



## INVITATION LETTER

Package Code: TEQIP-III/2019/JK/gcej/180  
Package Name: TEQIP-III/GCET/Networking

Current Date: 06-Nov-2019  
Method: Shopping Goods

To,

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Sub: INVITATION LETTER FOR TEQIP-III/GCET/Networking

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Item Name	Specifications	Quantity	Place of Delivery	Installation Requirement (if any)
1	Campus Networking	(Detailed Specifications as per Annexure-I)	1	Principal Govt. College of Engineering & Technology, Chak Bhalwal, Jammu-181122 (J&K)	YES

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

### 3. Quotation

- 3.1 The contract shall be for the full quantity as described above.
- 3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.
- 3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.
- 3.4 Applicable taxes shall be quoted separately for all items.
- 3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.



- 3.6 The Prices should be quoted in Indian Rupees only.
4. Each bidder shall submit only one quotation.
  5. Quotation shall remain valid for a period not less than **55**days after the last date of quotation submission.
  6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which
    - 6.1 are properly signed; and
    - 6.2 Confirm to the terms and conditions, and specifications.
  7. The Quotations would be evaluated for all items together.
  8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.
    - 8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.
    - 8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be Incorporated in the purchase order.
  9. Payment shall be made in Indian Rupees as follows:

**Supply, Installation and Inspection report - 100% of total cost**

10. **Liquidated Damages (L.D):**

If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 0.1% of the value of the order per day subject to a maximum of 10% of the total order value. The L.D charges can be increased in case of gross violation of the Purchase Order terms as decided by the Principal of the Institute.
11. All supplied items are under warranty of **60**months from the date of successful acceptance of items and AMC/Others is **NA**.
12. You are requested to provide your offer latest by **16:00** hours on **04-Dec-2019**.
13. Detailed specifications of the items are at Annexure I.
14. Training Clause (if any) **YES**
15. Testing/Installation Clause (if any) **YES**
16. **Performance Security:** The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any Nationalized /Commercial bank for an amount of 10% of the Invoice value at the time of delivery/ satisfactory report of the equipment and should be kept valid for a period of warranty period.



17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
18. Sealed quotation to be submitted/ delivered at the address mentioned below, **Government College of Engineering and Technology, Chak Bhalwal, Jammu.**
19. **The offer/bid should be submitted in two bid systems (i.e.) Technical bid and Financial bid as per the format mentioned in Annexure- I, II & III.**
20. **Technical Bid :**  
The technical bid comprising of following documents should be sealed in envelope “A” mentioning Technical Bid on top of the envelope. The envelope must mention package no. and name.
- The Technical Bid should be submitted as per the bid format. (Annexure-I & II)
  - A compliance list against the technical specifications as per Annexure-I should be provided.
  - Proof of Registration of the bidder.
  - Copies of PAN Card and GST registration no.
  - Signed copy of the tender document, with company seal, agreeing to the terms & conditions must be submitted.
- All documentary proof must be listed on the letterhead of the company. This part of bid should not contain any “Price information”.**
21. **Financial Bid :**
- Financial bid should indicate item wise price for the items mentioned in the technical bid as per the format. (Annexure-III)
  - The price quoted should be F.O.R GCET Jammu.
  - All duties and other levies payable by the supplier under the contract shall be included in the unit price.
  - The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
  - The Prices should be quoted in Indian Rupees only.
  - The Financial bid should be sealed in envelope “B” mentioning Financial Bid on top of the envelope. The envelope must mention package no. and name.
- Both the envelopes (containing Technical Bid and Financial Bid) should be packed in a big envelope and should subscribe the Shopping/Package No. and Name.**
23. **Opening of Bids:**
- The technical bid will be opened first and it will be examined by a technical committee (as per specification and requirement mentioned in the NIQ).
  - The financial offer/bid will be opened only for the technically qualified bidders/vendors as decided by the technical committee, and will be opened subsequently for further price comparison.
24. **Tenderer or his/her authorized representative (with proper authorization letter for opening of technical bids and also for opening of price bids) may choose to be present at the time of opening of Technical bids/Price Bids.**
25. **The Institute reserves the right to reject any bid not fulfilling the eligibility criteria.**
26. **Supply of Items:** Free of cost at GCET Jammu by the vendor.



## 27. IMPORTANT:

- i. A bid submitted with false information will not only be rejected but also the OEM/vendor will be debarred from participation in future tendering process.
- ii. Each bidder shall submit only one quotation.
- iii. The tenderer should visit the campus before submitting the quotation and quote the final price after deducting the existing infrastructure in place.
- iv. In case of any dispute, the decision of the Principal of this Institute shall be final and binding on the bidders.
- v. In case the due date for submission of the tender happens to be a holiday, the same will be accepted on the next working day.
- vi. The Authority of GCET Jammu reserves the right to reject any or the entire tender bids received without assigning any reason thereof at any stage and in case of any conflict (Technical Bids Stage etc.), the version of GCET shall prevail.
- vii. The technical bid will be evaluated first and price bids will be opened in respect of those OEMs/Vendors, who are found technically qualified after evaluation of Technical bids.
- viii. Bidder should submit the tender document, duly signed and stamped on every page in token of accepted all the terms and conditions of the tender.
- ix. The institute does not bind itself to offer any explanation to those bidders whose technical bids have not been found acceptable by the technical evaluation committee of the institution.
- x. The bids (Technical & Financial) once submitted will be the property of the institute.
- xi. The tenderer should visit the campus before submitting the quotation and quote the final price after deducting the existing infrastructure in place.
- xii. A Pre-Bid meeting should be held on **20.11.2019 at 1:00 P.M in the Principal Office, GCET, Jammu.**
- xiii. The tenderer should give the warranty/free maintenance for a period of five years after the successful completion of the project.
- xiv. The tenderer should train the manpower of the college after successful installation of the networking project.
- xv. The tenderer should have executed the similar type of networking project of similar amount in govt. organizations/ educational institutes with successful completion certificate of the work within last 5 years.
- xvi. Tenderer should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed.
- xvii. An undertaking from the OEM is required stating that they would facilitate the tenderer on a regular basis with technology/product updates and extend support for the warranty as well.
- xviii. The Bidder has not been blacklisted by Central Govt. /State Govt./PSUs/Other Govt. Agency. (Bidder should submit a declaration to this effect).
- xix. OEM should be Nationally/Internationally reputed Company.
- xx. Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between tenderer specification and supporting documents etc. may lead to rejection of the bid without any further communication.
- xxi. All the mentioned requirements are tentative. Actual requirement of networking project will be frozen before the placement of order to the successful bidder.
- xxii. Onsite Installation of the equipment will be done by the Tenderer and will get the satisfactory installation certificate by the concerned department.
- xxiii. On Site support to be provided by the Bidder or the OEM. Declaration for the same to be submitted along with the bid.
- xxiv. Prices should be inclusive of all licenses for the functionality as per the specification from day one.
- xxv. Attach literatures and datasheets of all the quoted products.

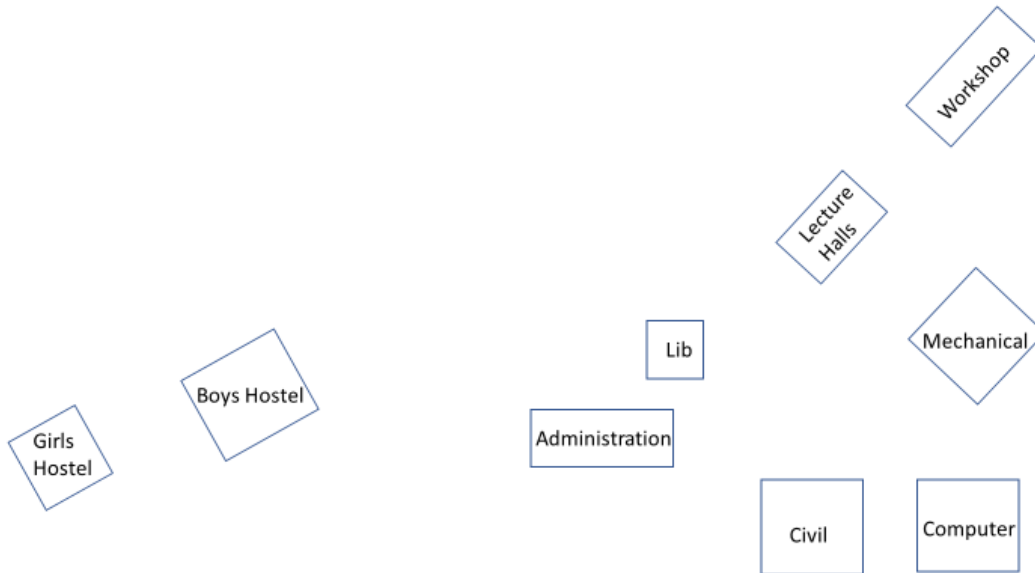


- xxvi. The tenderer must submit Income tax clearance certificate from the concerned IT circle.
- xxvii. The tenderer must submit a report on financial standing and should have an annual turnover of Rs. 3,00,00,000/- (Rupees Three crores).
- xxviii. Declaration and Authorisation form to be attached with Tender as per Annexure IV and Annexure-V.
- xxix. The vendor may be asked to give the demonstration of the equipment quoted (if required) before issuing of purchase order.

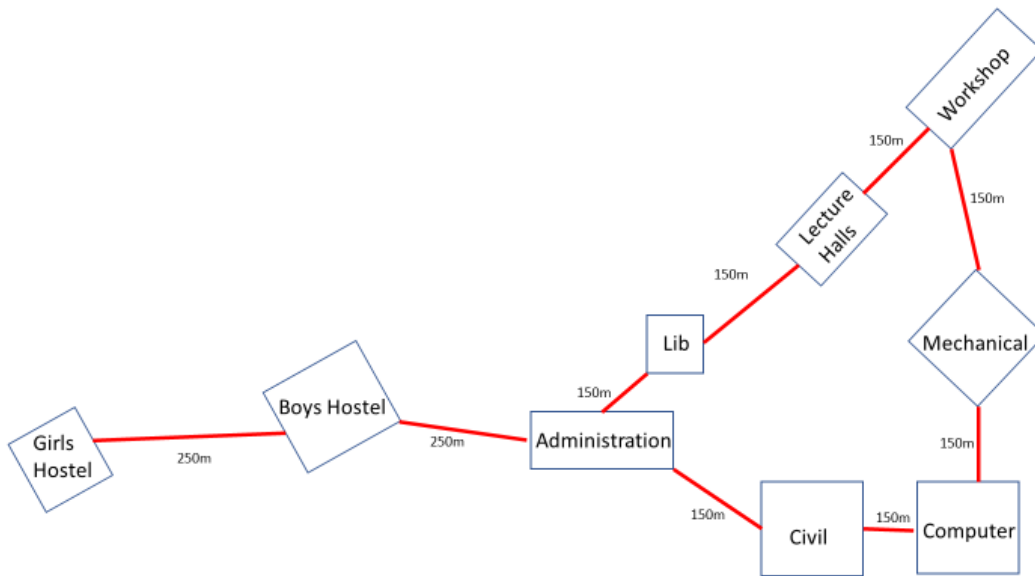
**28. We look forward to receiving your quotation and thank you for your interest in this project.**



**1. Blockwise Layout of GCET, Chak Bhalwal, Jammu:**



**1. Complete Layout of Campus:**

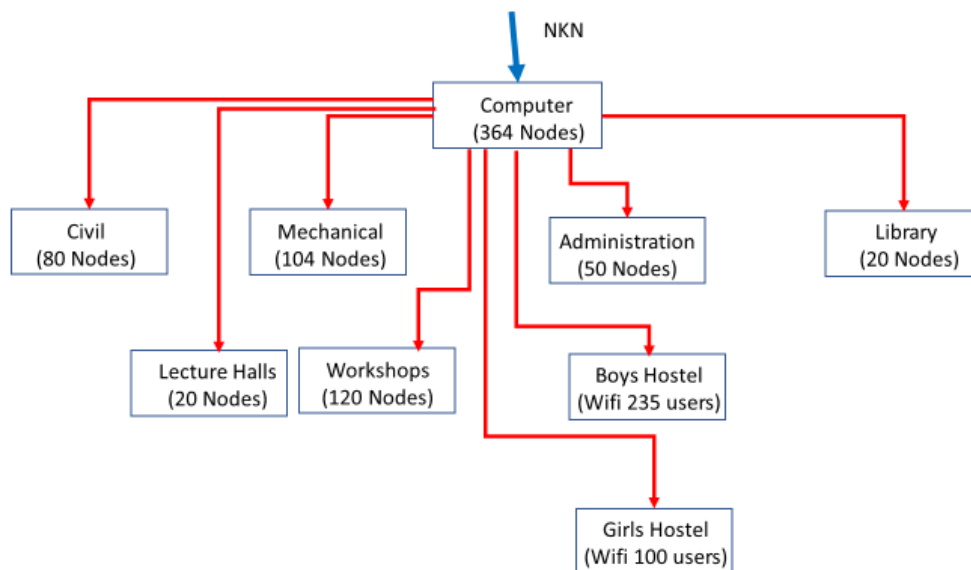


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**2. Networking connectivity between the Block:**

The logical Connectivity of the LAN is being proposed as under.

**GCET Campus LAN Logical Connectivity**



### 3. Distribution of Passive Components (Copper)\*:

Building/ Department	Floor	Users (8pprox..)	15U Rack	9U Rack	305m Cable Box	Information Outlets	Patch Panels	Patch cables Rack Side	Patch cables user side
Computer	Ground	205	1	8	26	205	10	205	215
	First	159	1	6	21	159	8	159	167
Civil	Ground	45	1	1	7	45	2	45	47
	First	35		1	6	35	2	35	36
Mechanical	Ground	34	1		6	34	2	34	35
	First	70		3	11	70	4	70	75
Administration	Ground	30	1		5	30	2	30	31
	First	20		1	3	20	1	20	20
Library section	Ground	10	1		2	10	1	10	10
	First	10			2	10		10	10
Workshop section	Ground	120	1	3	20	120	6	120	125
Lecture Halls	Ground	20	1	1	5	20	2	20	21
Boys Hostel		235	1	2	4	20	4	20	22
Girls Hostel		100	1	1	2	10	3	10	11
<b>Grand Total</b>		<b>1093</b>	<b>10</b>	<b>27</b>	<b>120</b>	<b>788</b>	<b>47</b>	<b>788</b>	<b>825</b>

### 4. Distribution of Passive Components(Fiber Cable)\*:

S. No.	FO Cable SM 48 Cores		Appox. Length (m)
	From	To	
1	Computer Engineering	Civil Engineering	150
2	Computer Engineering	Mechanical Engineering	150
3	Mechanical Engineering	Workshops	150
4	Workshops	Lecture Halls	150
5	Lecture Halls	Library	150
6	Library	Administration	150
7	Civil Engineering	Administration	150
8	Administration	Boys Hostel	250
9	Boys Hostel	Girls Hostel	250
<b>Total</b>			<b>1550</b>





**5. Distribution of Passive Components (Fiber)\*:**

<b>Distribution of Fiber Components</b>		
<b>Building</b>	<b>24 port FO Panels loaded with SC/LC Adapters &amp; SM SC/LC Pigtails</b>	<b>FO Patch Cords SM 3m SC/LC-LC</b>
Computer	4	10
Civil	4	1
Mechanical	4	1
Administration	4	1
Library	4	1
Lecture Halls	4	1
Workshops	4	1
Boys Hostel	4	1
Girls Hostel	4	1
<b>Total</b>	<b>36</b>	<b>18</b>

**6. Switches, Wifi Access Points & Accessories\*:**

<b>Building</b>	<b>Floor</b>	<b>Users</b>	<b>L3 24 port 10G SFP+ Switch</b>	<b>L2 24 Port Gigabit Switch+ 2 SFP+</b>	<b>L2 24 Port Gigabit Switch</b>	<b>L2 24 Port PoE Gigabit Switch</b>	<b>Indoor Wifi Aps</b>	<b>10G LR Module</b>
Computer	Ground	205	2	1	10			10
	First	159			8			
Civil	Ground	45		1	1			1
	First	35			2			
Mechanical	Ground	34		1	1			1
	First	70			4			
Administration	Ground	30		1	1			1
	First	20			1			
Library	Ground	10		1				1
	First	10						
Workshop	Ground	120		1	5			1
Lecture Halls	Ground	20		1				1
Boys Hostel		235		1		3	20	1
Girls Hostel		100		1		2	10	1
<b>Total</b>		<b>1093</b>	<b>2</b>	<b>9</b>	<b>33</b>	<b>5</b>	<b>30</b>	<b>18</b>



**7. Detailed List of Material to be used \*:**

S.NO	Component	DESCRIPTION	UOM	QTY
1	Core Switch	Supply, Installation, configuration & Commissioning of 24 port SFP+ slots Layer 3 switch	Nos	2
2	Distribution Switch	Supply, Installation, configuration & Commissioning of 24 Port Gigabit Layer 2 Switch with 2 SFP+ slots	Nos	10
3	Edge Switch	Supply Installation, configuration & Commissioning of 24 Port Gigabit Layer 2 Switch	Nos	35
4	PoE Edge Switch	Supply Installation, configuration & Commissioning of 24 Port Gigabit Layer 2 Switch	Nos	5
5	10G LR Modules	Supply & Installation of 10G LR, Single-mode fiber, 10km module of the same make as of switches.	Nos	18
6	Wifi Access Points	Supply & Installation of Indoor 802.11ac Wifi Access points of the same make as switches	Nos.	30
7	CAT6 UTP Cable	Supply & Laying of Solid Cable Cat 6 UTP 4 pair – 305m	Box	120
8	CAT6 Patch Panel	Supply, Installation & Termination of Patch Panel Cat 6 Keystone - 24 Port Loaded	No	47
9	Information Outlets	Supply & Installation of Jack Cat 6 Keystone UTP	No	788
10	Wall Plates	Supply & Installation of Universal Face Plate – Single	No	788
11	Surface Mount Box	Supply & Installation of Universal Back Box for Single, Square	No	788
12	Patch cables	Supply & Installation of Patch Cord Cat 6 UTP 1m-Rack Side	No	825
13	Patch cables	Supply & Installation of Patch Cord Cat 6 UTP 3m-User Side	No	788
14	OFC	Supply & Underground/Over the walls laying of O. F. Cable 48 Core Outdoor Armored SM	Mtrs	1550
15	FO Panels loaded	Supply & Installation of 24 Port FO Panels Rack Mount loaded with SC/LC Duplex type Adapters& SC/LC SM Pigtailed.	Nos	36
16	Fiber Patch cords	Supply & Installation of PATCH CORD SC/LC-LC SM DUPLEX LENGTH- 3m	Nos	25
17	Network Enclosures	Supply, Installation & Dressing of 9U Wall Mount Rack with 1U Cable Managerx2, 1x5A Skts PDB and Mounting Hardware.	No	27
18	Network Enclosures	Supply, Installation & Dressing of 15U Wall Mount Rack with 1U Cable Managerx2, 1x5A Skts PDB and Mounting Hardware.	No	10
19	PVC Duct/Conduit	Supply & over the walls/Ceiling laying of 1”/1.5” PVC Conduit with accessories	Mtr	9000
20	HDPE Conduit	Supply & Underground/Over the walls laying of 40/33 mm HDPE Lubricated Pipe	Mtrs	1550

**Note:** The abovementioned list\*(Sr. No. 4,5,6,7 and 8) has been prepared as per the requirement of the campus networking project after the survey conducted by committee. All the mentioned requirements are tentative. Actual requirement of networking project will be frozen before the placement of order to the successful bidder.



## 8. Technical Specifications of Active Components

Following are the technical specification of Switches, Access Points & UTM. OEMs should be under leader's category of Gartner's Magic Quadrant for Wired and Wireless LAN Access Infrastructures for the year 2018 & UTM's respectively and should have its support Centre in India.

### A. Core Switch-2 No.

S.No.	24-Port SFP+ 10-Gigabit Stackable Managed Layer-3 Switch		Compliance (Yes/No)
1	<b>Interfaces</b>	24 Port SFP+ 10-Gigabit Stackable Managed Switch Stacking/Virtual chassis	
2	<b>Performance Summary</b>	Switching fabric: 480Gbps Line-rate (non-blocking fabric) or more Throughput: 356Mpps or more Address database size: 16,000 MAC addresses or more VLAN ID Range: 1 – 4096 Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) or Equivalent Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation supports 1K multicast groups (source-specific multicasting is also supported)	
3	<b>L2 Services</b>	Spanning Tree Protocol (STP)/RSTP/MSTP VLAN and Voice VLAN Q-in-Q VLAN or 802.1 Q Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP) or Equivalent Unidirectional Link Detection (UDLD) Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2 Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping IGMP Querier	
4	<b>L3 Services</b>	Wire-speed routing of Ipv4 packets Up to 2K (2048) static routes and up to 256 IP interfaces Up to 2K (2048) static routes and up to 128 Ipv6 interfaces Static Routing- EIGRP/OSPF or equivalent Classless Inter-Domain Routing (CIDR) Configuration of layer 3 interface on physical port, LAG, VLAN interface or Loopback interface Relay of DHCP traffic across IP domains Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets Switch functions as an Ipv4 DHCP Server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options	
5	<b>Security</b>	Secure Shell (SSH) Protocol & Secure Sockets Layer Secure Sockets Layer (SSL) 802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment Should have security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port. STP Root Guard DHCP snooping IP Source Guard (IPSG) Dynamic ARP Inspection (DAI) IP/Mac/Port Binding (IPMB) Layer 2 isolation Private VLAN Edge (PVE) with community VLAN	

S.No.	24-Port SFP+ 10-Gigabit Stackable Managed Layer-3 Switch		Compliance (Yes/No)
		The ability to lock Source MAC addresses to ports and limits the number of learned MAC addresses.	
		Supports RADIUS and TACACS authentication.	
		Broadcast, multicast, and unknown unicast	
		RADIUS accounting	
		DoS prevention	
		Support for up to 512 ACL rules	
6.	Quality of Service (QoS)	4 hardware queues	
		Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)	
		Port based; 802.1p VLAN priority based; Ipv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS.	
		Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.	
		A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.	
7.	Ipv6	Ipv6 host mode.	
		Ipv6 neighbor and router discovery (ND) Ipv6 stateless address auto-configuration	
		Path maximum transmission unit (MTU) discovery	
		Duplicate address detection (DAD) ICMP version 6	
8.	LEDs	System, Link/Act, Speed, LED power saving option	
9	Certifications	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A	

**B. Distribution Switches-10 Nos.**

S.No.	Technical Specifications		Compliance (Yes/No)
<b>24-port 10/100/1000 Base-T L2+ Managed Switch</b>			
1	Interfaces	24 # 10/100/1000 Base-T RJ-45 auto-sensing ports.	
		Switch should have 2*10G SFP+ uplink ports.	
		Stacking/ Virtual Chassis	
2	Performance Summary	Switching fabric: 88 Gbps Line-rate (non-blocking fabric)	
		Throughput: 65 Mpps	
		Address database size: 64 MAC addresses	
		VLAN ID Range: 1 – 4096	
		Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) or Equivalent Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation	
supports 1K multicast groups (source-specific multicasting is also supported)			
3	L2 Services	Spanning Tree Protocol (STP)/MSTP/RSTP	
		VLAN and Voice VLAN	
		Q-in-Q VLAN Or 802.1Q	
		Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP) or Equivalent	
		Unidirectional Link Detection (UDLD)	
		Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2	
		Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping	
		IGMP Querier	

S.No.	Technical Specifications	Compliance (Yes/No)	
	<b>24-port 10/100/1000 Base-T L2+ Managed Switch</b>		
4	<b>L3 Services</b>	Classless Inter-Domain Routing (CIDR)	
		Configuration of layer 3 interface on physical port, LAG, VLAN interface or Loopback interface	
		Relay of DHCP traffic across IP domains	
		Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets	
		Switch functions as an Ipv4 DHCP Server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options	
5	<b>Security</b>	Secure Shell (SSH) Protocol & Secure Sockets Layer	
		Secure Sockets Layer (SSL)	
		802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment	
		Should have security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port.	
		STP Root Guard	
		DHCP snooping	
		IP Source Guard (IPSG)	
		Dynamic ARP Inspection (DAI)	
		IP/Mac/Port Binding (IPMB)	
		Layer 2 isolation Private VLAN Edge (PVE) with community VLAN	
		The ability to lock Source MAC addresses to ports and limits the number of learned MAC addresses.	
		Supports RADIUS and TACACS authentication.	
		Broadcast, multicast, and unknown unicast	
		RADIUS accounting	
DoS prevention			
Support for up to 512 ACL rules			
6	<b>Quality of Service (QoS)</b>	4 hardware queues	
		Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)	
		Port based; 802.1p VLAN priority based; Ipv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS.	
		Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.	
		A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.	
7	<b>Ipv6</b>	Ipv6 host mode	
		Ipv6 over Ethernet Dual Ipv6/Ipv4 stack	
		Ipv6 neighbor and router discovery (ND) Ipv6 stateless address auto-configuration	
		Path maximum transmission unit (MTU) discovery	
		Duplicate address detection (DAD) ICMP version 6	
8	<b>LEDs</b>	System, Link/Act, Speed, LED power saving option	
9	<b>Certifications</b>	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A	

**C. Edge Switches-30 Nos.**

S.No.	Technical Specifications	Compliance (Yes/No)
	<b>24-port 10/100/1000 Base-T L2 Managed Switch</b>	
1	<b>Interfaces</b> 24 # 10/100/1000 Base-T 2 Gigabit Ethernet combo	
2	<b>Performance Summary</b> Switching fabric: 52Gbps Line-rate (non-blocking fabric) or more Throughput: 38.5Mpps or more Address database size: 16,000 MAC addresses VLAN ID Range: 1 – 4096 Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) or equivalent Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation supports 1K multicast groups (source-specific multicasting is also supported)	
3	<b>L2 Services</b> Spanning Tree Protocol (STP)/MSTP/RSTP VLAN and Voice VLAN Multicast TV VLAN Q-in-Q VLAN or 802.1 Q Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP) or Equivalent Unidirectional Link Detection (UDLD) Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2 Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping IGMP Querier	
4	<b>L3 Services</b> Wirespeed routing of Ipv4 packets Up to 512 static routes and up to 128 IP interfaces Configuration of layer 3 interface on physical port, LAG, VLAN interface or Loopback interface Relay of DHCP traffic across IP domains Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets	
5	<b>Security</b> Secure Shell (SSH) Protocol & Secure Sockets Layer Secure Sockets Layer (SSL) 802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment Should have security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port. STP Root Guard DHCP snooping IP Source Guard (IPSG) Dynamic ARP Inspection (DAI) IP/Mac/Port Binding (IPMB)	

S.No.	Technical Specifications	Compliance (Yes/No)
	<b>24-port 10/100/1000 Base-T L2 Managed Switch</b>	
	Layer 2 isolation Private VLAN Edge (PVE) with community VLAN	
	The ability to lock Source MAC addresses to ports and limits the number of learned MAC addresses.	
	Supports RADIUS and TACACS authentication.	
	Broadcast, multicast, and unknown unicast	
	RADIUS accounting	
	DoS prevention	
	Support for up to 512 ACL rules	
6	<b>Quality of Service (QoS)</b>	
	4 hardware queues	
	Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)	
	Port based; 802.1p VLAN priority based; Ipv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS.	
	Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.	
	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.	
7	<b>Ipv6</b>	
	Ipv6 host mode	
	Ipv6 over Ethernet Dual Ipv6/Ipv4 stack	
	Ipv6 neighbor and router discovery (ND) Ipv6 stateless address auto-configuration	
	Path maximum transmission unit (MTU) discovery	
	Duplicate address detection (DAD) ICMP version 6	
8	<b>LEDs</b>	
	System, Link/Act, Speed, LED power saving option	
9	<b>Certifications</b>	
	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A	

#### **D. PoE Edge Switches-5 Nos.**

S.No.	Technical Specifications	Compliance (Yes/No)
	<b>24-port 10/100/1000 Base-T L2 Managed Switch</b>	
1	<b>Interfaces</b>	
	24 # 10/100/1000 Base-T PoE/PoE + ports	
	2 Gigabit Ethernet combo	
2.	<b>Performance Summary</b>	
	Switching fabric: 52Gbps Line-rate (non-blocking fabric) or more	
	Throughput: 38.5Mpps or more	
	Address database size: 16,000 MAC addresses	
	VLAN ID Range: 1 – 4096	
	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) or equivalent Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation	
3.	<b>L2 Services</b>	
	Spanning Tree Protocol (STP)/MSTP/RSTP	
	VLAN and Voice VLAN	
	Q-in-Q VLAN or 802.1 Q	
	Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP) or Equivalent	

S.No.	Technical Specifications	Compliance (Yes/No)
	<b>24-port 10/100/1000 Base-T L2 Managed Switch</b>	
	Unidirectional Link Detection (UDLD)	
	Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2	
	Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping	
	IGMP Querier	
4.	<b>L3 Services</b>	
	Wirespeed routing of Ipv4 packets Up to 512 static routes and up to 128 IP interfaces	
	Configuration of layer 3 interface on physical port, LAG, VLAN interface or Loopback interface	
	Relay of DHCP traffic across IP domains	
	Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets	
5.	<b>Security</b>	
	Secure Shell (SSH) Protocol & Secure Sockets Layer	
	Secure Sockets Layer (SSL)	
	802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment	
	Should have security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port.	
	STP Root Guard	
	DHCP snooping	
	IP Source Guard (IPSG)	
	Dynamic ARP Inspection (DAI)	
	IP/Mac/Port Binding (IPMB)	
	Layer 2 isolation Private VLAN Edge (PVE) with community VLAN	
	The ability to lock Source MAC addresses to ports and limits the number of learned MAC addresses.	
	Supports RADIUS and TACACS authentication.	
	Broadcast, multicast, and unknown unicast	
	RADIUS accounting	
	DoS prevention	
	Support for up to 512 ACL rules	
6.	<b>Quality of Service (QoS)</b>	
	4 hardware queues	
	Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)	
	Port based; 802.1p VLAN priority based; Ipv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS.	
	Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.	
	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.	
7.	<b>Ipv6</b>	
	Ipv6 host mode	
	Ipv6 over Ethernet Dual Ipv6/Ipv4 stack	
	Ipv6 neighbor and router discovery (ND) Ipv6 stateless address auto-configuration	
	Path maximum transmission unit (MTU) discovery	
	Duplicate address detection (DAD) ICMP version 6	
8	<b>LEDs</b>	
	System, Link/Act, Speed, LED power saving option	



S.No.	Technical Specifications	Compliance (Yes/No)
	<b>24-port 10/100/1000 Base-T L2 Managed Switch</b>	
9	<b>Certifications</b> UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A	

**E. Wifi Access Points-30 Nos.**

Sr. No.	Specification	Compliance (Yes/No)
1	An access point must include a standard OEM provided Mounting brackets for mounting on Ceiling or Roof top.	
2	Access Point shall support Console port that uses Standard Port (RJ-45) type connection	
3	Should have one RJ-45 auto-sensing 10/100/1000 Mbps LAN port.	
4	Access Point should have USB port for future requirement.	
5	Must have atleast 3 dBi Antenna gain on each radio.	
6	Must support 3x3 MIMO for both 802.11ac and 802.11n client	
7	Must Support minimum data rate of 867 Mbps on 5ghz with 80 mhz channel.	
8	Must support minimum of 22dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.	
9	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.	
10	Must incorporate radio resource management for power, channel and performance optimization	
11	Must have -97 Db or better Receiver Sensitivity.	
12	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
13	Must support Management Frame Protection.	
14	Should support locally-significant certificates on the Aps using a Public Key Infrastructure (PKI).	
15	Access Points must support Hardware-based encrypted user data and management traffic between controller and Access point for better security.	
16	Must support the ability to serve clients and monitor the RF environment concurrently.	
17	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
18	Must be plenum-rated (UL2043).	
19	Must support 16 WLANs per AP for SSID deployment flexibility.	
20	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.	
21	Must support telnet and/or SSH login to Aps directly for troubleshooting flexibility.	
22	Must support Power over Ethernet, local power(DC Power), and power injectors.	
23	802.11e and WMM	
24	Must support Reliable Multicast to Unicast conversion to maintain video quality at AP level	
25	Must support QoS and Video Call Admission Control capabilities.	
26	Access Point should 802.11 DFS certified	

**Passive Components**

All the passive components of Copper & Fiber should be from the same manufacturer.



**TECHNICAL BID DOCUMENT**

**FORMAT TO BE FILLED BY THE OEM OR AUTHORIZED VENDORS FOR  
SUBMITTING TENDER FOR PROCUREMENT OF \_\_\_\_\_**

1. Name of the Tenderer :
  
2. Details of Address of the Vendors :  
(Attach details)
  
3. Proof of Registration or trade license :  
(Attach copies)
  
4. PAN and GST registration no (attach copies) :

Certified that all above information are correct to the best of my/our information, knowledge and belief.

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Dated signature & seal of the OEM/Vendor



**<< Organization Letter Head >>  
DECLARATION SHEET**

We, \_\_\_\_\_ hereby certify that all the information and data furnished by our organization with regard to these tender specifications are true and complete to the best of our knowledge. I have gone through the specifications, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

We further certify that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.

The prices quoted in the financial bids are subsidized due to academic discount given to GCET Jammu.

**NAME & ADDRESS OF  
THE Vendor/ Manufacturer / Agent**

**Phone**

**Fax**

**E-mail**

**Contact Person Name**

**Mobile Number**

**GSTIN Number**

**PAN Number**

**(Signature of the Tenderer)**

**Name:**

**Seal of the Company**



**MANUFACTURERS' AUTHORIZATION FORM**

[The Tenderer shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. Date: [insert date (as day, month and year) of Bid Submission]

**Tender No.:** [insert number from Invitation for Bids]

**To:** [insert complete name and address of Purchaser]

**WHEREAS**

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby author-ize [insert complete name of Tenderer] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty as mentioned in the terms and conditions of the tender document, with respect to the Goods offered by the above firm.

**Signed:** [insert signature(s) of authorized representative(s) of the Manufacturer]

**Name:** [insert complete name(s) of authorized representative(s) of the Manufacturer]

**Title:** [insert title]

**Duly authorized to sign this Authorization on behalf of:** [insert complete name of Tenderer]

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ [insert date of signing]



**ANNEXURE-III****FORMAT FOR QUOTATION SUBMISSION**

(In letterhead of the supplier with seal)

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

To: \_\_\_\_\_

Sl. No.	Description of goods \ (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
<b>Total Cost</b>							

Gross Total Cost (A+B): Rs. \_\_\_\_\_

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. \_\_\_\_\_ (Amount in figures) (Rupees \_\_\_\_\_ amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of \_\_\_\_\_ months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

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

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

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

