

PHYSICAL RESEARCH LABORATORY

Design, Supply, Installation and Commissioning of integrated audio visual system on turnkey basis for the K R Ramanathan Auditorium at PRL, Main Campus, Navarangpura, Ahmedabad

Schedule of Quantity

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
A	Video System					
A1	Supply, Instllation, Testing and Commissioning(SITC) of Full HD Projector : it should be 7000 lumens or Higher lumens ANSI Digital Multimedia Projector. The distance between projection screen and projector room is approximately 65 feet. The vendor must provide appropriate projection system and required accessories to cater the need and enable projection from the 65 feet distance. The projector must have HDMI, VGA, DVI, RJ- 45, RS232 and other ports. The contrast ration 8000:1, Control S Input Connectors (Stereo Mini Jack), Control S Output Connectors (Stereo Mini Jack), Plug in power DC 5v, Light Source: Laser Diode, Screen Size: 40"-600" measured Diagonally, Aspect Ratio: 16:10, 3LCD 1920x1200x3 WUXGA, HDBaseT	1	No.	Sony		
A2	SITC of Projector Lens : addtional lens for projector to project image from distance of 65 feet Throw Ratio: 3:30:1-6:11:1, Zoom/Focus: Powered/Powered, Lens Shift:Vertical:Upward 113% to Downword 113% Horizontal: Right 63%-Left 63%. Aperture: ½.20-3.10, Screen Size:40"-600"	1	No.	Sony		
A3	SITC of Fixed white colour projection screen Fabric size 11'X 17' with panel, fixing and other required accessories. The fabric should be from reputed brand.	1	No.	Custom		
A4	SITC of Cordless PPT presenter with laser Pointer	1	No.	Logitech/Dell or equivalent		

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A5	SITC of 15.6" Interactive Touch Monitor , GA/600:1/ Can use electromagnetic pen. Diagonally resolution:1366x768, Aspect Ratio:16:9, Contract:400:1, Pen Pressure Level:512, response time rate:8ms, Communication Interface: USB 2.0 or better	1	No.	Wacom/Elmo/Dell or equivalent		
B	Video Switching System					
B1	Seamless Matrix Switcher : 8 HDMI Input ,8 HDMI Output, 4K resolutions up to UHD (3840 x 2160) and DCI (4096 x 2160) with refresh rates of 30 Hz (4:4:4) and 60 Hz (4:2:0),Signaling rates up to 3.4 Gbits for flawless 4K output,with IR Remote Control	1	No.	Aten/Lightware/wyrestrom /Milestone or equivalent		
B2	HDMI Repeater Plus Audio De-embedder-it should Extracts HDMI audio signal and outputs as additional audio source,Supports Dolby True HD and DTS HD Master Audio	1	No.	Aten/Lightware/wyrestrom /Milestone or equivalent		
B4	HdBaseT Trasnmitter & Recevier Set -HDMI connection over a long distance via one Cat 5e/6/6a cablePOH (Power over HDBaseT) – supplies power from Transmitter to Receiver,Superior video quality – up to 4K@35m (Cat 5e/6)	3	Set	Aten/Lightware/wyrestrom /Milestone or equivalent		
B5	Control Processor -it should Supports various control interface connections IR learning function for adding IR device drivers Web GUI for easy system configuration,it should have 4 Serial,4 IR,4 Relay Port & USB Port	1	No.	Aten/Lightware/wyrestrom /Milestone or equivalent		
B6	Ipad -Air 2 with Wifi	1	No.	Apple or equivalent		
B7	Floor Box-it should have Audio XLR x 2 Connectivity ,Power 5/15 A X 1,LAN X 1 ,HDMI x1	2	No.	Custom		
B8	Wall Plate -HDMI x1 with Audio XLR Faceplate along with Backbox	1	No.	Custom		
B9	Audio Visual Rack it should be 24U or Higher, Cooling Fan, Castrol Wheel	1	No.	President/Valrack/Elixir or equivalent		
C	Acoustics					
	Note : Rate for Acoustic should include removal of existing acoustic panels/ wooden frame / screen on rear side of stage where new acoustic panels to be provided.					

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
C1	<p>Providing and fixing accoustic paneling on existing wall using 20 mm tiles made of compress wood fibre made with inorganic compound with mat black colour of size 600 X 1200 / 600X 600. The tiles should have excellent noise absorption of 0.70 NRC as per ISO: 354-1985 and ASTM 423-90 a, STC of 48 as per ASTM 90/413 Density 650-750 kg/ cubic meter, meets stringent Fire Ratings ASTM D-876 and BS:476, Tested as per ASTM C 367-99. To be installed with Aluminium H Profile on G.I. studs 600 X 600 mm centre to centre 2400mm X 50mm web thickness 0.5mm, flanges 15 & 50 mm fully knurled giving it strength, hot dipped galvanized steel with 120 GSM zinc coating specially designed for Accoustic vibration management and long life with a backing of 50 mm thick, 1000 GSM absorb wool tested as per Fire Retardant ASTM D 635-1991/ Insulation and IS 15061-2002 for excellent results. Approx. Size - 38 feet X 4 feet</p>	152	square feet	Himalayan/ Absound/ Anutone/ Symphonyacoustic/ Gyptech or equivalent		
C2	<p>Providing and fixing accoustic paneling on existing wall using 20 mm tiles mad of wood fibre 1mm width cement composites 20 mm thick with an option of colours as per the choice of the Architect/ Enginner in charge of size 600 X 1200. The tiles should have excellent noise absorption of 1 NRC as per ISO: 354-1985 and ASTM 423-90 a, Density 400 kg/ cubic meter, meets stringent Fire Ratings ASTM D-876 and BS:476, weather resistance as per IS 3308, Thermal insulation as per IS:3346-1980 with relative humidity of 90% RH at 60 degree celcius (140 degree farenhite) for 15 days = No deterioration. Confirms to En 131682001 and are RoHS compliant. To be installed with Aluminium H Profile on G.I. studs 600 X 600 mm centre to centre 2400mm X 50mm web thickness 0.5mm, flanges 15 & 50 mm fully knurled giving it strength, hot dipped galvanized steel with 120 GSM zinc coating specially designed for</p>	494	square feet	Himalayan/ Absound/ Anutone/ Symphonyacoustic/ Gyptech or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
	Accoustic vibration management and long life with a backing of 50 mm thick, 1000 GSM absorb wool tested as per Fire Retardant ASTM D 635-1991/ Insulation and IS 15061-2002 for excellent results. Approx. Size - 38 feet X 13 feet					
C3	Providing and fixing accoustic paneling on existing wall using Wooden slats of size 2430 x 131x16mm FR Grades made of exterior grade MDF backed with acoustical Fleece providing sound absorption of 0.88 NRC as per ISO 354. To be installed with 15mm Aluminium profile conforms to Aluminium Alloy 6063-T6. Temper As per BS:1474-1987 and G. I. lock in clips on the back of tongue and Groove system. The density per panel is 750-800 kg/ cubic meter. The panels come with tongue and groove for seamless patterns, 4-28mm groove and visible panel. these slats are made from acoustical fibre board with linear perforations for excellent uniformity. The perpendicular holes are available on the back of panel which are covered by black acoustical fleece. Achieves sound reduction of 0.88 NRC.	136	square feet	Himalayan/ Absound/ Anutone/ Symphonyacoustic/ Gyptech or equivalent		
	To be installed on G.I. studs 600 X 600 mm centre to centre 2400mm X 50mm fully knurled giving it high strength, hot dipped galvanized steel with 120 GSM zinc coating specially designed for Accoustic vibration management and long life with a backing of 50 mm thick, 1000 GSM absorb wool tested as per Fire Retardant ASTM D 635-1991/ Insulation and IS 15061-2002 for excellent results. Approx. Size - 4 feet X 17 feet - 2 nos.					
D	Audio System					
D1	22 Channel Digital Audio Mixer: 7" (178 mm) diagonal color TFT, capacitive touch sensing, Input 16 (12 XLR, 4 XLR combo), Stereo USB / MP3 playback, Output 2 (XLR, line-level), 6 (XLR, line-level) + 2 (TRS, stereo In Ear Monitor or mono balanced line-level) , USB Wi-Fi adaptor (included) to control	1	No.	QSC/Yamaha/ Soundcraft / Shure or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
D2	Digital Power Amplifier - 8 channel class D Networkable Power amplifier with a Max Output Power of 8x500W@8 ohms, or bridged mode output power of 4x 1000W @ 8/4 ohms. 20Hz - 20 KHz, SNR of 102dB and THD + N of <0.4% with built in protection such as Limiters, Temperature, DC, Short Circuit, Peak Current Limiters, Turn on delay etc. Built in DSP for Matrix routing, Speaker equalization, Delays, Array EQs etc complete with Ethernet Port for Network Control, programming and monitoring. Shall offer optional Network audio connectivity (Dante or CobraNet) through expansion slot.	1	No.	Bose/Martin Audio/EAW/ Renkus Heinz /JBL or equivalent		
D3	FOH Speaker : Multi driver full range, IP54 or better rated loudspeaker system: The loudspeaker free space full range sensitivity shall be at least 92dB-SPL in the 50Hz to 16kHz range. The nominal horizontal beamwidth shall be 100 degrees, and the nominal vertical beamwidth shall be 70 degrees. The power handling capacity of the loudspeaker shall be at least 225 Watts continuous pink noise, band-limited from 50Hz to 16kHz. Max SPL shall be 117dB (123dB peak) or better with a nominal impedance of 8 Ohms or higher. Powder Coated steel grill or better	4	No.	Bose/Martin Audio/EAW/ Renkus Heinz /JBL or equivalent		
D4	Custom Hardware (Brackets/Pole/Yolk mounts required to hang shack)	2	Set	Custom		
D5	Stage Monitor : Multi-position Floor monitor with 3 X 2.25 inch Mid-high drivers and single 5.25 inch woofer gives articulated array configuration 120 X 60 degree coverage, Frequency response 70Hz- 16 kHz, Sensitivity 91 dB SPL, Max SPL 111 Db SPL, power handling 100W@ 8 ohm, Internal passive crossover network does not require active equalization, Rear bumper prevents unwanted movement, Drivers enclosed in Molded textured polyethylene material with powder coated steel grille	2	No.	Bose/Martin Audio/EAW/ Renkus Heinz or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
D6	Green Room/Control Room Speakers -full range speaker with freq response 95Hz to 17kHz, Nominal dispresion of 170H X 160V, Cont power: 16W @ 8 Ohms, sensitivity 84dB SPL, Max SPL 96dB SPL ,inbuilt drivers with polypropylene encloser with powder coated steel grille.	2	No.	Bose/Martin Audio/EAW/ Renkus Heinz or equivalent		
D7	Digital Sound Processor : 8 Mic/Line inputs & 8 analog outputs, 24 Bit A-D and D-A Convertors; Sampling Rate : 48 kHz; THD : < 0.002 % ; Channel Separation (Crosstalk) : < 105 dB ; Frequency Response 20 Hz - 20 kHz ; Signal-to-Noise Ratio 80 dB ;Dynamic Range : > 115 dB; 5 Control Inputs and Outputs; RS-232 and Ethernet Port for third party Control and Monitoring; Expansion slots for optional Network Audio formats like Dante/Cobranet; inbuilt DSP features like Input Equalizers, Router, Band Pass filter, Output Equalizer, Delay, Limiters, gates , Source selectors etc.	1	No.	Bose/Martin Audio/EAW/ Renkus Heinz /JBL or equivalent		
D8	UHF Cordless HandMike 12 UHF selectable channels Clear LCD display,Switching bandwidth up to 40 MHz frequency bands 518-548 MHz,Audio Frequency Response 50 to 15,000 Hz,RF power Output : 30 mW or better,Polar Patern : Dynamic cardioid/ Cardioid	2	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		
D9	UHF Cordless lapel Microphone: Minimum 12 or higher UHF selectable channels Clear LCD display,Switching bandwidth up to 40 MHz frequency bands 518-548 MHz,Audio Frequency Response 50 to 15,000 Hz,RF power Output : 30 mW or better,Polar Patern : Omnidirectional/Cardioid	2	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
D10	Chairman Unit : It should be Digital Wireless transmission with integrated True Diversity antenna technology, it should have Three selectable frequency bands : 2.4 / 5.2 / 5.8 GHz,automatic audio channel allocation of the microphone units,Clear button to switch off all activated delegate stations, Red LED ring around the gooseneck to indicate the ready-to-talk status of the microphone, Microphone button to switch the microphone on / off,450mm Gooseneck microphone should be supplied as separate unit,Programmable function button for different priorities or external controls ,Minimum operating time 20 hours or better	1	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		
D11	Delegates Unit : It should be Digital Wireless transmission with integrated True Diversity antenna technology, it should have Three selectable frequency bands : 2.4 / 5.2 / 5.8 GHz,automatic audio channel allocation of the microphone units,Red LED ring around the gooseneck to indicate the ready-to-talk status of the microphone, Microphone button to switch the microphone on / off,450mm Gooseneck microphone should be supplied as separate unit,Minimum operating time 20 hours or better	7	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		
D12	Host/Controller Unit: Modulation to ensure high immunity from interference in the frequency range of 2.4 / 5.2 and 5.8 GHz,it should Control minimum 20 microphones in the conference mode,System control and configuration via RS 232, USB or Ethernet; connection to a media control system is possible,Frequency range from 2400– 5875 MHz,Frequency response70 Hz – 22 kHz (-3 dB),it should support AVB Protocol	1	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
D13	Charging and transport case -Charging & Transport case for above microphones,Modular case to accommodate the microphone units, charging electronics and discussion control unit,Window to observe the charging status,Integrated power supply unit for charging 1 to 10 microphone units	1	No.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		
D14	Wired Microphone Polar Pattern: Super-Cardioid, Transducer Type: Dynamic, Frequency Response:50Hz- 15kHz, Nominal Impedance: 350Ohms, Connector: 3-pin XLR male, Mic holder, Plastic case, Leatherette pouch	4	Nos.	Beyerdynamic/ AKG/Clearone / Shure or equivalent		
D15	Table stand for wired microphone Base Dia: 150mm, Weight: 2.20kg, Table/Floor stand, Height: 350-530mm	2	Nos.	Custom		
D16	Floor stand for wired microphone Base Dia.: 230mm, Floor stand, Height: 920-1500mm	2	Nos.	Custom		
E	Head Table/ Dias Podium					
E1	Furniture work consisting of (1) 8x2.5x2.5 Head Table – 2 Nos. (2) 4x2.5x2 Podium – 2 (Furniture should be made out of IS-710 waterproof ply with veneer finish with malamine coating with all required hardware and cutout for AV as required,it should be Custom Design wooden of MR grade ply and century veneer with melamine polish)	1	Lot	Custom		
F	Online UPS					

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
F1	The vendor should supply minimum 10KVA UPS. The vendor should supply, install and commission the UPS and connect all the supplied items of this turnkey project work and few lights to UPS. All the required accessories including cables should be supplied by the vendor. The UPS should be of 30minutes backup having maintenance free battery. The UPS and battery should be vertical rack mount. The vendor should also supply suitable rack as per quoted solution. The vendor should also provide authorization certificate from the OEM issue after the tender date for after sale service, authorization. The UPS should have spike guard to protect the connected system. If UPS does not have inbuilt spike guard then vendor should provide and install and integrate with UPS. If there is a requirement of power panel, then vendor should supply and install it. The vendor should accommodate the UPS and batteries in the control room. No additional space will be given.	1	No.	APC/Emerson/ Power one or equivalent		
F2	Supply of onsite AV person on call basis PRL may or may not call AV person based on the requirement during functions. PRL will inform the vendor to provide onsite AV person on call basis. PRL will inform the vendor at least two days prior the function. The vendor should provide separate cost of providing AV person on per call basis per day. This cost will not be consider for Vendor L1 criteria.	1	Per day			
G	Cable and Connectors					
G1	HDMI Patch Cord 1.8 Mtr	10	No.	MX/Belden/ AERO or equivalent		
G2	Speaker Cable 16 awg	300	Mtr	MX/Belden/ AERO or equivalent		
G3	Cat6 Cable	305	Mtr	MX/Belden/ AERO or equivalent		

Sr. No.	Description of Item	Quantity	Unit	Principal Model	Rate in Rs.	Amount in Rs.
G4	Various types of A/V connectors - Lumpsum to complete the AV Setup,Extra component or equipment maybe added to match the complete specs.	1	Set	Custom		
H	Installation, Testing, commissioning and on site training to PRL staff of the above system	1	Lot			
Total Amount with GST						