

## IMSc Media Room Setup Requirements

<b>Mini-Studio setup to handle the following:</b>		Remote class room, One-to-one/multi party VC session, Remote VC session, Remote Interviews/viva-voce/meetings/recordings etc., A/V recordings, uploadable recorded/converted media contents						
Sl. No:	Items	Minimal specification	Make/Model	Unit cost	Qty	Cost	Taxes	Total
				Rs.	No.	Rs.	Rs.	Rs.
1	Video Conference System	Full HD MCU with upto 4-way simultaneous participation Videoconference unit with Video Std: H.261, H.263, H.263+, H.264 and H.239 and BFCP compliant, Support for multiple dual live streaming modes:1080p30 & 720p5,720p60 & 720p5,720p30 & 720p30 Video Inputs: one each HD Camera/HD Video/DVI-I(HDMI-VGA) Video Outputs: One each of HD video out/DVI-I video out Audio Std: G.711/722/722.1/722.1C/728/729,MPEG-4-AAC-LC, HD audio, full duplex, Echo cancellation, gain/noise control, Dual omni-directional microphones, Audio inputs:2 Stereo, Mic 2 channel in etc., Audio Outputs: 1 Stereo, HD-video out,DVI out etc., Supported Stds: H.221, H.224, H.225, H.231,H.239, H.241, H.242, H.245, H.281,BONDING (ISO13871) via Networker, RFC 3261, RFC 3264, RFC 2190, RFC 3407, RFC 2833 Adaptive Motion Control with forward error correction, CODEC only(capable of connecting Professional video camera as described below), NAT/Firewall Traversal(H.460/SIP), 10/100Mbps RJ45, IPv4/IPv6, Auto negotiation of bandwidth, GUI/Call manager,Web interface & management, enabled with SNMP AC power supply with Indian type adapter/socket	Lifesize /Cisco / Polycom					
2	Professional Video Camera	2 x Professional Video Camera with High Performance minimum 20X Zoom Lens/1.4X Digital Extender Zoom Three 1/2.86 MOS Sensors for high sensitivity, Supports PoE, FHD and via IP transmission/control-management, 3G-SDI & HDMI Supported Resolution: 1080/59.94p, 1080/29.97p, 1080/23.98p, 1080/59.94i, 1080/29.9PsF, 1080/23.98PsF,720/59.94p in HDMI & 3G-SDI	Panasoni/Sony					
3	Card Recorder with memory card	1xRecorder with 3.45" LCD display, Capable of 1080p native recording and supports 1080/24PsF input/output, HDMI (3D-compatible) output, HD/SD SDI input/output, video monitor output, audio monitor output, headphone output, REF input, TC input/output and XLR analog audio input,with USB 2.0 and 3.0 Input,SD/SDHC Memory Card Slots for 64GB	Panasonic/sony or Compatible equivalent					
		i).All-in-one 8x4 4K matrix switcher, scaler, audio DSP, audio power amplifier, and control processor	Crestron/Extron					

4	<b>Digital Matrix Switcher with Controller &amp; Amplifier</b>	ii) Video Inputs: 6xHDMI and 2xTwistedpair inputs						
		iii) Video outputs: 2x independently Scaled Twisted pair output and 2xHDMI						
		iv) Built-in Control processor with 1 x bidirectional RS-232, RS-422, RS-485, 2 x bidirectional RS-232, 2 x IR port, 4x Relay port and 3x Gigabit Ethernet switch						
		v) Built in Audio DSP 4 mic input with phantom power and 6 line input and 4 line output and 2 x Digital Audio out S/P DIF						
		vi) Built in Stereo power Amplifier- 25 watts (rms) per channel, 8 ohms, 1 kHz, 0.1% THD, 50 watts per channel, 4 ohms, 1 kHz, 0.1% THD						
5	<b>Camera to Matrix Switcher --&gt; 3G-SDI to HDMI Converter</b>	2x Able to convert 3G-SDI, HD-SDI, SD-SDI to HDMI with Audio embedding, Able to input detect automatically, Supported resolutions 1080p @ 59.94, 1080p @ 50, 1080p @ 25, 1080p @ 30, 1080p @ 24, 720p @ 60, 720p @ 50	Blackmagic/Data Video					
6	<b>Matrix Switcher to recorder --&gt; HDMI to 3G-SDI Converter</b>	2x Able to convert HDMI to 3G-SDI, HD-SDI, SD-SDI with Audio embedding, Able to input detect automatically, Supported resolutions 1080p @ 59.94, 1080p @ 50, 1080p @ 25, 1080p @ 30, 1080p @ 24, 720p @ 60, 720p @ 50	Blackmagic/Data Video					
7	<b>Faceplate with built in transmitter --&gt; I/O plate and transmitter for PC/Laptop source(HDMI/VGA with Audio)</b>	3x Transmits HDMI or analog video, control, and analog audio up to 230 feet (70 meters) over a shielded CATx cable, Video inputs- One HDMI, one VGA on 15-pin HD, two 3.5 mm stereo mini jacks for audio, Video Outputs- One twisted pair output on RJ-45, Supports computer video up to 1920x1200, including HDTV 1080p/60 and 2K, Auto-switching between inputs, HDCP compliant, gives LED indicators for signal presence, HDCP, and power	Extron/Crestron					
8	<b>High Resolution Co-axial Cable</b>	100 Meters of cable shall have Single 20 AWG 75 ohm coaxial conductor	Extron/Kramer					
9	<b>BNC Male crimp connectors</b>	1 Packet of connector shall have 75 ohm impedance prevents ghosting and enhances performance	Extron/Kramer					
10	<b>HDMI Patch cables</b>	12x HDMI Cable shall have High speed HDMI® cable, Up to 4K @ 30 Hz (4096x2160)*, UHD @ 30 Hz (3840x2160)*, 1080p @ 60 Hz, Pair impedance of 100 ohms ±10 ohms, Gold plated Contacts	Extron/Kramer/Crestron					
11	<b>HDMI to DVI Patch Cable</b>	2x HDMI to DVI Cable Shall have 28 AWG copper wire construction, Standard Speed HDMI to DVI-D cables, Supports signals up to 1920x1200 @ 60 Hz and 1080p/60, Gold plated Contacts	Extron/Kramer/Crestron					
12	<b>VGA Patch Cables</b>	1x VGA Molded Cable shall have Injection mold with overall foil shield for improved EMI electromagnetic interference isolation, AWM 20276 rated	Extron/Kramer/Crestron					

13	<b>Lighting dimmer module --&gt; For Lighting control</b>	Lighting dimmer module Outputs:-4 x 10A dimmed outputs,4 x 10A switched outputs ,4 x HF ballast control outputs selectable to DALI Broadcast, 1-10V DC, DSI, Protection:-4 x 10A 6kA single pole thermal magnetic circuit breakers,Control Inputs-1 x RS485 serial port ; 1 x programmable dry contact AUX input ,170 preset scenes supported, Switching Device:- Relay 16A nom. (resistive), Fluorescent 800A surge, Incandescent 165A surge, Regulating Device:- Triac 600V, 40A nom. 400A surge	Crestron/Dynalite					
		Outputs:- 4 x 10A dimmed outputs,4 x 10A switched outputs ,4 x HF ballast control outputs selectable to DALI Broadcast, 1-10V DC, DSI, Protection:-4 x 10A 6kA single pole thermal magnetic circuit breakers,Control Inputs-1 x RS485 serial port ; 1 x programmable dry contact AUX input ,170 preset scenes supported						
		Switching Device:- Relay 16A nom. (resistive), Fluorescent 800A surge, Incandescent 165A surge, Regulating Device:- Triac 600V, 40A nom. 400A surge						
14	<b>Button Panel for lighting --&gt; For Lighting control</b>	Should have atleast 10 Buttons for Lighting Controls,Should have Supply : 12V DC 20mA from the Lighting Dimmer ,Should have Control Inputs as 1 No Serial Port with 485 Protocol,Should have Good Stylish Front Cover Finishes and Buttons with LED Indicators	Crestron/Dynalite					
15	<b>Joystick for controlling the camera --&gt; Remote Camera controller</b>	1xAble to control camerathrough IP,Ethernet bus and Serial,Upto 5 cameras/pan-tilt heads can be controlled via serial connection,upto 100 pre-set memories are available	Panasonic/Sony					
16	<b>12x8 ProDSP Digital Matrix Processors --&gt; For managing the mics and is mandatory for quality audio</b>	12x8 ProDSP Digital matrix processor with AEC and Telephone interface	Extron/Clearone					
		Inputs:-12 balanced or unbalanced mic/line level on 3.5 mm, 3-pole and 6-pole captive screw connectors , of which Eight channels of AEC - acoustic echo cancellation with phantom power of 48Volt						
		Outputs:-Eight balanced or unbalanced line level on 3.5 mm, 6-pole captive screw connectors, Analog phone interfacing with POTS line and handset connections,32 DSP Configuration presets is possible,Ethernet monitoring protocol is possible						
17	<b>Surface mount speakers</b>	2-way, full range, indoor surface mount speaker,Frequency range of 70 Hz to 18 kHz, -10 dB, full space,60 W (rms) continuous pink noise,120 W (rms) continuous program,Nominal sensitivity of 90 dB SPL, 1 W, 1 m, full space,Nominal impedance of 8ohms,Crossover frequency of 2.5 kHz,Contains woofer of 6.5",Tweeter of 1".	Extron/Tannoy					
18	<b>Audio Cable</b>	150 meters of cable shall have 20AWG (10/30) tinned copper (in contact with shield),Impedance of 40 to 100Ω,DC Resistance of 34.6Ω/km (10.5Ω/1000ft).	Extron/Kramer					
19	<b>Mic Cable</b>	100 meters of cable shall have 20AWG (10/30) tinned copper (in contact with shield),Impedance of 40 to 100Ω,DC Resistance of 34.6Ω/km (10.5Ω/1000ft).	Extron/Kramer					

20	<b>Speaker Cable</b>	100 meters of cable shall have 16AWG, (26/30) bare copper conductors,DC Resistance of 13.7Ω/km (4.17Ω/1000ft).	Extron/Kramer					
21	<b>Digital camera</b>	One number of Digital Camera with minimum 18 megapixel camera with image sensor and high-performance Image Processor for excellent speed and quality, expandable ISO for shooting from bright to dim light, 9-point AutoFocus system	Sony/Canon or compatible equivalent					
22	<b>Data Projector</b>	1x Brightness of minimum 3000 ANSI Lumens DLP ULTRA SHORT THROW Projector, Ratio (0.28:1), Native Aspect Ratio (16:10), WXGA (1280x800) resolution, Contrast Ratio of 1800:1, Lens offset of 68%, Supports Screen Size of minimum 50 inch to 110 inch maximum, LASER & LED HYBRID LIGHT source, Mercury free, Upto 20,000 Hour Operating Life, Wireless presentations from PC or Mac, Built in 2GB Memory, USB display send video to the projector from almost any device via an inexpensive USB cable, Presentations from your thumb drive, Instant Off – no cool down required, Auto brightness adjustment, 16W Built in Speaker, Expanded input/outputs —RGB input, 1 RGB output, 1 video, 1 HDMI, RS-232C, audio in/out, mic in 1 USB A/B, 1 USB Display and 1 RJ-45 Wired LAN, It can be used for (24 x 7) Extended operation	Casio/Panasonic or compatible equivalent					
23	<b>Twisted pair HDMI Receiver --&gt; At Projector end</b>	3x Receives HDMI plus control and analog audio up to 230 feet (70 meters) over a shielded CATx cable, Video input-One twisted pair input on RJ-45 Video output-One HDMI, stereo audio on captive screw Supports computer and video resolutions up to 4K, including 1080p/60 Deep Color	Creston/Extron					
24	<b>Motorised mat-finish white screen with remote control</b>	8'x5.8' (WxH)16:10 wide, mate white finish on fabric base with motorised screen	Da-lite/Draper or compatible equivalent					
25	<b>Celing mount microphones with controller</b>	Full 360-degree coverage,Built-in, low-cut filter, rejects unwanted noise and increases intelligibility,Three unidirectional elements reduce reverberation and noise, Polar pattern-Cardiod,Dynamic Range: 80 dB, 1 kHz @ max SPL, Signal/Noise Ratio: 60 dBA, 1kHz @ 1Pa,Frequency Response: 100 Hz - 12kHz,Sensitivity: 114 mV/Pa ,Impedance: 200 Ω, to be used with the digital Matrix switcher	ClearOne/Biamp					
26	<b>Wireless Lapel Microphone</b>	Wireless Lapel microphone with polar pattern-Cardiod and rejects noises coming from the side which means less risk of feedback. 42 MHz bandwidth: 1680 tunable UHF frequencies for interference-free reception,Enhanced frequency bank system with up to 12 compatible frequencies,Auto-Lock function avoids accidental changing of settings,Pilot tone squelch for eliminating RF interference when transmitter is turned off	Sennheiser/Beyerdynamic or compatible equivalent					
27	<b>Wireless Touch Panel</b>	Wireless multi-touch panel with Retina/IPS display 9.7-inch (diagonal) LED-backlit, Wi Fi (802.11a/b/g/n); dual channel (2.4GHz and 5GHz) and MIMO,Bluetooth 4.0 technology	Extron/Creston/Apple/Anroid devices					
28	<b>Wireless router for touch panel</b>	Wireless router for above touch panel	D-Link					
29	<b>Network Switch</b>	24+2 port Giga port managed network switch	D-Link					
30	<b>Shielded Twisted Pair CAT6 cable</b>	150 Meters of Shielded twisted pair cable is Certified to 475 MHz bandwidth at distances up to 330 feet (100 m),24AWG, solid bare copper 43 ohms 1k ft,141 ohms/1 km	Extron/Kramer/Creston					

31	<b>RJ-45 Connectors for shielded twisted pair</b>	2 Packet of RJ-45 shall have Gold plated contacts,Metal strain relief and ground bonding,Conductor alignment guide reduces crosstalk and signal interference,	Extron/Kramer/Crestron					
32	<b>Lighting</b>	Sufficient LED light fittings(minium 15) with individual switch controls, sufficient lighting on the faces of the sitting/standing participants suitable for professional video recording	Philips or equivalent					
33	<b>Serial port Expander --&gt; Extra Control ports for lighting control</b>	Serial port expander with 3 x RS-232/RS-422/RS-485 with LAN out,Supports 10/100/1000Base-T,Supports Ethernet-controllable devices	Crestron/Extron					
34	<b>Equipment Rack</b>	24U Equipment Rack with power strips, doors and cooling fan --> for VC related, Switches, Array mics related, dimmer settings for LED lights, Expansion I/Os for Audio/Video/LAN Signal cables	APC/Valrack					
35	<b>Cablings</b>	Necessary video/audio/lighting cables with suitable terminators/connectors as required should be provided to handle operations of the above items. No cable crossing in the working area	Extron/Kramer/Crestron					
36	<b>Connectors</b>	1 Lot of Branded connectors have to be used for the installation	Extron/Kramer/Neutrik					
37	<b>False ceiling</b>	Suitable Ecophon Ceiling Tiles False Ceiling with provsions for LED light fittings, array microphones and fire alarm sensors. Work/Control Area						
38	<b>Furnitures</b>	4xWriting desk with castors for make use of 3 seater. All the desks should be cascaded to form a single round/oval shape table	Custom design					
39	<b>Chairs</b>	Slim back-resting chairs with lockable castors	Godrej or equivalent					
40	<b>Storage with cusion seating arrangement</b>	Wooden/Plywood cusion seating cum storage along the Semi-circle inner wall side	Ply - Maryur, Laminate - Marino					
41	<b>Double Glazing with UPVC Windows by replacing the existing aluminium Glass windows(L x B &amp; cm)</b>	4 sets of Aluminium framed (1) 147x117, (2) 136x117, (3) 152x117 Glass windows are to be replaced with Double Glazed fixed windows. One Center window of size 136x117 should be replaced with DG window hinges and handle with lock. 6T/12/6T mm thk. Double Glazed Clear Toughened Glass	Fenesta or compatible equivalent					
42	<b>Double Glazing with UPVC framed double Door by replacing the existing aluminium framed Glass Double Doors(L x H &amp; cm)</b>	153x213 Aluminium Glass double doors are to be replaced with 6T/12/6T mm thick Double Glazed clear touchened Glass doors. Door closer, tower bolt, pull handle with locking facility,	Fenesta or compatible equivalent					
43	<b>Curtain</b>	Fabric screens for the above UPVC fittings to arrest the outdoor lights and echo reductions	Suitable Fabrics					
44	<b>Provide false ceiling by replacing the existing A/C ducts</b>	Gypsum/Ecophon based false ceiling to handle with high accoustic performance, should have insulation against noise, airborne sound, impact sounds, thermal insulation etc. Provision for lightings, zone mics etc.	Saint Gobain or equivalent					
45	<b>Vinyl Flooring</b>	Suitable Anti-static vinyl flooring in the working & control room area	Arm strong /LG					
46	<b>Painting</b>	Suitable texture paintings on the walls, ceilings etc.,	Asian paints					
			<b>Total</b>					