Point (AP) Technical Specifications</b>		Qty.
<b>Maximum transmission speed</b>	The quoted wireless indoor access point must be Dual radio AP and must provide 802.11ax technology with transmission rate up to 5.37 Gbps or higher	30
<b>Interfaces</b>	The quoted AP must provide at least 2 ports (one for 100M/1000M/2.5G Ethernet multi-rate port & one for 100M/1000M Ethernet port) The quoted AP must have a Console Port (RJ-45) and USB port as well AP mounting kit must be included	
<b>POE</b>	The quoted AP must be 802.11 at/af compliant	
<b>Built-in Antenna</b>	Built-in omni-directional antenna. Antenna gain on 2.4GHz must be 5dBi or higher Antenna gain on 5GHz band must be 5dBi or higher	
<b>Bluetooth</b>	Support Bluetooth	
<b>Operating Temperature</b>	Must support 0°C to +45°C operating temperature	
<b>Working frequencies and MIMO</b>	The quote AP must support 4x4:4 MIMO at 5GHz and 2x2:2 MIMO at 2.4GHz Radio	
<b>Wi-Fi Certified</b>	IEEE 802.11a/b/g/n/ac/ax, WMM, WPA, WPA2 and WPA3 – Enterprise, Personal (SAE), Enhanced Open (OWE), Wi-Fi Alliance	
<b>Protection class</b>	IP41	
<b>AP Working Mode</b>	The AP must be capable of switching the working mode without need of any additional licensing. Working mode: FIT (Controller based) and Cloud	
<b>Number of clients</b>	The quoted AP must be capable of handling at least 600 clients or higher	

<b>SSID</b>	The quoted AP must support 16 SSID or higher	
<b>Roaming</b>	The AP must support 802.11k and 802.11v smart and 802.11r fast transition roaming to ensure the seamless end user experience while they are roaming	
<b>Security Policy</b>	The quoted AP must be able to detect and prevent Wireless Intrusion (WIPS). IP Source guard and 802.11i must also be included	
<b>QOS</b>	Coupled with WLAN ACs, the APs must be able to identify variety of applications and policy control could be implemented including priority adjustment, scheduling, blocking, and rate limiting on users. AP must also provide Airtime fairness	
<b>Load Balancing</b>	Quoted AP must support user and traffic-based load balancing	
<b>Power Saving</b>	AP should employ a green design that supports dynamically adjustment MIMO for power saving, enhanced automatic power saving delivery and smart identification of terminal network requirements. AP could be able to dynamically adjust the MIMO working mode and efficiently put terminals to sleep during off peak hours	
<b>Warranty Services</b>	3- Year NBD Equipment OEM warranty and after that 2 years 10xBD warranty backed by OEM	



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Passive Hardware			
Hardware	Specification / Description	Unit	Qty.
CAT-VI UTP Cable (Reel=305meter)	Cat 6 UTP 4 pair cables. Conductor: Solid Bare Copper AWG 23. Insulation: HDPE. Conductor Dia Norm: 0.57. Outer Sheath: PVC. Outer Diameter: At-least 6.3±0.3mm. Standard Compliance: ISO / IEC 11801, ANSI/TIA.EIA- 568.2-D, IEC 61156-5, EN 50399, EN 50173-1. Filler: PE. At least 305-meter reel. – Per role	Meter	1525
Duct	UPVC Duct 16x38 KSS/DURA ADAM G/ PAPULAR	Feet	1000
Screw	1.5" 8mm with Top of +	100/PKT	50
Screw Anchor (Gati)	PVC 14mm	100/PKT	50
washer	with an inner diameter of 1/8"	100/PKT	50
RJ 45 Cat 6 Connector	RJ 45 Cat 6 Connector of Gold-Plated Pins Imported	No	1000

**Note:**

1. The vendor who shall participate in tender serial No. 5, shall also quote in Tender serial no.3 This is associated passive networking installations associated with tender Serial no. 5.
2. Any vendor who shall participate in tender serial no. 5 but shall not participate in tender serial no. 3 shall not be consider only for tender serial no. 5.
3. The vendors violent to the said terms and conditions shall not be considered for the competitions and shall be treated as disqualified from technical evaluation process.
4. Every vendor shall quote the separate technical and Financial proposal for each serial (For serial no.3 and Serial no. 5).

<b>Technical Specifications (Multimedia Projector) For Classrooms Serial No. 6 (Item # 1)</b>			
S/No.	Feature	Description	QTY
1	<b>Brightness</b>	3,700 Lumens (LCD)	08
2	<b>Resolution</b>	True XGA (1024x768)	
3	<b>Contrast Ratio</b>	16,000:1	
4	<b>Lamp/Light Source Life</b>	Minimum 12,000 hours (Normal), 20,000 hours (Eco Mode) or better	
5	<b>Speaker</b>	Minimum 16W built in speaker or above	
6	<b>Inputs</b>	Minimum 2 x HDMI, 1 x VGA ports	
7	<b>Display Features</b>	<ul style="list-style-type: none"> <li>• Wired &amp; Wireless Display Capable,</li> <li>• USB Display Function</li> <li>• Should provide minimum 10 x 8 size of screen display</li> </ul>	
8	<b>Warranty</b>	Minimum 1-Year Unit Warranty Minimum 1- year or 1000 Hours Lamp Warranty (as offered by manufacturer) <b>Note:</b> <b>Warranty should be on Principal Letterhead</b>	
Terms and Conditions	<ul style="list-style-type: none"> <li>• The multimedia projectors are required for classrooms, therefore ensure display features before quoting the product,</li> <li>• The product should be brand new, and all the Component should be factory integrated and shall be verified by the serial number and may be verified from respective manufacturer.</li> <li>• Only channel partners / Authorized distributors participate in bidding and Vendor must provide manufacturer authorization letter (MAL).</li> </ul>		

  
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<b>Technical Specifications (Multimedia Projector) For University main Hall Serial No. 6 (Item # 2)</b>			
S/No.	Feature	Description	QTY
1	<b>Brightness</b>	Minimum 5,000 Lumens (DLP) or above	01
2	<b>Resolution</b>	Minimum WUXGA (1920 x 1200) or above	
3	<b>Contrast Ratio</b>	3,000,000:1	
4	<b>Lamp/Light Source Life</b>	Minimum 20,000 hours (Normal), 30,000 hours (Eco Mode) or better	
5	<b>Light Source Type</b>	Laser Phosphor System	
6	<b>Optical Zoom</b>	Minimum 1.6x or better	
7	<b>Speaker</b>	Minimum 2 x 10W or more if designed by manufacturer	
8	<b>Inputs</b>	Minimum 2 x HDMI Minimum 1 x 12V Trigger (3.5mm) Minimum 1 x USB-A Minimum 1 x RJ45 Minimum 1 x S-Video	
9	<b>Warranty</b>	Minimum 1-Year Unit Warranty Minimum 1- year or 1000 Hours Lamp Warranty (as offered by manufacturer) <b>Note: Warranty should be on Principal Letterhead</b>	
Terms and Conditions	<ul style="list-style-type: none"> <li>This Multimedia is required for installation in the main Hall of the university. The vendor should consider its requirements before quoting the device. The quoted device should be capable to serve in the main hall for at least 200 People.</li> <li>The product should be brand new, and all the Component should be factory integrated and shall be verified by the serial number and may be verified from respective manufacturer.</li> <li>Only channel partners / Authorized distributors participate in bidding and Vendor must provide manufacturer authorization letter (MAL).</li> </ul>		

  
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Technical Specification  
(IP Camera)  
Serial No. 6 (Item # 3)

Technical Specification of IP Camera	Qty
4MP IR PoE Network Bullet Camera, 1/3" Progressive Scan CMOS, 0.01 Lux, 2.8/4/6/8mm Focal Length, 30m IR Range, Manual Focus, 120dB WDR, 3D-DNR, BLC, ROI, supports up to Three Streams, Smart Feature Set, supports up to 128GB SD Card, ANR, IP67 Weatherproof, with <b>12VDC Power Supply</b> .	62

Note: IP Camera and NVR should be of Same Brand

  
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**Technical Specification  
Network Video Recorder (NVR)  
Serial No. 6 (Item # 4)**

<b>Technical Specification of NVR</b>	<b>Qty</b>
<p>Rack Mount 32 Channel Network Video Reorder, 8MP Recording Resolution, 256 Mbps Incoming Bandwidth, 160 Mbps Outgoing Bandwidth, 4K HDMI Output Resolution/1080p VGA Output Resolution, support up to H.265+ Decoding Format, <u>4 SATA</u> Interfaces Supports up to 6TB HDD Each, Supports Two-way Audio, 4/1 Alarm I/O, 12VDC Power Supply. Must be included in NVR 2x4 TB Sata HDD of surveillance Grade</p>	<b>02</b>

**Note: IP Camera and NVR should be of Same Brand**

  
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<b>Technical Specifications</b> <b>(Sound System)</b> <b>For University main hall</b> <b>Serial No. 6 (Item # 5)</b>			
S/No.	Feature	Description	QTY
1	<b>Audio Mixer unit</b>	Professional level Stereo Audio Powered Mixer	01
2	<b>Audio power</b>	Minimum 2000 Watts (1000 X 2)	
3	<b>Mic input</b>	Minimum 6 Mic XLR or more	
4	<b>Stereo Channel Input</b>	Minimum 4 Stereo Channel Input	
5	<b>Equalizer</b>	Graphic Equalizer	
6	<b>Mid band Output Power</b>	Minimum Mid band Output Power, 1kHz, THD=1%, Dual Channel (into 2.66 Ohms 2 x 1350 W into 4 Ohms 2 x 1000 W, into 8 Ohms 2 x 600 W)	
7	<b>Rated Output Power,</b>	Minimum 20Hz...20kHz, THD<0.5%, Single Channel or better (into 4 Ohms 2 x 900 W, into 8 Ohms 2 x 450 W)	
8	<b>Other considerable</b>	Maximum Output Voltage, of power amplifier, 1kHz, no load 74 Vrms, THD, at 1kHz, MBW=80kHz MIC Input to Master A L/R Outputs, +16dBu, typical < 0.005% POWER AMP INPUTS to Speaker L/R outputs < 0.075% DIM 30, power amplifier, 3.15kHz, 15kHz < 0.05% IMD-SMPTE, power amplifier, 60Hz, 7kHz < 0.15 CMRR, MIC input, 1kHz > 80 dB	
11	<b>Warranty</b>	Minimum One Year or more if vendor specific	
Terms and Conditions		<ul style="list-style-type: none"> <li>This sound system is required for installation in the main Hall of the university. The vendor should consider its requirements before quoting the device. The quoted device should be capable to serve in the main hall for at least to cover the 250 People audience.</li> <li>The product should be brand new, and all the Component should be factory integrated and shall be verified by the serial number and may be verified from respective manufacturer.</li> <li>Only channel partners / Authorized distributors participate in bidding and Vendor must provide manufacturer authorization letter (MAL).</li> </ul>	

  
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Technical Specifications  
UTM For FortiGate Firewall 600F  
(Serial No. 7)

Service	Description
<b>Antivirus</b>	Real-time protection against viruses, malware, spyware, and other threats. Inspects files, traffic, and content at the gateway level. Supports both proxy-based and flow-based inspection.
<b>Web Filtering</b>	Categorizes and blocks access to over 200+ URL categories. DNS & HTTP/HTTPS filtering. Supports SSL inspection. Policy-based control for users and devices.
<b>Application Control</b>	Identifies and controls thousands of web and business applications. Supports shaping, blocking, and prioritization. Detects evasive and encrypted applications.
<b>Intrusion Prevention System (IPS)</b>	Detects and prevents network intrusions using signature- and anomaly-based detection. Protection against exploits, buffer overflows, and DoS attacks.
<b>Antispam</b>	Email filtering for SMTP, POP3, and IMAP. Uses IP reputation, spam signatures, and heuristics. Prevents phishing, scam, and junk emails.
<b>FortiSandbox Cloud</b>	Cloud-based zero-day threat detection. Dynamic behavioral analysis of suspicious files.
<b>Botnet Protection</b>	Blocks communication with known botnet command-and-control servers. Integrated threat intelligence feeds from FortiGuard Labs.
<b>FortiCloud Logging &amp; Analysis</b>	Centralized cloud-based logging and reporting. Up to 7 days of log retention. Visualization dashboards and analytics.
<b>SSL Inspection (DPI)</b>	Decrypt and inspect SSL/TLS traffic. Detect malware and threats hidden in encrypted sessions.

  
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**Technical Specifications**  
**UPS-10 KVA**  
**(Serial no. 8)**

Sr. No	Descriptions	Features	QTY
1	Type	Double conversion online	02
2	Output power capacity	10kWatts / 10 kVA	
3	Nominal Output Voltage	230V	
4	Output Frequency	50 / 60Hz +/- 3 Hz or higher	
5	Load Crest Factor	03:1	
6	Waveform type	Pure Sine wave	
7	Power Factor	1	
8	Back Up Time	1 Hour Plus with 5KW load	
9	Bypass	Built in Automatic and manual Bypass	
10	Nominal Input Voltage	220 V to 230 V or better	
11	Input frequency	auto sensing 40 - 70 Hz or better	
12	Input voltage range half load	110 - 300 V	
13	typical recharge time	5 hour(s) or better	
14	Audible Alarm	Audible and visible alarms	
15	Control panel	Multi-function LCD status and control console	
16	Communication Ports	DB-9 RS-232, Intelligent Smart Slot, USB, Network RJ-45 Console Port	
17	Surge energy rating	600 Joules	
18	Form Factor	Rack Mount with Rail Kits	
19	Warranty	Minimum 1-Year Standard warranty or higher if vendor specific offered	
20	Brand Origin	US & Europe particularly designed and recommended for data Centr	
21	Battery type	100 x 12V / 9A Maintenance-free sealed Lead-Acid batteries	
22	Battery Packs	Same brand Original Equipment Manufacturer's battery packs. Third party local made battery packs / cabinets will not acceptable.	

  
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# 9 and 13-Serial Specifications

- **Patterning:**
  - Integrated semi-automatic patterning system with basic punch card or cam-based design support.
- **Compatibility:**
  - Accommodates a variety of yarn types, including fine wool, cotton, acrylic, and blends.

## 4. Dimensions and Weight

- **Machine Dimensions:** Approx. 48 x 18 x 12 inches (customizable based on requirements).
- **Weight:** 25-40 kg for stability during operation.

## 5. Ergonomics and Safety

- **Operation:**
  - Smooth manual carriage movement with ergonomic handles.
  - Semi-automatic feeder system to reduce user effort.
- **Safety Features:**
  - Needle guards and yarn feed protection to prevent accidents.
  - Stable base with non-slip pads for secure placement.

## 6. Maintenance

- **Ease of Maintenance:**
  - Modular design with easily replaceable parts (e.g., needles, feeders).
  - Simple cleaning and lubrication process.
- **Durability:**
  - Built to withstand frequent use in a lab setting.

## 7. Accessories and Extras

- Spare needles (minimum 20 needles included).
- Yarn tension clips and feeder adjustment tools.
- Cleaning brush and lubrication oil.
- Instruction manual with operational and maintenance guidelines.

## 8. Warranty

- Minimum 1-year warranty covering manufacturing defects and performance issues.
- After-sales support for maintenance and spare parts.

## 9. Additional Requirements

- **User Training:**
  - Vendor to provide on-site or remote training for staff and students on machine operation and maintenance.
- **Documentation:**
  - Comprehensive user manual, troubleshooting guide, and spare parts catalog.

## 10. Motorized or Semi-Automatic Operation

- **Motorized Assistance:**
  - The machine should feature a **low-power motor** (single-phase, 220V, 50Hz) to automate the carriage movement partially.
  - The motor should support variable speed control for precision and flexibility in knitting different patterns.
  - Quiet operation to ensure a conducive lab environment.
- **Semi-Automatic Patterning:**
  - The machine should include a **semi-automatic patterning system** using cams or punch cards, reducing manual effort while enabling consistent and complex designs.
  - Pattern selection should be intuitive, with manual overrides for experimental knitting.



- **Finish:**
  - Powder-coated for corrosion resistance and durability.
  - Color: Black, grey, or white (customizable).
- **Feet:**
  - Non-slip rubber or plastic caps to prevent sliding and protect floors.

#### 4. Durability and Performance:

- **Weight Capacity:**
  - Minimum 100 kg (220 lbs).
- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.

#### 5. Ergonomics and Safety:

- **Height:**
  - Optimized for use in studio, lab, or classroom environments to ensure comfortable sitting posture.
- **Corners and Edges:**
  - Smoothly finished to minimize the risk of injury.

#### 6. Maintenance:

- Easy to clean with a damp cloth.
- Resistant to scratches and minor spills.

### 9. Specifications for Semi-Automatic Flat Knitting Machine for Lab (Sr. # 13, Item # 3)

#### 1. General Specifications

- **Type:** Semi-automatic flat knitting machine.
- **Gauge:** 10 or 12G
- **Knitting Width:** Minimum 36 inches.
- **Feeders:** Minimum 2 feeders for multi-yarn operation and increased efficiency.
- **Needle Bed:**
  - Material: High-quality steel with corrosion-resistant treatment.
  - Capacity: Designed for seamless operation with fine-gauge needles.

#### 2. Material and Build

- **Frame:**
  - Material: Heavy-duty steel or cast iron for durability and stability.
  - Finish: Powder-coated or rust-resistant paint.
- **Needles:**
  - Material: High-carbon steel or stainless steel for precise knitting and longevity.
  - Compatibility: Designed for fine-gauge operation.
- **Controls:**
  - Manual carriage operation with semi-automatic patterning capabilities.
  - Intuitive dial controls for stitch and tension adjustments.

#### 3. Functionality

- **Stitch Types:**
  - Supports plain knit, rib, tuck, and basic lace patterns.
  - Capable of partial knitting and shaping for experimental designs.
- **Feeders:**
  - Minimum 2 feeders for handling multiple yarns or colors simultaneously.
  - Adjustable yarn tension for uniform stitch quality.



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#### 5. Reliability and Performance:

- **Weight Capacity:**
  - Minimum 100 kg evenly distributed across the table.
- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.

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#### 6. Ergonomics and Safety:

- **Height:**
  - Optimized for standing tasks, ensuring user comfort during pattern-cutting and design activities.
- **Corners:**
  - Rounded or smooth corners to minimize the risk of injury.

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#### 7. Maintenance:

- Easy to clean with a damp cloth.
- Laminated surface resistant to common spills and stains.

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#### 8. Delivery and Assembly:

- Delivered pre-assembled or flat-packed with clear assembly instructions.
- All necessary tools, screws, and fasteners to be included.

#### 8. Specifications for Sitting Stool for Students (Sr. # 9, Item # 6)

**Purpose:** To provide durable, functional, and ergonomically designed sitting stools for students in educational settings such as labs, studios, or classrooms. The stools will feature a mild steel (MS) structure with a wooden top for comfortable and practical use.

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#### 1. General Dimensions:

- **Height:** 18-20 inches (standard sitting height).
- **Seat Diameter:** 14-16 inches (round) or 14 x 14 inches (square).
- **Base Diameter/Width:** Sufficient to ensure stability (18-20 inches for round or square base designs).

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#### 2. Seat Top:

- **Material:**
  - High-quality solid wood or laminated engineered wood.
- **Thickness:**
  - Minimum 25 mm (1 inch) for durability.
- **Finish:**
  - Smooth, polished surface with a protective clear coat (e.g., polyurethane) for water and scratch resistance.
- **Edges:**
  - Rounded or beveled edges for safety and comfort.
- **Color:**
  - Natural wood tone or custom finish (e.g., light brown, dark brown).

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#### 3. Frame and Structure:

- **Material:**
  - Mild Steel (MS) tubes or rods with a minimum thickness of 1.5 mm.
- **Frame Design:**
  - Four-leg or circular support design for enhanced stability.
  - Cross-bracing or ring support between legs for additional rigidity.

## 7. Delivery and Assembly:

### Delivery:

- Table must be delivered in disassembled form (for large options) with all components securely packed.
- **Assembly:**
  - Easy-to-assemble design with detailed instructions.
  - All necessary tools, screws, and fasteners must be provided.

## 7. Specifications for Studio Tables for Fashion Lab (Sr. # 9, Item # 5)

**Purpose:** To provide sturdy, durable, and functional pattern-making tables for use in a fashion lab. The tables must be designed to support pattern-cutting, fabric manipulation, and other fashion design-related activities, with a size suitable for individual or group use.

### 1. General Dimensions:

- **Length:** 48 inches (4 feet) ±5%.
- **Width:** 36 inches (3 feet) ±5%.
- **Height:** 37 inches (standard height for standing workstations).

### 2. Tabletop:

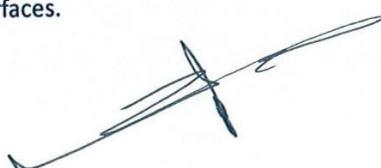
- **Material:**
  - High-quality laminated sheet over engineered wood or MDF (Medium-Density Fiberboard).
- **Thickness:**
  - Minimum 25 mm (1 inch) for durability and resistance to warping.
- **Finish:**
  - Scratch-resistant, water-resistant, and easy to clean.
  - Matte or semi-gloss finish to reduce glare during work.
- **Color:**
  - Neutral tones such as white, grey, or light woodgrain for better visibility of patterns and materials.

### 3. Frame and Structure:

- **Material:**
  - Mild Steel (MS) with a robust structure.
- **Frame Design:**
  - Rectangular tube frame for stability.
  - Tube Dimensions: Minimum 40 mm x 40 mm with a thickness of 1.5 mm.
- **Finish:**
  - Powder-coated surface for corrosion resistance and a professional appearance.
  - Color: Matte black or metallic grey (customizable).
- **Cross-Support:**
  - Integrated cross-bracing for additional stability and rigidity.

### 4. Additional Features:

- **Edge Banding:**
  - PVC edge banding on all sides of the tabletop to protect against chipping and ensure safety.
- **Under-Table Storage:**
  - Optional shelves or a horizontal bar for storing tools, fabric rolls, or accessories.
- **Legs:**
  - Adjustable leveling feet with non-slip rubber pads to prevent scratches on the floor and provide stability on uneven surfaces.



**Option 2: UV-Printed Glass Top:**

- **Material:** Tempered glass for durability and safety.
- **Thickness:** Minimum 12 mm (1/2 inch).
- **Printing:**
  - UV-printed design on the underside of the glass for protection and durability.
  - Design to be provided and approved by the institution before manufacturing.
- **Finish:**
  - Scratch-resistant and non-reflective surface (optional).
- **Mounting:** Supported by rubber spacers or pads for stability and shock absorption.

**Option 3: Solid Wood Top:**

- **Material:** One-piece natural wood plank (e.g., teak, acacia, or walnut).
- **Thickness:** Minimum 2 inches.
- **Surface Finish:**
  - Smooth, polished surface with a clear polyurethane or epoxy coating.
  - Natural cracks filled with clear or colored epoxy resin for enhanced durability and aesthetic appeal.
- **Edges:** Live-edge design to retain the wood's natural form.

**3. Table Structure:**

- **Material:** Mild Steel (MS) frame.
- **Frame Design:**
  - Rectangular or X-frame for enhanced stability and modern aesthetics.
  - Cross-bracing or additional supports for long spans.
- **Frame Finish:** Powder-coated surface for corrosion resistance.
- **Color:** Matte black or metallic grey (customizable).

**4. Additional Features:**

- **Cable Management:**
  - Integrated cable grommets or a concealed cable tray for clean wiring.
- **Leg Design:**
  - Wide-spaced legs to ensure ample legroom for seated individuals.
- **Glides:**
  - Adjustable, non-slip rubber or plastic glides on legs to stabilize the table and protect the floor.

**5. Durability and Performance:**

- **Load Capacity:**
  - Manufactured Wood/Glass Top: Minimum 100 kg evenly distributed.
  - Solid Wood Top: Minimum 150 kg evenly distributed.
- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.
- **Safety Standards:**
  - Tempered glass must comply with local safety standards.
  - Solid wood must be pest-treated and moisture-resistant.

**6. Aesthetics and Customization:**

- **Glass Top Design Approval:**
  - UV-printed design on the glass top must be pre-approved by the institution.
  - The vendor must provide high-resolution mockups for approval before production.
- **Solid Wood Customization:**
  - Epoxy resin color and finish can be customized as per institutional preferences.



- Finish: Powder-coated for corrosion resistance and durability.
- Color: Black, grey, or white (customizable).
- **Seat and Backrest:**
  - Material: Cushioned with high-density foam and covered with fabric or PU leather.
  - Optional: Perforated metal backrest with ergonomic curves for support.
- **Armrests:**
  - Material: MS with padded covers or wooden tops.

### 3. Design and Aesthetics:

- Modern, sleek design suitable for professional office settings.

### 4. Comfort and Ergonomics:

- **Seat:**
  - Waterfall edge design to reduce thigh pressure.
  - Adequate cushioning for prolonged sitting.
- **Backrest:**
  - Slightly angled or contoured to provide back support.
- **Armrests:**
  - Positioned to reduce shoulder strain.

### 5. Durability and Performance:

- **Weight Capacity:**
  - Minimum 120 kg (265 lbs).
- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.
- **Compliance:**
  - Solid wood must be treated for pest resistance.
  - MS frames must meet ISO standards for durability and safety.

### 6. Additional Features:

- **Glides:**
  - Non-slip rubber or plastic glides on legs to prevent floor scratches and noise.
- **Maintenance:**
  - Easy to clean with a damp cloth. Resistant to spills and wear.

## ✓ 6. Specifications for Meeting Table for 30 Chairs (Sr. # 9, Item # 4)

**Purpose:** To provide a durable, functional, and aesthetically pleasing meeting table capable of accommodating 30 chairs. The table will have options for manufactured wood, natural solid wood, or a UV-printed glass top with an MS powder-coated structure.

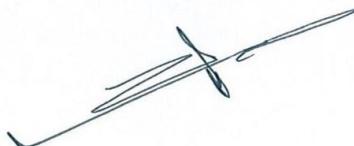
### 1. General Dimensions:

- **Table Width:** Minimum 5 feet (60 inches).
- **Table Height:** Standard 30 inches.
- **Seating Capacity:** Designed to comfortably accommodate 30 chairs.

### 2. Tabletop Options:

#### Option 1: Manufactured Wood Top:

- **Material:** High-quality laminated or engineered wood.
- **Thickness:** Minimum 25 mm (1 inch).
- **Finish:** Scratch-resistant, water-resistant laminate with PVC edge banding.
- **Color:** Neutral tones (e.g., walnut, oak, or mahogany).



- **Seat:**
  - Waterfall edge design to reduce pressure on the thighs and improve circulation.
- **Armrests:**
  - Positioned to reduce shoulder and neck strain.

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#### 5. Color and Finish:

- **Backrest:**
  - Color: Black nylon mesh (preferred); other colors optional based on requirement.
- **Seat and Frame:**
  - Color: Black or grey (preferred).
- **Caster Wheels:**
  - Smooth-rolling and scratch-resistant for hard floors or carpeted surfaces.

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#### 6. Durability and Performance:

- **Load Capacity:**
  - Minimum 120 kg (265 lbs).
- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.

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#### 7. Maintenance:

- Easy to clean with a damp cloth.
- Durable materials resistant to daily wear and tear.

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#### 8. Delivery and Assembly:

- Chairs should be delivered pre-assembled or with minimal assembly required.
- Assembly instructions and tools must be provided.

#### 5. Specifications for Office Visitor Chairs (Sr. # 9, Item # 3)

**Purpose:** To provide durable, aesthetically pleasing, and comfortable visitor chairs suitable for office use. The chairs will be constructed using either solid wood or mild steel (MS) with a powder-coated finish.

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#### 1. General Dimensions:

- **Seat Height:** 18 inches (floor to seat).
- **Backrest Height:** Minimum 18 inches from the seat.
- **Seat Width:** Minimum 18 inches.
- **Seat Depth:** Minimum 18 inches.
- **Overall Chair Height:** 32-36 inches.

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#### 2. Materials:

##### Option 1: Solid Wood Construction:

- **Frame:**
  - Material: High-quality solid wood (e.g., teak, sheesham, or ash).
  - Finish: Smooth polished surface with water-resistant and scratch-resistant lacquer.
  - Color: Natural wood finish, dark brown, or black (customizable).
- **Seat and Backrest:**
  - Upholstered with high-density foam for comfort.
  - Cover: Fabric or PU leather, breathable and easy to clean.
- **Armrests:**
  - Integrated into the wooden frame, contoured for comfort.

##### Option 2: Mild Steel (MS) Construction:

- **Frame:**
  - Material: MS tubes with a minimum thickness of 1.5 mm.



## 6. Additional Features:

- **Cable Management:**
  - Integrated cable grommet on the tabletop for organized wiring.
- **Weight Capacity:**
  - Tabletop: Minimum 100 kg.
  - Drawers: Minimum 10 kg per drawer.
- **Environment-Friendly Materials:**
  - Use of eco-friendly laminated sheets and non-toxic powder coating.

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## 7. Warranty and Maintenance:

- **Warranty:**
  - Minimum 1-year warranty against manufacturing defects.
- **Maintenance:**
  - Easy to clean with a damp cloth. Resistant to common office spills.

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## ✓ 4. Specifications for Office Chairs (Sr. # 9, Item # 2)

**Purpose:** To provide durable, ergonomic, and adjustable office chairs suitable for extended periods of office work. The chairs will feature a nylon mesh back for breathability, a sturdy plastic frame, and an adjustable height mechanism for user comfort.

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### 1. General Dimensions:

- **Seat Height:** Adjustable from 18 inches to 22 inches (floor to seat).
- **Backrest Height:** Minimum 20 inches from the seat.
- **Seat Width:** Minimum 18 inches.
- **Seat Depth:** Minimum 18 inches.
- **Overall Chair Height:** 36-40 inches (adjustable).

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### 2. Materials:

- **Backrest:**
  - Material: High-quality nylon mesh for breathability and flexibility.
  - Frame: Durable plastic with a reinforced structure for support.
- **Seat:**
  - Material: Cushioned seat with high-density foam.
  - Cover: Fabric that is breathable, tear-resistant, and easy to clean.
- **Base:**
  - Material: Nylon or heavy-duty plastic, capable of supporting at least 120 kg (265 lbs).
  - Type: Five-point base with smooth-rolling caster wheels for stability and mobility.
- **Armrests:**
  - Material: Plastic or polypropylene with smooth, contoured edges.
  - Type: Fixed or slightly adjustable for basic arm support.

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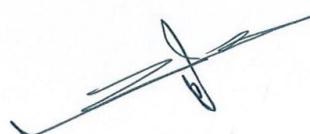
### 3. Adjustability:

- **Height Adjustment:**
  - Pneumatic lift mechanism for smooth and precise seat height adjustment.
- **Tilt Function:**
  - Recline angle of up to 20 degrees with tension adjustment.
- **Swivel:**
  - 360-degree swivel for ease of movement and flexibility.

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### 4. Ergonomics:

- **Backrest:**
  - Contoured design to provide lumbar support and promote proper posture.



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**1. General Dimensions:**

- **Overall Dimensions:**
  - Length: 48 inches (5 feet) ±10%
  - Width: 30 inches (2.5 feet) ±10%
  - Height: 30 inches (standard desk height)

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**2. Tabletop:**

- **Material:**
  - High-quality manufactured wood or laminated sheet with a smooth, scratch-resistant, and waterproof finish.
- **Thickness:**
  - Minimum 15 mm to ensure durability.
- **Edge Finish:**
  - PVC edge banding for added durability and protection against chipping.
- **Color:**
  - As per user preference, prior approval is required by showing samples

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**3. Steel Structure:**

- **Material:**
  - Mild steel frame with a powder-coated finish to prevent corrosion and ensure durability.
- **Frame Design:**
  - Rectangular tube structure with a cross-support design for added stability.
  - Tube Thickness: Minimum 1.5 mm.
  - Dimensions: 40 mm x 70 mm rectangular tubes for the main frame.
- **Feet:**
  - Adjustable leveling feet with rubber pads to prevent scratches on the floor.

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**4. Drawer Unit:**

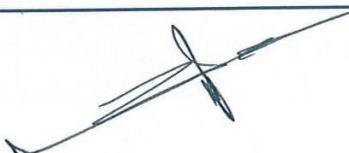
- **Type:**
  - Standalone two-drawer unit.
- **Material:**
  - Manufactured wood/laminated sheet.
- **Dimensions:**
  - Height: 20 inches ±10%
  - Width: 16 inches ±10%
  - Depth: 16 inches ±10%
- **Features:**
  - Smooth ball-bearing drawer slides for easy operation.
  - Lockable top drawer for added security.
  - Integrated handles or recessed grips for a modern look.
  - Four wheels for smooth movement

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**5. Assembly and Finish:**

- **Assembly:**
  - Easy-to-assemble design with detailed instructions provided.
  - All necessary screws, bolts, and fasteners included.
- **Finish:**
  - Table: Smooth and polished for an executive look.
  - Frame: Powder-coated in a matte black or metallic grey finish.
  - Drawers: Matching finish with the table design.

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**2. Cooling Capacity:**

- Coverage Area: Minimum 2,500-3,000 sq. ft.
- Airflow: Minimum 20,000 CFM (Cubic Feet per Minute).
- Cooling Pads: High-efficiency cellulose pads with at least 90% cooling efficiency.

**3. Material and Build:**

- Casing Material: Galvanized steel or heavy-duty corrosion-resistant aluminum for durability.
- Cooling Pads Housing: Weather-resistant frame with easy access for cleaning and replacement.
- Fan Blades: Aerodynamically designed blades made of durable, low-noise material (preferably polypropylene or aluminum).

**4. Motor and Electrical Specifications:**

- Motor Power: Minimum 2 HP (Horsepower), energy-efficient motor with thermal overload protection.
- Voltage: 220-240V, 50 Hz (compatible with local electrical standards).
- Adjustable Speed: Multi-speed operation (low, medium, high) for better control of airflow.
- Noise Level: Maximum 60 dB at full operation.

**5. Water System:**

- Water Tank Capacity: Minimum 200 liters with auto-refill capability.
- Pump: High-efficiency water pump with a minimum flow rate of 8 liters per minute.
- Water Distribution: Uniform distribution system to ensure even wetting of cooling pads.

**6. Installation and Operation:**

- Mounting Type: Roof-mounted with vibration-dampening pads to minimize structural noise.
- Air Distribution: Duct-ready outlet or adjustable louvers for direct airflow into classrooms.
- Maintenance Access: Easy-to-open panels for quick cleaning of cooling pads, tank, and fan.

**7. Environmental and Safety Features:**

- Eco-Friendly Operation: Uses evaporative cooling technology with no refrigerants.
- Dust Filters: Pre-installed filters to prevent dust and debris from entering the building.
- Water Overflow Protection: Automatic shut-off to prevent water wastage.
- Safety Standards: Must comply with local safety standards and certifications.

**8. Warranty and Support:**

- Warranty: Minimum 1-year warranty covering all parts, including the motor, pump, and fan.
- Maintenance: Vendor must provide free maintenance for the first 6 months and detailed maintenance guidelines.

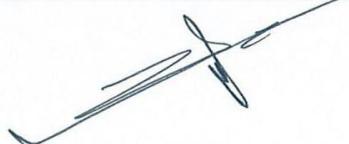
**9. Documentation and Demonstration:**

- User Manual: Detailed operating and maintenance instructions in English and Urdu.
- On-Site Demonstration: Installation and initial operation demonstration to the institution's representative.

**Note:** Vendors must include product brochures, complete technical specifications, and certifications of compliance with local standards. The model should be a tested and proven design suitable for the climatic conditions of Pakistan.

✓ **3. Specifications for Office Use Working Table (Sr. # 9, Item # 1)**

**Purpose:** To provide a durable, functional, and aesthetically pleasing working table for office use. The table will feature a sturdy steel structure, manufactured wood or laminated sheets for the tabletop, and a standalone two-drawer unit.



### Standalone Mobile Sound Unit (Trolley Type):

#### Specifications:

- Output Power: Minimum 100 Watts RMS with built-in subwoofer for deep bass.
- Speaker Type: 2-way or 3-way system with integrated woofer and tweeter.
- Battery Life: Minimum 8 hours of continuous operation on a full charge.
- Connectivity: Bluetooth, USB, AUX, and SD card support.
- Wireless Microphone Compatibility: At least one wireless microphone input.
- Controls: Built-in equalizer and independent volume/bass/treble controls.
- Portability: Equipped with wheels and a handle for easy transportation.
- Build: Durable casing with protection against minor shocks and spills.
- **Accessories:**
  - Wireless Microphone: 1 unit included with the standalone sound unit.
  - Charging Adapter: Included with the sound unit.
  - User Manual: Comprehensive guide for operation and troubleshooting.

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### 3. Installation and Configuration:

- **Fixed System:**
  - The supplier must provide professional installation, ensuring optimal placement of speakers and microphones for even sound coverage.
  - Training for faculty/staff on basic operation and troubleshooting.
  - Provision for calibration to avoid echo or feedback issues.
- **Standalone Mobile Sound Unit:**
  - Delivered preconfigured and ready for use.
  - On-site demonstration to explain features and functionalities.

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### 4. Additional Requirements:

- **System Warranty:**
  - Minimum 1 year for all components, including the standalone mobile sound unit.
- **Maintenance:**
  - Free maintenance and support for at least 1 year after installation.
- **Certification:**
  - All equipment must comply with international audio quality and safety standards (e.g., CE, FCC).
- **Documentation:**
  - User manuals, wiring diagrams, and service details to be provided for all components.

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### 5. Testing and Handover:

- The supplier must perform a demonstration of both the fixed system and the standalone mobile sound unit to verify performance.
- Adjustments should be made to ensure sound quality and coverage meet requirements.
- Final handover upon successful testing and satisfaction of the institution's representative.

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### 2. Specifications for Industrial Scale Evaporative Cooler (Sr. # 13, Item # 2)

**Purpose:** To provide efficient, eco-friendly, and noise-minimized cooling for the top floor of an educational building, ensuring comfort for students and faculty while accommodating local environmental conditions.

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#### 1. General Requirements:

- Designed for large spaces such as classrooms and lecture halls.
- Made in Pakistan with locally available parts for ease of maintenance and repair.
- Minimal noise operation to ensure no disruption in an educational setting.
- Energy-efficient operation to reduce running costs.

**NATIONAL TEXTILE UNIVERSITY, FAISALABAD**  
**SCHOOL OF ARTS & DESIGN**

**EQUIPMENT SPECIFICATIONS**

**1. Specifications for Sound System for a Classroom of 90 Students (Sr. # 13, Item # 1)**

**Purpose:** To provide clear and high-quality sound amplification for lectures, presentations, and multimedia use in a classroom accommodating up to 90 students. Additionally, a standalone mobile sound unit is required for flexible and portable audio solutions for events and group activities.

**1. General Requirements:**

- The sound system must ensure even sound coverage across the entire classroom.
- Components should be compatible with standard audio and multimedia devices such as laptops, projectors, and wireless microphones.
- The system must be user-friendly and require minimal technical expertise for operation.
- A standalone mobile sound unit is included to meet diverse usage needs, offering portability and independent operation.

**2. System Components:**

**Fixed Sound System:**

- **Amplifier:**
  - Output Power: Minimum 200 Watts RMS.
  - Inputs: At least 4 (including microphone and auxiliary inputs).
  - Output Impedance: Compatible with connected speakers.
  - Integrated equalizer for sound customization.
  - Protection against overload and short circuit.
- **Speakers:**
  - Type: Ceiling-mounted or wall-mounted as per classroom design.
  - Quantity: Minimum 4 speakers to ensure uniform sound distribution.
  - Power Handling: Minimum 50 Watts RMS per speaker.
  - Frequency Response: 60 Hz - 18 kHz for clear audio reproduction.
  - Material: Durable, non-corrosive material suitable for indoor use.
- **Microphones:**
  - Wireless Handheld Microphone: 1 unit with a range of at least 30 meters.
  - Wireless Lapel Microphone: 1 unit for instructor mobility.
  - Frequency Range: UHF or digital for interference-free operation.
  - Rechargeable batteries with at least 8 hours of continuous use.
- **Mixer:**
  - Channels: Minimum 4-channel mixer.
  - Features: Gain control, bass/treble adjustments, and individual volume controls.
  - Complete with locking metal cabinet fixed with wall
- **Connectivity:**
  - Support for Bluetooth and AUX for wireless and wired device connections.
  - USB input for direct playback from storage devices.
- **Cabling:**
  - High-quality shielded cables for noise-free connections.
  - Cable lengths to accommodate the classroom layout.
- **Power Supply:**
  - Input Voltage: 220-240V, 50 Hz (as per local standard).
  - Power Backup: Provision for UPS or power adapter connection.

- **Image Enhancement:**
  - Automatic color calibration.
  - Dust and scratch removal feature.
  - De-skewing and cropping during scanning.
- **Media Handling:**
  - Supports thick media up to 10mm, such as canvas or mounted artwork.
  - Handles a variety of materials, including paper, fabric, and textured surfaces.

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## 6. Software

- **Bundled Software:**
  - Image editing software (e.g., Photoshop Elements or equivalent).
  - Scanner utility software with advanced settings for resolution, color management, and batch processing.
- **File Formats:**
  - Outputs in JPEG, PNG, TIFF, BMP, PDF, and RAW formats.

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## 7. Power and Environmental Specifications

- **Power Requirements:**
  - 220-240V, 50-60 Hz (local standards).
- **Energy Efficiency:**
  - ENERGY STAR-certified or equivalent.
- **Operating Environment:**
  - Temperature: 10°C to 35°C.
  - Humidity: 20% to 80% (non-condensing).

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## 8. Maintenance

- **Ease of Maintenance:**
  - User-replaceable consumables (e.g., calibration targets, glass cleaning kit).
- **Durability:**
  - Designed for frequent use in studio and lab settings.

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## 9. Warranty and Support

- **Warranty:**
  - Minimum 1-year warranty for parts and labor.
- **Support:**
  - Vendor to provide remote and on-site technical support.



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#### Accessories and Extras

- **Included Accessories:**
  - 2-3 standard-sized bats.
  - Clay trimming tools set (minimum 5 tools).
  - Extra splash pan (optional).
- **Optional Add-ons:**
  - Adjustable stool or seat for operator comfort.

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#### 10. Warranty and Support

• **Warranty:**

- Minimum 1-year warranty covering motor, drive system, and structural components.

#### 12. Specifications for Scanner (Sr. # 13, Item # 5)

**Purpose:** To provide a high-quality, large-format scanner capable of accurately digitizing artwork, designs, and other large documents for archival, reproduction, and editing purposes. The scanner should support sizes up to A2 with high resolution and color fidelity.

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#### 1. General Specifications

- **Scanner Type:** Large-format flatbed scanner.
- **Scan Size:** Minimum A2 (16.5 x 23.4 inches) or larger.
- **Resolution:**
  - **Optical Resolution:** Minimum 600
- **Color Depth:**
  - Minimum 48-bit input and 24-bit output for accurate color reproduction.

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#### 2. Scan Speed

- **Full-Color Scans:**
  - A2 at 600 DPI: Approx. 20-30 seconds.
- **Black and White Scans:**
  - A2 at 600 DPI: Approx. 10-15 seconds.

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#### 3. Connectivity

- **Interfaces:**
  - USB 3.0 or higher for fast data transfer.
  - Ethernet connectivity for shared network access (optional).
- **Software Compatibility:**
  - Compatible with Windows and macOS operating systems.
  - TWAIN driver support for integration with design and editing software.

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#### 4. Build and Design

- **Material:**
  - Durable plastic or metal chassis for studio or lab environments.
- **Glass Bed:**
  - Anti-glare and scratch-resistant glass for clear scans.
- **Dimensions:**
  - Large enough to accommodate A2 media with extra workspace.

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#### 5. Features and Functionality

- **Scanning Modes:**
  - Full-color, grayscale, and black & white.
  - Preset modes for artwork, photographs, and documents.

## 2. Motor and Drive System

### Motor:

- Type: Single-phase, brushless motor.
- Power: 0.5 HP (Horsepower) minimum.
- Voltage: 220-240V, 50Hz (compatible with local electrical standards).

### Speed:

- Adjustable speed range: 0-300 RPM (Revolutions Per Minute) with fine control.
- Control: Foot pedal or dial for smooth and precise speed adjustment.

### Drive System:

- Direct-drive or belt-driven mechanism for quiet and vibration-free operation.

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## 3. Frame and Build

### Frame:

- Material: Powder-coated mild steel (MS) or heavy-duty plastic for durability.
- Finish: Rust-resistant, easy-to-clean surface.

### Base:

- Sturdy, non-slip base with adjustable feet for stability on uneven surfaces.

### Splash Pan:

- Detachable two-piece splash pan made of high-impact plastic or metal for easy cleaning.
- Large enough to catch excess water and clay trimmings.

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## 4. Capacity

### Clay Weight:

- Minimum 10 kg (22 lbs) capacity for handling medium-sized projects.

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## 5. Additional Features

### Control Options:

- Hands-free foot pedal for speed adjustment, allowing precise control while working.
- Manual dial option for users who prefer fixed speed settings.

### Reversible Rotation:

- Bidirectional operation (clockwise and counterclockwise) for left-handed and right-handed users.

### Work Surface:

- Integrated bat pins compatible with standard-sized bats for easy clay removal.

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## 6. Dimensions and Weight

### Machine Dimensions:

- Approx. 30 x 20 x 18 inches.

### Weight:

- 25-40 kg for stability during operation.

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## 7. Ergonomics and Safety

### Operation:

- Ergonomically designed for comfortable sitting or standing operation.

### Safety Features:

- Overload protection to prevent motor damage.
- Emergency stop button for quick shutdown.

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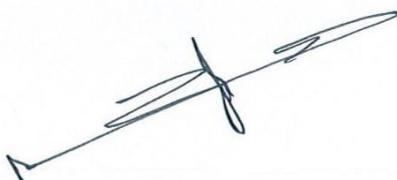
## 8. Maintenance

### Ease of Maintenance:

- Simple cleaning and lubrication points.
- Modular design for easy replacement of components.

### Durability:

- Built to withstand frequent use in a studio or lab environment.



#### 4. Weaving Mechanism

- **Shedding:**
  - Semi-automatic Dobby shedding system with lever or motorized operation.
- **Picking:**
  - Side lever or cam-driven picking mechanism for precise weft insertion.
- **Beating:**
  - Manual or motor-assisted beat-up mechanism with an adjustable reed position.
- **Take-up Motion:**
  - Semi-automatic take-up roller for consistent fabric winding.
  - Adjustable pick density to control fabric structure.

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#### 5. Ergonomics and Safety

- **Operation:**
  - Ergonomically placed controls for ease of use.
  - Adjustable working height to suit operators of different statures.
- **Safety Features:**
  - Protective covers for moving parts.
  - Emergency stop button for immediate shutdown.

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#### 8. Maintenance

- **Ease of Maintenance:**
  - Modular design for easy replacement of parts.
  - Lubrication points for smooth operation and reduced wear.
- **Durability:**
  - Designed to withstand frequent use in a lab setting.

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#### 9. Warranty and Support

- **Warranty:**
  - Minimum 1-year warranty covering manufacturing defects and performance issues.
- **After-Sales Support:**
  - Vendor to provide servicing and spare parts for at least 5 years.

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#### 10. Training and Documentation

- **Training:**
  - On-site or remote training for lab staff and students.
- **Documentation:**
  - Comprehensive user manual, maintenance guide, and troubleshooting instructions.

#### ✓ 11. Specifications for Pottery Wheel (Sr. # 13, Item # 6)

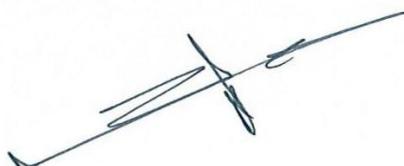
**Purpose:** To provide a durable, efficient, and user-friendly motorized pottery wheel suitable for educational and experimental use in a studio or laboratory environment. The wheel should support the creation of a variety of ceramic objects, from small to medium-sized pieces, with precise speed control and smooth operation.

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##### 1. General Specifications

- **Type:** Motorized pottery wheel with adjustable speed control.
- **Wheel Head Diameter:** 12 inches (standard size for general pottery tasks).
- **Working Surface:**
  - Material: Cast aluminum or stainless steel for durability and corrosion resistance.
  - Flat, smooth surface with concentric circles for centering clay.

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### 11. Knitting Carriage

- **Design:**
  - Lightweight yet durable carriage made of high-grade aluminum or steel for smooth operation.
  - Ergonomically designed handle for effortless manual control.
- **Functionality:**
  - The carriage should facilitate forward and backward movement with precision to create uniform stitches.
  - Adjustable stitch cam levers for customizing stitch density and texture.
  - Integrated system for yarn feeding and tension control to avoid yarn breakage or uneven stitches.
- **Compatibility:**
  - Capable of accommodating various yarn types and thicknesses, especially fine-gauge yarns suitable for 12G.
  - Designed for seamless interaction with dual feeders, enabling simultaneous use of multiple yarns or colors.

### 10. Specifications for Lab Scale Semi-Automatic Sample Loom (Sr. # 13, Item # 4)

**Purpose:** To provide a robust and precise semi-automatic loom for laboratory use, capable of producing sample fabrics for educational, experimental, and research purposes. The loom should support a variety of yarn types and fabric structures, ensuring flexibility and ease of operation in a lab setting.

#### 1. General Specifications

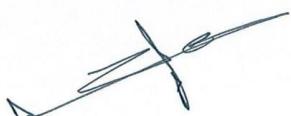
- **Type:** Semi-automatic loom.
- **Width:**
  - Reed width: 24-36 inches (customizable based on lab requirements).
  - Effective weaving width: Minimum 30 inches.
- **Loom Capacity:**
  - Suitable for plain weave, twill, satin, and other basic weave structures.
- **Automation:**
  - Semi-automatic functionality for basic shedding, picking, and beat-up motions.
  - Motorized operation for enhanced productivity with manual override.

#### 2. Material and Build

- **Frame:**
  - Material: Heavy-duty cast iron or mild steel (MS).
  - Finish: Powder-coated or painted to resist corrosion and ensure durability.
- **Reed:**
  - Material: Stainless steel or high-carbon steel.
  - Dents: 10-30 dents per inch (customizable based on fabric requirements).
- **Heald Frames:**
  - Material: Lightweight and durable aluminum or steel.
  - Capacity: Minimum 10 heald frames.

#### 3. Motor and Drive System

- **Motor:**
  - Single-phase motor, 220V, 50Hz, with a power rating of 0.5-1 HP.
  - Speed: Adjustable motor speed for precise control over the weaving process.
- **Drive System:**
  - Belt-driven or gear-driven mechanism for smooth and reliable operation.
  - Automatic stopping mechanism for yarn break detection (warp or weft).



## 10-Serial Specifications

Tender # G1-25/04-01 (Sr. #10)

### Specifications for 15 Meeting Tables and 25 Revolving Chairs for FBS Communication Lab

To provide the durable, functional and aesthetically pleasing 15 meeting tables, and 25 revolving chairs (plastic-imported).

#### General dimensions of each chair:

High back, double ply revolving chair, black color, Width: 27 inch, Depth: 21 inch, Seat Height: 29 inch, Steel/plastic frame, Weight capacity: 90 - 100 kg, Ball-bearing or roller-bearing, smooth and quite revolving mechanism.

#### General dimensions of each table:

The table should be manufactured wood, natural solid wood or a UV printed glass top with an MS powder coated structure. General dimensions of each table: Width: 4 feet, Length: 6 feet, Height: Standard 2.5 feet, designed to comfortably accommodate 30 chairs.

H.O.D 

Technical Specifications (Desktop Computer) Serial No. 11		
	Description	Qty
Type	<b>Desktop System should be Business Series Tower PC</b>	03
Processor	Processor 14th Generation Intel® Core™ i7 processor up to 5.30 GHz or higher	
Chipset	Intel Q Series Chipset	
Graphic Card	Built in graphic card	
Memory	Minimum 16 GB DDR4 or Higher if specified by manufacturer	
Storage	Minimum 512 GB Solid State Disk (SSD)	
Power Supply	Compatible designed by the manufacturer	
Ports /Slots	Minimum 9 USB 3.2, 2.0, & Type-C Ports or more Built-in Input/output Audio Ports Minimum 1x HDMI & 1x Display Port or higher Minimum 1x 10/100/1000 Gigabit Ethernet Port WLAN =yes	
Keyboard	USB Wired Keyboard of similar brand as packed by manufacturer	
Mouse	USB Wired Optical Mouse of similar brand as packed by manufacturer	
Monitoring Device	Minimum 19.5" LED compatible with quoted PC in similar brand	
Warranty	Minimum 1 Year Warranty	
Terms and Conditions	<ul style="list-style-type: none"> <li>• All the Component should be factory integrated. No local addition/upgradation shall be accepted and same shall be verified by the serial number and may verified from respective manufacturer.</li> <li>• Computer must be branded (like renowned international brands HP / Dell/Lenovo).</li> <li>• Locally assembled / configured / altered computers shall not be accepted</li> <li>• Vendor must provide manufacturer authorization letter (MAL).</li> </ul>	



Muhammad Shahzad Arshad  
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Abid Hussain  
Network Administrator  
National Textile University  
Faisalabad

**Technical Specifications  
(LaserJet Black & White Printer)  
Serial No. 12**

S/ No.	Description	Qty
1	Functions: Print	
2	Print speed black (A4): 40 ppm or higher	
3	Duty cycle (A4, letter): minimum 75,000 - 80,000 pages	
4	Print quality black (best): Fine Lines (1200 x 1200 dpi) or better	
5	Print technology: Laser	
6	Connectivity, standard: Minimum 1 Hi-Speed USB 2.0; 1 host USB at rear side; Gigabit Ethernet 10/100/1000BASE-T network; 802.3az (EEE)	
7	Mobile printing capability: Yes	
8	Network capabilities: Yes	
9	Display: 2-line backlit LCD graphic display or as manufactured in default by manufacturer	
10	Processor speed: Minimum 1200 MHz or higher	01
11	Maximum Memory: Minimum 200-256 MB or higher	
12	Paper handling input, standard: Tray 1: Minimum 100-sheet multipurpose, Tray 2 Minimum 250-sheet input or higher	
13	Paper handling output, standard: 150-sheet output bin	
14	Finished output handling: Sheetfed	
Warranty	Minimum 1 Year Warranty	
Terms and Conditions	The product should be brand new, and all the Component should be factory integrated and shall be verified by the serial number and may be verified from respective manufacturer. Vendor must provide manufacturer authorization letter (MAL).	



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## 14-Serial Specifications

Tender # G-25/04-01 Sr. # 14

### Technical Specification Desktop Computer System

(Required Quantity = 16 Nos.)

Component	Specification / Description
Processor	Intel® Core™ i7 processor (14th Generation) up to 5.30 GHz or higher
Chipset	Intel Q-Series Chipset
Graphics	Built-in Intel® Graphics
Memory	Minimum 16GB DDR4 as compatible designed by Manufacturer
Storage	Minimum 512 GB Solid State Disk (SSD)
Power Supply	Compatible, as designed by the Manufacturer
Slots	Minimum 9 USB 3.2, 2.0, and Type-C Ports or more
Audio Ports	Built-in Input/output Audio Ports
Video Ports	Minimum 1x HDMI & 1x Display Port
Network Port	Minimum 1x 10/100/1000 Gigabit Ethernet Port
Keyboard	USB Wired Keyboard of similar brand as packed by manufacturer
Mouse	USB Wired Optical Mouse of similar brand as packed by manufacturer
Monitor	Minimum 19.5" LED compatible with quoted PC in similar brand
Warranty	Minimum 1 Year warranty or more if offered by the Manufacturer

### Additional Requirements

1. All components should be factory integrated. No local addition or upgradation shall be accepted. Verification shall be done through serial numbers and confirmation from the respective manufacturer.
2. The computer must be branded (renowned international brands like HP, Dell, Lenovo etc.), Locally assembled, configured, or altered computers shall not be accepted.
3. Vendor shall provide a Manufacturer Authorization Letter (MAL).

  
Incharge IT Department  
National Textile University  
Faisalabad

# 15-Serial Specificati

Tender # G7-25/04-01 Sr. # 15

## Technical Specification 2 (Two) TON Split Air Conditioner Unit

S/No	Item Name / Part Name / Product Capacity	Detail and description	QTY
1	Cooling Capacity	2 (Two) Ton Split Air Conditioner Unit (DC Invertor H&C)	03
2	Evaporator	Pipe must be copper material	
3	Condenser	Pipe must be copper material	
4	Compressor	Imported /local as per broacher / quoted model available at manufacturer website / Technical document	
5	Accessory	Must be packed with. Copper pipe for Suction & Discharge, Drain Flexible pipe, Electric Cables for indoor to outdoor	
6	Warranty	Compressor warranty minimum 3 year / acceptable more than three years as offered by manufacturer Parts warranty minimum 1 year / acceptable more than one year as offered by manufacturer	
7	Refrigerant	Must be R-410	
8	Operational Status	Must be operational on site	

*Ram N. Mood*  
Incharge Chiller

*[Signature]*  
Deputy Director (P&D)

Tender # G-25/04-01 Sr. # 15

**Technical Specification 1.5 (One and Half) TON Split Air Conditioner Unit**

S/No	Item Name / Part Name / Product Capacity	Detail and description	QTY
1	Cooling Capacity	1.5 (One and Half) Ton Split Air Conditioner Unit (DC Invertor H&C)	02
2	Evaporator	Pipe must be copper material	
3	Condenser	Pipe must be copper material	
4	Compressor	Imported /local as per broacher / quoted model available at manufacturer website / Technical document	
5	Accessory	Must be packed with. Copper pipe for Suction & Discharge, Drain Flexible pipe, Electric Cables for indoor to outdoor	
6	Warranty	Compressor warranty minimum 3 year / acceptable more than three years as offered by manufacturer Parts warranty minimum 1 year / acceptable more than one year as offered by manufacturer	
7	Refrigerant	Must be R-410	
8	Operational Status	Must be operational on site	

Ram Mood  
26.3.25  
Incharge Chiller

Deputy Director (P&D)

for  
R.M

Tender # G-25/04-01 Sr. #15

**Technical Specification 4 (Four) TON Split Air Conditioner Unit**

S/No	Item Name / Part Name / Product Capacity	Detail and description	QTY
1	Cooling Capacity	4 (Four) Ton Split Air Conditioner Unit (DC Inverter)	01
2	Evaporator	Pipe must be copper material	
3	Condenser	Pipe must be copper material	
4	Compressor	Imported /local as per brochure / quoted model available at manufacturer website / Technical document	
5	Accessory	Must be packed with. Copper pipe for Suction & Discharge, Drain Flexible pipe, Electric Cables for indoor to outdoor	
6	Warranty	Compressor warranty minimum 3 year / acceptable more than three years as offered by manufacturer Parts warranty minimum 1 year / acceptable more than one year as offered by manufacturer	
7	Refrigerant	Must be R-410/R-22	
8	Operational Status	Must be operational on site	

R. M. M. Mood  
26.3.15  
Incharge Chiller

Deputy Director (P&D)