ANNEXURE – I

QUALIFICATION CRITERIA:

1. Average Annual financial turnover during the last 2 years, ending 31st March of the financial year 2017-2018 shall be at least minimum of 25 Lakhs.

2. The bidder should have office in Chennai with required support facilities & adequate resources.

3. Work Experience: Experience of having successfully completed similar requirement during last 2 years ending last day of month previous to the one in which tenders are invited. Proof of completion of one similar work costing not less than Rs.20 lakhs. Or two similar work with value of 10 lakhs plus each.

4. The bidders shall submit Work order / purchase order copies for supplying similar items. The Bidders shall also submit documentary evidence in respect of satisfactory execution of each of those work orders / Purchase orders, in the form of copies of any of the documents (indicating respective work order / Purchase order number and supply of the items)

5. Copy of satisfactory completion / Performance certificates declared by Central Government Undertakings, Public Sector Units and/or Corporates.

6. In case the bidder is a dealer or Authorized Channel partner, the bidder should submit the authorization certificate from the Manufacturer.

7. The Products quoted should conform to International AV Standards.

8. Manufacturer must have in-house testing facility conforming to International standards. The Bidder is required to present test reports issued by the in-house testing laboratory as conformation to quality standards adhered.

9. **Warranty:** Three year Comprehensive for all items supplied. Post warranty Annual Maintenance Charges to be agreed upon before Purchase of Equipment. The equipment quoted should be the latest in the market and there has to be spares support for 7 years or Life time of equipment whichever is earlier.

10. The bids of the bidders who are blacklisted by PSU or Government Department / Agency or Government Authority will be rejected.

ANNEXURE II

Schedule of work

Sl.No.	Schedule of Item - Description	Qty	Units
1	Multimedia Projector - 5000 Lumens, 15000:1 contrast ratio, WXGA 1280x800 resolution, 16:10 aspect ratio, 6000 lamp hours multimedia projector	1	Nos.
2	Ceiling mounting kit with 3 to 4 feet adjustable height	1	Nos.
3	Projection Screen - 113" 243x147 tubular motorized projection screen with remote control	1	Nos.
4	Face plate - Face Plate with HDMI ports	2	Nos.
5	HDMI Switcher - DP1.1, DVI, 2x HDMI1.4 + Ethernet + RS-232 + bidirectional IR with local HDMI output standalone switcher and HD Base T transmitter for CATx cable. Stereo local analog audio embedding, GPIO control port, HDCP, 3D and 4K /UHD (30Hz RGB 4:4:4, 60Hz YCbCr 4:2:0) support. 170 m extension distance. Command injection, Auto select & priority modes, EDID Management. Compatible with 'TPS' series input boards and receivers.	1	Nos.
6	HDMI Receiver - HDMI1.4 + Ethernet + RS-232 + bidirectional IR HD Base T receiver over CATx cable. HDCP, 3D and 4K /UHD (30 Hz RGB 4:4:4, 60Hz YCbCr 4:2:0) compliant. 170m extension distance, Remote powering through MX-TPS-OB boards.	1	Nos.
7	Wireless Presentation Gateway - Present wirelessly using laptops and mobile devices	1	Nos.
8	PTZ Camera - 30x optical zoom lens and support for PoE+* for outstanding operability and installation flexibility	1	Nos.
9	Video Recorder with inbuilt video Mixer - Process two high resolution AV sources from up to five available input signals Record and stream simultaneously, High quality scaling with flexible two-window management	1	Nos.
10	Confidence Monitor - Samsung 23.5(24) FHD Screen TN Panel 2ms response time HDMI ports and VGA Resolutions 1920 x 1080 Aspect Ratio 16:9	1	Nos.
11	Wireless Laple Microphone - RACK MOUNT LAV SYSTEM Includes CVL lavalier microphone, BLX1 bodypack transmitter, BLX4R rack mount receiver, single and dual rackmount kit, two 1/4 wave antennas, zipper bag, power supply, 2 AA batteries, and user guide.	1	Nos.

12	Wireless Handheld Microphone - VOCAL SYSTEM Includes BLX4 single-channel receiver, BLX2/PG58 handheld transmitter, microphone clip, power supply, 2 AA batteries, and user guide.	1	Nos.
13	Automatic Smart Mixer - 4 balanced mic inputs, 2 balanced Mic/Line inputs and 1 stereo unbalanced input, 8 x 3 audio routing matrix smart digital mixer	1	Nos.
14	Power Amplifier - Two-channel, 350W @ 4Ω Power Amplifier, XLR, 1/4", RCA inputs provide flexibility	1	Nos.
15	Surface Mount Speaker - Indoor Outdoor Background Foreground Loudspeaker, 200 W Continuous Program Power; 100 W Continuous Pink Noise, 60 W transformer for 70 V or 100 V lines, with 8 ohms thru.	2	Nos.
16	Speaker Cables - 1 SQ.mm 2 core Cu conduction speaker cable	50	Mtr.
17	Microphone Cable - 2 core Cu Conduction Microphone cable	20	Mtr.
18	Connectors - UL rated connectors	1	LS
19	Wall Mount relay controller - 2 channel rated at 230VAC feed thru outputs at 10A per channel along with Membrane Switch - 2 button, using RS-485	1	Nos.
20	HDMI CL3 Cable with 4K Support (15.0m/50ft)	3	Nos.
21	HDMI CL3 Cable with 4K Support (5.0m/16ft)	1	Nos.
22	HDMI CL3 Cable with 4K Support (1.0m/3.2ft)	3	Nos.
23	Shielded Twisted Pair Cable	50	Mtr.
24	22U Equipment rack	1	Nos.
25	Installation Labour, Project Management, Design and As Built Drawings (Reproducible), Operation and Maintenance Manuals - including Equipment Manuals	1	LS

ANNEXURE III
TECHNICAL SPECIFICATION FOR TRAINING ROOM AV

(The Compliance statement for the enclosed specifications to be supplied along with Technical bid)

1	**Multimedia Projector**		Qty:	1 No.

Specification		Compliance Yes/No	Remarks
White Light Output	5000 lm (NOR)/3600lm(ECO)		
Color Light Output	5000lm		
Technology	3LCD/DLP		
Native Resolution	WXGA		
Contrast Ratio	15000:1		
Video Input	HDMIx2, VGAx2, composite x1,		
Audio input	RCA x1, Ep stereo x1		
Video output	VGA x1		
Control I/O	RS232/D-SUB 9pin		
Others	USB Type Ax1(Memory, firmware update, copy OSD settings),USB Type Bx1 (USB Display, Mouse, K/B, Control, Firmware Update, Copy OSD Settings)		
Geometric Correction	**Vertical/Horizontal Keystone:**±30° / ±30° (Zoom: Centre)Auto Keystone : Yes Quick Corner : Yes		

2	**Ceiling Mounting Kit**		Qty:	1 No.

Specification		Compliance Yes/No	Remarks
Mounting Kit	Adjustable 4 to 6 Ft.		

3	**Motorized Projection Screen**		Qty :	1 No.

Specification		Compliance Yes/No	Remarks
Size	113 inches (243x147)		
Motor	Tubular motor		
Screen	Matt White		

4 | **Face Plate** | | Qty: 2 Nos.

Specification		Compliance Yes/No	Remarks
Face Plate	SS Face Plate with back box		
Connector	one HDMI female Connector		

5 | **MultiFormat HDMI Switcher** | | Qty : 1 No.

Specification		Compliance Yes/No	Remarks
Resolution	Up to 4K UHD 3840x2160@30Hz, 1600x1200@60Hz, FullHD1920x1080@60Hz>		
Digital Audio Formats	Supports upto 8 channel PCM, Dolby Tru HD, DTS-HD, master audio 7.1 formats		
Input Cable Equalization	Automatic Max 20m		
EDID Emulation	Yes		
HDCP Pass Through	Yes		
RS232 Pass through	Yes		
Audio & Video Connectors	DVI-D, HDMI (input and output), DisplayPort, Stereo jack		
GPIO Control Port	Yes		
3D Format supported	Yes		
Video Input	Display Portx1, HDMIx2, DVI-D Connector x1		
Video Output	HDMI x1, HDBTx1(upto 170m extension distance)		

6 | **HDMI RECEIVER** | | Qty : 1No.

Specification		Compliance Yes/No	Remarks
Data Rate	3.4 Gbps/color		
Equalization	Adaptive, Automatic		
EDID Support	Transparent		
HDCP Pass Through	Yes		
Ethernet Pass Through	Yes		
RS-232 Pass Through	Yes		
IR Pass Through	Yes		
Resolutions supported	All HDMI 1.4 resolutions supported		
3D Video Signals	Compatible with 120Hz 3D video signals		
LED signals	Live, Link detection, HDCP detection, and video		

7	**Wireless Presentation Gateway**		**Qty:**	**1 No.**
	Specification		Compliance Yes/No	Remarks
	Users	up to 32 users		
	Quad view	allows simultaneous display up to four presentation sources		
	Remote view	Allows up to 40 remote users to connect via web browser		
	OS Support	Win XP, Vista, Windows 7, 8, 10 MAC OS X (ver 10.5 thru 10.11)		
	Mobile Apps.	Apple, IOS, Android		
	Output Video	HDMI, VGA		
	Display Control	Control the display device over IP as part of the presentation		
	Output resolutions	800x600@60Hz to 1920x1200@60Hz.		
	Device Mirroring	Share the screen image and audio from an Apple IOS or Mac OS X device		
	Supported Files	MS PowerPoint® (.ppt, .pptx), MS Word (.doc, .docx), MS Excel® (.xls,.xlsx), PDF (.pdf), JPEG (.jpg, .jpeg)		

		Compliance Yes/No	Remarks
Shot & Show	Shares a static image of any app by using the screen shot function		
Moderator Mode	Enable single moderator to control the presentation via web browser or control system touch screen.		

8	**PTZ Camera**		**Qty:**	**1 No.**

Specification		Compliance Yes/No	Remarks
Power	DC12V, POE		
MIC/LINE input	3.5mm input impedance		
[Mic input]	Supported microphones: Stereo mic (plug-in power, on/off switching via menu)		
[Line input]	Input level:–10 dBV ±3 dBV		
Video Output	HDMI Connector x1		
Input/Output	LAN for IP control RJ45,RS232 IN/OUT, RS422 control, USB, MicroSD card slot		
Imaging Sensor	½.3 –Type C-MOS		
Lens	Motorized 30X zoom F1.6 to F4.7[f=4.3 mm (11/64 inches) to 129 mm(5-5/64 inches); 35 mm (1-3/8 inches)		
Focus	Switching between Auto and manual		
Focus Distance	Entire zooming range 1.2m to 10cm		
Color separation optical System	On-chip color filter system		
Horizontal Resolution	1000TV Lines		
Gain Selection	Auto, 0db to 48db (3 step)		
Electronic Shutter Speed	During Full Auto: 1/30 to 1/2000[59.94 Hz],1/25 to 1/2000[50 Hz]		
Gamma	Off, Normal (Low, Mid, High), Cinema.		

		Compliance Yes/No	Remarks
White balance	ATW, AWB A, AWB B, 3200K, 5600K, VAR (2400K to 9900K)		
Output Format	1080: 59.94p/50p ,1080: 59.94i/50i, 1080: 29.97p/25p,1080: 29.97PsF/25PsF, 720: 59.94p/50p		
Image Stabilization	Electronic		
Camera/pan-tilt	Maximum speed during preset:300°/s, Maximum speed during manual:90°/s		
head control	LAN cable*5 (category 5 or above), max. 100 m (328 ft) When using a PoE+ hub:		
Pan-tilt operation speed	Maximum speed during preset:300°/s, Maximum speed during manual:90°/s		
Panning Range	+/-175°		
Tilting Range	-30° to 90°		
Supported Protocol	IPv4: TCP/IP, UDP/IP, HTTP, DHCP, DNS		

9	**Video Recorder**		**Qty :**	**1 No.**

Specification		Compliance Yes/No	Remarks
Input Signal Type/Number	3 HDMI (HDCP Complaint), 1 Component Video		
Resolution	640x480 to 1920x1200, 480p to 1080p.		
Digital Processing	4:2:2 , 8 bits per color		
Video Output signal type/number	2 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)		
Scaled Resolution	Archive/record: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom Confidence: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom		
Frame rate	Up to 30 fps for all output rates		

Formats	H.264/AVC (Profile type: High, Main, and Baseline. Profile level: 4.1, 4.0, 3.2, 3.1, 3.0)		
Recording and Storage			
File system for USB storage	FAT32, NTFS, VFAT long file name extensions, EXT2, EXT3, EXT4		
File transfer protocols	FTP, SFTP, CIFS		
File types	H.264 and AAC in an MP4 container, JPEG, JSON, XML		
Internal Storage	80GB(75GB for recording Files)		
External USB ports	1 (front panel), 1 (rear panel), USB 2.0 (Each port is current limited to 1.5 A.)		
Analog Audio Input	2 stereo, balanced or unbalanced, 1 with loop-through		
Digital Audio Input	3 stereo, digital de-embedded from HDMI 1 loop-through from HDMI 1 stereo,		
Audio Processing			
Sampling rate	16 bit, 48 kHz or 44.1 kHz sampling		
Compression	AAC-LC MPEG-4 (ISO/IEC 14496-3:2005)		
Bit rate	80 kbps to 320 kbps, stereo		
Analog Audio Output	1 stereo, balanced/unbalanced		
Digital Audio Output	1 stereo, HDMI (re-embedded local preview) 1 AAC-LC digital audio over Ethernet		
Digital I/O Control	4 digital input/output (configurable)		
	USB Type Bx1, USB Type A x 2 USB 1.1, USB2.0 high, low speed hosts		
Serial Control port	1 bi-directional Rs232, 3.5mm captive screw connector,		

	Specification	Compliance Yes/No	Remarks
Ethernet control	Ethernet host port 1 female RJ-45 Ethernet data rate 10/100/1000Base-T,		
Ethernet data rate	10/100/1000Base-T, half/full duplex with AutoDetect		
Streaming protocol	Pull: RTP/RTCP (RFC 3550), RTSP (RFC 2326), Interleaved RTSP (RTP/RTSP), RTP/RTSP tunneled through HTTP unicast or multicast Push: MPEG2-TS/UDP* (ISO/IEC 13818-1), MPEG2-TS/ RTP* (RFC 2250, IPTV-ID-0087, ETSI TS 102 034), Direct RTP (RFC 3984), SAP (RFC2974), SDP (RFC4566), unicast or multicast, RTMP.		

10	**Wireless Handheld Microphone**		**Qty : 1 No.**
	Specification	**Compliance Yes/No**	**Remarks**
Polar Patter	Cardioid		
Operating Range	91m		
Type	Dynamic		
Available frequencies	524 – 865Mhz		
Audio Range	50 – 15000Hz		
Battery Life	upto 14hours		

11	**Wireless Lavalier Microphone**		**Qty : 1 No.**
	Specification	**Compliance Yes/No**	**Remarks**
Polar Patter	Cardioid		
Operating Range	91m		
Type	Condenser		
Available frequencies	524 – 865Mhz		
Audio Range	50 – 15000Hz		
Battery Life	upto 14hours		

12	**Digital Smart Mixer**		Qty : 1 No.
	Specification	**Compliance Yes/No**	**Remarks**
Inputs	4x balanced mic inputs, 2x balanced Mic/Line inputs and 1 x stereo unbalanced input		
Outputs	1 stereo and 2 mono outputs		
Routing	8x3 Routing Matrix		
Mix	6-channel Smart Mix		
AEC	Yes, On board		

13	**Power Amplifier**		Qty: 1No.
	Specification	**Compliance Yes/No**	**Remarks**
Channel	Dual		
Signal to noise ratio	>97db		
THD	<0.5%		
Power	550W@2ohms per channel, 350W@4Ω/ch,215W@Ω/ch		
Damping Factor	>200		
Intermodulation Distortion	<0.3%		

14	**Surface Mount Speaker**		Qty : 2 Nos.
	Specification	**Compliance Yes/No**	**Remarks**
Frequency Range	70Hz to 23Khz		
Power Capacity	200W continuous program power		
Transformer Taps	100V: 60W,30W,15W; 70V : 60W,30W,15W,7.5W		
Nominal Sensitivity	87dB SPL, 1W @1m		
Nominal Coverage	100º x100º		
Maximum SPL@1m	113dB continuous pink noise,		
Nominal Impedance	8ohms		

15	**HDMI Cable 15Metre**		Qty : 2 Nos.
	Specification	**Compliance Yes/No**	**Remarks**
Maximum Single Link Range	1080p,30 bit deep color@60fbps		

Video Format supported	640x480 to 1920x1200, 4K UHD Compatible		
Output Video	HDMI v1.4 with full 3D compatibility with Frame packing/sequential (Blu-ray) and Interlaced Stereoscopic		
Audio Format Supported	DTS-HD, Dolby True HD, multi-channel 5.1, 7.1, stereo - S/PDIF Audio: Dolby Digital PCM 5.1		

16	**HDMI Cable 2 Metre**			**Qty : 5 Nos.**

Specification		Compliance Yes/No	Remarks
Maximum Single Link Range	1080p,30 bit deep color@60fbps		
Video Format supported	640x480 to 1920x1200, 4K UHD Compatible		
Output Video	HDMI v1.4 with full 3D compatibility with Frame packing/sequential (Blu-ray) and Interlaced Stereoscopic		
Audio Format Supported	DTS-HD, Dolby True HD, multi-channel 5.1, 7.1, stereo - S/PDIF Audio: Dolby Digital PCM 5.1		

17	**HDMI Cable 0.5 Metre**			**Qty : 5 Nos.**

Specification		Compliance Yes/No	Remarks
Maximum Single Link Range	1080p,30 bit deep color@60fbps		
Video Format supported	640x480 to 1920x1200, 4KUHD Compatible		
Output Video	HDMI v1.4 with full 3D compatibility with Frame packing/sequential (Blu-ray) and Interlaced Stereoscopic		
Audio Format Supported	DTS-HD, Dolby True HD, multi-channel 5.1, 7.1, stereo - S/PDIF Audio: Dolby Digital PCM 5.1		