ANNEXURE-A

Sant Longowal Institute of Engineering & Technology has Multimode Fibre optical network insfrastructure. To provide the Internet connectivity in the Kendriya Vidhyalaya, SLIET campus, following equipments are required. Supplier will be responsible to configure supplied switch in the LAN.

S.No	Item	Qty	Make/Madel
1	Switch (manageable) (24 Port POE)	1 No.	As per Specifications
2	1000 Base-LX/LH SFP	2 Nos.	
3	Patch Panel (24 Port) fully loaded	1 No.	D-link/Molex/Belkin
4	6 U Rack with all accessories	1 No	ComNet/APW/NetPro
5	SMB & IO Box	3 Nos.	D-link/Molex/AMP
6	CAT 6 UTP Patch Cord(3 mtrs)	6 Nos.	D-link/Molex/AMP
7	ST to LC fibre Patch Cord (3 mtrs) Duplex multimode	2 Nos.	D-Link/Molex/AMP
8	CAT 6 UTP Cable	204 Mtrs.	D-link/Molex/AMP

Specification (24 Port POE Switch)

S.No	Access Switch Minimum Specification	Complaince
General Features		
1	The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports	
2	The switch should support a minimum of 2 SFP+ Uplinks	
3	The switch should support 2x10G SFP+ modules	
4	The switch should support 2x1G SFP modules	
5	The switch should support a total of 26 Ports	
6	The switch should support MTBF of 250000 hours	
Performance and Scalability		
1	The switch should support Forwarding bandwidth of 100 Gbps	
2	The switch should support Full-duplex Switching bandwidth of 200 Gbps	
3	The switch should support 64-Byte Packet Forwarding Rate of 94 Mpps	
4	The switch should support a Dual Core CPU	
5	The switch should support 128 MB of Flash memory	
6	The switch should support 512 MB of DRAM	
7	The switch should support 1023 VLANs	
8	The switch should support Jumbo frames of 9216 bytes	
9	The switch should support Maximum transmission unit (MTU) of 9198	

	bytes	
10	The switch should support 16000 Unicast MAC addresses	
Dimension		
1	The Switch should be 1RU	
2	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC	
3	The switch should support Operating relative humidity 10% to 95% noncondensing	
Stacking		
1	The switch should support Stacking	
2	Stacking should enable all switches to function as a single unit	
3	The switch should support an optional Stacking Port	
4	Stacking module should be Hot-swappable	
5	Stacking should support a minimum of 2 or more Switches	
6	Stacking should support a maximum of 8 Switches	
7	Stacking should support 80 Gbps of throughput	
8	Stacking should support single IP address management for the group of switches	
9	Stacking should support single configuration	
10	Stacking should support simplified switch upgrade	
11	Stacking should support automatic upgrade when the master switch receives a new software version	
12	Stacking should support stacking cable length of 3m	
13	Stacking should support QoS to be configured across the entire stack	
PoE & PoE+		
1	The switch should support PoE (IEEE 802.3af)	
2	The switch should support PoE+ (IEEE 802.3at)	
3	The switch should support flexible power allocation across all ports	
4	The switch should have 370W of Available PoE Power	
5	The switch should support 24 ports up to 15.4W	
6	The switch should support 12 ports up to 30W	
7	The switch should support Per port power consumption to specify maximum power setting on an individual port	
8	The switch should support Per port PoE power sensing to measure actual power being drawn	
9	The switch should support protocol to allow switch to negotiate a more granular power setting of IEEE classiffied devices	
10	The switch should support a PoE MIB to get visibility into power usage	
11	The switch should support a PoE MIB to set different power-level thresholds	
Power Supply		
1	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC	
2	The switch should support an External Redundant Power Supply	
Standards		
1	The switch should support IEEE 802.1p	

2	The switch should support IEEE 802.1Q Trunking	
3	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)	
4	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)	
5	The switch should support IEEE 802.1x	
6	The switch should support IEEE 802.1ab (LLDP)	
7	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)	
8	The switch should support IEEE 802.3af Power over Ethernet	
9	The switch should support IEEE 802.3af Power Classification	
10	The switch should support IEEE 802.3at Power over Ethernet +	
11	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)	
12	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports	
13	The switch should support IEEE 802.3 10BASE-T specification	
14	The switch should support IEEE 802.3u 100BASE-TX specification	
15	The switch should support IEEE 802.3ab 1000BASE-T specification	
16	The switch should support IEEE 802.3z 1000BASE-X specification	
17	The switch should support RMON I and II standards	
18	The switch should support SNMP v1, v2c, and v3	
Layer 2 Features		
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors	
2	The switch should support IEEE 802.1Q VLAN encapsulation	
3	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically	
4	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence	
5	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability	
6	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.	
7	The switch should support IGMP filtering	
8	The switch should support 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.	
9	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance	
10	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance	
11	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance	
12	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN	

13	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth	
14	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.	
15	The switch should support 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.	
16	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.	
17	The switch should support IGMP v1, v2 Snooping	
18	The switch should support IGMP v3 Snooping	
19	The switch should support IGMP v1, v2 Filtering	
20	The switch should support IGMP Snooping Timer	
21	The switch should support IGMP Throttling	
22	The switch should support IGMP Querier	
23	The switch should support Configurable IGMP Leave Timer	
24	The switch should support MVR (Multicast VLAN Registration)	
Quality of Service (QoS) & Control		
1	The switch should support 4 egress queues per port to enable differentiated management	
2	The switch should support scheduling techniques for Qos	
3	The switch should support Weighted tail drop (WTD) to provide congestion avoidance	
4	The switch should support Standard 802.1p CoS field classification	
5	The switch should support Differentiated services code point (DSCP) field classification	
6	The switch should support Control- and Data-plane QoS ACLs	
7	The switch should support Strict priority queuing mechanisms	
8	The switch should support Rate Limitting function to guarantee bandwidth	
9	The switch should support rate limiting based on source and destination IP address	
10	The switch should support rate limiting based on source and destination MAC address	
11	The switch should support rate limiting based on Layer 4 TCP and UDP information	
12	The switch should support availability of up to 256 aggregate or individual polices per port.	
Management		
1	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence	

2	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability	
3	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.	
4	The switch should support IGMP filtering	
5	The switch should support 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.	
6	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance	
7	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance	
8	The switch should support IPv6 Host support for IPv6 SSH	
9	The switch should support IPv6 Host support for IPv6 TFTP,	
10	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth	
Network Security		
	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.	
	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 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	
IPv6 Features		
1	The switch should be on the approved list of IPv6 Ready Logo phase II - Host	
2	The switch should support IPv6 unicast Static Routing	
3	The switch should support 16 IPv6 Static routes	
4	The switch should support IPv6 MLDv1 & v2 Snooping	
5	The switch should support IPv6 Host support for IPv6 Addressing	
6	The switch should support IPv6 Host support for IPv6 Option processing	
7	The switch should support IPv6 Host support for IPv6 Fragmentation	

8	The switch should support IPv6 Host support for IPv6 ICMPv6	
9	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6	
10	The switch should support IPv6 Host support for IPv6 Ping	
11	The switch should support IPv6 Host support for IPv6 Traceroute	
12	The switch should support IPv6 Host support for IPv6 VTY	
13	The switch should support IPv6 Host support for IPv6 SSH	
14	The switch should support IPv6 Host support for IPv6 TFTP,	
15	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects	
16	The switch should support IPv6 Port Access Control Lists	
17	The switch should support IPv6 Router Access Control Lists	
18	The switch should support HTTP, HTTP(s) over IPv6	
19	The switch should support SNMP over IPv6	
20	The switch should support SysLog over IPv6	
21	The switch should support IPv6 Stateless Auto Config	
22	The switch should support DHCP based Auto Config (Auto Install) and Image download	
23	The switch should support IPv6 QoS	
24	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic	
25	The switch should support SCP/SSH over IPv6	
26	The switch should support Radius over IPv6	
27	The switch should support TACACS+ over IPv6	
28	The switch should support NTPv4 over IPv6	