#### GOVERNMENT OF INDIA CENTRAL INSTITUTE OF PSYCHIATRY (General Section)

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Kanke, Ranchi- 834006, Jharkhand

# List of items to be Purchased through Open Tender 2020-21

SI.	Tender No.	<b>Bid Security</b>	
No			Amount
1.	CCN/01/2020-21/M&E	Neuroplasticity Study Lab at Centre for Cognitive	Rs.100000/-
		Neurosciences	
2.	CCN/02/2020-21/M&E	Integrated 32-Channel Neuro Biofeedback System	Rs.100000/-
		for Neuroplasticity Lab at CCN	
3.	CCN/03/2020-21/M&E	64 Channel EEG for Ambulatory Studies at	Rs.100000/-
		Neuroplasticity Lab at CCN	
4.	CCN/04/2020-21/M&E	fNIRS Compatible HD tDCS for Neuroplasticity Lab	Rs.100000/-
		at CCN	
5.	CCN/05/2020-21/M&E	Furnishing, supply, installation, testing &	Rs.100000/-
		commissioning of video conferencing system at	
		Room no. 18, , Conference Hall, CCN	
6.	CCN/06/2020-21/M&E	Upgradation & Augmentation of MATLAB	Rs.80000/-
		Software License No. 40613453 & 40613454	
7.	Gen/01/2020-21/M&E	Ultra-Brief Pulse ECT Machine	Rs.100000/-
8.	Gen/02/2020-21/M&E	Digital Radiography System with Single Detector	Rs.100000/-
		for Whole Body Digital Radiography	
9.	Gen/03/2020-21/M&E	Neuro-therapy System (Neuro-Biofeedback) for S.	Rs.100000/-
		S. Raju Center for Addiction Psychiatry	
10.	Gen/04/2020-21/M&E	Electronic OPD Management and Queuing System	Rs.100000/-
		& Integration with HIMS (HOSPITAL	
		INFORMATION MANAGEMENT SYSTEM)	
11.	Gen/05/2020-21/M&E	Workstation	Rs.25000/-
12.	Path Lab /01/2020-21/M&E	Automated Elisa Analyzer	Rs.25000/-

Sd/-(Director)

# <u>Technical Specifications for Neuroplasticity Study Lab at Centre for Cognitive Neurosciences</u> <u>Tender No. CCN/01/20-21/ M&E</u>

- 1. Neuroplasticity lab should consists of the following:
  - a. Modular room has to be created as per design of neuroplasticity room (Design / layout can be taken from CCN Lab)
  - b. Atleast 6 feetX5 feet projector screen with high definition projector complete with cabling and also with wireless compatibility-**3 in Nos** (on three walls)
  - c. Comfortable patient recliner with electrically adjusted controls-2 nos
  - d. Should supply four sectional electrically operated bed-1 no
- 2. Should be supplied Wireless 24 Channel fNIRS system
  - a. NIRS should have the following specification: -
  - i. No. of Channels -24 (upgradable up to 32 channels in future)
  - ii. Technology: Continuous wave near infrared spectroscopy using modified Lambert-Beer Law
  - iii. Should Measure Changes in oxy- and deoxyhemoglobin levels through low frequency laser.
  - iv. Should have at least 11 nos of Transmitters with at least 7 receivers.
  - v. System should be capable of performing upto 24 Channel Wireless NIRS on a subject.
  - vi. Wireless and Portable
  - vii. Should have inbuilt battery with back up of atleast 2-3 hours.
  - viii. Sampling rate atleast 50 Hz.
    - b. Should be supplied with analysis software and should have following features
    - i. Import & export of NIRS data files.
    - ii. Export should be in text file, Microsoft Excel or XML.
  - iii. Importing of data files collected with other instruments
  - iv. Import and scaling of data acquired via the optional analog input AD channels
  - v. Viewing of data.
  - vi. Calculation average, mean, standard deviation.
  - vii. Calculation differences between selected time frames
  - viii. Calculation of Oxygen consumption, blood flow & venous saturation
  - ix. Calculating averages of (Block) stimuli (for functional NIR studies), including detrend function.
  - x. Preparing two dimensional plots
  - xi. Preparing video of minimum two dimensions
  - xii. Comparing traces plots.
  - xiii. Files should be collected within one project analysis should set up for all files simultaneously & new files should be easily added.
  - c. Should be compatible with existing Starstim 32 Channel tDCS EEG Make: Neuroelectrics

- 3. Should be supplied with cart.
  - a. The cart should be mobile with locking swivel wheels (preferably MR Compatible).
- 4. Should have facility to connect system to any External PC and will be provided with monitoring software to view physiological monitoring. The data can be stored with all the treatment parameters on the PC or can be converted in to text format.

- 5. Should have facility of Comprehensive database to store the complete patient information and can be configured according to user needs.
- 6. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer.
- 7. The CD/DVD/Bluray writer should be able to archive EEG data on a CD/DVD/Blu-ray, which should have the capability to be read on any Windows, based PC without any additional software. Similar archiving should be available with Pen drives or any other removable storage media.
- 8. Only vendor who is able to quote and deliver all equipment/machines will be considered.
- 9. The equipment should be tested and certified by International agencies and should have either ISO 9001 certification with CE approval preferably.
- 10. The system should comply with CE and IEC standards and quality. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers only.
- 11. Warranty must be at least 1 year.
- 12. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### Technical Specifications Integrated 32-Channel Neuro Biofeedback System for Neuroplasticity Lab at CCN

### Tender No. CCN/02/20-21/ M&E

- 1. The amplifier should be 32 Channel and should work on batteries and should be removable from the main unit. It may have option for upgradation of number of channels in future, at least up to 64 channels. The channel should have:
- a. No of EEG channels 32
- b. Bandwidth: 0.16 to 1000 Hz per channel
- c. Analog Sampling frequency: 6Khz per channel
- d. IMR: 140dB
- e. Differential input impedance: 10GOhm parallel to 35pF
- f. Battery operation for atleast 40 hrs
- 2. The amplifier should have manual Start button on head box for start and for patient event button.
- 3. The amplifier should have internal memory system through removable SD card/USB Flash Card in the amplifier junction box.
- 4. The system should have DVD Playback with Multi-Parameter feedback controls.
- 5. The system should have Real-time Low Resolution Tomographic Analysis (LORETA) neurofeedback.
- 6. The system should perform Real-time Z-Score feedback.
- 7. Should have LORETA analysis and export.
- 8. Should have an interactive dashboard.
- 9. Should be supplied with at least 20-25 custom 3D games made specifically for neurofeedback system.
- 10. Should have Continuous impedance monitoring of all channels at all times. Impedance should be kept at 5 Kilo Ohm each on all channels.
- 11. Should have Brain feedback training module for clinical grade Neurofeedback.
- 12. Should perform Amplitude, frequency and coherence mapping.
- 13. Should be supplied with Spectral analysis tool with data export facility.
- 14. Should have Magnitude and power numerical export to Excel and ASCII.
- 15. Should have facility to Export to Matlab and to other EEG/ERP data formats.
- 16. Should have advanced custom montage constructor and administrator.
- 17. Should have acquisition software (Clinical Grade training platform and recording).
- 18. Should have Trend graphs and robust reporting features.

- 19. Easy to use threshold bins for fast protocol creation.
- 20. Common custom Neurofeedback games should be included such as

a. Flying Aircraft	b. Chess	c. Butterfly	d. Bird
e. Ball	f. Cones	g. Cubes	h. Dolphins
i. Elephant	j. Formula	k. Girl	l. Robot
m. River	n. Rocket	o. Spoon	p. Car driving etc

- 21. Live view of rewarded signal with protocol settings.
- 22. Should have Full data review and analysis with brain mapping.
- 23. Should have analysis tools, including direct export to LORETA.
- 24. Export data to any format including EDF+/ASCII.
- 25. View all epochs of rewarded data vs non-rewarded data.
- 26. Spectral analysis with block select of data should be available.
- 27. Should be supplied with 1 channel Bluetooth battery operated near infrared spectroscopy for monitoring oxygenation and deoxygenation while neuro biofeedback is running.
- 28. Weight of the amplifier should be less than 500 grams and it should be handy and easy to carry.
- 29. It should be wireless.
- 30. Should be supplied with cart.
  - a. The cart should be mobile with locking swivel wheels (preferably MR Compatible).
- 31. Should be supplied with one no 55 inch Colour LED HD TV.
- 32. The vendor has to make a custom made room for patient and a partitioned room for the consultant. The partition should be toughened glass and patient should not be able to see through the glass but it should be transparent from one side.
- 33. The vendor has to supply office essentials for Console room for doctor including Table (modular with racks on both sides and toughened glass top), Consultant Chair-01 no., and Executive Chairs-4 nos.
- 34. The vendor has to provide four high definition infrared cameras (Night vision enabled) with audio system.
- 35. The vendor has to provide two way communication systems.

- 13. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer with scanning and copying facilities.
- 14. Archiving should be available with Pen drives or any other removable storage media.
- 15. Only vendor who is able to quote and deliver all equipment/machines will be considered.
- 16. The equipment should be tested and certified by International standards.
- 17. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers only.
- 18. Warranty must be at least 5 years.
- 19. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### <u>Technical Specification for Specifications for 64 channel EEG for Ambulatory Studies at Neuroplasticity</u> <u>Lab at CCN</u> <u>Tender No. CCN/03/20-21/ M&E</u>

- 1. Should be portable having ultra-light 64 channel EEG with preferably single amplifier box/unit.
- 2. The amplifier should have inbuilt battery and should be portable with weight not more than 500 grams.
- 3. Inbuilt battery should give back up of at least 5 hours.
- 4. Amplifier should have following technical specifications:
  - a. EEG measurement noise < 1.0  $\mu$ V rms
  - b. Referential input signal range 150 -1000 mVppp
  - c. Input Impedance > 1 GOhm
  - d. CMRR > 100 db
  - e. Max Sampling Rate = 16Khz (individually on all channels)
  - f. Resolution 24 bit
  - g. The system should have the digital down sampling facility from 8,000Hz to 128Hz
- 5. System should be supplied with licensed version of Analysis Software (Please note open software is not acceptable)
- 6. System should be up-gradable up to 256 Channels.
- 7. Caps should have active shielding technology.
- 8. System should be supplied with at least 03 nos. of 64 Channel cap suitable for adults (50 to 55 cm)
- 9. The cap wires should be concealed with in cap fabric to prevent damage/ accidental removable electrodes. The cap should be washable.
- 10. Should have following sizes & firm should quote the prices of all caps optional.
  - a. Large (55 to 62 cm)
  - b. Medium (52 to 55 cm)
  - c. Small (46 to 50 cm)
- 11. Should have waterproof suitcase/backpack for carrying purpose.
- 12. Should be supplied with 1 channel Bluetooth battery operated near infrared spectroscopy for monitoring oxygenation and deoxygenation.
- 13. Should be supplied with backpack for mobile experiment.
- 14. Should be supplied with archive server to connect existing EEG System (manufactured by ANT) so that data can be retrieved from any system.
- 15. Should be compatible with NIRS and Neuromodulation System at Neuroplasticity Lab at CCN, CIP, Ranchi
- 16. Should be supplied with one cap to which can host 32 channel electrodes of tDCS & 24 Channel FNIRS system optodes.
- 17. The System should be supplied one Laptop with latest configuration (Windows based with latest version which should be upgradable, at least i7 Intel processor, at least 8 GB Ram and 1 TB of internal Storage).

- 18. Should be supplied with two split air conditioner (2 Ton each with stabilizers).
- 19. Modify the room as per the design of neuroplasticity room.
- 20. Should be supplied with cart.
  - a. The cart should be mobile with locking swivel wheels.
- 21. Should have facility to connect system to any External PC and will be provided with monitoring software to view physiological monitoring. The data can be stored with all the treatment parameters on the PC or can be converted in to text format.

- 22. Should have facility of Comprehensive database to store the complete patient information and can be configured according to user needs.
- 23. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer with Printing, Scanning and copying facilities.
- 24. Archiving should be available with Pen drives or any other removable storage media.
- 25. Only vendor who is able to quote and deliver all equipment/machines will be considered.
- 26. The equipment should be tested and certified by International.
- 27. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers only.
- 28. Warranty must be for 5 years.
- 29. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### <u>Section-V</u> <u>Technical Specifications for fNIRS Compatible HD tDCS for Neuroplasticity Lab at CCN</u> <u>Tender No. CCN/04/20-21/ M&E</u>

- 1. Should be compatible with NIRS System at Neuroplasticity Lab at CCN, CIP, Ranchi
- 2. Should be supplied with one cap to which can host 32 channel electrodes of tDCS & 24 Channel FNIRS system optodes.
- 3. The system should have one integrated hardware to perform EEG and tCS (tDCS, tACS, tRNS & Sham)
- 4. The user should have the facility to choose no of channels for EEG or tCS.
- 5. The system should be a comprehensive transcranial Cortical Stimulation (tCS) system which should be able to perform the following cortical stimulation paradigms:
- a. Transcranial Direct Current Stimulation (tDCS)
- b. Transcranial Alternating Current Stimulation (tACS)
- c. Transcranial Random Noise Stimulation (tRNS)
- d. Sham Stimulation
- 6. EEG should have the following functionality
- a. EEG monitoring is possible before, during and after stimulation
- b. Flexible electrode placement based on the 10-10 system
- c. EEG sampling rate: 500 SPS
- d. EEG bandwidth 0-125 Hz (DC coupled)
- e. EEG resolution 24 bits 0.05  $\mu$ V
- f. EEG measurement noise: <1  $\mu$ V RMS
- g. Common mode rejection: < -115 dB
- h. EEG input impedance:  $1 G\Omega$
- 7. Stimulation should have the following minimum characteristics:
- a. Stimulation sampling rate: 1000 SPS
- b. Stimulation frequency range: 0-250 Hz (tACS); 0-500 Hz (tRNS)
- c. Sham and double blind mode
- d. Current resolution:  $1 \ \mu A$
- e. Current accuracy: 1%
- f. Maximum voltage: ±15V per electrode (allows 30 V of stimulation potential difference)
- 8. Stimulation Safety features:
- a. Maximum current per channel: ±2mA
- b. Maximum total injected current: 4 mA (by all electrodes, at any time)
- c. Maximum duration per session: 1 hour
- d. Stimulation session must be pre-programmed
- e. Impedance check before and during stimulation
- f. Abort functionality: possible at any time as an important feature
- 9. Stimulation and EEG monitoring should be possible at the same site with the same electrode (but not simultaneously).
- 10. The hardware should transmit data to Laptop /Desktop through Bluetooth/Wi-Fi for remote viewing.
- 11. The hardware should have provision to record the signal on a memory card for uninterrupted data storage and post analysis.
- 12. The System should be supplied one Laptop with latest configuration (Windows based with latest version which should be upgradable, at least i7 Intel processor, at least 8 GB Ram and 1 TB of internal Storage).
- 13. Battery operating time: 5 hours or more (combined EEG/tCS use)
- 14. Sponge electrodes to be used with saline solution for stimulation -24 nos
- 15. Gel based electrodes for both stimulation and EEG recording 64 nos
- 16. Should be supplied with Dry electrode for EEG recording 32 nos.

- 17. The Vendor has to supply the following:
  - a. Modify the room as per the design of neuroplasticity room.
  - b. 8 feet by 5 feet projector screen with high definition projector complete with cabling for celling 1 no.

- 18. Should be supplied with cart.
  - a. The cart should be mobile with locking swivel wheels (preferably MR Compatible).
- 19. Should have facility to connect system to any External PC and will be provided with monitoring software to view physiological monitoring. The data can be stored with all the treatment parameters on the PC or can be converted in to text format.
- 20. Should have facility of Comprehensive database to store the complete patient information and can be configured according to user needs.
- 21. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer.
- 22. Archiving should be available with Pen drives or any other removable storage media.
- 23. Only vendor who is able to quote and deliver all equipment/machines will be considered.
- 24. The equipment should be tested and certified by International.
- 25. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers only.
- 26. Warranty must be at least 1 year.
- 27. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

#### FURNISHING, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF VIDEO CONFERENCING SYSTEM AT

#### Room no. 18, Conference Hall CCN at Central Institute of Psychiatry, Kanke, Ranchi

#### Tender No. CCN/05/20-21/M&E

#### Scope of Work & Instructions for Technical Bid

The work covered by this specification comprises the Furnishing, supply, installation and commissioning of the facilities. The Contractor/ Agency/ System Integrator will furnish the hall, supply and install the equipment necessary to meet the requirements and provide all labour and materials, whether or not described in full, necessary to produce complete and fully operational systems in accordance with the intent of this document. A comprehensive systems approach to the installation shall be taken. This shall include, but not be limited to; following the architectural concepts where available, implementation of the design of the multimedia systems, careful integration with other facilities. The Contractor/ Agency/ System Integrator must familiarise himself with the site drawings and the scope of the facilities that is required. He should ensure that he is aware of the operational requirements under which the systems and associated facilities are to be installed and used. The installed systems must be in all respects suitable for the purposes for which they are intended.

All the furnishing works like False Ceiling, Door, Door Pilling, Sound Proofing, Blinds, Cabling, Electric Wiring, Lighting etc. shall responsibility of The Contractor/ Agency/ System Integrator.

The scope of work also include to prepare details drawings and submit 1 set in hard copy as well as in soft copy in CAD, PDF format etc. as per requirement of project. The Contractor/ Agency/ System Integrator are allowed to visit the Hall during office working hours from 10.00 A.M. – 4.00 P.M (Except Lunch Hour from 1.00 P.M. to 2.00 P.M.) Only the approved drawings by CIP authority will be eligible for Price Bid.

All clearance from competent authorities to make Video Conferencing system operational at the time of handover shall be arranged by Contractor/ Agency/ System Integrator. Contractor/ Agency/ System Integrator have to provide experienced engineer for operation & maintenance during Warranty period of three years starting from date of handover of works

This document specifies the furnishing, installing, testing and commissioning of complete Video Conferencing System at CCN Conference Hall.

Warranty must be at least 1 year. The firm should also quote for CMC / AMC for the next five years. A firm assurance from the manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

The Complete Specification of all the items are as mentioned below.

**Technical Specification** 

SI. No.	Description	Area/No.
Civil W	ork	
1	High Quality Drapes/ Shields for Soundproofing of the room Sound Proof Wall, Acoustical wall Panel will be mount in aluminum channel size L16-(2 mm groves@8mm centers), tongue grove edge for a seamless look, black fleece installed by using GL struct system. Two color of acoustic board will enhance the look of wall along with its utility of sound proofing.	650 Sqft
2	High Quality and thick Roller Blinds 7x7 = 49 x2 no= 98 (in sqft. Approx.) Vinyl Fabric with wall bracket balance in aluminum tube also in bottom. Bottom chain and code weight in string.	98 Sqft
3	Entrance Door - 32 mm thick flush door, with 1mm thick laminate, $18''$ Chrome handle of both sides. $7x3.5 = 24.5 = 25$ (sqft. Approx.)	25 Sqft

4	Entrance Door Pilling (in rft Approx.)	30 Sqft			
5	Dismantle of Current False Ceiling and Installation of New False ceiling using Gypsum board and heavy duty Aluminum Casing or similar (In Sqft Approx.)				
	Electric Items	·			
6	Wall Mount Fan:(In No)Unique Pivot Arrangement for Easy Tilt Mechanism, Rust Free Body with 100% Copper Motor, Sweep Size: 400mm, Wattage: 75, Air Delivery(M3/Min): 100 (in No)	6 Nos.			
7	<b>1.5 Ton Cassette AC with Installation (In No) (Make: Blue star/Hitachi/Carrier)</b> Tonnage: 1.5 TON, Star: at least 3 Star, Power: 220-240, Type Of Product: Cassette AC along with all the required Rating Accessories	2 Nos.			
8	1mm Wire (In Meter Approx.)	180 Mtr.			
9	2.5mm Wire (In Meter Approx.)	180 Mtr.			
10	Switch Box (in No)	12 Nos.			
11	6 amp Socket (in no)	12 Nos.			
12	¾ inch Conduit Pipe (In Meter Approx.)	120 Mtr.			
13	MCB 16 Amp with Box (in No)	10 Nos.			
14	Electric Switches 6 Amp.(in No)	30 Nos.			
15	LED Bulb (20 Wt.) (in No)	6 Nos.			
16	Electric Work Labour, Wiring, Wall Mount Fan Installation Charges (In Lot)	1 Lot			
	Video Conferencing System	·			
17	<ul> <li>Professional Grade PTZ Camera with 12X Optical Zoom and multi-Port Connectivity. Focusing on Stage/Round table</li> <li>1. The camera shall have 1/2.5 inch high quality 3.1MP HD CMOS sensor or better.</li> <li>2. It shall have a option of Auto or Manual White Balance.</li> <li>3. It shall have S/N Ratio of &gt;50db.</li> <li>4. It shall have 12x optical zoom or better.</li> <li>5. It shall have 2x digital zoom or better.</li> <li>6. It shall have USB 3.0 port for unified communication applications, HDMI/DVI Port for Hardware Equipment, 3G-SDI Port for Broadcasting Devices. All the Ports shall work simultaneously so that the same camera can be used for different applications while using different types of cables.</li> <li>7. It shall have RJ-45 network interface for Monitoring applications.</li> <li>8. It shall support Video format of 1080p 60/50/30/25 fps, 720p 60/50/30/25 fps.</li> <li>9. It shall have an RS 232 port as well s RS-422/485 Port for Communication.</li> <li>11. It shall have an RS 232 port as well s RS-422/485 Port for Communication.</li> <li>11. It shall have an RS 232 port as well s RS-422/485 Port for Communication.</li> <li>12. It shall have a Pan Rotation Angle of -169 degrees to +169 degrees or better.</li> <li>13. It shall have a Tilt Rotation Angle of -30 degrees to +70 degrees or better.</li> <li>14. It shall be supplied with IR remote control, Control Cable, Mounting bracket and 3 Meters for the super superior in the dedication in the superior of the superior in the dedication in the superior of the superior in the dedication in the superior of the superior</li></ul>	1 No.			

18	Presen	tation capturing System with 2 TB recording Storage Space.	1 No.
	1.	Appliance should support the following video standards H.264 or more. It shall be	
		expandable to Six Videos in future with license upgrade.	
	2.	It shall support AAC-LD or better.	
	3.	It shall support 16:9 aspect ratio.	
	4.	It shall have 2 or more HDMI/DVI/3G-SDI or combination of these as an input.	
	5.	It shall have at least 1 DVI-I/HDMI input for connecting Laptops/CPUs.	
	6.	It shall be able to give Two full high definition outputs at Sixty frames per seconds with	
		Full High Definition Camera feeds from one Output and Content from the second	
		output.	
	7.	It should have at least 2 Audio inputs	
	8.	It should have at least 2 Audio outputs.	
	9.	It should support Resolutions of 1080p, 720p or more.	
	10	It should support Acoustic Echo Cancellation, Automatic Gain Control, and Acoustic	
		Noise Suppression.	
	11	It should support 1000 Local Address Book or better.	
	12	It should have minimum 1 RJ-45 port for IP network. It should support TCP/IP, DHCP.	
	13	It shall support up to 8 Mbps or more bandwidth.	
	14	It should support AES signaling and media stream encryption.	
	15	It shall be supplied with internal recording server with High definition recording or an	
		external recording server is to be supplied with this device for local session recording.	
		It shall be supplied with 2 TB storage spaces having high speed data transfer port of	
		USB 3.0/HDMI 2.0 or better.	
19	Profes	sional Grade wireless AV transmission gateway with Two cross one switching System	1
	1.	It shall consist of One AV Gateway Unit with two USB 2.0 based or better Wireless	
		Transmitters.	
	2.	It shall be scalable to support Twenty Eight or more Transmission units.	
	3.	It shall have a communication bandwidth of Three Hundred mbps or more.	
	4.	It shall support signal transmission between Gateway Receiver and Transmitter up to	
		Thirty Five meters or better.	
	5.	It shall get integrated with the calling device.	
	6.	It shall be able to send and receive annotation controls wirelessly when an interactive	
		device is connected to the gateway data output.	
	7.	It shall support platforms like ipad, iOS, Mac, Windows or more.	
	8.	It shall support Full HD or HD or more resolutions.	
	9.	This along with the Transmitters shall work as wireless 2x1 switching system and shall	
		give access to the latest Wireless Transmitter whose transmission switch is put to	
		Momentary Close Circuit State.	
	10	It shall have HDMI Output Interface for Video and Audio.	
	11	It shall have 3.5mm Stereo Audio Interface or better.	
	12	It shall have at least 1 USB 2.0 Port and at least 1 USB 3.0 Port.	
	13	It shall have RJ-45 Interface for Wired Network and WLAN for connecting to wireless	
		networks.	

20	Industrial Grade CPU for Unified Applications	1
	1 It shall have Core i5 or better processor	
	2 It shall have 16 GB or more BAM	
	3 It shall have 1 TB or more HDD	
	4 It shall have at least two HDMI or DP outputs	
	5 It shall have Mini Form Factor	
	6 It shall have at least 2 LISB 3 0 Ports	
	7 It shall have at least 2 USB 3.0 Ports	
	7. It shall have at least 2 USB 2.0 FOILS	
	0. It shall have inhuilt ashe concellation with external Microphone integration or shall be	
	9. It shall have inbuilt echo cancellation with external with opnone integration of shall be	
	Supplied with full duplex DSP with OSB Port.	
21	10. It shall be supplied with wireless keyboard and Mouse	1
21	Professional Grade 86 inches High end LED Monitor/Panel with Wall Mount Kit	1
	1. The Panel size shall be Screen Size of 86 inches or more.	
	2. It shall have native resolution of 3840X2160 or more.	
	3. It shall have brightness of 350cd/m2 or more.	
	4. It shall have three or more HDMI 2.0 Input, 1 or more USB Port or better.	
	5. It shall have optical Audio Out.	
	6. It shall have Speaker output of 10W+10W or better.	
	7. It shall have RS-232 control port.	
	8. It shall have RJ-45 port.	
	9. It shall support Hotel Mode, Time Scheduler, USB cloning, Embedded Content Manager,	
	Network based control for third party controllers	
	10. It shall have a typical Power consumption of 305 Watts or less.	
	11. It shall be supplied with Remote controller. Power cord as an included accessory.	
22	Professional Grade Powered Speaker Pair	1
		-
	1. It shall have 5.25 or better High frequency Driver, 1 inch Mid Frequency Driver and .75	
	inches or more high frequency Driver.	
	2. It shall have a frequency response of 80 Hz to 20,000. Speaker less than this range would	
	not be accepted.	
	3. It shall be supplied as set of speakers with one Active Speaker and one passive speaker.	
	4. It shall have sensitivity of 88dB at 1m. Below that would not be accepted.	
	5. The system shall have 2X40 Watts or more Power.	
	6. It shall have 3.5 mm, RCA and Balanced Inputs.	
	7. It shall be 3 Way Speaker System.	
23	Professional Grade Cascaded Mic Pods - with High Pick up Range for Video Conferencing	2 Nos.
	1 It shall have 3 built-in high sensitivity Omni directional microphones	
	2 It shall have Frequency Response from 100 Hz $-$ 16000 HZ or more	
	3 It shall have noise reduction of 12 dB or better	
	1     1 <td></td>	
	5 It shall have Adaptive Echo cancellation Noise Reduction Automatic Gain Control	
	6 It shall support VCCLevel B radio Interference standard	
	7 It shall have LISB Audio Interface	
	7. It shall have USD Audio Internate.	
	o. It shall be supplied as 2 cascade microphone system and shall support cascading up to 3	
	UIIID.	
	9. It shall be supplied with 2 meter USB cable, 2 Meter Aux Cable, Manual as an Included	
	accessory.	

24	Professional Grade 5 meters HDMI Patch Cords	2 Nos.
	1. 5 meters HDMI Type A to Type A.	
	2. It shall support data rate of up to 18 Gbps	
	3. It shall support resolutions of up to 3820x2160@60 Hz or better	
	4. It shall have Gold Plated Contacts for Signal Integrity.	
	5. It shall have a dynamic bend radius of 90mm or better.	
	6. It shall have an insulation resistance of 100 ohms or better.	
	7. It shall have a Dielectric Strength of 500V/minute or better.	
	8. It shall be HDMI 2.0 or better.	
	9. It shall have up to 1536 KHz or better Audio Sample Frequency for highest audio fidelity.	
	10. It shall be highly resistant with RF and EMI interference.	
	11. It shall work without the use of External Power Supplies.	
25	Professional Grade 10 meters USB 3.0 Active Optical Cable	1 No.
	1. 10 meters USB 3.0 Active Optical Cable Type A Male to Type A Female.	
	2. It shall support data rate of up to 5 Gbps or better.	
	3. It shall have a bend radius of 20mm or better.	
	4. It shall be back compatible with USB 2.0/1.1 or better.	
	5. It shall have an interface for Power Supply.	
	6. It shall have Power Dissipation of .94W or lesser.	
	7. It shall support signal transmission up to 50 meters or better.	
	8. It shall have an outer cable diameter of 4mm or less.	
	9. It shall be USB 3.0 or better.	
	10. It shall be hot pluggable and Anti Jamming.	
26	Professional Grade 10 meters HDMI 2.0 Active Optical Cable	1
	1. 10 meters HDMI Active Optical Cable Type A to Type A.	
	2. It shall support data rate of up to 18.2 Gbps	
	3. It shall support resolutions of up to 3820x2160@60 Hz or better	
	4. It shall have a Power Consumption of 250mV or better.	
	5. It shall have a dynamic bend radius of 80mm or better.	
	6. It shall have a static bend radius of 40mm or better.	
	7. It shall support lossless signal transmission up to 100 meters or better.	
	8. It shall be HDMI 2.0 or better.	
	9. It shall support HDCP 2.2 or better.	
	10. It shall have an outer diameter of 4mm or less.	
	11. It shall be highly resistant with RF and EMI interference.	
	12. It shall work without the use of External Power Supplies.	

27	High End Professional Laptop -1 no with following specifications:	1 unit
	<ol> <li>2-in-1 with at least 33.7cm (13.3) FHD IPS Touch Display (360 degree convertible)/ 13.3- inch (diagonal) LED-backlit display with IPS technology; 2560x1600 native resolution at 227 pixels per inch with support for millions of colours</li> <li>Long battery life and flexible usage modes to boost productivity at the office and on the go</li> <li>Spill prof and Full size backlit Keyboard</li> <li>Full USB Type C docking support/Thunderbolt ports/USB 3.1 ports</li> <li>Long battery life at least 10 hours with single charge</li> <li>Processor not less than intel i5; Memory not less than 8 GB Ram/ 2.0GHz quad-core 10th-generation Intel Core i5, Turbo Boost up to 3.8GHz, with 6MB shared L3 cache</li> <li>SSD not less than 256 GB/Storage should be atleast 1 TB.</li> <li>Loaded with MS Office Professional latest version</li> <li>Loaded with Kaspersky Internet Security latest version</li> <li>Available with preloaded Windows 10.0 pro/MacOS latest version which may be upgradable.</li> <li>Weight should be less than 02 kgs</li> </ol>	
28	High End Professional Desktop (Windows/MacOS Platform) make HP/Apple/Dell or similar	1 unit
	with following specifications:	
	1. At least 27 Inch Display with up to 5K resolution	
	2. Intel Xeon Processor with atleast 08 Cores and speed at least 4 GHz (it may be upgradable	
	up to 10-12 Cores in future)	
	<ol> <li>Radeon Pro Vega 56 graphics processor with 8GB of HBM2 memory (which may be upgradable in future)</li> </ol>	
	<ol> <li>Memory at least 32GB of 2666 MHz DDR4 ECC memory (It may be upgradable)</li> <li>Storage 1 TB SSD</li> </ol>	
	<ol> <li>It should have variety of ports including thunderbolt ports, USB C and USB 3.1 ports, Ethernet ports</li> </ol>	
	7. Should come with Warranty.	
	8. Loaded with MS Office Professional latest version	
	9. Loaded with Kaspersky Internet Security latest version	
	<ol> <li>Should be provided with all inbox accessories including keyboard, mouse, connector and wires.</li> </ol>	
29	Colour LaserJet Printer with Print, Scan and Copying Facility compatible with Windows and	1 Unit
	Mac with facility for wireless printing as well for pages of configuration A3 Size and above.	
30	2 TB External HDD for storage of data (Latest USB 3.0 configuration; SATA or SSD)	2 Units
27	<b>2 Core Shielded Audio Cable ( 20 Meters)</b> Supply, Installation, Testing and Commissioning of 30 meters 2 Core shielded Control cable. It shall be thin 2 core shielded audio cable.	1 unit
28	Supply, Installation, Testing and Commissioning complete in all respect to run the complete system. (In Lot/on turnkey basis)	1 Lot

29. Warranty must be 5 years for items mentioned above at SI No 7, 17 to 29.

Should also quote rates for CMC / AMC for the next five years for items mentioned above at SI No
 7, 17 to 29. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

# <u>Technical Specifications for Upgradation & Augmentation of MATLAB Software License No. 40613453</u> <u>& 40613454</u> <u>Tender No. CCN/06/20-21/ M&E</u>

SI. No	Software/Toolbox	Added Features in version R2020a
1.	MATLAB	<ol> <li>File Encoding: Save MATLAB code files and other plain text files as UTF-8 encoded files by default</li> <li>Graphics:         <ul> <li>Box chart: Create box plots to visualize grouped numeric data</li> <li>Tiled Layout Function: Position, nest, and change the grid size of layouts</li> <li>Chart Container Class: Develop charts that display a tiling of Cartesian, polar, or geographic plot</li> </ul> </li> <li>Live Editor Tasks: Interactively retime or synchronize timetables, and stack or unstack table variables</li> </ol>
2.	Simulink	1. Flexible Port Placement: Locate ports on any side, in any order, on Subsystems,
		Subsystem References, Model References, and State flow charts 2 C Function Block: Write C code to integrate external algorithms
3.	Image Processing Toolbox	<ol> <li>Image analysis, including segmentation, morphology, statistics, and measurement</li> <li>Apps for image region analysis, image batch processing, and image registration</li> <li>3D image processing workflows, including visualization and segmentation</li> <li>Image enhancement, filtering, geometric transformations, and deblurring algorithms</li> <li>Intensity-based and non-rigid image registration methods</li> <li>Support for CUDA enabled NVIDIA GPUs (with Parallel Computing Toolbox™)</li> <li>C-code generation support for desktop prototyping and embedded vision system deployment</li> </ol>
4.	Design and simulate streaming signal processing systems Toolbox	<ol> <li>Signal processing and linear algebra blocks for Simulink</li> <li>Streaming signal processing in MATLAB</li> <li>Single-rate, multirate, FIR, IIR, and adaptive filter design</li> <li>Time Scope, Spectrum Analyzer, and Logic Analyzer for visualizing and measuring streaming signals</li> <li>Fixed-point modeling and simulation of signal processing algorithms</li> <li>Support for C and C++ code generation</li> <li>Support for HDL code generation</li> </ol>
5.	Signal Processing Toolbox	<ol> <li>Signal Labeler App: Perform interactive or automated signal labeling</li> <li>Signal Data stores: Work with signal collections that exist in the workspace or in files</li> </ol>
6.	Curve Fitting Toolbox	<ol> <li>Linear and nonlinear regression with custom equations</li> <li>Library of regression models with optimized starting points and solver parameters</li> <li>Interpolation methods, including B-splines, thin plate splines, and tensor-product splines</li> <li>Smoothing techniques, including smoothing splines, localized regression, Savitzky-Golay filters, and moving averages</li> <li>Preprocessing routines, including outlier removal and sectioning, scaling, and weighting data</li> <li>Post-processing routines, including interpolation, extrapolation, confidence intervals, integrals and derivatives</li> </ol>
7.	Deep Learning Toolbox	<ol> <li>Experiment Manager App: Manage multiple deep learning experiments, keep track of training parameters, and analyze and compare results and code</li> <li>Deep Network Designer App: Interactively train a network for image classification, generate MATLAB code for training, and access pretrained models</li> </ol>

8.	Wavelet Toolbox	1.	Time-Frequency Analysis: Use variational mode decomposition to extract intrinsic modes
			for nonstationary, nonlinear signals
		2.	Kingsbury Q-shift Dual-Tree Complex Wavelet Transforms: Perform shift-invariant and
			directionally sensitive discrete multiresolution analysis with minimal redundancy
9.	Others toolboxes	1.	Statistics and Machine Learning Toolbox
	include	2.	Matlab Compiler
		3.	Matlab Spreadsheet Link
		4.	Phased Array System Toolbox
		5.	Fuzzy Logic Toolbox
New Pr	oposed Toolboxes		
10.	Image Acquisition	1.	Image Acquisition Toolbox™ provides functions and blocks for connecting cameras and lidar
	Toolbox: Acquire		sensors to MATLAB <sup>®</sup> and Simulink <sup>®</sup> .
	images, video, and	2.	It includes a MATLAB app that lets you interactively detect and configure hardware
	lidar point clouds		properties. You can then generate equivalent MATLAB code to automate your acquisition in
	from industry-		future sessions.
	standard hardware	3.	The toolbox enables acquisition modes such as processing in-the-loop, hardware triggering,
			background acquisition, and synchronizing acquisition across multiple devices.
		4.	Image Acquisition Toolbox supports all major standards and hardware vendors, including
			USB3 Vision, GigE Vision <sup>®</sup> , and GenICam™ GenTL.
		5.	You can connect to Velodyne LiDAR <sup>®</sup> sensors, machine vision cameras, and frame grabbers,
			as well as high-end scientific and industrial devices.
11.	Computer Vision	1.	Computer Vision Toolbox™ provides algorithms, functions, and apps for designing and
	Toolbox: Design		testing computer vision, 3D vision, and video processing systems.
	and test computer	2.	You can perform object detection and tracking, as well as feature detection, extraction, and
	vision, 3D vision,		matching.
	and video	3.	For 3D vision, the toolbox supports single, stereo, and fisheye camera calibration; stereo
	processing systems		vision; 3D reconstruction; and lidar and 3D point cloud processing.
		4.	Computer vision apps automate ground truth labeling and camera calibration workflows.
		5.	You can train custom object detectors using deep learning and machine learning algorithms
			such as YOLO v2, Faster R-CNN, and ACF. For semantic segmentation, you can use deep
			learning algorithms such as SegNet, U-Net, and DeepLab. Pretrained models let you detect
			faces, pedestrians, and other common objects.
		6.	You can accelerate your algorithms by running them on multicore processors and GPUs.
			Most toolbox algorithms support C/C++ code generation for integrating with existing code,
			desktop prototyping, and embedded vision system deployment.
12.	Data Acquisition	1.	Data Acquisition Toolbox™ provides apps and functions for configuring data acquisition
	XODION		hardware, reading data into MATLAB <sup>®</sup> and Simulink <sup>®</sup> , and writing data to DAQ analog and
		-	digital output channels.
		2.	The toolbox supports a variety of DAQ hardware, including USB, PCI, PCI Express <sup>®</sup> , PXI <sup>®</sup> , and
		-	PXI-Express devices, from National Instruments <sup>®</sup> and other vendors.
		3.	The toolbox apps let you interactively set up a data acquisition interface and configure it to
			your hardware.
		4.	You can then generate equivalent MATLAB code to automate your data acquisition.
			loolbox functions give you the flexibility to control the analog input, analog output,
			counter/timer, and digital I/O subsystems of a DAQ device. You can access device-specific
		-	teatures and synchronize data acquired from multiple devices.
		5.	You can analyze data as you acquire it or save it for post-processing. You can also automate
			tests and make iterative updates to your test setup based on analysis results.

### **Technical specification of Ultra Brief Pulse ECT Machine**

### Tender No. Gen/01/20-21/ M&E

- 1. ECT should provide higher stimulus current, deeper cerebral stimulus penetration, and better seizure generalization.
- 2. Should deliver current of bi-directional square wave ultra-brief pulse of 0.3ms
- 3. Should have 4 channels EEG, 1 channel ECG and 1 channel EMG.
- 4. Should have facility to monitor real time dynamic impedance during procedure & also static impedance.
- Should have stimulus current 800/900mA, Frequency 10-70Hz, Pulse width 0.25, 0.5-1.5msec in increment of 0.25ms. Stimulus duration of 0.14-8sec.
- 6. Should have facility Standard maximum output is typically 504 mC current with 99.8 joules energy across 220 ohms impedance.
- 7. Should have facility Output for double dose modes is typically 1008 mC current with 199.6 joules energy across 220 ohms.
- 8. Should have 8 user selectable gain positions: 10, 20, 50, 100, 200, 500, and 2000  $\mu$ V/cm.
- 9. Should have facility of EEG amplitude & EEG Coherence Measurement.
- 10. Should have facility of heart rate measurement.
- 11. Should have facility to store ECT treatment session so that treatment session can be retrieved in case paper is out during printing.
- 12. Should have 4 channel thermal chart recorder for higher resolution printing.
- 13. Should have 32-BIT INTERNAL COMPUTER which should perform Power Spectral Analysis to process and store up to 10 minutes of digitized EEG.
- 14. Should have the facility to send EEG data to external computer for EEG analysis.
- 15. You should also quote your rates for old ECT Machine (Make: Mecta, Model: spectrum 5000q.)
- 16. Equipment should be USA /FDA Approved.
- 17. Warranty must be at least 5 years.
- 18. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### Technical Specification for Digital Radiography System with Dual Detector for Whole Body Digital Radiography

### <u> Tender No Gen/02/20-21/M&E</u>

#### 1. Specifications for Digital X-ray Machine

- a. A fully digital radiography system capable of detector exposure and image acquisition on vertical, horizontal and oblique position to perform all skeletal body and chest radiography. Complete system operation with control of generator, X-ray tube and imaging system from a single integrated user interface should be possible.
- b. The system should have wired two detectors in bucky stand and table, with one integrated control console capable of controlling Generator, X ray tube, imaging system from the central console.
- c. System should have a ceiling mounted X ray tube support capable of motorized movement in Z axis direction /electromagnetic breaks with fully counter balanced mechanism.

#### 2. Generator:

- a. Generator should be of latest technology with High-frequency, multipuls generator with inverter principle and automatic exposure control (AEC) for constant output.
- b. Output Minimum 50 kW or higher.
- c. kV range should be atleast 40 kV 150k V
- d. Output at 100 kV should be 600 mA or more
- e. It should have automatic exposure control device (AEC)
- f. It should have digital display or kV and mAs in the console and the tube housing
- g. It should have overloading protection.
- 3. X-ray tube and Collimator
- a. The X-ray tube should be ceiling mounted with rotating anode with high speed of 8000 RPM or higher, fully compatible with the generator and must have dual focus. Focal spot of the following size are required:
- b. Large focus: 1.2 mm or less
- c. Small focus: 0.6 mm or less
- d. Tube should be with anode heat storage capacity of 300 k HU or more
- e. The X-ray tube should have Multi leaf collimator having halogen lamp/bright light source.
- f. Collimator should have a rotation of up a maximum of + 45°, should have manual and motorized control and controllable using the organ programs.

#### 4. Ceiling mounted column support

- a. Ceiling mounted tube support with Auto tracking in z- direction should be provided
- b. Movement should be motorized.
- c. A touch screen should be available on the X ray tube for control and display of multiple functions. Touch screen should correct display orientations, when the tube is rotated also.
- d. Vertical 150 cm or more should be available
- e. It should have provision of auto centering in z- direction
- f. Minimum focus to ceiling distance should be 100 cm or more
- g. Specify the horizontal and vertical tube rotation angle around the respective axes.
- h. Tube rotation should be possible in the horizontal and vertical axis and rotation of tube about vertical axis at +/- 90 degree should be possible with stop position at 0 degree, 90 degree and 180 degrees.
- i. Specify the horizontal and vertical travel range of the tube

#### 5. Patient Table

a. Horizontal Table with four ways floating table top.

### 6. Vertical Bucky stand with integrated detector

- a. The unit should be provided with Vertical Bucky with tilt facility
- b. It should have provision to do chest radiography without grid
- c. The vertical Bucky stand should accommodate an integrated solid state detector of size 43 cm x 43 cm
- d. The minimum grid ratio of the moving grid on the vertical Bucky should be 10:1 and not less.

- e. Tilt of the vertical Bucky must be possible between 20<sup>o</sup> to + 90<sup>o</sup> with stop at 0 deg. & 90 deg.
- f. Tube tracking should be possible in the vertical direction
- g. It should have automatic exposure control.
- 7. Integrated Detector system in the patient table:
- a. The detector in the table should be of solid state flat detector
- b. The size of detector should be 34 cm x 39 cm or more.
- c. The activity detector matrix should be 2 K x 2 K or more
- d. The pixel size should be 150  $\mu m$  or less
- e. The resolution should be minimum of 3.4 lines pair/millimeter
- f. Detector Quantum Efficiency (D.Q.E) should be 52% or more at 14 bits/Pixels.
- g. Detector should support storage of atleast 50 images.
- 8. Image acquisition and image processing based on body part and viewing position
- a. The digital workstation should be based on the latest high speed processor of at least 12 bit
- b. It should have the possibility of acquiring the image from the detector system and retrieval of patient list and examination data from Hospital/Radiology Information systems (HIS/RIS) should be possible.
- c. It should have image storage disk of 10,000 images or more.
- d. The system should have ready DICOM Interface and networking capability with RIS/HIS/PACS
- e. Post processing function must be available.
- f. Console station must be provided for image processing, image display, post processing function and networking with anti-glare color monitor of LCD type with size 19 inches or more with matrix of 1024 x 1024
- g. Dry laser camera of 500 dpi or more for printing the images on film should be available.
- 9. Essential Accessories
- a. Voltage stabilizer for the complete DR system should be quoted along with the unit, It should be of required capacity and the make and capacity of the voltage stabilizer should be specified.
- b. On line 3kva UPS with suitable rating and 60 minutes back up for console / digital system should be supplied with DR systems

#### 10. Warranty

- a. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers.
- b. Warranty must be at least 5 years. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories including the x-ray tube and Flat panel detector for 5 years after the warranty period.

#### 11. Others

- a. Buy back of Allenger Make X-Ray machine (300 mA).
- b. The detector, generator and the X-ray tube of the system at least two of them should be supplied from the same make so that the parameters match with accuracy. The system should be supplied only by reputed X-ray manufacturers with good track record of life of the DR systems including X-ray tube, detector etc. Also the detector and software should be from the same manufacturer. The company should have proven track record in Govt. sector.
- c. The system should have all necessary approvals such as ISO, EN ISO, CE /FDA approval and AERB Type approved.
- d. At least five (05) installations of DR system in the country.

### Technical Specification for Neuro-therapy System (Neuro-Biofeedback) for S. S. Raju Center for

### **Addiction Psychiatry**

### Tender No Gen/03/20-21/M&E

Neurotherapy system for Drug-deaddiction (Neurofeedback) system should perform qEEG and Neurofeedback with this all-in-one system. Should have following specification

- 1. The amplifier should be 32 Channel and should work on batteries and should be removable
- 2. The amplifier should have Start button on headbox for start and for patient event button
- 3. The amplifier should have Internal memory through SD card in the amplifier
- 4. The system should have DVD Playback with Multi-Parameter feedback controls.
- 5. The system should have Real-time LORETA neurofeedback
- 6. The system should perform Real-time Z-Score feedback
- 7. Should have LORETA analysis and export
- 8. Should have an interactive dashboard
- 9. Should be supplied with 20-25 custom 3D games made specifically for neurofeedback
- 10. Should have Continuous impedance monitoring of all channels at all times
- 11. Should have Brainfeedback training module for clinical grade Neurofeedback
- 12. Should perform Amplitude, frequency and coherency brain mapping
- 13. Should be supplied with Spectral analysis tool with data export
- 14. Should have Magnitude and power numerical export to Excel or ASCII
- 15. Should have facility to Export to Matlab and to other EEG/ERP data formats
- 16. Should have Advanced custom montage constructor
- 17. Should have acquisition software (Clinical Grade training platform and recording)
- 18. Should have Trend graphs and robust reporting features
- 19. Easy to use threshold bins for fast protocol creation
- 20. Over 25 custom Neurofeedback games such as

A. Flying Aircraft	B. Chess	C. Butterfly
D. Bird	E.Ball	F. Cones
G. Cubes	H. Dolphins	I. Elephants
J. Formula	K. Girl	L. Robot
M. River	N. Rocket,	O. Spoon

- P. Car driving etc
- 21. Live view of rewarded signal with protocol settings
- 22. Should have Full data review and analysis with brain mapping
- 23. Should have analysis tools, including direct export to LORETA
- 24. Export data to any format including EDF+
- 25. View all epochs of rewarded data vs non-rewarded
- 26. Online brain maps for Amplitude, Coherence and Frequency
- 27. Spectral analysis with block select of data
- 28. Should be supplied with HD Network Video with Infrared lamp and microphone.
- 29. Should be supplied with 1 ch Bluetooth battery operated near infrared spectrascopy for monitoring oxygenation and deoxygenation.

- 30. No of EEG channels 32
- 31. Bandwidth: 0.16 to 1000 Hz per channel
- 32. Analog Sampling frequency: 6Khz per channel
- 33. IMR: 140dB
- 34. Differential input impedance: 10GOhm parallel to 35pF
- 35. Battery operation for atleast 40 hrs
- 36. Amplifier should not weigh more than 400g
- 37. Should be wireless
- 38. Should be supplied with Computer Cart
- 39. Should be supplied with one no 50-55 inch Colour LED HD tV
- 40. Should be supplied with One seater recliner
- 41. The vendor will be responsible for creating a room for patient and a partitioned room for the consultant. The partition should be toughened glass partitioned and patient should not be able to see through the glass.
- 42. Should be supplied with computer with latest specification
- 43. Should have CE approval
- 44. Warranty must be at least 5 years.
- 45. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### <u>Technical Specification for Electronic OPD Management and Queuing System & Integration with HIMS</u> (HOSPITAL INFORMATION MANAGEMENT SYSTEM) <u>Tender No Gen/04/20-21/M&E</u> <u>Scope of Work & Instructions for Technical Bid</u>

### Scope of Work:

The work covered by this specification comprises the Furnishing, supply, installation and commissioning of Cooling System, Audio-Visual System and Centralised Control and monitoring Software for remote display management which will be configure with existing e-hospital Software and Integration of OPD Software. The Contractor/ Agency/ System Integrator will furnish the hall, supply and install the equipment necessary to meet the requirements and provide all labour and materials, whether or not described in full, necessary to produce complete and fully operational systems in accordance with the intent of this document. A comprehensive systems approach to the installation shall be taken. This shall include, but not be limited to; following the architectural concepts where available, implementation of the design of the multimedia systems, careful integration with other facilities. The Contractor/ Agency/ System Integrator must familiarize himself with the site drawings and the scope of the facilities that is required. He should ensure that he is aware of the operational requirements under which the systems and associated facilities are to be installed and used. The installed systems must be in all respects suitable for the purposes for which they are intended.

All the furnishing works like False Ceiling, Tiles Fixing, Door, Door Pilling, Table, Chair, Texture Paint/ Wall Paper, Blinds, Cabling, Electric Wiring, Cooling solution and ventilation plan, Lighting plan, fabrication work, dismantle of Current False Ceiling, Air Curtain, etc. shall responsibility of The Contractor/ Agency/ System Integrator.

The scope of work also include to prepare details drawings and submit 1 set in hard copy as well as in soft copy in CAD, PDF format etc. as per requirement of project. The Contractor/ Agency/ System Integrator are allowed to visit the Hall during office working hours from 10.00 A.M. – 4.00 P.M (Except Lunch Hour from 1.00 P.M. to 2.00 P.M.) Only the approved drawings by CIP authority will be eligible for Price Bid.

All clearance from competent authorities to make AV system operational at the time of handover shall be arranged by Contractor/ Agency/ System Integrator. Contractor/ Agency/ System Integrator have to provide experienced engineer for operation & maintenance during Warranty period of three years starting from date of handover of works.

Sl. No.	Description of work/item required	Technical Specifications	Area/No.
1	Roof leakage fixing	Roof leakage fixing. Sheet will be repaired with polyurethane waterproofing membrane and large leakage area need sheet to change. (In Sqft Approx.)	1000 sqft
2	Roller Blinds	Roller Blinds : Vinyl Fabric with wall bracket balance in Aluminium tube also in bottom . Bottom chain and code weight in string. (In Sqft Approx.)	900 sqft
3	Tiles fixing	Tiles fixing on Floor and Pillar with Skirting (in Sqft Approx.)	4500 sqft
4	UPS Room	UPS Room Construction 5 x 10 =50 (in Sqft. Approx.)	50sqft
5	Aluminium Partition	Doctor's Chamber (framed in Aluminium partition and will be covered by fiber sheets ) 140 x 5 = 700 (in Sqft Approx.)	700sqft
6	Paint and Putti	Paint and Putti on Inner Wall of Waiting Hall (in Sqft.)	4500sqft
7	Aluminium Door	Aluminium Door for Doctor's Bathroom (01), Doctor's Chamber (03), UPS Room (01) (in Sft Approx.)	105 sqft

Sl. No.	Description of work/item required	Technical Specifications	Area/No.
8	Entrance Door	Entrance Door - 32 mm thick flush door, with 1mm thick laminate, 18" handle of both sides. (Sq.Ft. Approx.)	42 sqft
9	Entrance Door Pilling	Entrance Door Pilling (in Rft Approx.)	40 rft.
10	Table	Table for Doctor's Chamber $(4x3x2.5) 30*5 = 150$ (in Sft Approx.) Table will made up of 19 mm & 12 mm thick pine wood ply with gurjan core finish there will be on drawer inside table. Outer face of the table will be covered with Matty laminate.	150 sqft
11	Executive Chair	Executive Chair with full length back support; adjustable and instant seat height adjustment. The seat and back shall be made of PU foam of density $45 \pm 2 \text{ Kg/m3}$ upholstered with changeable fabric upholstery covers. Chair should have a full $360^{\circ}$ revolving mechanism.	5 Nos.
12	Normal Chair	Normal Chair with half-length back support and instant seat height adjustment. The seat and back shall be made of PU foam of upholstered with changeable fabric upholstery covers. Chair should have a full 360° revolving mechanism(in No)	15 Nos.
13	Dismantle Work and New False ceiling	Dismantle of Current False Ceiling and Installation of New False ceiling (In Sft Approx.)	4500 Sqft
14	Fabrication Work	Fabrication Work for hanging Cassatte AC (in No )	9
15	Wall Mount Fan:	Unique Pivot Arrangement for Easy Tilt Manchanism, Rust Free Body with 100% Copper Motor, Sweep Size: 400mm, Wattage: 75, Air Delivery(M3/Min): 100 (in No)	5
16	4mm Wire (In Meter Appro	x.)	1800 mtr.
17	1mm Wire (In Meter Approx.)		1350mtr.
18	2.5mm Wire (In Meter Approx.)		1080mtr.
19	One Way Switch Box (in No)		11 Nos.
20	4-Core 16 Square mm Copper Armoured Power Cable 3 Phase (In Meter Approx.)		70 Mtr.
21	¾ inch Conduit Pipe (In Meter Approx.)		480 Mtr.
22	1 inch Conduit Pipe (In Meter Approx.)		100Mtr.
23	MCB 16 Amp.(in No)		30 Nos.
24	Electric Switches 6 Amp.(in No)		30 Nos.
25	Electric Panel 3 ftx3 ft.(in No)		1 No.
26	Changer (in No)		1
27	Online UPS System 10kVA with Battery		1 set
١.	Capacity (in kVA / kW)	10 kVA 3-Phase Input / 1 Phase Output	
11.	Technology and Capability	<ul> <li>a) True Online configuration with double conversion UPS</li> <li>b) DSP based control.</li> <li>c) Possibility of enhancing UPS capacity / redundancy by operating UPS in N+X Parallel Redundant Configuration (PRS).</li> <li>d) Capability of Independent battery bank operation of the UPS when operated in PRS.</li> <li>e) UPS should be designed at Rated PF of 0.8 i.e. 10kVA / 8 kW UPS rating.</li> <li>f) Dual Input design.</li> </ul>	

SI. No.	Description of	Technical Specifications	Area/No.
	work/item required		
111.	Input facility -Phases / Wires	3-Phase / 4-Wire & Gnd (3Phase & Neutral + Ground)	
IV.	Input Voltage Range	220/380V, 230/400V, 240/415VRange (Full Load) 176~276 /	
		305~477VRange (Derating to 50% Load) 120~175 / 208~304V	
٧.	Nominal Input Frequency	50/ 60 Hz (Auto selectable)	
VI.	Input Frequency Range	45 to 65 Hz	
VII.	Input Power Factor	> 0.95 (full load)	
VIII.	Generator Compatibility	Compatibility to genset supply required	
IX.	Input Protection (Thru In-	Should be provided at the input of the UPS suitable for the full rated	
	built 1P MCB)	capacity of the UPS	
Х.	Nominal Output voltage	220/230/240 VAC	
XI.	Output Voltage	±1%	
	Regulation		
XII.	Nominal Output	50/60 Hz	
	Frequency		
XIII.	Output Short circuit	Electronic Protection	
N (1) (	Protection	Zura an far a Matter and the Datter Marks	
XIV.	Transfer Time (Wode of	Zero ms from Mains mode to Battery Mode	
×\/	Transfer Time (Inverter to	Zero his from Battery Mode to Mains frode <1ms (Synchronized Mode)	
۸۷.	Bypass / Bypass to		
	Inverter)		
XVI.	Overall Efficiency (AC to	Upto 92% (at 100% load)	
	AC) - Online (Double		
	Conversion)		
XVII.	Overall Efficiency (AC to	Upto 96% (at 100% load)	
	AC) - ECO Mode (Bypass		
	feeding the load under		
	normal conditions)	· · · · · · · · · · · · · · · · · · ·	
XVIII.	Inverter Overload	≥105% continous,106% ~ 110% 600sec,111% ~ 125% 300sec,126% ~	
		150% 30 sec,>150% Immediate	
XIX.	Measurements (On LCD)	Input: Voltage / Frequency, Bypass: Voltage / Frequency, Output:	
		Voltage / Requercy, Battery, Remaining time / Battery Level mutator,	
		Canacity/Status/Test Result System Date/Time Setting Current	
		Time.PEC Fuse Open. Battery Temperature Too High. Battery Over	
		Charge, Battery Out of Date, NV Short Circuit, Output Breaker Off	
XX.	Fault Indication (On LCD)	Main Input Sequence Fault, Power Module General Fault, Battery	
		Ground Fault, Bypass Static Switch Fault, System General Fault, Parallel	
		Fault, Provide Bypass O/P Even If UPS Fault,	
XXI.	Indications (LED)	Normal-Green/Battery-Orange/Bypass-Green/Fault-Red	
XXII.	Audible Alarms	Battery Low beep / DC Fault beep/ UPS Overload beep/ o/p short ckt	
		fault beep/ Shutdown beep	
XXIII.	Backup Required	240 Mins on full load	

SI. No.	Description of work/item required	Technical Specifications	Area/No.	
XXIV.	Battery Bank Voltage	Voltage 240 V DC or higher (200 Ah of 20 no. Batteries)		
XXV.	Battery Bank VAh	Minimum VAH 48000		
XXVI.	Batteries Type	SMF		
XXVII.	Charger type / Charging Method & Charging Voltages	<b>Constant Voltage Constant Current</b> Solid state <b>SMPS</b> charger Float Charge 270V±(2V) Boost Charge 280V±(2%V)		
XXVIII.	Battery recharge time (After complete discharge) to 90% capacity	10-12 hours		
XXIX.	Battery Housing	Battery Housing Should be compact and space saving MS steel open racks complete with interconnectors		
XXX.	Parallel Configuration	UPS should have capability for parallel 4 units.		
XXXI.	Manufacturer	QMS:         As per ISO 9001: 2008           EMS:         As per ISO 14001: 2004           OSHAS:         As per ISO 18001: 2007		
XXXII.	Product Safety Certifications (Mandatory)	ESD:IEC61000-4-2: level4 RS : IEC61000-4-3: level3 EFT: IEC61000-4-4:level4 SURGE: IEC61000-4-5:level4 CS: IEC61000-4-6: level3 IEC 61000-2-2 EN 62040-2 EN 61000-3-2		
XXXIII.	ROHS compliance	UPS should be ROHS compliance		
28	Industrial Exhaust Fan	18" Industrial Exhaust Fan with heat Indicator and sensor (Steel) (in No) To control heat between roof and false ceiling to make the AC System effective.	8 Nos.	
29	Exhaust Fan (Fiber)	8" Exhaust Fan (Fiber)	16 Nos.	
30	LED Bulb	Min. 20 Watt. , 6000 lumens (in No.)	10 Nos.	
31	1.5 Ton Cassette AC	Tonnage: 1.5 TON, Star Rating: 3 Star, Power: 220-240, Type Of Product: Cassette AC along with all the required Accessories	12 Nos.	
32	Air Curtain	for 6 Feet Door Size, Noise level upto 60dB, Wall Mount, Air Flow-Non Recirculating	1 Unit	
	IT Products			
33	24 Port-Switch	24-Port Switch, (In No)	1 Nos.	
34	12-Port POE	12-Port POE (In No)	1 No.	
35	I/O Box	I/O Box, (In No)	27 Nos.	
36	UTP Cable	UTP Cat6 Cable (In Box)	4 Box	
37	Rack	6U Rack (In No)	1 No.	
38	Display System Pro Grade - 55 Inch Monitoring display with wall mount Kit and Embedded CMS (Content Management System) for Multiple Screen Display (In No)		4 Nos.	
١.	Screen Size	It shall have a Screen Size of 55 inches or more		
II.	Panel Technology	It shall have IPS Panel Technology or better		
III.	Aspect Ratio	It shall have an aspect ratio of 16:9		
IV.	Native Resolution	It shall have a native resolution of 1920X1080 or more		
٧.	Brightness	It shall have a brightness of 450cd/m2 or more.		

SL No	Description of	Technical Specifications	Area/No
51. NO.	work/item required	rechnical specifications	Alea/NO.
VI.	Contrast Ratio	It shall have a dynamic ratio of 4000000:1 or more and static contrast rati more.	o of 1100:1 or
VII.	Viewing Angle	It shall have a viewing angle of 178X178 or more.	
	Input Connectivity	The Panel shall have atleast 3 HDMI Input Port, 1 DVI-D Input Port, 1 DP Ir	iput Port, 1
VIII.		Audio In Port and 1xUSB 3.0 Ports.	
IX		The Panel shall have atleast 1 DP output port and atleast 1 Audio Output	
	AV Output	Port.	
Х.	Control	It shall be with RS-232 in as well as out port.	
XI.	RJ-45 and IR	It shall have RJ-45 port and IR receiver	
XII.	Orientation	The Panel shall support Landscape as well as Portrait Mode.	1
XIII.	Tile Mode	It shall support upto 12X12 or more tile mode.	
XIV.	Features	It shall have 8 GB or more Internal Memory, Built-in Wi-Fi, Temperature S Brightness Sensor, Current Sensor, webOS 4.0, Embedded CMS, Fail Over, Customization, Screen Share, Play via URL, Gapless Playback, Control Man Energy Saving, Beacon, HDMI-CEC or more.	ensor, Auto Image ager, Smart
XV.	Speakers	It shall have 10W+10W Speakers or better.	
XVI.	Operating Hours	It shall have 24x7 working hours.	
XVII.	Power Consumption	It shall have a typical Power consumption of 105 Watts or less.	
39	Centralized Control and m	onitoring Software for remote display management (In No)	01 No
Ι.	Signage	Signage and Content Software shall support Four Clients right from Day O	ne.
١١.	Database	It shall be able to link with external databases.	
III.	OEM	The Digital signage shall be from the same OEM as that of Signage Panels	•
IV.	Accessibility	It shall support Multiple Displays and Accounts.	
٧.	Admins	It shall support Multiple Admins.	
40	Professional Grade W/L Lapel Mic (In No) 01 No.		01 No.
Ι.	Modulation	It shall have Frequency Modulation.	
١١.	S/N Ratio	It shall have a S/N ratio of ≥ 103 dBA or better.	
III.	Frequencies	It shall be able to use 8 or more Frequency Channels simultaneously	1
IV.	THD	It shall have THD of ≤ 0.9% or better.	
V.	Frequency Response	It shall have frequency response of 50 to 16,000 Hz (–3 dB) or better.	
VI.	Squelch	It shall have Squelch Control.	
VII.	Interface	It shall have Balanced XLR Audio output and Unbalanced Audio Output.	
VIII.	Operating Time	It shall have Operating Time of 8 Hours or more.	
IX.	Max Audio Level	It shall have maximum audio level of 12 dB or more.	
Х.	Rated Impedance	It shall have rated impedance of 1 ohm or better.	
XI.	Accessories	It shall be supplied as 1 receiver, 1 bodypack transmitter, 1 clip on Microp adaptor, 1 AA batteries, and 2 receiver antennas complete in all respect.	hone, 1 power
41	Professional Grade W/L H	andheld Mic (In No)	01 No.
Ι.	Modulation	It shall have Frequency Modulation.	1
II.	S/N Ratio	It shall have a S/N ratio of ≥ 103 dBA or better.	1
III.	Frequencies	It shall be able to use 8 or more Frequency Channels simultaneously	
IV.	THD	It shall have THD of $\leq$ 0.9% or better.	
V.	Frequency Response	It shall have frequency response of 70 to 16,000 Hz (-3 dB) or better.	<u>ا</u>
VI.	Squelch	It shall have Squelch Control.	

SI. No.	Description of work/item required	Technical Specifications	Area/No.
VII.	Interface It shall have Balanced XLR Audio output and Unbalanced		
VIII.	Operating Time	It shall have Operating Time of 8 Hours or more.	
IX.	Pattern It shall have Super Cardioid Polar Pattern.		
v	Accessories	It shall be supplied as 1 receiver, 1 Handheld transmitter, 1 power adaptor	r, 1 AA batteries,
Х.		and 2 receiver antennas complete in all respect.	
42	Gooseneck Mic (In No)		01 No.
Ι.	Transducer	It shall be pre polarised Condenser Microphone.	
II.	Frequency Response	It shall have frequency response of 50Hz to 18000 Hz or better.	
III.	Phantom Power	It shall operate from an external 12V to 48V DC phantom power source; consumption shall be 3 mA.	urrent
IV.	Connectivity	It shall have XLR connectivity.	
43	Profession	al Grade Amplifier with Balanced Output and AGC (In No)	
l.	Amplifier Wattage	It shall be 240 Watts or more Mixing Amplifier.	
١١.	Frequency Response (Mic)	It shall have Microphone frequency response of 40Hz- 17000Hz or better.	
III.	Frequency Response (Line)	It shall have a Line Frequency Response of 40 Hz-18000 Hz or better.	
IV.	Minimum Load Impedance	It shall have minimum impedance load bridged of 4 ohms per channel.	
V.	Microphone Inputs	It shall have 4 or more balanced microphone inputs.	
VI.	Phantom Power	It shall have phantom power individually for four microphone inputs with On/Off.	
VII.	Line Input	It shall have 4 or more line inputs.	
VIII.	Balanced Line Output	It shall have Balanced Three Pin XLR/Phoenix Line Audio output.	
IX.	Unbalanced Line Output	It shall have 1 Pre output and 1 unbalanced Line output or better.	
Х.	Input Sensitivity (Mic)	It shall have input sensitivity of $\pm2.5$ mV/ $2k\Omega$ for balanced Microphone in	nputs.
XI.	Input Sensitivity (Amp)	It shall have input sensitivity of 1000 mV/10k $\Omega$ , Unbalanced RCA Input for AMP input.	
XII.	Input Sensitivity (Aux)	It shall have input sensitivity of $350 \text{mV}/10 \text{k}\Omega$ for unbalanced Aux input.	
XIII.	Output Sensitivity (Rec)	It shall have an output sensitivity of 200mV/470 $\Omega$ for record output.	
XIV.	Speaker Out	It shall have 100V line, 70V line as well as 4 to 16 ohm impedance output.	
XV.	THD	It shall have THD of >0.1% at 1 KHz, 1/3 rated Power or better.	
XVI.	Overload	It shall have Microphone input overload of fifteen db or greater.	
XVII.	Override	The microphone inputs shall override over other audio inputs by 30 dB attenuation via switch.	
XVIII.	Gain Control	It shall have a gain control of ± 2.5mV to ± 75mV@ 30dB.	
XIX.	Crosstalk	It shall have a cross talk of ≤ 50 dB or better.	
XX.	Cooling and Protection	It shall have auto cooling function at 55 degree Celsius. It shall have high temperature, overload and short circuit protection.	
	Operation	It shall get operated from AC as well as DC.	
44	Professional Grade Speake	rs (In No)	02 Nos.
Ι.	Frequency Response	It shall have frequency response of 90 Hz to 25Khz or better.	
II.	LF driver	It shall be 4.5 inches or more.	
III.	HF driver	It shall be 1 inches or more.	

Sl. No.	Description of work/item required	Technical Specifications	Area/No.
IV.	Max SPL	It shall have max SPL of 111 dB or more.	
V.	Crossover	It shall have 7 Khz or better inductively coupled crossover.	
VI.	Dispersion	It shall have 90 degrees or better conical dispersion.	
45	Laying, Installation & Commissioning & Integration into existing HIMS Software (In Lot)       1 lot.		1 lot.
46.	Supply, Installation, Testing and Commissioning complete in all respect to run the complete system. 01 Lot		
	Labour Charges for Mason work and Earthing Pit (in Lot)		

47. Warranty must be at least 5 years on items mentioned above at Sl. No 27 to 31, 38 & 40 to 44.

48. Should also quote rates for CMC / AMC on items mentioned above at SI. No 27 to 31, 38, & 40 to 44 for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

# <u>Section-V</u> <u>Technical Specifications for Workstation</u> Tender No. Gen/05/20-21/ M&E

SI. No	Name of	Specification
	Components	
1	Processor 1	Intel Xeon Silver series or more 12 core processor or higher
2	Processor 2	Same as Processor 1
3	RAM	Minimum 256 GB 2933 MHz DDR4 RAM
4	HDD	12000GB 7200 RPM SATA
5	Graphics	At least 16 GB nVIDIA Quadro Graphics
6	Optical Drive	Supermulti DVDRW
7	Operating	Windows 10 Pro 64 bit with recovery media; Dual Boot with Linux (Cent OS) to be
	System	enabled; system to be installed on-site after discussion with end-user for installing
		Linux
8	Monitor	24 inches IPS display or larger
9	USB	Minimum 8 UBS ports (4 USB 3.0) with 4 front facing ports
10	Warranty	5 years NBD Warranty
11	Others	Compatible single unit packing, Compatible dual processor air cooling kit or
		equivalent, India-English localization, Manufacturer Authorization Form (MAF) from
		OEM, Integrated network interface card, At least 4 PCIe x 16 expansion slots,
		Compatible Chassis with 90% Efficiency, ENERGY STAR qualified or equivalent
12	UPS	6 KVA UPS along with batteries, rack, links, and other accessories; UPS should provide
		minimum 1 hour uninterrupted power supply
13	External HDD	Minimum 4TB USB3 SSD
14	Printer	Color Laser Printer with scanning and copier function
15	Accessories	USB Optical Mouse with Scroll Button, USB Business Slim Keyboard, Compatible
		Country Kit along with all media/drivers/software disks, cables, heat sinks, GPU
		installation kits etc. to be provided

16. Installation should be done on turnkey basis.

17. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

### <u>Section-V</u> <u>Technical Specification for Automated Elisa Analyzer</u> <u>Path Lab/01/2020-21/M&E</u>

### 1. System

- I. Benchtop Automated Elisa System which is capable of processing assays in Micro plates and are extremely versatile, offering totally automated processing of pipetting, washing, shaking, incubation and reading without any user intervention.
- II. The System should be ideal for laboratories involved in clinical infectious disease screening, virus screening, torch panel screening, tumor markers, Hormones and autoimmune antibody testing from Human Serum Plasma Samples.
- III. Number of Test Plates: 4 Nos. 96 well Microplates

### 2. Reader

- I. Wavelength Range 340-750
- II. Measuring Range 0 3.5(Approx.)
- III. Assay- End Point, Curve-Fit, Kinetics, Quantitative Method

### 3. Washer

- I. Manifold Type 8 well washer
- II. Manifold Needles 8-way dispensing channels & 8-way aspiration channels

### 4. Safety Features

- I. Multiple Liquid Detection, Colour Monitoring Check, Clot Detection
- II. Password Protection
- III. Storable Program and Result
- IV. Barcode Reading Facility
  - 5. The system should comply with ISO/CE standards and quality.

6. The Machine should be a reputed make, it should have 2 years good past record of functioning in Central Government/State Government Medical Institutions

7. The system should be supplied with all standard accessories and instruction manual

8. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the authorized representatives from the principal manufacturers.

9. Warranty must be 5 year.

10. Should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.