JAWAHAR NEHRU TECHNOLOGICAL UNIVERISTY: KAKINADA

KAKINADA – 533 003. A P, INDIA.

Tender Notice No. JNTUK/DE/2017-18/Furniture, Net working, Equipment, Transportation etc., /2017, dt. 13/10/2017.

The sealed tenders are invited for the following items.

Furniture & Equipment, Web Cameras, Bio-Metric door lock system, networking etc., as listed for newly constructed **"University Examination Center"** for JNTUK, Kakinada for the year 2017-18 are the tender items. The last date and time for tenders schedule are as given below.

Bid calling date	13-10-2017
Bid closing date/time	25-10-2017 at 02:00 PM
Bid opening date/time	25-10-2017 at 03:00 PM
Bid Document Fee (for each item)	Rs. 2000/-
JNTUK Contact person	Director Of Evaluation
JNTUK Reference No.	0884 - 2300911

Sd/-
Registrar

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003. - A P – INDIA.

TENDER NOTICE

Tender Notice No. JNTUK/DE/2017-18/Furniture/Networking & Equipment
& Transportation /2017, dt. 13/10/2017.

Sealed Tenders are invited for procurement of Furniture & Equipment, Web Cameras, Bio-Metric door lock system, networking etc., as listed for newly constructed University Examination Center, JNTUK.

The Tender application forms can be obtained from the office of the Registrar, JNTUK, Kakinada for details visit www.jntuk.edu.in
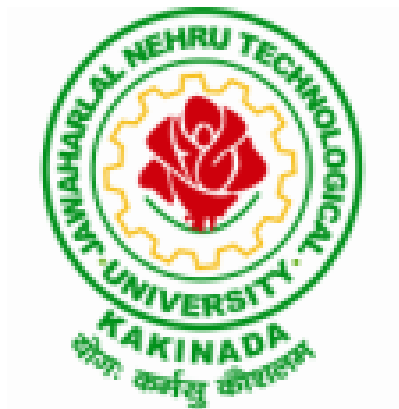
Last date of receipt of Tenders is **25-10-2017, at 02:00 PM**.

Size: 8 X 3

REGISTRAR

INVITATION OF TENDER
FOR
Item No. 2
For procurement of Networking Equipment, Web cameras, Bio-Metric door lock system, etc., as listed for University Examination Centre, JNTUK, Kakinada

Tender Notice No. JNTUK/DE/2017-18/ Networking Equipment, /2017-18.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKIANDA

(Established by Andhra Pradesh Act No. 30 of 2008)

Kakinada – 533 003. Andhra Pradesh, India.

Ref: JNTUK/DE/2017-18/Furniture/Networking/ Equipment, Transportation/2017.

INVITATION OF TENDER AND INSTRUCTIONS TO TENDERERS

Jawaharlal Nehru Technological University, Kakinada invites tenders for supply of Furniture & Equipment, Black & White Laser Printer, Color Laser Printer, Web Cameras, Bio-Metric door lock system, networking etc., as listed for the newly constructed University Examination Center, JNTUK, Kakinada for the year 2017-18.

The tender scheduled fee for each item is Rs. 2,000/- (Rupees Two thousand only) which is not refundable and in the form of crossed Demand Draft on any Nationalized bank drawn in favour of Registrar, JNTUK, Kakinada.

The Tenderer should go through the specifications of the *"Tender Specifications"* carefully and strictly abide by the same.

A Company incorporated under the Indian Companies Act – 1996 (Certificate of incorporation to be furnished) with 5 years of existence with infrastructure and facilities for manufacturing and supply of Furniture & Equipment, Black & White Laser Printer, Color Laser Printer, Web cameras, Bio-Metric door lock system, networking etc., as listed.

SCOPE OF THE WORK

1. Collection of data purchase orders from the Director of Evaluation for variable purchase of Furniture and Equipment.
2. List of machinery with document proof of procurement.
3. Should have supplied Furniture and equipment to various Universities and Government organizations and Boards in an academic year for the last 3 years.
4. Certified by Auditor that a turnover of Rs. 6 crores is achieved in 3 financial years in similar orders.

PRE-QUALIFICATIONS CRITERIA

Keeping in view the sensitiveness and complexity of the work involved the following are prescribed as pre qualifications criteria for Tenderers interested in participating in the Tender specified.

The tendering company incorporated under the Indian companies Act (Certificate of incorporation to be furnished) with 5 years of existence with infrastructure and facilities engaged in manufacturing & supply satisfying the following criteria alone can apply.

1. The firm should have average annual turnover of Rs. 2 crores in the last 3 years (certificate from the company's CA to be furnished). And the firm should furnish the history of the company associated with undertaken supply of similar works of Educational Boards/Universities/Government organizations etc.

2. The firm / company should be ISO certified (valid certification to this effect is to be furnished).

3. The firm / company should have highly sophisticated machinery with all facilities along with online variable data facility only.

4. The Branch office of the firm should be situated with the State of Andhra Pradesh only.

5. The packing, transport and installation of Furniture & Equipment, Black & White Laser Printer, Color Laser Printer, Web cameras, Bio-Metric door lock system, networking etc., shall be done by supplier/ bidder.

6. The Furniture & Equipment, Black & White Laser Printer, Color Laser Printer, Web cameras, Bio-Metric door lock system, Networking etc., as listed should be packed firmly and transport them to the premises of the University.

7. The tenderer should furnish the following documents along with the tender form, failing which their tender is liable to be rejected.

   a. Name and full detailed postal address of the firm with phone numbers.
   b. Certificate of Registration of the firm
   c. Latest Income tax certificate along with the PAN number.
   d. VAT registration photo copy and latest VAT clearance certificate.
   e. Experience of certificate of similar work form Government /Universities /Boards in the state.
   f. Details of the relevant critical equipment available with the tenderer to execute the works viz, machinery wise, shift wise capacities, outputs per day, latest improvements made in the machinery (if any), specific advantages with the machinery of the tenderer and all other relevant details, etc.,
   g. Details of the available skilled personnel with the adequate experience required for execution of the works in this tender.
   h. Tender schedules technical bid & price bid.

8. The tenderer shall be responsible for the delivery of the material, its successful demonstration, and providing training as required, as per specifications at the destination site.

9. The prices must be quoted in the same format as specified in the Tender Schedule, and should be inclusive of packing, forwarding, insurance, delivery at destination site and all taxes. Price quoted needs to be inclusive of all duties and taxes

10. The firm should not SUB-LET any part/item of work to other firms as the work is sensitive and most confidential in nature. It should undertake all the works on its own. Any Joint Ventures, consortium or MOU among companies are not allowed.

11. The firm should not have been blacklisted of debarred by an Educational Board of University for deficiency in complying the orders entrusted (Declaration to this effect is to be furnished).

12. The tenderer shall undertake the work in a most confidential manner and not to indulge in any kind of malfunction by himself or by his employees for which the tenderer shall be held responsible. In the event of any such incident, the University shall have the power to impound EMD, in addition to taking necessary civil and criminal action as per law.

13. **Earnest Money Deposit (EMD):** A Demand Drafts towards application/ tender fee and EMD for each item as indicated in the item list, shall be drawn in favour of the "**The Registrar, JNTUK, Kakinada**" and the DDs must accompany the tender. The tender without application fee and EMD will be rejected. The EMD will be refunded to all the unsuccessful tenderers only after the purchase orders are placed on the successful tenderer. EMD amount will be refunded as per terms and conditions. Tender fee once paid is neither refundable nor adjustable for other tenders

Item wise Application fee & EMD details

Item No.	Item	Application / Tender Fee	EMD, Rs.
1	Networking	2000/-	50,000/-

Companies may make their representative available on 25-10-2017 at 03:00 PM at the time of opening tenders.

Prices:

The prices quoted should be inclusive of all taxes.

VALIDITY:

The tender should be valid for acceptance up to period of 3 months.

DELIVERY:

The purchase order for manufacturing of Furniture & Equipment, Black & White Laser Printer, Color Laser Printer, Web cameras, Bio-Metric door lock system, Networking etc., as listed shall be supplied as per the enclosed specifications of various furniture and equipment and obtained acknowledgement from the University after due verification by the University.

FURNITURE/ NETWORKING & EQUIPMENT, TRANSPORTATION ETC., AS LISTED.

The material should be delivered within 30 days from the date of issue of order form to the firm

TERMS OF PAYMENT:

i) 100% of payment shall be made by the JNTUK, Kakinada after receipt of goods in good condition, complete installation / commissioning and satisfactory report by end user.

ii) Bill of payment will be as per actual quantities.

TERMS AND CONDITIONS OF THE TENDERING FIRMS:

Printed terms and conditions of the tenderer will not be considered as forming part of their tenders. Invitation to tender is not acceptable to any tenderers. He should clearly specify deviation in his tender. The JNTUK, Kakinada reserves the right to accept or reject them. The JNTUK, Kakinada shall not be bound to give reasons for the refusal to consider the tender with such deviations.

INSTRUCTIONS REGARDING FILLING TENDER:

i) If any modifications of the schedule are considered necessary, the tenderers should communicate the same by means of separate letter sent with the tenders.

ii) The tender is liable to be ignored if complete information is given therein or if the particulars and data (if any) asked for in the schedule to the tender are not fully filled in, the specific attention must be paid to the delivery dates, data processing and also other relevant conditions of the contract to be executed.

iii) The tenderer should submit with the following covers.

a. Technical bid
(Original Tender document, EMD, forms 7a to 7h, samples & other enclosures)

b. Financial bid
(Price offered in this sheet only)

Refer Annexure – I : Specification and brochure.

DELIVERY OF TENDER:

The tenderers shall submit their tender documents for each item in separate sealed covers:

The sealed tenders mentioning clearly "**University Examination Centre, JNTUK Campus, KAKINADA**." on the cover along with the Tender No. JNTUK/DE//2017-18/ Furniture & Equipment/2017 and item No. should be addressed and delivered to **The Registrar,** JNTUK, Kakinada – 533 003, (Andhra Pradesh) and

Superscripted on the right hand side with the Item No. and corresponding item (Ex. Item No. 1. -Furniture) for JNTUK, Kakinada for the year 2017-18 and should indicate clearly the name and address of the tenderer. In addition, left hand corner of the envelope / container should indicate the tender number, date and time of opening of tender. Right is reserved to ignore any tender which mails to comply with the above instructions. All tenders should be sent by registered post or through messenger handed over to the above named officer or to the person authorized by him to receive the tender on his behalf in this office and acknowledgement obtained. It is responsibility of the tenderer to see that his tender offer is delivered by him within the specified date and time at the above address. All further communications should be addressed to the officer named above and by title only.

LAST DATE & TIME for receipt of tender:

The tender must reach the Registrar, JNTUK, Kakinada not later than **25-10-2017 at 2.00 PM**. Tenders submitted after the specified date and time shall not be considered and no intimation will be sent in this regard.

Companies may depute their representative available on 25-10-2017 at 03:00 PM at the time of opening tenders.

Period of which offer will remain open:

The tender shall remain open for acceptance until 3 months from the last day of the receipt of the tender. If the day up to which the offer is to remain open has been declared to be closed holiday by the University, the offer shall remain open till next working day. The tenders qualified by such vague and indefinite expression such as subject to immediate acceptance subject to prior sale will not be considered.

Right to Acceptance:

The University does not bind itself to accept the lowest on any tender and reserves to himself the right of accepting the whole of any part of the tender of portion of the quantity offered and the tenderer shall supply the same at the rate quoted. The University reserves the right to reject any or all offers received in response to tender or cancel, withdraw the tender notice without assigning any reason.

Results of Tender:

Acceptance of Tender shall be communicated by letter of acceptance of formal acceptance of the tender to the successful tenderer.

The University reserves to reject to cancel the tenders without assigning any reason.

Warranty declaration:

We warrant that everything to be supplied by us hereunder shall be brand new, free from all defects and faults in material, workmanship and manufacture and shall be of the highest grace and quality and material of the type ordered, shall be in full conformity with the specification,

drawings, of samples, if any. We shall be fully responsible for its quality. This warranty shall survive inspection of equipment and acceptance of the goods, but shall expire (exact in respect of complaints of which the contractor has been notified prior to such date) 12 months after their successful scanning & processing of data, functioning satisfactory and acceptance by the University.

The obligations under the warranty expressed above shall include all costs relating to the quality of the material and transport change from site to the desired destination.

Signature of the witness   *Signature of the Tenderer*

BID PARTICULARS:

1. Name of the Bidder   :

2. Address of the Bidder   :
3. Availability of Scanners spare parts :

4. Bidders proposal number and date   :

5. Application/ Tender fee Enclosed   :   Yes/No   If yes

   DD No._____ Bank _____ Amount_____

6. EMD enclosed   :   Yes/No   If yes

   DD No._____ Bank _____ Amount_____

7. Samples enclosed   :   Yes/No
   (As per the specifications mentioned in the tender schedule)

8. Name and address of the office to whom all reference shall be made regarding this tender enquiry.
   Telephone No.   :

   Fax No.   :

   Mobile No.   :

   E-mail   :

Witness Signature	:	Witness Signature	:
Name	:	Name	:
Designation	:	Designation	:

Address with seal	:		Address with seal	:
Date	:		Date	:

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TENDERER

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EVALUATION OF TENDERS

1. The tenderer has to meet the pre qualification criteria prescribed in tender schedule and abide by all the terms and conditions stipulated in tender schedule before the rates quoted by them are considered.

2. Any effort by the agency to influence the University in the process of selection may result in the rejection for the tender.

3. In order to prove that the firm has the capacity to undertake the works the tenderer has to furnish all the relevant data, documents, certificates, equipment and man power available documentary evidence of works executed etc., in the prescribed formats along with the EMD, in the sealed cover.

4. All the tenderers have to deposit application / tender fee and EMD as given in list of items of tender schedule. The tender received without required application fee and EMD shall be rejected without further reference. The EMD will be returned the unsuccessful bidder.

5. The University is not bound to accept the lowest quotation and the decision of the University in this regard to the acceptance of quotations is final and conclusive in view of the sensitivity and urgency involved.

6. The University can inspect the infrastructure facilities of all operations involved in the process.

7. The University reserves the right to negotiate with any of the tenderer.

8. The University reserves the right to vary the qualities and / or split the order among the selected bidders.

9. The University reserves the right to accept or reject any or all bids without assigning reasons.

The tender is subjected to the following conditions:

1. The company has to quote basic price. The price should be FOR destination as per the direction of University. Rate should be inclusive of all taxes. Any vague statements and such as "Extra" are not accepted.

2. The payment will be as per the directions of University.

3. The Company invoice should be submitted to the University.

4. The quotation must accompany the experience list of reputed organizations and educations institutions for having supplied similar furniture at least in the last 5 years

5. Performance certificates about the performance of the similar type of works from the heads of at least three reputed organizations should be submitted along with the tender.

6. It is not binding on the University to accept the lowest of the tenders.

7. The University reserves the right to place order for individual items with difference tenders. The quantities indicated herein can be modified without any intimation/notice. The University reserves the right to differ the purchase of any item without any intimation/notice.

8. University reserves right to modify the quantity of the Furniture and all or any one or two of the three options (types of furniture) depending upon the requirement.

9. The tenders should be valid for acceptance up to a period of 12 months.

10. The envelope must be super scribed with reference No. for which quotations are being submitted.

11. The tenderer should mention the correct address of the organization located and registration number etc., duly enclosing certificate of registration in support of ownership of the firm for inspection and for other purpose. **The registered office of the firm should be situated within the state of Andhra Pradesh.**

12. **The tenderer must be ready to demonstrate the list of machinery, equipment and other infrastructure requirement along with support documents / invoices to execute the job with them to an expert committee (deputed by the University) at your working site as and when University desires.**

13. The successful tenderer should execute an agreement (in the prescribed format) on a non judicial bond paper worth of Rs. 100/- (Rupees one hundred only) in duplicate duly signed by the authorized officer/Managing director of firm of execution of agreement within 10 days from the date of finalization of selection.

14. All disputes if any which may arise out of the transaction have to be settled with in the jurisdiction; of Courts/High Court of Andhra Pradesh situated at Hyderabad.

15. It should be certified by the tenderer stating that the factory is not black listed by any state Government/Union territory/Government of India or any other organization. The firms which are either black listed or any case is pending for inferior quality supplied will be rejected from participating in the tender.

16. Certificates of experience in this field must be enclosed with samples and works under taken for supply of Furniture in large volumes will be preferred over others.

17. The EMD of the successful bidder will be retained with the University for the warrantee / one year whichever is earlier or bank guarantee.

    i)   In the event of non-supply, this deposit shall be forfeited to the extent of items not supplied. Further, if the University has to procure the items/services part of it from any other supplier because of failure to supply in full or part by the successful bidder, the difference in payment may be made be made good from this security deposit, besides, penalty.

    ii)   The University, against EMD, can also make any other adjustments for default on part of seller/service provider.

    iii) The EMD deposit shall be returned after the supply of all the contracted items/services and their successful installation & execution at all the intended sites. No interest will be payable for the EMD by the University.

REGISTRAR

CERTIFICATE:

Certified that all the terms and conditions mentioned in the tender documents are perused thoroughly before quoting above indent unit rates.

Station:

Date:

                    Signature of tenderer:

                    Name & Designation:

                    With office seal   :

Item No-2 Networking : Supply, installation and commissioning of following equipment:

A	*Active Components*
B	**Passive Components**
C	**Integration Components Supply**
D	**Installation & Integration Services**
E	**CCTV Components**
F	**EPABX Components**
G	**Bio Metric Components**

*   All Components should carry warranty.

** Onsite Technical support should be extended for one year.

A-Active Components

S. No.		Item	Unit	Qty
1		24 port Gigabit switch with 4 x 1G SFP As per Detailed Specifications Listed under Section A.1	Nos.	12
1 a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer	Nos	12
2		24 port Gigabit PoE 370W switch, 4 x 1G SFP As per Detailed Specifications Listed under Section A.2	Nos.	2
2 a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer		
3		8 Port Gigabit Ethernet switch with 2 x 1G copper or 2 x 1G SFP with Rack mounting KIT . As per Detailed Specifications Listed under Section A.3	Nos.	4
3a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer		
4		1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM As per Detailed Specifications Listed under Section A.4	Nos.	8

** All Active Components should cover one year warranty

A - Technical specification:

(The Technical compliance Statements need to be duly filled against each line item and should be attached along with the Technical Bid duly signed and stamped failing which the tender is liable to be rejected)

A - Active Components

A.1. – Specifications for Access Switches

Make :

Model :

Serial No.1 (24 x10/100/1000 Mbps L2 Switch	Compliance	Remarks
The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports		
The switch should support a minimum of 4*1G SFP uplinks		
The switch should support a total of 28 Ports		
The switch should support flexibility to configure hardware resource (TCAM) allocation for different features.		
The switch should support Forwarding bandwidth of 108 Gbps		
The switch should support Full-duplex Switching bandwidth of 216 Gbps		
The switch should support 64-Byte Packet Forwarding Rate of 71.4 Mpps		
The switch should support a Dual Core CPU		
The switch should support 128 MB of Flash memory		
The switch should support 512 MB of DRAM		
The switch should support 1023 Active VLANs		
The switch should support 4096 VLAN IDs		
The switch should support Jumbo frames of 9216 bytes		
The switch should support Maximum transmission unit (MTU) of 9198 bytes		
The switch should support up to 16000 Unicast MAC addresses		
The switch should be 1 RU.		
The switch shall support Stacking		
Stacking should enable all switches to function as a single virtual switch		
The switch shall have dedicated Stacking Port		
Stacking module should be Hot-swappable		
Stacking should support a minimum of 8 Switches		
Stacking should support 80 Gbps of bi-directional throughput		

Stack should support automatic upgrade when the master switch receives a new software version		
The switch should support configurable egress buffer allocation for different queues on the stack ports		
The switch should be stackable with older switch models that use similar stacking technology		
The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
The switch should support an External Redundant Power Supply in future		
The switch should support variable speed fan		
The switch should support IEEE 802.1D, 802.1p,802.1Q,802.1S and 802.1w		
The switch should support IEEE 802.1x		
The switch should support IEEE 802.1ab (LLDP)		
The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
The switch should support RMON I and II standards		
The switch should support SNMP v1, v2c, and v3		
The switch should be IPv6 Certified		
The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
The switch should support RFC 1112 - IP Multicast and IGMP		
The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		
The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
The switch should support RFC 2461 - IPv6 Neighbor Discovery		
The switch should support RFC 2462 - IPv6 Auto configuration		
The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
The switch should support RFC 3376 - IGMP v3		
The switch should support RFC 3580 - 802.1X RADIUS		
The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		
The switch should support Spanning-tree root guard to prevent other edge switches becoming the root bridge.		
The switch should support IGMP filtering		
The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems		

performance		
The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		
The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
The switch should support IGMP v1, v2 and v3 Snooping		
The switch should support IGMP v1, v2 Filtering		
The switch should support MVR (Multicast VLAN Registration)		
The switch should support IGMP v1, v2 and v3 Snooping		
The switch should support IGMP v1, v2 Filtering		
The switch should support MVR (Multicast VLAN Registration)		
The switch should support Software image update and switch configuration without user intervention		
The switch should support automatic configuration of switch port as devices connects		
The switch should support real-time alerts and remediation advice when an issue is detected.		
The switch should prevent booting any counterfeit images		
The Switch should support signed images		
The switch should support 4 or 8 configurable egress queues per port to enable differentiated management		
The switch should support class map based traffic differentiation with in the same queue		
The switch should support shared egress buffers for all the ports		
The switch should support dedicated egress buffers reserved for each ports		
The switch should support scheduling techniques for QoS		
The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
The switch should support CoS/dscp remarking		
The switch should support Standard 802.1p CoS field classification		
The switch should support Differentiated services code point (DSCP) field classification		
The switch should support Control- and Data-plane QoS ACLs		
The switch should support Strict priority queuing mechanisms		
The switch should support Rate Limiting function to guarantee bandwidth		
The switch should support rate limiting based on source and destination IP address		
The switch should support rate limiting based on source and destination MAC address		
The switch should support rate limiting based on Layer 4 TCP and UDP information		

The switch should support availability of up to 256 aggregate or individual polices per port.		
The switch should support QoS on the stack ports		
The switch should support QoS configuration across the entire stack		
The switch should support queue level statistics of dropped and enqueued frames for each port		
The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		
The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
The switch should support Telnet interface support for comprehensive in-band management of-band management.		
The switch should support SSH for secure access		
The switch should support SCP for secure file transfer		
The switch should support 2 USB ports for external storage		
The switch should support solutions that monitors and conserves energy with customized policies		
The switch should support reduction of greenhouse gas (GhG) emissions		
The switch should support an increase in energy Cost savings		
The switch should support Intelligent power management		
The switch should support measuring of energy between itself and endpoints		
The switch should support control of energy between itself and endpoints		
The switch should support discovery of manageable devices for Energy measurement		
The switch should support support monitoring of power consumption of endpoints		
The switch should support hibernation mode to save power when switch is idle		
The switch should support IEEE 802.1x authentication for dynamic port-based security.		
The switch should support MAB based authentication (MAB)		
The switch should support Web based authentication (Web-auth)		
The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
The switch should support downloading user level ACL polices (dACL) defined on the RADIUS server during authentication		
The switch should support precise access controls based on role, device, location or a combination of all		
The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		

The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
The switch should support Private VLAN		
The switch should support faster authentication by triggering all the supported authentication methods simultaneously		
The switch should support implementation of 802.1x without affecting user traffic to confirm network readiness for 802.1x transition		
The switch should support 8021.X monitor mode, facilitate smoother transition to 802.1X deployment.		
The switch should support MAC based VLAN assignment which allows per user VLAN assignment on Multi-auth port.		
The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
The switch should support DHCP Snooping Statistics and SYSLOG		
The switch should support IPv4 Static routes		
The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
The switch should support IPv6 unicast Static Routing		
The switch should support IPv6 Static routes		
The switch should support IPv6 MLDv1 & v2 Snooping		
The switch should support IPv6 QoS		
The switch should support SCP/SSH over IPv6		
The switch should support Radius over IPv6		
The switch should support TACACS+ over IPv6		
The switch should support NTPv4 over IPv6		

A.2. – Specifications for PoE Switches

Make:
Model :

Serial No. 2 (24x10/100/1000 Mbps L2 PoE Switch	Compliance	Remarks
The switch should support a minimum of 24 nos. 10/100/1000 POE Ethernet Ports		

The switch should support a minimum of 4*1G SFP Uplinks		
The switch should support a total of 28 Ports		
The switch should support flexibility to configure hardware resource (TCAM) allocation for different features.		
The switch should support Forwarding bandwidth of 108 Gbps		
The switch should support Full-duplex Switching bandwidth of 216 Gbps		
The switch should support 64-Byte Packet Forwarding Rate of 71.4 Mpps		
The switch should support a Dual Core CPU		
The switch should support 128 MB of Flash memory		
The switch should support 512 MB of DRAM		
The switch should support 1023 Active VLANs		
The switch should support 4096 VLAN IDs		
The switch should support Jumbo frames of 9216 bytes		
The switch should support Maximum transmission unit (MTU) of 9198 bytes		
The switch should support up to 16000 Unicast MAC addresses		
The Switch Should have a POE budget of 370W		
The switch should support IEEE 802.3af Power over Ethernet from day one		
The switch should support IEEE 802.3af Power Classification from day one		
The switch should support IEEE 802.3at Power over Ethernet + from day one		
The switch should be 1 RU.		
The switch shall support Stacking		
Stacking should enable all switches to function as a single virtual switch		
The switch shall have dedicated Stacking Port		
Stacking module should be Hot-swappable		
Stacking should support a minimum of 8 Switches		
Stacking should support 80 Gbps of bi-directional throughput		
Stack should support automatic upgrade when the master switch receives a new software version		
The switch should support configurable egress buffer allocation for different queues on the stack ports		
The switch should be stackable with older switch models that use similar stacking technology		
The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
The switch should support an External Redundant Power Supply in future		
The switch should support variable speed fan		

The switch should support IEEE 802.1D, 802.1p,802.1Q,802.1S and 802.1w		
The switch should support IEEE 802.1x		
The switch should support IEEE 802.1ab (LLDP)		
The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
The switch should support RMON I and II standards		
The switch should support SNMP v1, v2c, and v3		
The switch should be IPv6 Certified		
The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
The switch should support RFC 1112 - IP Multicast and IGMP		
The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		
The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
The switch should support RFC 2461 - IPv6 Neighbor Discovery		
The switch should support RFC 2462 - IPv6 Auto configuration		
The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
The switch should support RFC 3376 - IGMP v3		
The switch should support RFC 3580 - 802.1X RADIUS		
The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		
The switch should support Spanning-tree root guard to prevent other edge switches becoming the root bridge.		
The switch should support IGMP filtering		
The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance		
The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		

The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
The switch should support IGMP v1, v2 and v3 Snooping		
The switch should support IGMP v1, v2 Filtering		
The switch should support MVR (Multicast VLAN Registration)		
The switch should support IGMP v1, v2 and v3 Snooping		
The switch should support IGMP v1, v2 Filtering		
The switch should support MVR (Multicast VLAN Registration)		
The switch should support Software image update and switch configuration without user intervention		
The switch should support automatic configuration of switch port as devices connects		
The switch should support real-time alerts and remediation advice when an issue is detected.		
The switch should prevent booting any counterfeit images		
The Switch should support signed images		
The switch should support 4 or 8 configurable egress queues per port to enable differentiated management		
The switch should support class map based traffic differentiation with in the same queue		
The switch should support shared egress buffers for all the ports		
The switch should support dedicated egress buffers reserved for each ports		
The switch should support scheduling techniques for QoS		
The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
The switch should support CoS/dscp remarking		
The switch should support Standard 802.1p CoS field classification		
The switch should support Differentiated services code point (DSCP) field classification		
The switch should support Control- and Data-plane QoS ACLs		
The switch should support Strict priority queuing mechanisms		
The switch should support Rate Limiting function to guarantee bandwidth		
The switch should support rate limiting based on source and destination IP address		
The switch should support rate limiting based on source and destination MAC address		
The switch should support rate limiting based on Layer 4 TCP and UDP information		

The switch should support availability of up to 256 aggregate or individual polices per port.		
The switch should support QoS on the stack ports		
The switch should support QoS configuration across the entire stack		
The switch should support queue level statistics of dropped and enqueued frames for each port		
The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		
The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
The switch should support Telnet interface support for comprehensive in-band management of-band management.		
The switch should support SSH for secure access		
The switch should support SCP for secure file transfer		
The switch should support 2 USB ports for external storage		
The switch should support solutions that monitors and conserves energy with customized policies		
The switch should support reduction of greenhouse gas (GhG) emissions		
The switch should support an increase in energy Cost savings		
The switch should support Intelligent power management		
The switch should support measuring of energy between itself and endpoints		
The switch should support control of energy between itself and endpoints		
The switch should support discovery of manageable devices for Energy measurement		
The switch should support support monitoring of power consumption of endpoints		
The switch should support hibernation mode to save power when switch is idle		
The switch should support IEEE 802.1x authentication for dynamic port-based security.		
The switch should support MAB based authentication (MAB)		
The switch should support Web based authentication (Web-auth)		
The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
The switch should support downloading user level ACL polices (dACL) defined on the RADIUS server during authentication		

The switch should support precise access controls based on role, device, location or a combination of all		
The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
The switch should support Private VLAN		
The switch should support faster authentication by triggering all the supported authentication methods simultaneously		
The switch should support implementation of 802.1x without affecting user traffic to confirm network readiness for 802.1x transition		
The switch should support 8021.X monitor mode, facilitate smoother transition to 802.1X deployment.		
The switch should support MAC based VLAN assignment which allows per user VLAN assignment on Multi-auth port.		
The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
The switch should support DHCP Snooping Statistics and SYSLOG		
The switch should support IPv4 Static routes		
The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
The switch should support IPv6 unicast Static Routing		
The switch should support IPv6 Static routes		
The switch should support IPv6 MLDv1 & v2 Snooping		
The switch should support IPv6 QoS		
The switch should support SCP/SSH over IPv6		
The switch should support Radius over IPv6		
The switch should support TACACS+ over IPv6		
The switch should support NTPv4 over IPv6		

A.3. – Specifications for Access Switches

Make:
Model :

Serial No. 3 (8x10/100/1000 Mbps L2 Switch				
SN		**Technical Specification**	**Compliance**	**Remarks**
1	**General Features**	Switch should have 8 no's 10/100/1000 Etherne Access Ports and 2x1Gbps SFP &2x10/100/1000 Mbps Uplink Ports		
2	**Performance and Scalability**	should support 24Gbps Swithching bandwidth with line rate performance		
		Should support Forwarding Rate of 17 Mpps		
		128 MB of Flash memory & 512 MB DRAM		
		Support 255 VLANs & 4K VLAN IDs		
		16000 Unicast MAC addresses		
		Shall be 19 inch Rack mountable		
		Should support Static routes and full IPv6		
3	**Standards**	IEEE 802.1D Spanning Tree Protocol, 802.1p, 802.1Q , 802.1s, 802.1W, 802.1x, 802.1AB		
		RMON I and II standards		
		SNMP v1, v2c, and v3		
4	**Layer-2 Features**	Should support following L2 features		
		IEEE 802.1Q VLAN encapsulation		
		UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		
		Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.		
		IGMP filtering		
		Discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
		Per-port Multicast & broadcaststorm control to prevent faulty end stations from degrading overall systems performance		
		Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		

		Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth		
		Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.		
		Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
		MVR (Multicast VLAN Registration)		
5	**Quality of Service (QoS) & Control**	Switch should support following quality of features		
		4 egress queues per port to enable differentiated management		
		scheduling techniques for Qos		
		Weighted tail drop (WTD) to provide congestion avoidance		
		Standard 802.1p CoS field classification		
		Differentiated services code point (DSCP) field classification		
		Strict priority queuing mechanisms		
6	**Network security features**	IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
		Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
		SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
		TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
		MAC address notification to allow administrators to be notified of users added to or removed from the network.		
		Port security to secure the access to an access or trunk port based on MAC address.		
7	**L3 features**	Switch should support IPv4 & IPv6 Static routes		
8	**DHCP Features**	DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.		
		DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		

9	**IPv6 Security**	Should support IPv6 First-Hop Security		
		IPv6 First Hop Security: RA Guard		
		IPv6 First Hop Security: DHCP Guard		
		IPv6 First Hop Security: IPv6 Binding Integrity Guard		
10	**Management**	CLI, console, Telnet, SSH and Web Management		
		SNMP v1, v2c, and v3		

A.4. – Specifications for SFP Module

Serial No. 4 (SFP Modules)		
Specification	**Compliance**	**Remarks**
The proposed module shall be 1000BASE-LX/LH SFP, Module supports a link length of 10 kilometers on standard single-mode fiber (SMF, G.652). The Network switches & modules should be from the same OEM.		

B - Passive Components

Sr. No.	Item	Unit	Qty
A	**Fiber**		
1	12 Core Fiber Cable - Single Mode As per Detailed Specifications Listed under Section B1.1	mtrs.	800
2	24 Port LIU - Shelf fully loaded As per Detailed Specifications Listed under Section B1.2	nos.	2
3	Pigtails - LC Style – SM As per Detailed Specifications Listed under Section B1.3	nos.	24
4	LC-LC Patch Cords – SM As per Detailed Specifications Listed under Section B1.4	nos.	8
B	**UTP**		

Sr. No.	Item	Unit	Qty
1	CAT6 UTP cable box As per Detailed Specifications Listed under Section B1.5	NO	16
2	CAT6 UTP Patch Panel -24 Port Fully Loaded As per Detailed Specifications Listed under Section B1.6	NO	14
3	CAT6 IO As per Detailed Specifications Listed under Section B1.7	NO	277
4	Face Plate-Single	NO	277
5	Back Box	NO	277
6	CAT6 UTP PATCH CORD:3 Feet As per Detailed Specifications Listed under Section B1.8	NO	277
7	CAT6 UTP PATCH CORD:7 feet As per Detailed Specifications Listed under Section B1.9	NO	300

B1-Specifications for Passive Components

B1.1- - Fiber Optic Cable Outdoor for Backbone
Make :

Specification	Compliance Yes / No	Remarks
Physical Specifications		
Fiber Count 12 Core		
Core Diameter – 8.3 microns		
Cladding Diameter -125.0 m (0.7) microns		
Core/Cladd Offset – 5 microns		
Cladding Non Circularity – 1%		
Coated Fiber Diameter- 245 (10) microns		
Cladding/Coating Offset - 12 microns		
Colored Fiber Diameter 254 (7) microns		
Proof Test - 0.7 Gpa		
Fiber Curl - > 4 microns		
Dynamic Fatigue Parameter ☐ 18		
Macrobend (100 turns, 50 mm mandrel) 0.10dB @ 1310nm, 0.10dB @ 1550nm		
Macrobend (1 turn on a 32mm mandrel) 0.50 db @ 1310 nm and @ 1550 nm		
Outer Diameter Inches. (mm) – 0.51(13.1)		
Weight lbs/ft (Kg/km) - 103 (177)		
Minimum Bend Radius Inch(cm)		
Loaded 10.3(26.2)		

		Compliance	Remarks
Unloaded	5.1 (13.1)		
Max. Tensile Load lbs(Newtons)			
Short Term	607(2700)		
Long Term	180(800)		
Maximum Vertical Raise Feet(Meters) 1754(535)			
Optical Specifications			
Mode Field Diameter 9.2 Micron (0.3) @ 1310 nm 10.4 (nominal) @ 1550 nm			
Group Index of Refraction 0.92 @ 1310nm 1383(3)nm,1467 @1550nm			
Attenuation 0.35 db/km @ 1310nm 0.24 db/km @ 1550nm			
Maximum Dispersion 2.8 ps/nm-km 1285 tp 1330 nm			
Zero Dispersion Wavelength 1300-1322 nm			
Zero Dispersion Slope 0.092 $ps/((nm)^2km)$			
Polarization Mode Dispersion LDV 0.08 $ps/(km)^{1/2}$			

Specification	Compliance Yes / No	Remarks
Environmental & Mechanical Specifications		
Operating Temperature 40^0 to $+70^0C$		
Installation Temperature -30^0 to $+60^0C$		
Storage Temperature -40^0 to $+75^0C$		
Crush Resistance 44 N / Min		

Standards & Other Specifications		
The cables shall be designed for point to point applications as well as mid-span access, and provide a high-level of protection for fiber installed in the outside plant Environment		
The cable shall armored with a corrugated polymer coated steel tape		
The singlemode fiber shall be dispersion-unshifted, fiber which meets the ITU-T G.652c requirements		
Shall be fully capable of handling existing and legacy singlemode applications which traditionally operate in the 1310nm and 1550nm regions.		
The fiber cable shall be designed to handle the new and emerging applications that utilize the "Extended" E-band, 1360-nm to 1460nm.		
The cable shall satisfy the requirements of ICEA S-640-1999, "Optical Fiber Outside Plant Communications Cable" and Telcordia Generic requirements for Fiber-Optic Cable (GH-20-CORE), Section 6.		
The fiber cable shall also be designed to provide optimum performance from 1265nm to 1625nm making it suitable for 16-channel Course Wavelength Division Multiplexing (CDDM) applications.		
The Fiber cable shall be constructed with industry standard 3mm buffer tubes, stranded around a central strength member.		
The buffer tubes shall be compatible with standard hardware, cable routing and fan-out kits.		
The cable core shall be water blocked with dry water-blocking materials, making access and handling of individual tubes easier and craft-friendly.		

B1.2 :- Light Interface Unit 24/12 Port

Make :

Specification & Requirement	Compliance Yes / No	Remarks
The combination shall have a sliding tray with two 3-inch (7.7 cm) storage drums and two openings with liquid-tight cable fasteners. The sliding tray allows front access and installation of fibers.		
The rack mount combination shelf shall be applicable for use in LANs, premises distribution systems, and small-count splice and termination applications		
The rack mount shelf shall be one-unit-high and be capable of housing 24 ST, 24 SC or 48 LC terminations.		
The shelf shall be capable of 24 fibers (48 with LCs) or to accommodate 48 mechanical splices, 64 fusion splices or 12 ribbon (mass fusion splices using optional splice trays.		
The sliding tray shall ride on two self-locking nylon slides used for pulling the shelf away from the frame for front access to fibers		
An Optional door and cable manager shall be available for use when two shelves are stacked for an aesthetic appearance. This optional accessory shall be a 1U high (1.75") with a 3U door (5.25"). A top cover shall be available to protect from dust and falling debris.		
Shelf dimensions : 1.72" (4.37cm) H x 17.19" (43.7 cm) W x 11.20" (28.5 cm) D.		
The LIU Should be made of Aluminum		
The combination shall have a sliding tray with two 3-inch (7.7 cm) storage drums and two openings with liquid-tight cable fasteners. The sliding tray allows front access and installation of fibers.		
The rack mount combination shelf shall be applicable for use in LANs, premises distribution systems, and small-count splice and termination applications		
The rack mount shelf shall be one-unit-high and be capable of housing 24 ST, 24 SC or 48 LC terminations.		
The shelf shall be capable of 24 fibers (48 with LCs) or to accommodate 48 mechanical splices, 64 fusion splices or 12 ribbon (mass fusion splices using optional splice trays.		
The sliding tray shall ride on two self-locking nylon slides used for pulling the shelf away from the		

Specification & Requirement	Compliance	Remarks
frame for front access to fibers		
An Optional door and cable manager shall be available for use when two shelves are stacked for an aesthetic appearance. This optional accessory shall be a 1U high (1.75") with a 3U door (5.25"). A top cover shall be available to protect from dust and falling debris.		
Shelf dimensions : 1.72" (4.37cm) H x 17.19" (43.7 cm) W x 11.20" (28.5 cm) D.		
The LIU Should be made of Aluminum		

B1.3:- Fiber –Connectors / Pigtails

Make :

Specification & Requirement	Compliance Yes / No	Remarks
Connector Type – SC Single Mode		
The connector shall Utilize a Zirconia Ferrule for fiber alignment		
The connector shall have push pull hardware for easier connections, as well as high optical stability		
The connector shall be crimped to the outer hardware, to prevent momentary disconnect when axial load is placed on the cable		
The connectors shall meet the following specification		
Length - 2 in (5.08 cm)		
Operating Temperature - 40 to 85° C		
Average Loss 0.2 db (tuned), 0.3 db (untuned)		

B1-4 :- Fiber Patch Cord (LC-LC)

Make :

Specification & Requirement	Compliance Yes / No	Remarks
Cable → Duplex Cordage Single Mode		
Length → 3.0 Mtr		
Insertion Loss → Less than 0.2 db		
Return Loss → -50db for Single Mode		
Cable outside Dia → 3.0 mm		
Tip Metal → Ceramic		

B1.5 :- CAT 6 UTP Cables
Make :

Specification & Requirement	Compliance Yes / No	Remarks
Category 6 UTP Cable, 4 Pair		
The high performance Category 6 UTP cable shall be of the traditional round design with mylar bisector tape.		
The cable shall support Voice, Analog Baseband Video/Audio, Fax, Modem,Switched-56, T-1, ISDN,RS-232, RS422, RS-485, 10BASE – T Ethernet, Token Ring, 100Mbps TP-PMD, 100BASE-T Ethernet, 155 Mbps ATM, AES/EBU Digital Audio, 270 Mbps Digital Video, 622 Mbps 64-CAP ATM and emerging high-bandwidth applications, including 1 Gbps Ethernet, gigabit ATM, IEEE 1394B S100 and S400, as well as all 77 channels (550 Mhz) of analog broadband video.		
The cable jacket shall comply with Article 800 NEC for use as a plenum or non-plenum cable. The 4 pair UTP cable shall be UL® and c (UL®) Listed Type CMP (plenum) or CM (non-plenum).		
Performance shall be characterized to 550 MHz to support high-bandwidth video applications		
All Category 6 high performance cables shall the following specification:		
Gauge 23 AWG		
Weight 25.3 lb (1000 ft)		
Jacket Thickness 0.022 in		
Outside Diameter 0.232 in		
Conductor Diameter 0.022 in		

Insulation Type High density Polyethylene			
Jacket Material PVC			
Maximum Pulling Tension 25 lbs			
Nom. Velocity of Propagation 0.69			
Max DC Resistance 9.83 Ohms/100m			
Max DC Resistance Unbalanced Less than or Equal to 3%			
Mutual Capacitance @ 1kHz 4.95 nF/100m			
Operating Temperature -20 to 60° C			
UL Type CMR & CMG			

*Typical worst pair swept margin.
**Guaranteed margin is valid at any frequency from 1-250 MHz for the single manufacturer's certified

The high performance Category 6 cable shall be specified to 550 MHz and shall meet the guaranteed swept margin as follows:			
	High Performance Cable	High Performance Channel	Premium Performance Channel
		(4 Connections)	
	Typical Worst Pair Margin*	Guaranteed Margin **	Guaranteed Margin**
Insertion Loss	3.0 %	5.0%	7.5%
NEXT	6.0 Db	6.0 dB	7.0 dB
PSNEXT	6.0 Db	7.5 dB	8.5 dB
ELFEXT	5.0 dB	6.0 dB	8.0 dB
PSELFEXT	5.0 Db	8.0 dB	10.0 dB
Return Loss	4.0 dB	4.0 dB	4.0 dB
Frequency Range	1-550 MHz	1-250 MHz	1-250 MHz

channel comprising the single manufacturer's Category 6 apparatus and the single manufacturer's High Performance series cable or Premium Performance series. Values represent margin over the TIA/EIA Category 6/Class E channel specifications

B1.6. :- CAT 6 Patchmax/Jack Panel

Make :

Specification & Requirement	Compliance Yes / No	Remarks
24 port patch panels with 110 IDC connector terminations on rear – 1 U Size		
The patch shall have electrical performance guaranteed to meet or exceed TIA/EIA 568-B.2-1 Category 6 and ISO/IEC Category 6/Class E		

specifications.		
The panel shall have vertical and horizontal cord organizers available as to improve patch cord management.		
The panel shall be available in 24-port configurations with universal A/B labeling and 110 connector terminations on rear of panel allowing for quick and easy installation of 22 to 24 AWG cable.		
The Panel shall have a black powder finish over high-strength steel.		
The panel shall be UL listed, UL-C certified and ACA approved.		
The panel shall support network line speeds in excess of 1 gigabit per second and be backward compatible with Category 5e, 5 and 3 cords and cables.		
The Category 6 modular jack panels shall meet or exceed the Category 6/Class E standards requirements in ISO/IEC 11801, CENLEC EN 50173 and TIA/EIA and shall be UL Listed.		
The panels shall be either wall or 19-inch rack mountable		

The panels shall meet the following specifications			
	Category 6 Patch panel	HighPerformance Channel	Premium Performance Channel
		(Category 6 Channel) (4 Connections)	
	Typical Worst Pair Margin*	Guaranteed Margin **	Guaranteed Margin**
Insertion Loss	64.3 %	5.0%	7.5%
NEXT	6.6 dB	6.0 dB	7.0 dB
PSNEXT	7.3 dB	7.5 dB	8.5 dB
ELFEXT	6.4 dB	6.0 dB	8.0 dB
PSELFEXT	6.1 dB	8.0 dB	10.0 dB
Return Loss	6.6 dB	4.0 dB	4.0 dB
Frequency Range	1-250 MHz	1-250 MHz	1-250 MHz

* Typical worst pair swept margin when measured with same manufacture's Category 6 modular patch cord.

**Guaranteed margin is valid at any frequency from 1-250 MHz for the single manufacturer's certified channel comprising the single manufacturer's Category 6 apparatus and the single manufacturer's High Performance series cable or Premium Performance series. Values represent margin over the draft Category 6/Class E channel specifications.

Specification & Requirement	Compliance Yes / No	Remarks
Physical Specifications		
Dimensions 19.0 x 1.75 x 1.60 in (48.26 x 4.38 x 4.06 cm) – Universal A/B labeling		
Intra-bay organizer 20.0 x 3.50 x 4.50 in (50.8 x 8.89 x 11.43 cm) – (Front Horizontal / Vertical Routing		
Inter-bay organizer 19.0 x 3.50 x 3.75 in (48.26 x 8.89 x 9.53 cm) – Front Horizontal routing		
Intra-bay organizer 19.0 x 1.72 x 4.60 in (48.30 x 4.38 x 11.70 cm)- Front & back routing		
1U Wall Mount Bracket 19.0 x 3.50 x 3.59 in (48.30 x 8.89 x 12.70 cm)		
Operational Specifications:		
Operating Temperature Range: 14°F to 140°F (-10°C to 60°C)		
Storage Temperature Range: -40°F to 158°F (-40°C to 70°C)		
Humidity: 95% (noncondensing)		
Nominal Solid Conductor Diameter: 0.025 to 0.020 in (0.64 to 0.51 mm) (22 to 24 AWG)		
Nominal Stranded Conductor Diameter: 0.025 to 0.020 in (0.64 to 0.51 mm) (22 to 24 AWG)		
Insulation Size:		

0.042 in (1.08 mm) (22 to 24 AWG) Maximum DOD		
Insulation Types: All plastic insulates (including PVC, irradiated PVC, Polyethylene, Polypropylene, PTF Polyurethane, Nylon, and FEP)		
Insertion Life : 750 minimum insertions of an FCC 8-Position Telecommunications Plug		
Front Panel: Black powder painted steel.		
Plastic: High-impact, flameretardant, UL-rated 94V-0 thermoplastic		

B1.7 :- CAT 6 Information Outlets

Make :

Specification & Requirement	Compliance Yes / No	Remarks
All Category 6 outlets shall meet or exceed Category 6 transmission requirements for connecting hardware, as specified in TIA/EIA 568-B.2-1 Commercial Building Telecommunications Cabling Standard and ISO/IEC 11801:2002 Second Edition.		
The Category 6 outlets shall be backward compatible with Category 5E, 5 and 3 cords and cables.		
The Category 6 outlets shall be of a universal design supporting T568 A & B wiring.		
The Category 6 outlets shall be capable of being in a modular patching situation or as a modular telecommunication outlet (TO) supporting current 10BASE-T, Token Ring, 100 Mbps TP-PMD, 155 Mbps ATM, 622 Mbps ATM using parallel transmission schemes and evolving high-speed, high-bandwidth applications, including Ethernet, 1000BASE-T and 1.2 Gbps ATM.		
The Category 6 outlets shall be capable of being installed at either a 45° or a 90° angle in any M-series modular faceplate, frame, or surface-mounted box avoiding the need for special faceplates.		
The Category 6 outlets shall have improved pair splitters and wider channel for enhanced		

Specification & Requirement		
conductor placement. The outlet shall also have a low-profile wire cap, which protects against contamination and secures the connection. Multicolored identification labels shall be available to assure accurate installation.		
Meets or exceeds the mechanical, electrical, and clearance specifications in FCC Rules and Regulations, Part 68, Subpart F		
Meet or exceed the Category 6 requirements in ISO/IEC 11801, CENELEC EN 50173, and TIA/EIA568B		
Certifications: UL Listed, CSA Certified and AUSTEL approved.		

The Category 6 outlets shall meet the following Guaranteed Margin Performance and Physical Specifications:			
	Category 6 Outlet	High Performance Channel	Premium Performance Channel
		(4 Connections)	
	Typical Worst Pair Margin*	Guaranteed Margin **	Guaranteed Margin**
Insertion Loss	26.9 %	5.0%	7.5%
NEXT	5.4 dB	6.0 dB	7.0 dB
PSNEXT	4.7 dB	7.5 dB	8.5 dB
ELFEXT	10.5 dB	6.0 dB	8.0 dB
PSELFEXT	10.8 dB	8.0 dB	10.0 dB
Return Loss	8.0 dB	4.0 dB	4.0 dB
Frequency Range	1-250 MHz	1-250 MHz	1-250 MHz

* Typical worst pair swept margin when measured with same manufacture's Category 6 modular patch cord.

**Guaranteed margin is valid at any frequency from 1-250 MHz for the single manufacturer's certified channel comprising the single manufacturer's Category 6 apparatus and the single manufacturer's High Performance series cable or Premium Performance series. Values represent margin over the draft Category 6/Class E channel specifications.

Specification & Requirement	Compliance Yes/No	Remarks
Physical Specifications		
Dimensions - 0.8 in (20 mm) W x 0.8 in (20 mm) H x 1.2 in (31 mm) D		
Plastic - High-impact, flame-retardant, UL rated 94V-0 thermoplastic		
Connector - Copper alloy, 100 micro-inch bright solder over 100 micro-inch nickel underplate		
Outlet Wires Copper alloy, 50 micro-inch lubricated gold plating		

Specification & Requirement	Compliance Yes / No	Remarks
over 100 micro-inch nickel underplate		
Operating Temperature 14°F to 140°F (-10°C to 60°)		
Storage Temperature Range -40°F to 158°F (-40°C to 70°C)		
Humidity - 95% (noncondensing)		
Nominal Solid Conductor Diameter: 0.025 to 0.020 in (22 to 24 AWG)		
Nominal Stranded Conductor Diameter 0.64 to 0.51mm (22 to 24 AWG)		
Plug Retention Force 30lb (133 N) minimum		
Plug / Jack Contact Force 100 grams minimum per contact using FCC-8 position telecommunication plug		
Insertion Life 750 cycles minimum using FCC-8 position telecommunication plug		

B1- 8,9 Copper Patch Cord 3 Feet & 7 Feet

Make :

Specification & Requirement	Compliance Yes / No	Remarks
All patch cords shall exceed TIA/EIAand ISO/IEC Category 6/Classs E specifications.		
All patch cords shall be backward compatible with Category 5 and Category 5E systems.		
The patch cords shall incorporate an anti-snag feature that provides maximum protection from snagging during moves and re-arrangements.		
Patch cords shall support network line speeds in excess of 1 gigabit per second. 4. Patch cords shall be UL listed, UL-C certified and AUSTEL approved.		
Patch cords shall be available in stranded and solid conductor in lengths to 3 Feet & 7 Feet and Beyond		

The Category 6 modular patch cord shall have guaranteed margin as follows:			
	Category 6 Patch Cord	High Performance Channel	Premium Performance Channel
		(4 Connections)	
	Typical Worst Pair Margin*	Guaranteed Margin **	Guaranteed Margin**
Insertion Loss	N.A	5.0%	7.5%
NEXT	4.4 dB	6.0 dB	7.0 dB
PSNEXT	N.A	7.5 dB	8.5 dB
ELFEXT	N.A	6.0 dB	8.0 dB
PSELFEXT	N.A	8.0 dB	10.0 dB
Return Loss	5.9 dB	4.0 dB	4.0 dB
Frequency Range	1-250 MHz	1-250 MHz	1-250 MHz

* Typical worst pair swept margin when measured with same manufacture's Category 6 modular patch cord.

**Guaranteed margin is valid at any frequency from 1-250 MHz for the single manufacturer's certified channel comprising the single manufacturer's Category 6 apparatus and the single manufacturer's High Performance series cable or Premium Performance series. Values represent margin over the draft Category 6/Class E channel specifications.

C- Integration Components Supply

S.No	Description	UOM	QTY
1	1" Casing & Capping	Mtr	1000
2	2" Casing & Capping	Mtr	1000
3	1" Flexible Pipe	Mtr	100
4	2" Flexible Pipe	Mtr	100
5	6 U Wall Mountable Rack with standard accessories	No	6
6	42 U Closed Rack with standard accessories	No	1
7	1" HDPE Pipe with accessories	Mtr	500
8	1" GI Pipe with accessories	Mtr	20
9	150X50 MM Industrial Duct	Mtr	400
10	4 Pair telephone cable	Mtr	300
11	coaxial cable for TV	Mtr	200

D – Installation & Integration Services

Sr. No.	Item	Unit	Qty
A	**Fiber**		
1	laying of 12 Core Fiber Cable - Single Mode	mtrs.	800
2	Fixing of 24 Port LIU - Shelf fully loaded	nos.	2
4	Pigtails - LC Style - SM	nos.	24
3	LC-LC Patch Cords - SM	nos.	8
5	Digging & laying of 1" HDPE Pipe with standard Accessories	mtrs.	500

Sr. No.	Item	Unit	Qty
B	**UTP**		
1	Laying of CAT6 UTP cable	NO	4800
2	Fixing of CAT6 UTP Patch Panel -24 Port Fully Loaded	NO	8
3	Fixing of CAT6 IO	NO	277
4	Fixing of Face Plate-Single	NO	277
5	Fixing of Back Box	NO	277
6	CAT6 UTP PATCH CORD:3 Feet	NO	277
7	CAT6 UTP PATCH CORD:7 feet	NO	300

C	**Integration components**		
1	Installation of the 1" Casing & Capping	Mtr	1000
2	Installation of the 2" Casing & Capping	Mtr	1000
3	Installation of the 1" Flexible Pipe	Mtr	100
4	Installation of the 2" Flexible Pipe	Mtr	100
5	Fixing of 6 U Wall Mountable Rack with standard accessories	No	6
6	Fixing of 42 U Closed Rack with standard accessories	No	1
7	Laying of 1" HDPE Pipe with accessories	Mtr	500
8	Laying of 1" GI Pipe with accessories	Mtr	20
9	Installation of the 150X50 MM Industrial Duct	Mtr	400
10	Laying of 4 Pair telephone cable	Mtr	300
11	laying of video cable for TV	Mtr	200

E- CCTV Components

Serial No	Model & Make	Description	Quantity
1		Up to 2 megapixel high resolution Dome Camera , Full HD1080p video, Dual stream,l 4mm/6mm fixed lens, 120dB Wide Dynamic Range,3D Digital Noise Reduction, Backlight Compensation DC12V & PoE, Support H.264+, Up to 30m IR range, 3-axis adjustment,IP67 weather-proof protection, Metallic housing & bracket As per Detailed Specifications Listed under Section E1.1	24
2		Up to 2 megapixel high resolution Bullet Camera , Full HD1080p video, Dual stream,l 4mm/6mm fixed lens, 120dB Wide Dynamic Range,3D Digital Noise Reduction, Backlight Compensation DC12V & PoE, Support H.264+, Up to 30m IR range, 3-axis adjustment,IP67 weather-proof protection, Metallic housing & bracket As per Detailed Specifications Listed under Section E1.1	27
3		32 channel NVR with mobile Remote Viewing,VJA Port,,HDMI Port without Hard disk As per Detailed Specifications Listed under Section E1.2	2
4		4 channel DVR with mobile Remote Viewing,VJA Port,,HDMI Port without Hard disk	1
5		4 TB Hard Disk	3
6		Converters & Co-Axial Cables (for above BOM)	
7		Installation charges	(LumSum)

E1- Technical specification

E1.1 IP camera configuration

SI No	specification	Compliance YES /NO	Remarks
1.	2 Megapixel CMOS ICR Infrared Network Bullet Camera 1/3" Progressive Scan CMOS image sensor Min 75° Angle view 32kbps to 16 Mbps bit rate with dual stream Supports network storage Backlight compensation support Frame rate upto 30 fps 30 Meters IR range Standard video compression with high compression ratio Progressive scan CMOS, capture motion video without incised margin Support dual stream, and the sub-stream for mobile surveillance High-performance and long service life Infrared LED, Approx. 20 to 30 meters IR range IR cut filter with auto switch PoE (Power over Ethernet)		

E1.2 NVR configuration

SI No	specification	Compliance YES /NO	Remarks
1.	16/32 channel Network video recorder with following specifications Simultaneous HDMI and VGA outputs at up to 1920×1080 resolution. Holiday recording; Up to 16-ch synchronous playback at 4CIF resolution. Locking and unlocking record files. Support HDD quota mode; different capacity can be assigned to different channel. 2 SATA hard disks can be connected with maximum capacity 4 TB 1 self-adaptive 10M/100M/1000M network interface is provided; Support DDNS (Dynamic Domain Name System); Support network detection, including network delay, packet loss, etc. Support enabling H.264+ to ensure high video quality with lowered bitrate. Input upto 160mbps bandwidth Output upto 80 mbps bandwidth Output 1-ch, resolution: 1920 × 1080 /60Hz, 1600 × 1200 /60Hz, 1280 × 1024 /60Hz, 1280 × 720 /60Hz One network interface One usb 2.0 and one usb 3.0 interface		

F- EPABX Components

Serial No	Make & Model	Description	Quantity
1		40 Line EPABX	1
2		Analog Phone	20
3		Digital Phone	17

F1-Technical specification

Sl No	specification	Compliance YES /NO	Remarks
1.	40 line epabx system expandable up to 256 lines with 8 input lines Attendent/Operator console Auto fax detection, Caller line identification CLI based routing Caller identify software Programming backup facility Remote programming Computer telephone integration Fully configurable key phone system		

G- Biometric Components

Serial No	Make & Model	Description	Quantity
1		Biometric attendance unit	8
2		Magnetic door lock	6
3		Installation charges	Lumsum

G 1-Technical specification

Biometric attendance system

Sl No	specification	Compliance YES /NO	Remarks
1.	Standalone finger print attendance system with keypad and speaker 1,00,000 transaction storage Finger print template capacity 3000 Card capacity 3000 With 800Mhz 32 bit processor Network and usb ports Supports door sensor With suitable software Battery backup		

Signature of Bidder with stamp

Financial Bid

Consolidated Price Schedule for the Tender Requirements

Form No.	Item details with make and model	Warranty	Total price with taxes and duties etc with warranty as per Col. 3 (INR)
1	2	3	4
A	*Active Components*	1 Years	
B	**Passive Components**	1 Year	
C	**Integration Components Supply**	1 Year	
D	**Installation & Integration Services**	1 Year	
E	**CCTV Components**	1 Year	
F	**EPABX Components**	1 Year	
G	**Bio Metric Components**	1 Years	
	Total Project cost (INR)		

Bid amount in words   (Col. No. 4) _____

(Signature of Bidder with stamp)

A- Active Components

S. No.	Make & Model	Item	Unit	Qty	Unit Price INR	Extd Price INR
1		24 port Gigabit switch with 4 x 1G SFP As per Detailed Specifications Listed under Section A.1	Nos.	12		
1 a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer	Nos	12		
2		24 port Gigabit PoE 370W switch, 4 x 1G SFP As per Detailed Specifications Listed under Section A.2	Nos.	2		
2 a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer				

Sr. No.		Item	Unit	Qty	Unit Rate	Total Amount
3		8 Port Gigabit Ethernet switch with 2 x 1G copper or 2 x 1G SFP with Rack mounting KIT . As per Detailed Specifications Listed under Section A.3	Nos.	4		
3a		8 x 5 x NBD Hardware replacement warranty for 1 Year Directly provided by the principal manufacturer				
4		1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM As per Detailed Specifications Listed under Section A.4	Nos.	8		
					Sub Total	
					Taxes	
					Grand total	

B - Passive Components

Sr. No.	Item	Unit	Qty	Unit Rate	Total Amount
A	**Fiber**				
1	12 Core Fiber Cable - Single Mode	mtrs.	800		
2	24 Port LIU - Shelf fully loaded	nos.	2		
3	Pigtails - LC Style - SM	nos.	24		
4	LC-LC Patch Cords - SM	nos.	8		
				Sub Total	

Sr. No.	Item	Unit	Qty	Unit Rate	Total Amount
B	**UTP**				
1	CAT6 UTP cable box	NO	16		
2	CAT6 UTP Patch Panel -24 Port Fully Loaded	NO	14		
3	CAT6 IO	NO	277		
4	Face Plate-Single	NO	277		
5	Back Box	NO	277		
6	CAT6 UTP PATCH CORD:3 Feet	NO	277		
7	CAT6 UTP PATCH CORD:7 feet	NO	300		
				Sub total	

Sub Total A+B	
Taxes	
Grand Total	

C- Integration Components Supply

S.No	Description	UOM	QTY	Unit Price	Total Price
1	1" Casing & Capping	Mtr	1000		
2	2" Casing & Capping	Mtr	1000		
3	1" Flexible Pipe	Mtr	100		
4	2" Flexible Pipe	Mtr	100		
5	6 U Wall Mountable Rack with standard accessories	No	6		
6	42 U Closed Rack with standard accessories	No	1		
7	1" HDPE Pipe with accessories	Mtr	500		
8	1" GI Pipe with accessories	Mtr	20		
9	150X50 MM Industrial Duct	Mtr	400		
10	4 Pair telephone cable	Mtr	300		
11	coaxial cable for TV	Mtr	200		
				Sub Total	
				Taxes	
				Grand Total	

D - Installation & Integration Services

Sr. No.	Item	Unit	Qty	Unit Rate	Total Amount
A	**Fiber**				
1	laying of 12 Core Fiber Cable - Single Mode	mtrs.	800		
2	Fixing of 24 Port LIU - Shelf fully loaded	nos.	2		
4	Pigtails - LC Style - SM	nos.	24		
3	LC-LC Patch Cords - SM	nos.	8		
5	Digging & laying of 1" HDPE Pipe with standard Accessories	mtrs.	500		
				A Sub Total	

Sr. No.	Item	Unit	Qty	Unit Rate	Total Amount
B	**UTP**				
1	Laying of CAT6 UTP cable	NO	4800		
2	Fixing of CAT6 UTP Patch Panel -24 Port Fully Loaded	NO	8		
3	Fixing of CAT6 IO	NO	277		
4	Fixing of Face Plate-Single	NO	277		
5	Fixing of Back Box	NO	277		
6	CAT6 UTP PATCH CORD:3 Feet	NO	277		
7	CAT6 UTP PATCH CORD:7 feet	NO	300		
				B Sub Total	

C	Integration components					
1	Installation of the 1" Casing & Capping	Mtr	1000			
2	Installation of the 2" Casing & Capping	Mtr	1000			
3	Installation of the 1" Flexible Pipe	Mtr	100			
4	Installation of the 2" Flexible Pipe	Mtr	100			
5	Fixing of 6 U Wall Mountable Rack with standard accessories	No	6			
6	Fixing of 42 U Closed Rack with standard accessories	No	1			
7	Laying of 1" HDPE Pipe with accessories	Mtr	500			
8	Laying of 1" GI Pipe with accessories	Mtr	20			
9	Installation of the 150X50 MM Industrial Duct	Mtr	400			
10	Laying of 4 Pair telephone cable	Mtr	300			
11	laying of video cable for TV	Mtr	200			
				C Sub Total		
			Sub total A + B+ C =			
			Taxes			
			Grand Total			

E- CCTV Components

Serial No	Model & Make	Description	Quantity	Unit Price	Total Amount
1		Up to 2 megapixel high resolution Dome Camera , Full HD1080p video, Dual stream,l 4mm/6mm fixed lens, 120dB Wide Dynamic Range,3D Digital Noise Reduction, Backlight Compensation DC12V & PoE, Support H.264+, Up to 30m IR range, 3-axis adjustment,IP67 weather-proof protection, Metallic housing & bracket	24		
2		Up to 2 megapixel high resolution Bullet Camera , Full HD1080p video, Dual stream,l 4mm/6mm fixed lens, 120dB Wide Dynamic Range,3D Digital Noise Reduction, Backlight Compensation DC12V & PoE, Support H.264+, Up to 30m IR range, 3-axis adjustment,IP67 weather-proof protection, Metallic housing & bracket	12		
3		32 channel NVR with mobile Remote Viewing,VJA Port,,HDMI Port without Hard disk	1		

Sr. No.	Make & Model	Description	Quantity	Unit Price	Total Amount
4		4 channel DVR with mobile Remote Viewing,VJA Port,,HDMI Port without Hard disk	1		
5		4 TB Hard Disk	2		
6		Converters & Co-Axial Cables (for above BOM)			
7		Installation charges	Lumsum		
				Sub Total	
				Taxes	
				Grand Total	

F- EPABX Components

Sr. No.	Make & Model	Description	Quantity	Unit Price	Total Amount
1		40 Line EPABX	1		
2		Analog Phone	20		
3		Digital Phone	17		
4		Installation charges	LUMSUM		
				Sub Total	
				Taxes	
				Grand Total	

G- Bio Metric Components

Sr. No	Make & Model	Description	Quantity	Unit Price	Total Amount
1		Biometric attendance unit	8		
2		Magnetic door lock	6		
3		Installation Charges	Lumsum		
			Sub Total		
			Taxes		
			Grand Total		

(Signature of Bidder with stamp)