

27.09.2022

**Amendment No. 5****Sub: Technical Amendment to the referred tender enquiry****Ref.: HITES/PCD/AIIMS-IV/55/Radiology/22-23 dated 12-07-2022 read with amendment no 1, 2, 3 and 4 dated 13.07.2022, 10.08.2022, 30.08.2022, and 19.09.2022 respectively.**

The following changes are being incorporated in the above referred Tender Enquiry Document.

**SECTION – VII**  
**TECHNICAL SPECIFICATIONS**

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)		
Page No. & Para No.	Technical Specification	Amended as
Page 45	Purchase of <b>Contrast enhanced</b> Dual energy 128 sub mm Slice per rotation CT Scanner	Purchase of Dual energy 128 sub mm Slice per rotation CT Scanner
Page 45; Para 2.2.1	Virtual NCCT—Brain hemorrhage : Differentiation of brain hemorrhage from contrast enhancement .	Virtual NCCT—Brain hemorrhage : Differentiation of brain hemorrhage from contrast enhancement. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 2.2.3	Material density data : Electron Density and Atomic number visualization and processing.	Material density data : Electron Density and Atomic number visualization and processing. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 2.2.4	Bone Marrow Imaging : Dual Energy marrow imaging by calcium subtraction to look for marrow pathologies.	Bone Marrow Imaging : Dual Energy marrow imaging by calcium subtraction to look for marrow pathologies. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 2.2.7	Lung Analysis : Lung isolation, Color coding of affected vessels, Iodine uptake quantification.	Lung Analysis : Lung isolation, Color coding of affected vessels, Iodine uptake quantification. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>

Page 45; Para 2.2.8	Direct Neuro CTA : Neuro CTA with accurate bone removal in complex body regions using dual energy method.	Direct Neuro CTA : Neuro CTA with accurate bone removal in complex body regions using dual energy method. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 2.2.9	Contrast vs Blood differentiation : Virtual non-contrast CT scan using dual energy method.	Contrast vs Blood differentiation : Virtual non-contrast CT scan using dual energy method. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 2.2.10	Vascular Plaque characterization : Vascular Plaque characterization using dual energy method. (Optional)	Vascular Plaque characterization : Vascular Plaque characterization using dual energy method. (Optional) <b>(Quoted price to be valid for warranty period)</b>
Page 45; Para 3.1	X-RAY GENERATOR Output capacity (actual and not effective) ≥ 100 kW or more	X-RAY GENERATOR Output capacity (actual and not effective) ≥ <b>72 kW or more</b>
Page 45; Para 3.2	mA range : 20-800mA or more	mA range : <b>20-600mA or more</b>
Page 45; Para 4.2	Tube current range : 800mA or more	Tube current range : <b>600mA or more</b>
Page 45; Para 4.3	Tube Assembly: Anode heat storage capacity >=8MHU or Direct Cooling Technology	Tube Assembly: Anode heat storage capacity >= <b>6 MHU or Direct Cooling Technology</b>
Page 46; Para 5.2	Scannable range ≥ 2000 mm	Scannable range ≥ <b>1800 mm</b>
Page 46; Para 7.1	Number of acquired slices per rotation in all modes Minimum 128 acquired slices in all modes	Number of <b>acquired / generated</b> slices per rotation in all modes : Minimum 128 slices in all modes
Page 46; Para 7.3	Dynamic CTA : Enabling 4D CT DSA, time resolved perfusion with a minimum range of 31 cm.	Dynamic CTA : Enabling 4D CT DSA, time resolved perfusion with a minimum range of <b>8 cm.</b>
Page 46; Para 10.1	Operator Console with Table: CPU Processor Minimum quad core processor, 270 GB hard disc, 8 GB RAM. The best available option to be quoted by the vendor	Operator Console with Table: CPU Processor Minimum quad core processor, <b>1 TB hard disc, 32 GB RAM.</b> The best available option to be quoted by the vendor

NA	NA	<p><b>Added Para:</b>  <b>Following Applications on all 2 concurrent users:</b>  <b>a. Metal Artifact Reduction (MAR)</b>  <b>b. Stroke Analysis &amp; Quantification</b>  <b>c. Complete Liver Volumetry &amp; Segmentation</b></p>
Page 47; Para 11.1	Image Post Processing Architecture: A Client Server Architecture based solution (Intellispace portal/ AW Server/Syngo Via etc) Added Para : Server Hardware details: Intel Gold CPU 8-core, 96GB RAM, 3TB storage with separate disks for system SW, Win Server 2019 edition & NVIDIA 8GB GPU Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation.	Image Post Processing Architecture: A Client Server Architecture based solution (Intellispace portal/ AW Server/Syngo Via etc) Added Para : Server Hardware details: Intel Gold CPU 8-core, <b>64 to 96 GB RAM</b> , 3TB storage with separate disks for system SW, Win Server 2019 edition & <b>NVIDIA 5 to 8 GB GPU</b> Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation.
Page 48; Para 11.4.4	Advance applications : Diagnostic bone assessment in radiological in radiological CT datasets. The spine and ribs should be displayed in one plane.	Advance applications : Diagnostic bone assessment in radiological in radiological CT datasets. <b>Optional : The spine and ribs should be displayed in one plane.</b>
Page 48; Para 13.2	Latest Iterative Reconstruction Technique: Iterative reconstruction technology for all imaging protocols which reduces dose while simultaneously improving low contrast detectability & spatial resolution and reduces image noise.	Latest Iterative Reconstruction Technique: Iterative reconstruction technology for all imaging protocols which reduces dose while simultaneously improving low contrast detectability & spatial resolution and reduces image noise.  <b>Added Para : AI based iterative reconstruction technology can be offered as optional.</b>
Page 48; Para 15.1	Dual head pressure injector: Dual head pressure injector with dual flow with 50 nos of Syringes & 200 sets of tubings.	Dual head pressure injector: Dual head pressure injector <b>with Synchronization with CT Scanner (of any make)</b> , with dual flow with 50 nos of Syringes & 200 sets of tubings.  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>  <b>Added Para: Should have the connectivity to PACS, RIS, and Speech Recognition Systems - (OPTIONAL.)</b>

NA	NA	<b>Added Para:</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>
<b>Site Modification Work</b>		
Page 49	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Page 53; Para 1.g	Aperture should be at least 75 cm diameter	Aperture should be at least 75 cm diameter <b>or more</b>
Page 54; Para 4.e	The vertical range should be atleast 55 cms ( max height — min height )	The vertical range should be atleast <b>40 cms</b> ( max height — min height )
Page 54; Para 7.e	The Hard disk Capacity for both Image and Raw data should be more than 500GB	The Hard disk Capacity for both Image and Raw data should be <b>1 TB or more.</b>
Page 54; Para 7.e	It should have facility to store at least 2,50,000 Images	It should have facility to store at least <b>5,00,000</b> Images
Page 54; Para 7.k	Workstations & Server: A multimodality client server architecture based solution with minimum concurrent 40000 slices rendering capacity, with 96 GB RAM with total storage of minimum 20 TB. Client hardware specification- 2no.s Workstation with two licences : dualquad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medicalgrade monitor of minimum 2 MP resolution & 3 button mouse. The server client solution offered should be OEM	Workstations & Server: A multimodality client server architecture based solution with minimum concurrent 40000 slices rendering capacity, with <b>64 to 96 GB RAM</b> with total storage of minimum 20 TB. Client hardware specification- 2no.s Workstation with two licences : dualquad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medicalgrade monitor of minimum 2 MP resolution & 3 button mouse. The server client solution offered should be OEM.  <b>Added Para :</b> <b>Concurrent licence should offered for all software/application and should process simultaneously on all the offered workstation at the same time point.</b>

Page 55; Para .i	Application: Added Para: 1. Acquisition of Dynamic Myocardial Perfusion and post processing of the acquired data to be offered (OPTIONAL) 2. CT FFR Software to be provided (OPTIONAL)	Added Para: 1. Acquisition of Dynamic Myocardial Perfusion and post processing of the acquired data to be <b>offered as standard</b> 2. CT FFR Software to be provided (OPTIONAL)
Page 55; Para .j	Added Para : 1. Dynamic CTA with a coverage of more than 31 cm to cover large areas greater than detector width 2. Dynamic 4D CT should be provided.	Added Para : 1. Dynamic CTA with a coverage of more than <b>16 cm</b> to cover large areas greater than detector width 2. Dynamic 4D CT should be provided.
Page 55; Para 8.g	Dose reduction Techniques: Should have model based iterative reconstruction technique (VEO/ADMIRE/IMR) for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM. Added Para : Latest Deep Learning Algorithm for image reconstruction to be provided, if available with the vendor.	Dose reduction Techniques: Should have model based iterative reconstruction technique ( <b>ASiR-V</b> /VEO/ADMIRE/IMR/ <b>AIDR</b> ) for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM. Added Para : Latest Deep Learning Algorithm for image reconstruction to be provided, if available with the vendor.
Page 56; Para 9.d	Dual Head Pressure Injector of reputed make with 50 nos of Syringes & 200 sets of tubings. Specify the make of Injector.	Dual head pressure injector: Dual head pressure injector <b>with Synchronization with CT Scanner (of any make)</b> , with dual flow with 50 nos of Syringes & 200 sets of tubings.  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>  <b>Added Para: Should have the connectivity to PACS, RIS, and Speech Recognition Systems - (OPTIONAL.)</b>
NA	NA	<b>Metal Artifact Reduction (MAR) should be offered</b>
NA	NA	<b>Stroke Analysis &amp; Quantification should be offered</b>
NA	NA	<b>Complete Liver Volumetry &amp; Segmentation should be offered</b>
NA	NA	<b>CT Virtual Colonoscopy with detail quantification should be offered</b>
NA	NA	<b>Added Para : Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>
<b>Site Modification Work</b>		

Page 57	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Page 60; Pata A.7	Gantry: Both the <b>gantries including table</b> should have an automatic positioning capability dependent on the reference image being selected	Both the gantries should have an automatic positioning capability dependent on the reference image being selected
Page 60; Pata D.1.ii	X-Ray Tubes: 0.5 mm or less with load 40 KW or more in minimum one plane.	X-Ray Tubes: <b>0.6 mm</b> or less with load <b>38 KW</b> or more in minimum one plane.
Page 60; Pata F.1	Biplane Digital System: Dynamic flat detector system with high spatial and 16 bit contrast resolution with 2k matrix resolution	Biplane Digital System: Dynamic flat detector system with high spatial and <b>14 bit</b> contrast resolution with <b>1.5 k</b> matrix resolution
Page 60; Pata F.2	Size of frontal plane should be at least 45 cm diagonal	Size of frontal plane should be at least <b>43 cm</b> diagonal
Page 62; Pata 8	Added Para: The system should have latest radiation safety package like Clarity IQ/CARE & CLEAR/Blueprint/equivalent	Added Para: The system should have latest radiation safety package like Clarity IQ/CARE & CLEAR/Blueprint/ <b>Optiq / Autoright / equivalent</b>
Page 62; Pata H.8	Pressure injector of reputed make should be coupled with DSA system. 200 Nos. disposable syringes sets to be supplied as per institute requirement.	<b>Single Head</b> Pressure injector of reputed make should be coupled with DSA system. <b>100 Nos. disposable syringes sets and 500 Nos. of tubings should be supplied along with the system.</b>  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>

Page 65; BOQ SI No.10	Pressure injector of reputed make along with 200 disposable syringes sets. : 1 No	<b>Single Head</b> Pressure injector of reputed make along with <b>100 Nos. disposable syringes sets and 500 Nos. of tubings.</b> : 1 No
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>
NA	NA	<b>Added Para :</b> <b>4D DSA if available should be quoted as OPTIONAL. The price of the same should be valid for warranty period.</b>
<b>Site Modification Work</b>		
Page 62; Para 1	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DSA centre.	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection</b> for the construction of DSA centre.
NA	NA	<b>Added Para:</b> <b>Broad band connection for operation of SRS System will be provided by the Institute. However, internal LAN cabling work should be done by the vendor.</b>

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Amnd No1 Page 2/15 Para 2.b	Shim system: Off-centre shimming should be possible. Added Para : System must have Second order/high order shimming.	Shim system: Off-centre shimming should be possible. Added Para : System must have Second order/high order shimming / <b>equivalent technology. (If the equivalent technology is offered, an undertaking should be provided from principal manufacturer for non-availability of second order/high order shimming)</b>

Amnd No1 Page 2/15 Para 4.a	RF System: A fully digital RF system capable of transmitting power of at least 30 KW or more, Dual RF power amplifiers. System should be capable of Multi Transmit with Multi amplifier driving / True shape for better B1 homogeneity	RF System: A fully digital RF system capable of transmitting power of at least 30 KW or more. <b>Suitable technique should be provided for better B1 homogeneity.</b>
Amnd No1 Page 2/15 Para 4.c	RF System: It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least 9.	RF System: It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least <b>4</b> .
Amnd No1 Page 2/15 Para 5.b	Anesthesia Machine: Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes (SIMV,PSV and PRVT) along with inbuilt suction	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated</b> suction.
Amnd No1 Page 3/15 Para 5.i	Shoulder coil: a. Dedicated Shoulder coil – 16 channel or more- 1 No b. flex coils – 2nos. (One large and one small)	Shoulder coil: a. Dedicated Shoulder coil – 16 channel or more- 1 No b. flex coils – 2nos. (One large and one small <b>as specified below &amp; as per BOQ</b> ) <b>i. Shoulder coil: Flex coils (Small) - 4 Channel or more</b> <b>ii. Shoulder coil: Flex coils (Large) - 8 Channel or more OR multipurpose coil of 16 channel or more.</b>
Amnd No1 Page 3/15 Para 5.k	RF Coils: High resolution foot/ ankle coil – 16 channels or more.	RF Coils: High resolution foot/ ankle coil – <b>8 channels or more.</b>
Amnd No1 Page 4/15 Para 8.1	Server: The server (single/dual configuration) should have image storage capacity of at least 20 TB minimum 40,000 concurrent slice processing power and at least 128 GB RAM. The server hardware to be included with 21" or more FT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation	Server: The server (single/dual configuration) should have image storage capacity of at least 20 TB minimum 40,000 concurrent slice processing power and at least <b>64 GB RAM</b> . The server hardware to be included with 21" or more FT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation



Amnd No1 Page 8/15 Para 14.b	Added Para : Multi-slice Simultaneous Sequence to provide Better image quality in EPI and TSE sequence.	Added Para : Multi-slice Simultaneous Sequence to provide Better image quality in EPI. <b>Multi-slice Simultaneous Sequence should be offered in TSE sequence, if available.</b>
Amnd No1 Page 9/15 Para 6	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance / <b>1.5 meter from isocentre compliance</b> in MRI Room and One Slave monitor in console room with followin modules provision to monitor the following	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance from isocentre in MRI Room and One Slave monitor in console room with followin modules provision to monitor the following <b>Monitor should be atleast 10" display</b>
Amnd No1 Page 9/15 Para 6.h	All consumables required for installation & commissioning of the system should be supplied.	All consumables required for installation & commissioning of the system should be supplied. <b>Added Para : 200 Nos. of per patient consumables should be provided during supply of the system. Unit price for per patient consumable should be quoted separately and the same should be valid during warranty period.</b>
Amnd No1 Page 9/15 Para 14	Two non-magnetic height adjustable patient transfer trolleys should be provided	Two non-magnetic height adjustable patient transfer trolleys, <b>which do not alarm in FerroMagnetic Detector System</b> , should be provided
Amnd No1 Page 10/15 Para 16	Walk through Metal detector with multiple fluxgate sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	Walk through Metal detector with multiple fluxgate <b>or equivalent sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.
Amnd No1 Page 14/15 BOQ SI No.10	Shoulder coil: Flex coils (Large) - 16 Channel or more	Shoulder coil: Flex coils (Large) - <b>8 Channel or more OR multipurpose coil of 16 channel or more</b>
Amnd No1 Page 14/15 BOQ SI No.11	Shoulder coil: Flex coils (Small) - 16 Channel or more	Shoulder coil: Flex coils (Small) - <b>4 Channel or more</b>

Amnd No1 Page 14/15 BOQ SI No.12	High resolution foot/ ankle coil – 16 channels or more	High resolution foot/ ankle coil – <b>8 channels or more.</b>
Amnd No1 Page 14/15 BOQ SI No.21	Endocavitary Coil - Prostrate Study	Endocavitary Coil - Prostrate Study ( <b>Optional</b> )
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>
NA	NA	<b>Added Para Under "Accessories" :</b> <b>Para 17.23 : SCREENER FOR IMPLANT DETECTION - 1 No</b>
<b>Site Modification Work</b>		
Amnd No1 Page 11/15	Civil work Any ab initio new construction or demolition of existing walls etc and reconstruction is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet	Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.
Amnd No1 Page 13/16 Para i.4	Miscellaneous: Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure <b>CO2 gas</b> cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied	Miscellaneous: Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied

Item Name: MRI 1.5 T(2022 HLL 121185 5)		
Page No. & Para No.	Technical Specification	Amended as
Page 76; Para 3.b	Gradient System: The gradient should be actively shielded with each axis having <b>simultaneously</b> a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m. Added Para : The rise time should not be more than 225 micro second to reach the maximum gradient	Gradient System: The gradient should be actively shielded with each axis having a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m. Added Para : The rise time should not be more than 225 micro second to reach the maximum gradient
Page 77; Para 4.c	It should support Parallel acquisition techniques with a factor of up to 9 in 2D.	It should support Parallel acquisition techniques with a factor of up to <b>4</b> in 2D.
Page 78; Para 8.g	SHOULDER coils a. Dedicated Rigid Shoulder coil –16 channel - 1 No b.Flex Coil (16 channel or more) - 2nos. (One large FOV and one small FOV	SHOULDER coils a. Dedicated Rigid Shoulder coil –16 channel - 1 No b. flex coils – 2nos. (One large and one small as <b>specified below &amp; as per BOQ</b> ) i. <b>Flex Coil (16 channel or more) OR multipurpose coil of 16 channel or more- Large FOV - 1 No</b> ii. <b>Flex Coil (4 channel or more) - Small FOV - 1 No</b>
Page 78; Para 8.i	Coil System: High resolution foot/ ankle coil – 16 channels or more	Coil System: High resolution foot/ ankle coil – <b>8 channels or more</b>
Page 79; Para 8.1	Workstation: Hardware Server: The server should have image storage capacity of at least 5 Tera bytes or more, minimum 40,000 concurrent slice processing power and at least 128 GB RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor.	Workstation: Hardware Server: The server should have image storage capacity of at least 5 Tera bytes or more, minimum 40,000 concurrent slice processing power and at least <b>64 GB RAM</b> . The server hardware to be included with 21" or more TFT/LCD monitor with dual processor.
Page 80; Para 16.4	Accessories: MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber	MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, <b>integrated suction</b> and circle absorber
Page 80; Para 16.4b	Accessories: Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes (SIMV,PSV and PRVT) along with inbuilt suction	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated suction</b> .

Page 80; Para 16.5	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss/ <b>1.5m from isocentre</b> Compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following; Monitor should be atleast 12" display	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following; Monitor should be <b>atleast 10" display</b>
Page 80; Para 16.5.g	All consumables required for installation & commissioning of the system should be supplied.	All consumables required for installation & commissioning of the system should be supplied. <b>Added Para : 200 Nos. of per patient consumables should be provided during supply of the system. Unit price for per patient consumable should be quoted separately and the same should be valid during warranty period.</b>
Page 81; Para 16.14	Two non-magnetic height adjustable patient transfer trolleys should be provided	Two non-magnetic height adjustable patient transfer trolleys, <b>which do not alarm in FerroMagnetic Detector System</b> , should be provided
Page 81; Para 18.ii	Walk through Metal detector - 01 no	<b>Deleted</b>
Page 81; Para 18.iii	Walk through Metal detector with multiple fluxgate sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	Walk through Metal detector with multiple fluxgate <b>or equivalent sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.
Page 84; BOQ SI No.8	Flex Coil (16 channel or more) - Large FOV - 1 No	Flex Coil ( <b>16 channel or more</b> ) <b>OR multipurpose coil of 16 channel or more</b> - Large FOV - 1 No
Page 84; BOQ SI No.9	Flex Coil (16 channel or more) - Small FOV - 1 No	Flex Coil ( <b>4 channel or more</b> ) - Small FOV - 1 No
Page 84; BOQ SI No.12	High resolution foot/ ankle coil – 16 channels or more - 1 No	High resolution foot/ ankle coil – <b>8 channels or more</b> - 1 No
Page 85; Para 8	Miscellaneous: Added Para : SCREENER FOR IMPLANT DETECTION - 1 No	Miscellaneous: Added Para : SCREENER FOR IMPLANT DETECTION - 1 No ( <b>OPTIONAL</b> )

NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>
<b>Site Modification Work</b>		
Page 72	Civil work Civil work Any ab initio new construction or demolition of existing walls etc and reconstruction is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 1.5T strength magnet	Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.
Page 84; Para i.4	Dry chemical power type MRI compatible fire extinguisher of 4.5kgs capacity (2 Nos), with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc. complete, confirming t IS:2171 of approved make & complete as directed by EIC	<b>Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make &amp; complete as directed by EIC.</b> <b>4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied</b>

<b>Item Name: CR System (Tender ID: 2022 HLL 121185 6)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Page 88; Para 4	Shearwave Elastography should be available in Linear & convex probes stress/strain elastography should be available in Linear, convex and trans vaginal Probes.	Shearwave Elastography should be available in Linear & convex probes <b>strain elastography</b> should be available in Linear, convex and trans vaginal Probes.
Page 89	Added Para : System should onboard tutor / online support for learning and enhancing the technical skill for patient scanning.	Added Para : System should <b>have</b> onboard tutor / online support for learning and enhancing the technical skill for patient scanning.
NA	NA	<b>Added Para :</b> <b>Atleast 12 inch touch screen with twin display for ease of use and faster throughput.</b>
NA	NA	<b>Added Para :</b> <b>System should have auto biometry measurement in OBS application</b>
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>

<b>Item Name: Colour Doppler (2D &amp; 3D) (2022 HLL 121185 8)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Page 91; Para 9.2	The system shall include at least 100 GB of dedicated hard drive for large local storage capacity,with 20000 image storage capacity or more.	The system shall include <b>at least 500 GB of dedicated hard drive</b> for large local storage capacity,with 20000 image storage capacity or more.
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>

<b>Item Name: Portable Colour Doppler (2022 HLL 121185 9)</b>		
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Amended as</b>
Page 92; Para 5	Scanning depth to be 30 cm or more	Scanning depth to be <b>28 cm or more</b>
Page 93; Para 22	The system should be able to store atleast 5000 Images.	<b>The system should have integrated storage of at least 250 GB.</b>
Page 93; Para 24	In built battery backup should be atleast 1 hour	In built battery backup should be <b>atleast 50 minutes</b>
NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>

**Reply to the Pre-Bid query**

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 45	Purchase of <b>Contrast enhanced</b> Dual energy 128 sub mm Slice per rotation CT Scanner	Purchase of Dual energy 128 sub mm Slice per rotation CT Scanner. ( <b>Justification</b> : Contrast enhanced dual energy is specific to one vendor and it is not available with Philips on 128 slice Segment. We request you to kindly remove this technique for wider participation.)	Purchase of Dual energy 128 sub mm Slice per rotation CT Scanner	For better clarity
Page 45; Para 1.1	Gantry: Aperture $\geq$ 70 cm	Aperture $\geq$ <b>75 cm</b> ( <b>Justification</b> : All vendors have wider gantry aperture in 128 slice CT segment which is essential for patient comfort, Improving Cancer Care, greatly helps in CT guided intervention cases and less Claustrophobic for patients.)	No Change	
Page 45; Para 1.3	Gantry Tilt : Minimum Physical/Digital tilt of 20 degree on either side.	Please retain this point. For wider participation  Request you to kindly delete the digital tilt from the existing specs and amend the same as "Gantry Tilt: Minimum Physical tilt of 20 degrees on either side."	No Change	
Page 45; Para 2	Dual Energy Technology	Please make all Dual Energy Technology as an optional.	No change	



Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		All Applications specified under this point and sub points may not be available with all vendors including us hence it is requested to DELETE entire point no.2 from the specs.		
Page 45; Para 2.1	Dual Energy : The system must have dual energy capabilities and wide range of applications should be available. Please specify whether dual energy can be used for daily clinical routine without extra radiation to the patient.	Kindly remove the points from 2.1 – 2.1.10	No Change	
Page 45; Para 2.2	Dual energy packages (to be offered) : The system should have dual energy acquisition and processing capabilities. Provide 1 number of floating license individually for each applications mentioned below.	Kindly remove the points from 2.1 – 2.1.10	No Change	
Page 45; Para 2.2.1	Virtual NCCT—Brain hemorrhage : Differentiation of brain hemorrhage from contrast enhancement .	Kindly remove the points from 2.1 – 2.1.10	Virtual NCCT—Brain hemorrhage : Differentiation of brain hemorrhage from contrast enhancement. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation
		TO BE DELETED		
Page 45; Para 2.2.2	Monoenergetic imaging : Mono energetic Imaging for beam hardening artifact elimination, Contrast augmentation and tissue visualization with	Kindly remove the points from 2.1 – 2.1.10	No Change	
		TO BE DELETED		

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
	Mono energetic image with facility for removal of artifacts from clips, coils, orthopedics/dental implants etc.			
Page 45; Para 2.2.3	Material density data : Electron Density and Atomic number visualization and processing.	Kindly remove the points from 2.1 – 2.1.10  TO BE DELETED	Material density data : Electron Density and Atomic number visualization and processing. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation
Page 45; Para 2.2.4	Bone Marrow Imaging : Dual Energy marrow imaging by calcium subtraction to look for marrow pathologies.	Kindly remove the points from 2.1 – 2.1.10  TO BE DELETED	Bone Marrow Imaging : Dual Energy marrow imaging by calcium subtraction to look for marrow pathologies. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation
Page 45; Para 2.2.5	Gout Imaging : Color coded visualization of deposited uric acid crystals in peripheral extremities.	Kindly remove the points from 2.1 – 2.1.10	No Change	
Page 45; Para 2.2.6	Calculi Characterization : Visualization of the chemical composition of kidney stones.	Kindly remove the points from 2.1 – 2.1.10	No Change	
Page 45; Para 2.2.7	Lung Analysis : Lung isolation, Color coding of affected vessels, Iodine uptake quantification.	Kindly remove the points from 2.1 – 2.1.10	Lung Analysis : Lung isolation, Color coding of affected vessels, Iodine uptake quantification. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 45; Para 2.2.8	Direct Neuro CTA : Neuro CTA with accurate bone removal in complex body regions using dual energy method.	Kindly remove the points from 2.1 – 2.1.10	Direct Neuro CTA : Neuro CTA with accurate bone removal in complex body regions using dual energy method. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation
Page 45; Para 2.2.9	Contrast vs Blood differentiation : Virtual non-contrast CT scan using dual energy method.	Kindly remove the points from 2.1 – 2.1.10	Contrast vs Blood differentiation : Virtual non-contrast CT scan using dual energy method. <b>(Optional)</b> <b>(Quoted price to be valid for warranty period)</b>	For wider participation
Page 45; Para 2.2.10	Vascular Plaque characterization : Vascular Plaque characterization using dual energy method. (Optional)	Kindly remove the points from 2.1 – 2.1.10	Vascular Plaque characterization : Vascular Plaque characterization using dual energy method. (Optional) <b>(Quoted price to be valid for warranty period)</b>	For wider participation
		TO BE DELETED		
Page 45	Added Para Dual Energy in Cardiac mode (OPTIONAL)	TO BE DELETED	No Change	
Page 45; Para 3.1	X-RAY GENERATOR Output capacity (actual and not effective) ≥ 100 kW or more	≥ 72 kW or more (Justification : To enable GE Participation without compromising clinical value)	X-RAY GENERATOR Output capacity (actual and not effective) ≥ 72 kW or more	For wider participation
		To be amended as "Output capacity (actual and not effective) ≥ 72 kW or more."		

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		<p>≥ 75 kW or more                      (Justification : Philips do not have product available with 100KW in 128 slice CT scanner segment. Also, 128 slice is used for the routine CT in any medical institute and 75Kw generator output along with Latest Iterative technique provides you best result in fraction of Dose. It is a restrictive tender requirement and will debar philips from quoting its latest system in the tender. 75 kW is more inclusive as every companies has 128 slice CT scanner product available in this segment.)</p>		
Page 45; Para 3.2	mA range : 20-800mA or more	<p><b>20-600mA</b> or more                      (Justification : To enable GE Participation without compromising clinical value)</p> <p>mA range : <b>20- 600mA</b> or more</p> <p>To be amended as "mA range <b>20-600mA</b> or more"</p>	mA range : <b>20-600mA or more</b>	For wider participation
Page 45; Para 3.3	kV : 80-135 KVP	<b>80-140kVp</b>	No Change	
Page 45; Para 4.1	Tube Assembly: Tube Voltage : 80-135KV or more	Tube voltage: <b>80-140kVp</b>	No Change	

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 45; Para 4.2	Tube current range : 800mA or more	<b>600mA or more</b>	Tube current range : <b>600mA or more</b>	For wider participation
		mA Range : <b>600mA or more.</b>		
Page 45; Para 4.3	Tube Assembly: Anode heat storage capacity >=8MHU or Direct Cooling Technology	<b>The X ray Tube should be essentially Dual Focus. The heat storage capacity should be at least 8 MHU or equivalent or more. Specify the method and technique of cooling.</b> (Justification: Similar specifications were part of 256 slice CT specifications of tender PMSSY Phase IV/55/Rad.)	Tube Assembly: Anode heat storage capacity >= 6 MHU or Direct Cooling Technology	For wider participation

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		<p><b>&gt;=6MHU</b> or Direct Cooling Technology  <b>(Justification :</b> GE latest clarity panel detector having 98% sensitivity &amp; 0.003<math>\mu</math>s after glow which consume less x-ray photon compared to conventional GOS detector and enable system speed 4-times faster with wide detector coverage to acquire data in high speed at sort time hence our system does not require high MHU tube.                      &gt;=8MHU highest heat loading capacity specification ask is just like an older filament bulb of 60W against 15W CFL bulb &amp; 10W LED bulb for the same light/brightness which will consume higher electricity cost so this specification allowing the old inferior compromised product technology to quote in this tender as 64 rows &amp; 128 slice CT and purposely keeping another vendor out of this tender.)</p> <p>To be amended as "Anode heat storage capacity &gt;=7.5MHU" or Direct Cooling Technology</p>		
Page 46; Para 5.2	Scannable range $\geq$ 2000 mm	<p>Scannable Range <b>&gt;= 1800mm</b>  <b>(Justification :</b> 1800mm is good enough to scan any long patient from head to toe.)</p> <p>To be amended as "Scannable range <math>\geq</math> 1800 mm"</p>	Scannable range $\geq$ 1800 mm	For wider participation

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 46; Para 6.1.1	Scanning Modes : Spiral exposure At least 60 sec or more	At least <b>100 sec or more</b> <b>(Justification:</b> Spiral exposure at least 60 sec or more is the requirement of 128-Rows 256-Slice or 256-Rows 512-Slice system where the scan time is fraction of second and longer can time does not require because of faster gantry rotation speed & wider detector coverage. Whereas in 64-Rows 128-Slice CT System, detector size is 38-40mm and rotation time is 0.33 – 0.35 which is having higher scan time against 256 & 512 slice CT.)	No Change	
		To be amended as "Spiral exposure At least <b>100 sec or more</b> "		
Page 46; Para 7.1	Number of acquired slices per rotation in all modes Minimum 128 acquired slices in all modes	Minimum generation of 128 slices in all modes <b>(Justification :</b> We are generating 128 slices with the help of our overlapped reconstruction technology. Acquired word is specific to one vendor.)	Number of <b>acquired / generated</b> slices per rotation in all modes : Minimum 128 slices in all modes	For wider participation
Page 46; Para 7.3	Dynamic CTA : Enabling 4D CT DSA, time resolved perfusion with a minimum range of 31 cm.	Dynamic CTA : Enabling 4D CT DSA, time resolved perfusion with a minimum range of <b>8 cm.</b>	Dynamic CTA : Enabling 4D CT DSA, time resolved perfusion with a minimum range of <b>8 cm.</b>	For wider participation
		To be amended as "3 Dynamic CTA Enabling 4D CT DSA, time resolved perfusion with a minimum range of <b>4 cm.</b> "		

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 46; Para 10.1	Operator Console with Table: CPU Processor Minimum quad core processor, 270 GB hard disc, 8 GB RAM. The best available option to be quoted by the vendor	Minimum quad core processor, <b>1 TB hard disc, 32 GB RAM</b> . The best available option to be quoted by the vendor	Operator Console with Table: CPU Processor Minimum quad core processor, <b>1 TB hard disc, 32 GB RAM</b> . The best available option to be quoted by the vendor	For better specification
NA	Suggestion from Vendor	Following Applications on all 2 concurrent users: Metal Artifact Reduction (MAR) Ventricular Output, EF Calculation, Myocardial Evaluation Stroke Analysis & Quantification Complete Liver Volumetry & Segmentation CT Virtual Colonoscopy with detail quantification	<b>Added Para:</b> <b>Following Applications on all 2 concurrent users:</b> <b>a. Metal Artifact Reduction (MAR)</b> <b>b. Stroke Analysis &amp; Quantification</b> <b>c. Complete Liver Volumetry &amp; Segmentation</b>	Dept requirement



Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 47; Para 11.1	Image Post Processing Architecture: A Client Server Architecture based solution (Intellispace portal/ AW Server/Syngo Via etc) Added Para : Server Hardware details: Intel Gold CPU 8-core, 96GB RAM, 3TB storage with separate disks for system SW, Win Server 2019 edition & NVIDIA 8GB GPU Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation.	A Client Server Architecture based solution (Intellispace portal/ AW Server/Syngo Via etc) Added Para : Server Hardware details: Intel Gold/Xenon CPU 8-core, <b>64/96GB RAM</b> , 3TB storage with separate disks for system SW, Win Server 2019 edition & NVIDIA 8GB GPU Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation. <b>(Justification : Every company has different configuration of server and we offer Xenon Intel processor and 64 GB Ram)</b>	Image Post Processing Architecture: A Client Server Architecture based solution (Intellispace portal/ AW Server/Syngo Via etc) Added Para : Server Hardware details: Intel Gold CPU 8-core, <b>64 to 96 GB RAM</b> , 3TB storage with separate disks for system SW, Win Server 2019 edition & NVIDIA <b>5 to 8 GB</b> GPU Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation.	For wider participation
		To be amended as "Added Para: Server Hardware details: Intel Gold CPU 8-core, 96GB RAM, 3TB storage with separate disks for system SW, Win Server 2019 edition & NVIDIA <b>5GB GPU</b> Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation."		

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 48; Para 11.4.4	Advance applications : Diagnostic bone assessment in radiological in radiological CT datasets. The spine and ribs should be displayed in one plane.	Make it optional. Ribs unfolding comes with only one vendor. {Justification: All protocol are pediatric & infant friendly}.	Advance applications : Diagnostic bone assessment in radiological in radiological CT datasets. <b>Optional : The spine and ribs should be displayed in one plane.</b>	For wider participation
Page 48; Para 11.4.6	CT Fluoroscopy CT Fluoroscopy Guided Biopsy with near real time needle visualization with Monitor of 18" or more, Cart for carrying monitor and Foot switch. Please quote the price separately.	CT Fluoroscopy Guided Biopsy with near real time needle visualization and AI based needle tracking with autocalculation of depth and deviation with Monitor of 18" or more, Cart for carrying monitor and Foot switch. (Justification : Please make it standard)	No Change	
Page 48; Para 12.3	Image Reconstruction Recon Matrix : 512 X 512	Recon matrix : 512 X 512 , 1024X 1024 (Justification : 1024 X 1024 has better resolution because of small pixel size and leads to a better resolution and IQ.)	No Change	

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 48; Para 13.2	Latest Iterative Reconstruction Technique: Iterative reconstruction technology for all imaging protocols which reduces dose while simultaneously improving low contrast detectability & spatial resolution and reduces image noise.	<p><b>AI based</b> iterative reconstruction technology for all imaging protocols which reduces dose while simultaneously improving low contrast detectability &amp; spatial resolution and reduces image noise.</p> <p><b>(Justification :</b> AI based iterative technique provides better image quality even on very low dose. AI works on the image space level and help to remove the noise from the images with precision while improving the spatial and low resolution . Benefits of this Artificial based iterative reconstruction technique is to prevent photon starvation artifacts (streaks, bias) prior to image creation and in maintaining image texture to overcome the artificial or “plastic” look of images that have been frequently reported when using previous-generation iterative reconstruction techniques.)</p>	<p>Latest Iterative Reconstruction Technique: Iterative reconstruction technology for all imaging protocols which reduces dose while simultaneously improving low contrast detectability &amp; spatial resolution and reduces image noise.</p> <p><b>Added Para : AI based iterative reconstruction technology can be offered as optional.</b></p>	Dept requirement

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 48; Para 15.1	Dual head pressure injector: Dual head pressure injector with dual flow with 50 nos of Syringes & 200 sets of tubings.	Pedestal Dual Head Pressure Injector with Synchronization with CT Scanner (of any make). Injector should have Dual Flow – Contrast & Saline are pushed together for the enhanced image quality; Patient-specific Injection Protocols for Cardiac procedure should be available as a standard; Abdominal Protocol Optimization Software should be available as a standard; Pulmonary Angiography Protocol Optimization Software should be available as a standard; Enhanced Protocol manager; Workstation should have Contrast Dose Management Solution; The data should be centrally mobilized and instantly available; Should have the connectivity to PACS, RIS, and Speech Recognition Systems - OPTIONAL.	Dual head pressure injector: Dual head pressure injector <b>with Synchronization with CT Scanner (of any make)</b> , with dual flow with 50 nos of Syringes & 200 sets of tubings.  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>  <b>Added Para: Should have the connectivity to PACS, RIS, and Speech Recognition Systems - (OPTIONAL.)</b>	Dept requirement
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance
<b>Site Modification Work</b>				

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 49	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre	For wider participation
Page 49 Para a.1	Civil work a) Flooring 600 x 600 mm vitrified tiles with 100mm tile skirting to match in CT Gantry & Console room, lobby and patient preparation areas, Radiologist room etc.	a) Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in Console room, lobby and patient preparation areas, Radiologist room etc. In CT Gantry room Vinyl flooring to used.	No Change	
Page 49 Para a.2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment / UPS room.	b) Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in CT Equipment Room / UPS Room	No Change	
Page 50 Para c.1	False Ceiling : Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.	False ceiling: Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. <b>Finished with mineral fibre tiles of 600x600 for grid ceiling. Ceiling height to suit the equipment mount and clearances.</b>	No Change	

Item Name: CT 128 Slice (Tender ID: 2022_HLL_121185_1)				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
Page 50 Para 3	AIR CONDITIONING: Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	AIR CONDITIONING: Ductable Split / <b>Split AC</b> / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	No Change	
Page 50	Added Para : Dehumidifier of 110 Litre - 2 Nos. to be provided.	Added Para : Dehumidifier of <b>60 Liter</b> - 2 Nos. to be provided.	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 53	The system quoted should be latest state of art top of the line .The system should have 128 or more physical rows of detectors capable of Dual Energy applications. The scanner should be capable of comprehensive whole body imaging including cardiac, abdomen, neuro and vascular imaging applications, true isotropic volume acquisition. It should also be capable of 3-D reconstructions at fast speeds, quantitative calcium scoring in the vessels using all documented quantification algorithms, 3-D image display during acquisition on-line as well as real time, 3-D vessel imaging with feasibility for volume rendering.	<p>The system quoted should be latest state of art top of the line.The system should have <b>192 or 128 +128 more physical independent rows of detectors</b> in any combination and capable of Dual Energy applications. The scanner should be capable of comprehensive whole body imaging including cardiac, abdomen, neuro and vascular imaging applications, true isotropic volume acquisition. It should also be capable of 3-D reconstructions at fast speeds, quantitative calcium scoring in the vessels using all documented quantification algorithms, 3-D image display during acquisition on-line as well as real time, 3-D vessel imaging with feasibility for volume rendering.</p> <p>Considering the tender requireemnt for Top of the line CT Scanner , we would like to inform you that CT Scan machine having 256 or more Physical Rows of Detector are available in the market. So we requet you to amend the specs as "The system quoted should be latest state of art top of the line .The system should have <b>256 or more physical rows of detectors</b> capable of Dual Energy Applications"</p>	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 53; Para 1.d	Gantry: The sub millimetre Slice @ 0.63 mm or less in 128 physical rows / 64+64 as sandwich arrangement of detector and should be able to acquire 256 slices per rotation. The system should be in position to perform 256 acquisition Slices per Rotation for general, cardiac/vascular applications. Vendor should specify the Z - axis total detector width.	The sub millimetre slice @ 0.63mm or less in true physical 128-Rows <b>or more and should be able to acquire 256 slices per 360-degree gantry rotation in both sequential &amp; spiral/helical single as well as in dual energy scan mode for all clinical applications. The minimum Z-Axis coverage should be 76mm or more at 1:1 pitch</b>	No Change	
		The sub millimetre Slice @ 0.63 mm or less in <b>192 physical rows / 128+128</b> as sandwich arrangement of detector and should be able to acquire 256 slices per rotation. The system should be in position to perform 256 or more acquisition Slices per Rotation for general, cardiac/vascular applications. Vendor should specify the Z - axis total detector width.		
		As explained above we request you to amend the specs as "The sub millimetre Slice @ 0.63 mm or less in <b>256 physical rows arrangement of detector</b> and should be able to <b>acquire/generate 512 slices per rotation</b> . The system should be in position to perform 512 acquisition Slices per Rotation for general, cardiac/vascular applications. Vendor should specify the Z - axis total detector width."		
Page 53; Para 1.g	Aperture should be at least 75 cm diameter	Aperture should be at least <b>78 cm diameter or more</b>	Aperture should be at least 75 cm diameter <b>or more</b>	For wider participation
		Aperture should be at least <b>80 cm</b> diameter. {Justification : It is the minimum requirement of 256 slice Scanner}		



<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 53; Para 2.b	X ray Section: The System X ray power should be 100 kW (actual power) and above.	The System X ray power should be <b>120 kW</b> (actual power) and above.	No Change	
Page 53; Para 2.c	X ray Section: The mA range available should be between 20 to 740 mA or more with increments in steps of not more than 10mA.	The mA range available should be between <b>20 to 1000 mA or more</b> with increments in steps of not more than 10mA.	No Change	
Page 53; Para 2.d	X ray Section: The X ray Tube should be essentially Dual Focus. The heat storage capacity should be at least 8 MHU or equivalent or more. Specify the method and technique of cooling.	The X ray Tube should be essentially Dual Focus. The heat storage capacity should be <b>at least 6.8 MHU or equivalent or more</b> . Specify the method and technique of cooling. To be amended as "The X ray Tube should be essentially Dual Focus. The heat storage capacity should be at least <b>7.5 MHU</b> or more. Specify the method and technique of cooling."	No Change	
Page 53; Para 3.b	Detectors: The 256 acquisition slice or more per Rotation should be possible. The Systems should have at least 128 Physical Rows of the detector or more.	The 256 acquisition slice or more per Rotation should be possible. The Systems should have at least <b>192 rows or 128 + 128</b> Physical Rows of the detector or more. <b>The detector must have z - axis coverage of atleast 60 mm.</b> {Justification : Already given justification in above point 1(D)}	No Change	
Page 54; Para 4.a	The patient table offered should have a minimum load bearing capacity of at least 150 KG.	The patient table offered should have a minimum load bearing capacity of at least <b>200 KG</b> .	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 54; Para 4.e	The vertical range should be atleast 55 cms ( max height — min height )	The vertical range should be <b>atleast 43 cms</b> ( max height — min height ) <b>(Justification:</b> SOMATOM Drive table has Vertical table travel range 49–92 cm/19.29–32.2” (at table top) Therefore,we request you to amend the specification as mentioned for wider participation)	The vertical range should be <b>atleast 40 cms</b> ( max height — min height )	For wider participation
Page 54; Para 4.f	Specify the reproducing accuracy of the table.	The reproducing accuracy of the table at full load capacity should be $\pm 0.25\text{mm}$ or less.	No Change	
Page 54; Para 6.a	The system offered should have Spiral Capability of at least 80 seconds & above. Real Time Spiral @ 10 f/s should be standard.	The system offered should have Spiral Capability of at least 60 seconds & above. Real Time Spiral @ 30 f/s should be standard	No Change	
Page 54; Para 6.b	The range of Spiral facility in Axial Direction should be more than 100 cms.	The range of Spiral facility in Axial Direction should be more than <b>1800 cms</b> .	No Change	
Page 54; Para 7.a	Console & Workstation The Console offered should be the Latest Multi tasking Processors and a menu driven platform with a RAM size of at least 8 GB.	The Console offered should be the Latest Multi-tasking Processors and a menu driven platform with a RAM size of at least <b>32GB</b> .	No Change	
Page 54; Para 7.e	The Hard disk Capacity for both Image and Raw data should be more than 500GB	requesting HTIES technical committee to change the CT Console CPU Processor technical specification from “8GB RAM & 500GB Hard Disk” in to “32GB RAM & <b>1TB Hard Disk</b> ” to allow quotation with latest hardware CPU processor for faster reconstruction, multi-tasking work with real time image display	The Hard disk Capacity for both Image and Raw data should be <b>1 TB or more</b> .	For better specification

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 54; Para 7.e	It should have facility to store at least 2,50,000 Images	It should have facility to store at least <b>5,00,000</b> Images	It should have facility to store at least <b>5,00,000</b> Images	For better specification
Page 54; Para 7.k	Workstations & Server: A multimodality client server architecture based solution with minimum concurrent 40000 slices rendering capacity, with 96 GB RAM with total storage of minimum 20 TB. Client hardware specification- 2no.s Workstation with two licences : dualquad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medicalgrade monitor of minimum 2 MP resolution & 3 button mouse. The server client solution offered should be OEM	Workstations & Server: A multimodality client server architecture based solution with minimum concurrent 40000 slices rendering capacity, with <b>64/96 GB RAM</b> with total storage of minimum 20TB (Internal/External). Client hardware specification- 2no.s Workstation with two concurrent licences : dualquad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medicalgrade monitor of minimum 2 MP resolution & 3 button mouse. The server client solution offered should be OEM. <b>Current license means all software/application should process simultaneously on all the offered workstation at the same time point.</b> ( Justification : Every company has different configuration of server and we offer Xenon Intel processor and 64 GB Ram)	Workstations & Server: A multimodality client server architecture based solution with minimum concurrent 40000 slices rendering capacity, with <b>64 to 96 GB RAM</b> with total storage of minimum 20 TB. Client hardware specification- 2no.s Workstation with two licences : dualquad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with medicalgrade monitor of minimum 2 MP resolution & 3 button mouse. The server client solution offered should be OEM.  <b>Added Para :</b> <b>Concurrent licence should offered for all software/application and should process simultaneously on all the offered workstation at the same time point.</b>	Dept requirement
Page 54; Para 7.l	Whole organ (brain & body) perfusion CT. Scanner should have capability of Whole brain acquisition of Minimum 10 cm of coverage.	Whole organ (brain & body) perfusion CT. Scanner should have capability of Whole brain acquisition of Minimum <b>8 cm</b> or more of coverage.	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 55; Para 7.i	DUAL ENERGY APPLICATIONS to be provided as standard: Mention the technology for dual energy acquisition: rapid kV switching or dual source or simultaneous or other method. Added Para :Dual energy for coronary analysis Minimum 2 nos of concurrent users should be possible. Renal Calculi Characterisation, Gout, Cardiac including myocardial perfusion, Lung perfusion & pulmonary emboli dedection, Vascular plaque characterisation, Virtual NCCT, Direct Neuro CTA, Contrast vs blood differentiation, Monoenergetic imaging, Tissue differentiation (tendon ligament), Endo leak assesment.	DUAL ENERGY APPLICATIONS to be provided as standard: Mention the technology for dual energy acquisition: rapid kV switching or dual source or simultaneous or other method. Minimum 2 nos of concurrent users should be possible. Renal Calculi Characterization, Gout, Cardiac including myocardial perfusion, Lung perfusion & pulmonary emboli detection, Vascular plaque characterization, Virtual NCCT, Direct Neuro CTA, Contrast vs blood differentiation, Monoenergetic imaging, Tissue differentiation (tendon ligament), Endo leak assessment.  Tissue differentiation (tendon ligament) and Endo leak Assessment. Applicaton are Not available with us. So we request you to kindly DELETE both the applications from the existing specs	No Change	
Page 55; Para .i	Application: Added Para: 1. Acquisition of Dynamic Myocardial Perfusion and post processing of the acquired data to be offered (OPTIONAL) 2. CT FFR Software to pe provided (OPTIONAL)	Added Para: 1. Acquisition of Dynamic Myocardial Perfusion and post processing of the acquired data to be offered <b>as an standard</b> 2. CT FFR Software to pe provided (OPTIONAL)	Added Para: 1. Acquisition of Dynamic Myocardial Perfusion and post processing of the acquired data to be <b>offered as standard</b> 2. CT FFR Software to pe provided (OPTIONAL)	Dept requirement
Page 55; Para .j	Added Para : 1. Dynamic CTA with a coverage of more than 31 cm to cover large areas greater than detector width	1. Dynamic CTA with a coverage of more than <b>8 cm</b> to cover large areas greater than detector width 2. Dynamic 4D CT should be provided.	Added Para : 1. Dynamic CTA with a coverage of more than <b>16 cm</b> to cover large areas greater than detector width	For wider participation & dept requirement.

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
	2. Dynamic 4D CT should be provided.	Dynamic CTA with a coverage of more than <b>16 cm</b> to cover large areas greater than detector width 2. Dynamic 4D CT should be provided. We request you to kindly amend this point as "Dynamic CTA with a coverage of more than <b>16 cm</b> to cover large areas greater than detector width."	2. Dynamic 4D CT should be provided.	
Page 55; Para 7.iv	Dual energy application must be possible on all workstation and all fields of view with minimum FOV 33cm.	Dual energy application must be possible on all workstation and all fields of view with minimum FOV <b>35cm</b> . Dual energy application must be possible on all workstation and all fields of view with minimum FOV <b>35 cm</b> . (Justification : Shorter the FOV higher the chance to miss the lesions) Dual Energy Application is available with console only so we request you to kindly amend the specas as "Dual energy application must be possible on <b>Console / workstation</b> and all fields of view with minimum FOV 33cm.."	No Change	
Page 55; Para 7.v	Also Specify if DUAL ENERGY APPLICATIONS like Metal Artifact Correction / Beam Hardening artifact Correction, Brain Haemorrhage are available in the system.	Metal artifact corrections / BEAM Headning artifacts corrections is available with us in single energy application. Brain Hemaemorrhage application in dual energy is not available with us so we request you to kindly amend this point as "Also Specify if <b>DUAL / SINGLE ENERGY APPLICATIONS</b> like Metal Artifact Correction / Beam Hardening artifact Correction, Brain Haemorrhage should be available in the system.	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 55; Para 8.g	Dose reduction Techniques: Should have model based iterative reconstruction technique (VEO/ADMIRE/IMR) for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM. Added Para : Latest Deep Learning Algorithm for image reconstruction to be provided, if available with the vendor.	Should have model based iterative reconstruction technique <b>(ASiR-V / ADMIRE / IMR)</b> for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM. Request you to kindly add AIDR technique in this point and amend the same as "Should have model based iterative reconstruction technique (VEO/ADMIRE/IMR/ <b>AIDR</b> ) for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM."	Dose reduction Techniques: Should have model based iterative reconstruction technique <b>(ASiR-V /VEO/ADMIRE/IMR/ AIDR)</b> for X Ray dose reduction. If VEO is not available, vendor should submit an undertaking from OEM. Added Para : Latest Deep Learning Algorithm for image reconstruction to be provided, if available with the vendor.	For wider participation
Page 56; Para 9.d	Dual Head Pressure Injector of reputed make with 50 nos of Syringes & 200 sets of tubings. Specify the make of Injector.	Pedestal Dual Head Pressure Injector with Synchronization with CT Scanner (of any make). Injector should have Dual Flow – Contrast & Saline are pushed together for the enhanced image quality; Patient-specific Injection Protocols for Cardiac procedure should be available as a standard; Abdominal Protocol Optimization Software should be available as a standard; Pulmonary Angiography Protocol Optimization Software should be available as a standard; Enhanced Protocol manager; Workstation should have Contrast Dose Management Solution; The data should be centrally mobilized and instantly available; Should have the connectivity to PACS, RIS, and Speech Recognition Systems - OPTIONAL.	Dual head pressure injector: Dual head pressure injector <b>with Synchronization with CT Scanner (of any make)</b> , with dual flow with 50 nos of Syringes & 200 sets of tubings.  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>  <b>Added Para: Should have the connectivity to PACS, RIS, and Speech Recognition Systems - (OPTIONAL.)</b>	Dept requirement
NA	Suggestion from Vendor	Metal Artifact Reduction (MAR)	<b>Metal Artifact Reduction (MAR) should be offered</b>	Dept requirement

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
NA	Suggestion from Vendor	Auto Spine Labeling	No Change	
NA	Suggestion from Vendor	Stroke Analysis & Quantification	<b>Stroke Analysis &amp; Quantification should be offered</b>	Dept requirement
NA	Suggestion from Vendor	Complete Liver Volumetry & Segmentation	<b>Complete Liver Volumetry &amp; Segmentation should be offered</b>	Dept requirement
NA	Suggestion from Vendor	CT Virtual Colonoscopy with detail quantification	<b>CT Virtual Colonoscopy with detail quantification should be offered</b>	Dept requirement
NA	Suggestion from Vendor	Multi-modality image Fusion Software	No Change	
NA	NA	NA	<b>Added Para : Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance
<b>Site Modification Work</b>				
Page 57	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection system</b> for the installation of CT centre	For wider participation
Page 57; Pata a.1	Flooring Flooring :- 600 x 600 mm vitrified tiles with 100mm tile skirting to match in Gantry & console room, lobby and patient preparation areas, Radiologist room etc	Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in Console room, lobby and patient preparation areas, Radiologist room etc. <b>In CT Gantry room Vinyl flooring to be used.</b>	No Change	
Page 57; Pata a.2	50 mm thick cement concrete flooring with Vinyl flooring in CT equipment / UPS	600 x 600 mm vitrified tiles with 100mm tile skirting to match in CT Equipment Room / UPS	No Change	

<b>Item Name: CT 256 Slice (Tender ID: 2022 HLL 121185 2)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
	room.	Room		
Page 57; Pata c.1	False Ceiling Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.	False ceiling:Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with mineral fibre tiles of 600x600 for grid ceiling. Ceiling height to suit the equipment mount and clearances.	No Change	
Page 58; Pata 3	AIR CONDITIONING: Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	Ductable Split / <b>Split AC</b> / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	No Change	
Page 58; Pata 3	Dehumidifier of 110 Liter - 2 Nos. to be provided	Dehumidifier of <b>60 Liter</b> - 2 Nos. to be provided.	No Change	



<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 60; Pata A.3	All movements of the gantries should be controlled from the controller on the table side as well as from the control.	Considering the safety requirement, all Gantry movement from the control room are not advisable so we request you to kindly amend the same as, "All movements of the gantries should be controlled from the controller on the table side <b>as well as limited function from the control.</b> "	No Change	
Page 60; Pata A.7	Gantry: Both the <b>gantries including table</b> should have an automatic positioning capability dependent on the reference image being selected	Both the <b>gantries</b> should have an automatic positioning capability dependent on the reference image being selected (Justification: Both the gantries have auto positioning capabilities and table has to be positioned separately)	Both the gantries should have an automatic positioning capability dependent on the reference image being selected	For wider participation
Page 60; Pata B.1	Patient Table: The table should have motorized Vertical & longitudinal and free floating with head tilt facility.	The table should have motorized Vertical & longitudinal and free floating. <b>Tilt table to be quoted as optional.</b> (Justification: GE offers 8 way float table with 333cm length for all vascular and Neuro DSA work . We do not offer tilt table and request you to keep it as optional)	No Change	Table tilt is essential for emergency situation to control bleeding and minimize air embolism.

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 60; Pata D.1.ii	X-Ray Tubes: 0.5 mm or less with load 40 KW or more in minimum one plane.	<p><b>0.6 mm</b> or less with load of <b>38 KW</b> or more in minimum one plane. (Justification: We have unique triple focus tube for our large detector with micro, small &amp; large focal spots of size 0.3, 0.6 &amp; 1.0 mm respectively with corresponding loading capacity of 17 KW, 38 KW &amp; 80 KW. The micro &amp; small focal spots are very useful in neuro interventions for generating sharp images. We offer similar tube and 16 bit HDR detector in both planes for image uniformity)</p>	X-Ray Tubes: <b>0.6 mm</b> or less with load <b>38 KW</b> or more in minimum one plane.	For wider participation
		<p><b>0.6 mm</b> or less with load 40 KW or more in minimum one plane. (Justification: This requirement is for dual focus spot tubes but We are offering tube with triple focus spot of 0.3 , 0.6 &amp; 1.0 mm and input power upto 40 kW is available on 0.6 mm)</p>		
		<p>To be amended as, "0.5 mm or less with load <b>50 KW</b> or more in minimum one plane."</p>		
Page 60; Pata D.2	Anode heat storage capacity should be 2.4 MHU or more (true value) having liquid bearing technology or metal lubricant	<p>Please retain this point for wider participation.</p> <p>Anode heat storage capacity should be <b>5 MHU</b> or more having liquid bearing technology or metal lubricant. Anode heat dissipation /cooling rate should be 18000W.</p>	No Change	

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		To be amended as, "Anode heat storage capacity should be <b>3.0 MHU</b> or more (true value) having liquid bearing technology or metal lubricant."		
Page 60; Pata F.1	Biplane Digital System: Dynamic flat detector system with high spatial and 16 bit contrast resolution with 2k matrix resolution	Dynamic flat detector system with high spatial and <b>14 bit</b> contrast resolution with <b>1.5k matrix</b> resolution (Justification: GE made detectors offer highest DQE of 84 % and 1:1 A/D converters , we do not require to store at 16 bits. Also 2k resolution offered by other vendors , is available only at 7.5 fps and not at all frame rates. All vendors Lateral plane resolution is 1.5k only.)	Biplane Digital System: Dynamic flat detector system with high spatial and <b>14 bit</b> contrast resolution with <b>1.5 k</b> matrix resolution	For wider participation
		Dynamic flat detector system with high spatial and 16 bit contrast resolution with 2k matrix resolution <b>in any one plane.</b>		
		Dynamic flat detector system with high spatial and 16 bit contrast resolution with <b>1.5k x1.5k matrix</b> resolution.		
Page 60; Pata F.2	Size of frontal plane should be at least 45 cm diagonal	Size of frontal plane should be at least <b>43 cm</b> diagonal. We offer square frontal plane detector with 43 cm diagonal size. This will help in positioning and in dose.	Size of frontal plane should be at least <b>43 cm</b> diagonal	For wider participation

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 62; Para 2	Added Para: It should be possible for different density structures such as bone, contrast filled vessels, stents, clips & coils to be identified separately in image in real time.	We request you to kindly <b>DELETE</b> this point as the same seems to be company specific and the same is not available with us.	No Change	
Page 62; Para 8	Added Para: The system should have latest radiation safety package like Clarity IQ/CARE & CLEAR/Blueprint/Equivalent	The system should have latest radiation safety package like Clarity IQ/ <b>Optiq / Autoright</b> (Justification: AutoRight / Optiq /Clarity are the latest dose saving softwares from respective vendors . If equivalent option is given here , then vendors will not necessarily quote latest dose saving software's. )  The system should have latest radiation safety package like Clarity IQ/ <b>CARE &amp; OPTIQ/Autoright</b> or equivalent.	Added Para: The system should have latest radiation safety package like Clarity IQ/CARE & CLEAR/Blueprint/ <b>Optiq / Autoright / equivalent</b>	For wider participation

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 62; Pata H.8	Pressure injector of reputed make should be coupled with DSA system. 200 Nos. disposable syringes sets to be supplied as per institute requirement.	Single Head Pressure injector of reputed make should be coupled with DSA system. 200 Nos. disposable syringes sets to be supplied as per institute requirement. Syringe Size: 150ML; Protocol Memory: 35 Protocols ; Injection Memory History: 50 Injections ; Color touch screen on console room display for easy operations; Injector should have front load syringe design with clear syringe (Not opaque); For safety the injector should not operate unless tilted down during injection; Facility to have dual display connectivity.	<b>Single Head</b> Pressure injector of reputed make should be coupled with DSA system. <b>100 Nos. disposable syringes sets and 500 Nos. of tubings should be supplied along with the system.</b>  <b>Added Para : Unit price for disposable syringe and tubing set should be quoted separately and the same should be valid during warranty period.</b>	Dept requirement
NA	Suggestion from Vendor	Both detectors should be be of same 43cm diagonal size, DQE and spatial resolution.	No Change	
NA	Suggestion from Vendor	Both the tubes have triple focal spot to facilltate full body work.	No Change	
NA	Suggestion from Vendor	ACTUAL VALUES SHOULD BE REFLECTED IN THE COMPLIANCE AND NO EFFECTIVE OR DERIVED VALUES SHOULD BE ALLOWED FOR QUALIFICATION	No Change	
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
			<b>Added Para :</b> 4D DSA if available should be quoted as <b>OPTIONAL</b> . The price of the same should be valid for warranty period.	Dept requirement
<b>Site Modification Work</b>				
Page 62; Pata 1	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DSA centre.	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection</b> for the construction of DSA centre. Kindly change firefighting system with fire detection system.	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and <b>Fire detection</b> for the construction of DSA centre.	For wider participation
NA	Suggestion from Vendor	Broadband connection for operation of SRS System to be provided by the customer.	<b>Added Para:</b> <b>Broad band connection for operation of SRS System will be provided by the Institute. However, internal LAN cabling work should be done by the vendor.</b>	For better clarity in turnkey scope
Page 63; Pata a.1	Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in DSA Examination Room, console room, lobby and patient preparation areas, Radiologist room etc.	Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in Console room, lobby and patient preparation areas, Radiologist room etc. In <b>DSA Examination Room Vinyl flooring to used.</b>	No Change	

<b>Item Name: Biplane DSA (2022 HLL 121185 3)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 63; Pata a.2	Flooring: 50 mm thick cement concrete flooring with Vinyl flooring in Biplane DSA equipment / UPS room.	Flooring: 600 x 600 mm vitrified tiles with 100mm tile skirting to match in CT Equipment Room / UPS Room	No Change	
Page 63; Pata c.1	False ceiling: Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.	False ceiling:Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with <b>mineral fibre tiles of 600x600 for grid ceiling</b> . Ceiling height to suit the equipment mount and clearances	No Change	
Page 64	Air Conditioning: Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	Ductable Split / <b>Split AC</b> / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	No Change	

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 1/15	Added Para : The model should be the latest and launched in or after 2017. The undertaking should be submitted from the manufacturer for the same.	6. Patient Table :Table should have facility for dockable table /Table top in any of emergency evacuation (Optional) All the vendors have launched new models <b>in 2015 and later</b> and hence institute should procure the latest and state of the art machine.	No Change	The present tender will be executed in 2023 and machine will be supplied in late 2023 or 2024. By that time a technology of 2015 would be 8-9 years old and hence be outdated.The manufacturers come up with new models every 5-6 years and hence we would be looking at really old model, which is not conforming to the needs of a tertiary care teaching institute.



<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 2/15 Para 2.b	Shim system: Off-centre shimming should be possible. Added Para : System must have Second order/high order shimming.	Added Para: System must have Second order/high order shimming : <b>Please delete. (Different vendors have different mechanism to address the patient In-homogeneity.GE uses 32 plane plot for measurement which is highly accurate than 24 plane plot of other vendors. Additionally, GE uses 32nd order Passive Shimming and Auto Shimming, which is Region Specific, Patient Specific &amp; Anatomy Specific ( Unique to GE). Therefore, 2nd Order Shimming / High Order Shimming is not required for GE Systems.)</b>	Shim system: Off-centre shimming should be possible. Added Para : System must have Second order/high order shimming / <b>equivalent technology. (If the equivalent technology is offered, an undertaking should be provided from principal manufacutrer for non-availability of second order/high order shimming)</b>	For wider participation

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 2/15 Para 3.a	Gradient system: Activity shielded Gradient System with strength of at least 44 mT/m at slew rate of 200T/m/sec to be achieved simultaneously for the same FOV & preferably low linearity. The rise time should not be more than 225 micro second to reach the maximum gradient strength	Activity shielded Gradient System Performance with strength of at least 44 mT/m at slew rate of 200T/m/sec to be achieved for the same FOV & preferably low linearity. The rise time should not be more than <b>250 micro second</b> to reach the maximum gradient strength. (Simultaneous is Vendor specific and discourages participation.Gradient System efficiency & Efficacy is measured differently by Different Vendors and hence “ Performance” should be introduced. Also, 225 Microseconds is also vendor Specific. Please maintain 250 microsecs to enable participation)	No Change	High output scanners to be used for diffusion & perfusion studies, Neuro imaging etc. SNR needs to be high for good image quality.

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 2/15 Para 4.a	RF System: A fully digital RF system capable of transmitting power of at least 30 KW or more, Dual RF power amplifiers. System should be capable of Multi Transmit with Multi amplifier driving / True shape for better B1 homogeneity	A fully digital RF system capable of transmitting power of at least 30 KW or more. (Justification: Every Manufacturer has their own way to rectify Di Electric Shadding in 3T System. The names & techniques are obviously different. Hence we suggest to put the RF Power supplied to judge robustness of the RF Transmission. Today, We have industry best RF Transmit Power of 37.5 kW with unique Trueform Transmission to rectify Di Electric Shadding artifact. Feeding the 4 ports of the integrated body coil with an optimized weighting yields a homogeneous B1 distribution. We do not have Trueshape technology available with us in the 32 channel wide bore 3T platform .We have attached factory declaration along with this letter)	RF System: A fully digital RF system capable of transmitting power of at least 30 KW or more. <b>Suitable technique should be provided for better B1 homogeneity.</b>	For wider participation

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 2/15 Para 4.b	RF System: It should also have at least minimum of 32 independent ADC or channel independent hardware RF channels with each having bandwidth of 1MHz or more along with necessary hardware to support Quadrature/CP array coils.	It should also have at least minimum of <b>64 independent ADC hardware RF channels</b> with each having bandwidth of 1MHz or more along with necessary hardware to support Quadrature/CP array coils. (32 Channels is an obsolete technology in 3T. Also, 64 RF Channel Platform is where all the recent advancements are introduced. Higher number of channels shall ensure the maximum number of elements within a given FOV and reduce the scan time per patient significantly. Higher the better and available with all vendors.)	No Change	
Amnd No1 Page 2/15 Para 4.c	RF System: It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least 9.	It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least <b>4</b> . (Parallel Acquisition factor is a obsolete technology. There are better technologies available which can reduce time without affecting the Image Quality. Factor of 9 or more is vendor specific)	RF System: It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least <b>4</b> .	For wider participation

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 2/15 Para 5.a	RF Coils: 32 channels or more head coil-capable of multi frequency MR spectroscopy (1H).	Head coil ( <b>48-channel or more</b> ) / <b>64 Channel Head Neck</b> , for high resolution brain, brachial plexus, nerve imaging, EPI/ DTI applications. Compatible with fMRI projection device quoted with the system. (The 48 Channel Head or 64 Channel Head & Neck Imaging shall ensure very high-resolution Brain Imaging. Higher number of elements in the head/neck imaging shall be beneficial especially in EPI studies ( DTI, fMRI etc). Also, Head 48 / Head Neck 64 is the one of the recent innovation in filed of MRI since 2016 and available with vendors.)	No Change	
Amnd No1 Page 2/15 Para 5.b	Anesthesia Machine: Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes (SIMV,PSV and PRVT) along with inbuilt suction	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated</b> suction. (Justification: The given specifications are vendor specific, therefore,we request you to amend the specification as mentioned)	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated</b> suction.	For wider participation

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Amnd No1 Page 2/15 Para 5.e	RF Coils: Body phased array coils 32 channels of more (single or in combination) at least 45 cm z-axis coverage for imaging of abdomen, with at least 32 channels acquisition for body parts.	Body Imaging with 46 Channel or more for 45 cm Z-axis Coverage in for imaging of abdomen, with at least 32 channels acquisition for body parts (The 46 Channel Body Imaging is recent technology post 2016. And higher the number of channels better the SNR.)	No Change	
Amnd No1 Page 3/15 Para 5.k	RF Coils: High resolution foot/ ankle coil – 16 channels or more.	High resolution foot/ ankle coil – <b>8 channels or more</b> (16 Channel Foot/Ankle is vendor specific)	RF Coils: High resolution foot/ ankle coil – <b>8 channels or more.</b>	For wider participation

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 4/15 Para 8.1	Server: The server (single/dual configuration) should have image storage capacity of at least 20 TB minimum 40,000 concurrent slice processing power and at least 128 GB RAM. The server hardware to be included with 21" or more FT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation	Server: The server (single/dual configuration) should have image storage capacity of at least 20 TB( Internal/external) minimum 40,000 concurrent slice processing power and at least <b>64/128 GB</b> RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation (Justification : We have 64 GB ram and can provide 20TB storage ( internal/External). 64GB RAM will provide you the slice concurrency of 45,000 slices in our server.)	Server: The server (single/dual configuration) should have image storage capacity of at least 20 TB minimum 40,000 concurrent slice processing power and at least <b>64 GB RAM</b> . The server hardware to be included with 21" or more FT/LCD monitor with dual processor. DICOM 3.0 compatibility and interfacing with other modalities must be possible. The workstation shall have the resolution, software and all functionality of a stand-alone workstation	For wider participation
Amnd No1 Page 3/15 Para 6.a	Patient Table: The table should be fully motorized, MRI Compatible computer controlled table movement in vertical and horizontal directions Position accuracy should be +/- 1.0 mm or better.	Table should have facility for dockable table /Table top in any of emergency evacuation (Standard). (The Dockable table shall ensure better throughput of patient preparation outside the gantry room. This shall ensure to decrease the patient preparation time and thereby scanning of higher number of patients every day.)	No Change	

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 8/15 Para 14.b	Added Para : Multi-slice Simultaneous Sequence to provide Better image quality in EPI and TSE sequence.	Added Para : Multi-slice Simultaneous Sequence to provide Better image quality in <b>EPI sequence</b> . (Justification : Multislice Simultaneous Sequence in EPI is essential requirement so that we can reduce k space read out time and generate the faster images where else TSE is itself a fast and optimised SE sequence which do not necessary require multislice sequence technique to deliver the faster images. K space in TSE is way shorter than EPI.)	Added Para : Multi-slice Simultaneous Sequence to provide Better image quality in EPI. <b>Multi-slice Simultaneous Sequence should be offered in TSE sequence, if available.</b>	For wider participation
Amnd No1 Page 9/15 Para 5	Accessories: 5. MRI Compatible ( upto 3 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber	MRI Compatible ( upto 3 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, <b>integrated</b> suction and circle absorber. (Justification: The given specifications are vendor specific, therefore,we request you to amend the specification as mentioned)	Amended as above	



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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		MRI Compatible ( upto 3 Tesla ) Anaesthesia Machine with <b>atleast 12 inch touch screen</b> and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber. <b>The AWS should have remote monitor in console room . The equipment should be supplied with 500 pieces of per patient consumable per year of warranty</b>	No Change	
Amnd No1 Page 9/15 Para 6	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance / <b>1.5 meter from isocentre compliance</b> in MRI Room and One Slave monitor in console room with followin modules provision to monitor the following	6. One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance / <del>1.5 meter</del> from isocentre compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following. We request you to amend the specification as mentioned .	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance from isocentre in MRI Room and One Slave monitor in console room with followin modules provision to monitor the following <b>Monitor should be atleast 10" display</b>	For wider participation

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance / 1.5 meter from isocentre compliance in MRI Room and One Slave Monitor in console room with following modules provision to monitor the following ; <b>Monitor should be atleast 15 inches touch screen with colour display and no proprietary per patient consumables</b>	Amended as above	
Amnd No1 Page 9/15 Para 6.h	All consumables required for installation & commissioning of the system should be supplied.	The equipment should be supplied with 500 pieces of per patient consumables should be supplied per year during warranty.	All consumables required for installation & commissioning of the system should be supplied. <b>Added Para : 200 Nos. of per patient consumables should be provided during supply of the system. Unit price for per patient consumable should be quoted separately and the same should be valid during warranty period.</b>	Dept requirement
Amnd No1 Page 9/15 Para 7	3.0T MRI compatible syringe pump – 2 Nos	3.0T MRI compatible syringe pump – 2 Nos and volumetric pump – 1 Nos. The equipment should be supplied with 500 pieces of per patient consumables should be supplied per year during warranty.	No Change	

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 9/15 Para 14	Two non-magnetic height adjustable patient transfer trolleys should be provided	Two certified non ferrous trolleys which do not alarm in FerroMagnetic Detector System.	Two non-magnetic height adjustable patient transfer trolleys, <b>which do not alarm in FerroMagnetic Detector System</b> , should be provided	For better quality of trolley
Amnd No1 Page 10/15 Para 16	Walk through Metal detector with multiple fluxgate sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	Walk through Metal detector with multiple fluxgate sensor/ <b>AMR sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley We request you to amend the specification as mentioned as it is vendor specific.	Walk through Metal detector with multiple fluxgate <b>or equivalent sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	For wider participation
		Request to keep the specification same.	No Change	
Amnd No1 Page 10/15 Para 22	MRI compatible wheel chair 1 no (Price to be quoted separately)	Certified non ferrous MRI compatible wheel chair 1 no (Price to be quoted separately) which do not alarm in FerroMagnetic Detector System.	No Change	
Amnd No1 Page 14/15 BOQ SI No.10	Shoulder coil: Flex coils (Large) - 16 Channel or more	Shoulder Flex coil( large) - <b>8 channel or more</b>	Shoulder coil: Flex coils (Large) - <b>8 Channel or more OR multipurpose coil of 16 channel or more</b>	For wider participation

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Amnd No1 Page 14/15 BOQ SI No.11	Shoulder coil: Flex coils (Small) - 16 Channel or more	Shoulder Flex coil( small) - <b>4 channel or more</b>	Shoulder coil: Flex coils (Small) - <b>4 Channel or more</b>	For wider participation
Amnd No1 Page 14/15 BOQ SI No.21	Endocavitary Coil - Prostrate Study	Endocavitary Coil - Prostrate Study <b>(Optional)</b> (Justification: As per the tender specifications page n0 4 under Coils,Endocavitary coil is mentioned as OPTIONAL,however under BOQ it is not mentioned under optional.Kindly amend the specification as mentioned to avoid ambiguity.)	Endocavitary Coil - Prostrate Study <b>(Optional)</b>	For wider participation
NA	Suggestion from Vendor	<b>Specification Addition:</b> Screener for Implant Detection: Entirely passive , non invasive Screener for Implant detection. Certified as per ISO 9001 standards with proven greater than 95% detection rate. Should have atleast 10 visual bar indication and Display On-Off control button to avoid unnecessary detection of walking personnel. It should have minimum detection range of 0.8 micro Tesla to detect smallest implants.	No Change	
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
NA	NA	NA	<b>Added Para Under "Accessories" : Para 17.23 : SCREENER FOR IMPLANT DETECTION - 1 No</b>	Dept requirement
<b>Site Modification Work</b>				
Amnd No1 Page 11/15	Civil work Any ab initio new construction or demolition of existing walls etc and reconstruction is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet	Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.	Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.	For better clarity in turnkey scope
Amnd No1 Page 11/16 Para g	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.	<b>To be deleted</b>	No Change	

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 12/16 Para c	False Ceiling: Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.	False ceiling: Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with mineral fibre tiles of 600x600 for grid ceiling. Ceiling height to suit the equipment mount and clearances. (We need to avoid metallic tiles as it may creat vibration and can creat artifact in image. So we suggest mineral fibre tiles & gypsum board for false ceiling.)	No Change	
Amnd No1 Page 12/16 Para F.ii	ii. Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability.	Ductable Split / Ductable package air conditioners/ <b>Split AC's</b> may be used according to room requirement and suitability. (Requist to add split AC as well - so that combination can be used.)	No Change	
Amnd No1 Page 12/16	Added Para : Dehumidifier of 110 Liter - 2 Nos. to be provided.	Added Para : Dehumidifier of <b>30 Liter</b> - 2 Nos. to be provided.	No Change	

<b>Item Name: MRI 3.0 T(2022 HLL 121185 4)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Amnd No1 Page 13/16 Para i.4	Miscellaneous: Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure <b>CO2 gas</b> cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied	Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied (Since it is ABC extinguisher - so request to deleted the CO2 wording to avoid )	Miscellaneous: Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied	For better clarity in turnkey scope

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 76	Added Para : The model should be the latest and launched in or after 2017. The undertaking should be submitted from the manufacturer for the same.	Introduction: Addition The model should be the latest and <b>launched in or after 2016.</b> (All the vendors have launched new models in 2016 and later and hence institute should procure the latest and state of the art machine.)	No Change	The present tender will be executed in 2023 and machine will be supplied in late 2023 or 2024. By that time a technology of 2016 would be 7-8 years old and hence be outdated. The manufacturers come up with new models every 5-6 years and hence we would be looking at really old model, which is not conforming to the needs of a tertiary care teaching institute.
Page 76; Para 3.b	Gradient System: The gradient should be actively shielded with each axis having <b>simultaneously</b> a slew rate of at least 200 T/m/s and a peak	The gradient should be actively shielded with each axis having a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m. (Simultaneous is vendor specific)	Gradient System: The gradient should be actively shielded with each axis having a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m. Added Para :	For wider participation



<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
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	amplitude of 44mT/m. Added Para : The rise time should not be more than 225 micro second to reach the maximum gradient	The gradient should be actively shielded with each axis having a slew rate of at least 200 T/m/s and a peak amplitude of 44mT/m. (Justification : The above mentioned amendment will ensure that all the vendors will participate with their premium and high end MRI. All vendors has just one product in this segment. The words like simultaneously and microsecond are not mentioned in our datasheet.)	The rise time should not be more than 225 micro second to reach the maximum gradient	
Page 77; Para 4.b	It should also have at least 32 independent RF receiver channels with each having bandwidth of 1 MHz or more along with necessary hardware to support quadrature ICP array/Matrix coils.	32 Channels is an obsolete technology in 1.5T. Also, 64RF Channel Platform is where all the recent advancements are introduced. Higher number of channels shall ensure the maximum number of elements within a given FOV and reduce the scan time per patient significantly. Higher the better and available with all vendors.	No Change	

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<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		It should also have at least minimum of 32 independent ADC or channel independent hardware RF channels with each having bandwidth of 1MHz or more along with necessary hardware to support Quadrature/CP array coils. (Justification: Same point is already incorporated in 3 Tesla MRI. "Our 1.5 Tesla MRI is a channel Independent System which means that the RF receiver Channel or ADC are available on the coil itself which ensure better signal quality and improved SNR.)		
Page 77; Para 4.c	It should support Parallel acquisition techniques with a factor of up to 9 in 2D.	It should support Parallel acquisition techniques like ASSET/SENSE/iPAT with a factor of at least 4. (Parallel Acquisition factor is a obsolete technology. There are better technologies available which can reduce time without affecting the Image Quality. Factor of 9 or more is vendor specific.)	It should support Parallel acquisition techniques with a factor of up to 4 in 2D.	For wider participation
Page 77; Para 8.d	Coil System: Body Array/Matrix coil with 32 channels or more with at least 38 cm Z- axis coverage for imaging of abdomen, angiograms and heart with one or two body coils	Body Array/Matrix coil with <b>45 channels or more with at least 50 cm Z- axis coverage</b> for imaging of abdomen, angiograms and heart with one or two body coils. (The 46 Channel Body Imaging is recent technology post 2016. And higher the number of channels better the SNR.)	No Change	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 77; Para 8.d	Coil System: High resolution foot/ ankle coil – 16 channels or more	High resolution foot/ ankle coil – <b>8 channels or more</b>	Coil System: High resolution foot/ ankle coil – <b>8 channels or more</b>	For wider participation
Page 79; Para 8.1	Workstation: Hardware Server: The server should have image storage capacity of at least 5 Tera bytes or more, minimum 40,000 concurrent slice processing power and at least 128 GB RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor.	Hardware Server: The server should have image storage capacity of at least <b>20 Tera bytes or more</b> , minimum 40,000 concurrent slice processing power and at least 128 GB RAM. The server hardware to be included with 21" or more TFT/LCD monitor with dual processor. (We request you increase the server storage capacity to 20 TB as inline with the Item no 4:MRI 3T Hardware server specifications)	Workstation: Hardware Server: The server should have image storage capacity of at least 5 Tera bytes or more, minimum 40,000 concurrent slice processing power and at least <b>64 GB RAM</b> . The server hardware to be included with 21" or more TFT/LCD monitor with dual processor.	For wider participation
		Please add on points : Hardware Server: The server should have image storage capacity of at least 5 Tera bytes or more, minimum 40,000 concurrent slice processing power and at least <b>64GB/128 GB RAM</b> . The server hardware to be included with 21" or more TFT/LCD monitor with dual processor. {Justification : We can process 45,000 concurrent slice with 64GB RAM. We do not have option for 128 GB RAM}.		

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Page 80; Para 16.2	(i) MRI Compatible Dual Syringe Pressure injector : Independent dual-Syringe Pressure injector with following Features; Non-ferrous, automatic syringe size detection, performs single and dual phase contrast injections, provides Saline flush delivery and allows timed contrast delivery Must be compatible with 5, 7.5 &10ml pre-filled contrast syringes and 50 ml syringes for both saline & contrast (100 Nos of 50 ml Syringes with 100 nos. of tube connectors should be provided) Must be able to observe progress of injection and view injection result	Independent Dual Head Pressure Injector with following Features made up of non-ferrous material. Designed for use in all MR Scanner field strengths up to and including 3.0T; Injector can perform single / dual / multi phase contrast injection provides saline flush delivery and allows timed contrast delivery. Control Room Unit displays the remaining contrasts/saline volume; 20 numbers of available size of Syringes & 100 Connecting Tubing with Integrated Check Valve to prevent the back flow be provided; Control Room Display Unit should allow the user to observe the progress of injection & injection results from the console room. <b>Automatic syringe size detection is not required as 2 fixed size Syringes (65ml &amp; 115ml) are provided with an option to fill the syringes as per the requirement of contrast &amp; saline. NOT REQUIRED to connect prefilled syringes of varied sizes to avoid the wastage of contrast media. Should be able to connect whatever sizes of Syringes available with the supplier &amp; should be to fill ANY CONTRAST with the required amount of contrast depending on the patient/procedures &amp; 1 Syringe for the Saline.</b>	No Change	

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Page 80; Para 16.4	Accessories: MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber	MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, <b>integrated suction</b> and circle absorber (The given specifications are vendor specific, therefore,we request you to amend the specification as mentioned)	MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with atleast 8 inch screen and integrated electronic ventilator, 2 vaporiser, <b>integrated suction</b> and circle absorber	For wider participation
		MRI Compatible ( upto 1.5 Tesla ) Anaesthesia Machine with <b>atleast 12 inch touch screen</b> and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber. <b>The AWS should have remote monitor in console room . The equipment should be supplied with 500 pieces of per patient consumable per year of warranty.</b>		
Page 80; Para 16.4b	Accessories: Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes (SIMV,PSV and PRVT) along with inbuilt suction	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated suction</b> . (The given specifications are vendor specific, therefore,we request you to amend the specification as mentioned)	Software for ventilation should support Volume control, Pressure control and Pressure support modes and advanced modes ( <b>SIMV,PSV</b> ) along with <b>integrated suction</b> .	For wider participation

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Page 80; Para 16.5	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss/ <b>1.5m from isocentre</b> Compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following; Monitor should be atleast 12" display	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance / <del>1.5 meter</del> from isocentre compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following. (We request you to amend the specification inline with the MRI compatible monitor 3T MRI specifications)	One MRI compatible Multiparameter Vital Signs Patient Monitor of 5000 Gauss Compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following; Monitor should be <b>atleast 10" display</b>	For wider participation

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		<p>Vital Signs Patient Monitor made up of non.magnetic material to work within 30000 GUASS LINES with 0.5 to 3T MRI Scanners. Should be able to place near to patient &amp; near to MRI bore with Remote Communication Mode for Slave Monitor in the Console Room Monitor Screen Size should be 10" and above ; ECG Cable should be of 5 lead &amp; ECG Channels Displayed - I, II, III, V, AVF, AVR, AVL, V (any of the Chest Lead) ; HR measuring range - 30 to 250 BPM; MASIMO - EtCO2 monitoring with Side Stream technology to display graphical &amp; nematical values. Technique - Sidestream, Non-dispersive infrared (NDIR) absorption technique. No moving parts. Initialization time less than 10 seconds, full specifications within 1-2 minutes; Wireless SpO2 Module - MASIMO SET to measure &amp; display Arterial Oxygen Saturation with diagnostic plethysmography pulse waveform.Measurement Range - 1% to 100%. Choice of Reusable &amp; Disposable Sensors/Grips for Adult + Peadiatric + Neonatal use. ; WIRELESS MODULE for MULTIGAS Monitoring should be provided for measurement of Anesthetic Agents with O2 &amp; N2O ; Please Specify # of Reusables &amp; Disposables to be provided; WIRELESS Dual IBP Module ; Single Temprature - either Skin OR Core (adult &amp; Pead).</p>	Amended as above	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 80; Para 16.5.g	All consumables required for installation & commissioning of the system should be supplied.	The equipment should be supplied with 500 pieces of per patient consumables should be supplied per year during warranty.	All consumables required for installation & commissioning of the system should be supplied. <b>Added Para : 200 Nos. of per patient consumables should be provided during supply of the system. Unit price for per patient consumable should be quoted separately and the same should be valid during warranty period.</b>	Dept requirement
Page 81; Para 16.6	1.5T MRI compatible Syringe Infusion Pump (1 No) and MRI compatible Volumetric Infusion Pump (1 No)	1.5T MRI compatible Syringe Infusion Pump (1 No) and MRI compatible Volumetric Infusion Pump (1 No). The equipment should be supplied with 500 pieces of per patient consumables should be supplied per year during warranty.	No Change	



<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		<p>The MR Safe pump should be adaptable both as a syringe pump as well as a volumetric pump.</p> <p>It should be designed for use in MR environment and not adopted for the purpose (should not be a non MR pump in an RF cage); It should have a non magnetic ultrasonic motor to provide accurate fluid delivery from infants to adults with capability of delivering two drugs simultaneously; It should come with a 10 digit keypad entry system for ease of programming; It should be 10000 Gauss compliant so that it can be placed anywhere in the MR room; It should have a large LCD display providing high visibility; Expanded delivery range of the pump should be 0.1— 1400 ml / hr; It should have a longlife lithium polymer battery pack for more than 10 hours back up once fully charged; The syringe set should be self vented type with a very low priming volume; The system should be field upgradable to pulse oximeter monitoring; The downstream occlusion pressure should be adjustable from 1 — 10 psi to suit various cannula sizes and viscosity of the drug to be infused; There should be an air inline ultrasonic bubble detector; It should have a visible green / red bright flashing alarm light indication sufficiently big to be observed from control room itself in event of any alarm situation or for regular drug delivery confirmation; MR Safe free standing IV pole with mounting of pump for easy operation, it should be CE marked and FDA approved, Accessories to be supplied with Pump (including the standard supply) ; Syringe IV set - 200 qty.</p>	No Change	
<b>HITES/PCD/AIIMS-IV/55/Radiology(Amendment No 5/22 dated 27.09.2022)</b>			<b>Page 73 of 91</b>	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 81; Para 16.7	MRI compatible WHEEL CHAIR - 2 NOS	Certified non ferrous MRI compatible WHEEL CHAIR - 2 NOS which do not alarm in Ferro Magnetic Detector System	No Change	
Page 81; Para 16.14	Two non-magnetic height adjustable patient transfer trolleys should be provided	Two certified non ferrous trolleys which do not alarm in Ferro Magnetic Detector System.	Two non-magnetic height adjustable patient transfer trolleys, <b>which do not alarm in FerroMagnetic Detector System</b> , should be provided	For better quality of trolley
Page 81; Para 18.ii	Walk through Metal detector - 01 no	NA	<b>Deleted</b>	Same is mentioned in para 18.iii
Page 81; Para 18.iii	Walk through Metal detector with multiple fluxgate sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	Walk through Metal detector with multiple <b>fluxgate sensor/AMR sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley <b>(OPTIONAL)</b> (We request you to amend the specification as mentioned as it is vendor specific. Request you to mention OPTIONAL as the same is mentioned as optional in BOQ page no 85 S.no 21: Walk through Metal detector with multiple sensor and multiple location LED (Zone III type) - (Optional) qty 1 no)	Walk through Metal detector with multiple fluxgate <b>or equivalent sensor</b> to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.	For wider participation

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		Request to keep the specification same.		
Page 84; BOQ SI No.8	Flex Coil (16 channel or more) - Large FOV - 1 No	Flex Coil ( <b>8 channel or more</b> ) - Large FOV - 1 No Flex Coil ( <b>4 channel or more</b> ) - Small FOV - 1 No	Flex Coil ( <b>16 channel or more</b> ) OR <b>multipurpose coil of 16 channel or more</b> - Large FOV - 1 No	
Page 84; BOQ SI No.9	Flex Coil (16 channel or more) - Small FOV - 1 No	or <b>Multipurpose coil ( 16 channel or more) - 2no.</b> Justification : You can either ask for multipurpose msk coil of 16 channel which comes in only one size or else you can ask for two flex coil but then you have to reduce the number of element to either 8 for large flex or 4 for small flex in the coil.	Flex Coil ( <b>4 channel or more</b> ) - Small FOV - 1 No	
Page 84; BOQ SI No.20	Voice recognition software qty 2 nos.	To be clarified Voice recognition software qty 2 nos is not mentioned under 1.5 T MRI specifications,it is only mentioned under BOQ.Kindly confirm whether the item has to be offered as per BOQ	<b>Clarified as :</b> <i>"Voice recognition software qty 2 nos. should be offered as per BOQ"</i>	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 85; Para 8	Miscellaneous: Added Para : SCREENER FOR IMPLANT DETECTION - 1 No	To be clarified As per the tender specifications Page no 81,we need to offer the following ii)metal detector(walkthrough) iii)Walk through Metal detector with multiple fluxgate sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley(optional) Kindly clarify whether the screener for implant detection is required as the walk through metal detector (ii) is also used for detecting screen implantation.If,so kindly provide detailed specifications for SCREENER FOR IMPLANT DETECTION	Miscellaneous: Added Para : SCREENER FOR IMPLANT DETECTION - 1 No <b>(OPTIONAL)</b>	Dept suggestion

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
Page No. & Para No.	Technical Specification	Representations received from the firm	Committee Recommendation	Justification
		<p>Screeners for Implant Detection: Entirely passive , non invasive Screener for Implant detection. Certified as per ISO 9001 standards with proven greater than 95% detection rate. Should have atleast 10 visual bar indication and Display On-Off control button to avoid unnecessary detection of walking personnel. It should have minimum detection range of 0.8 micro Tesla to detect smallest implants.</p>	No Change	
NA	NA	NA	<p><b>Added Para :</b>  <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b></p>	For better quality assurance
<b>Site Modification Work</b>				
Page 72	<p>Civil work Civil work Any ab initio new construction or demolition of existing walls etc and reconstruction is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 1.5T strength magnet</p>	<p>Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 1.5 T strength magnet.</p>	<p>Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 3T strength magnet.</p>	For better clarity in turnkey scope

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 72; Para g	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.	<b>To be deleted</b>	No Change	
Page 83; Para 18.c	False Ceiling Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.	False ceiling:Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with mineral fibre tiles of 600x600 for grid ceiling. Ceiling height to suit the equipment mount and clearances. (We need to avoid metallic tiles as it may creat vibration and can creat artifact in image. So we suggest mineral fibre tiles & gypsum board for false ceiling.)	No Change	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 83; Para 18.f. ii	Air Conditioning: Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.	Ductable Split / Ductable package air conditioners/ Split AC's may be used according to room requirement and suitability. (Request to add split AC as well - so that combination can be used.)	No Change	
Page 83; Para 18.f. v	Added Para : Dehumidifier of 110 Liter - 2 Nos.	Dehumidifier of <b>30 Liter</b> - 2 Nos. to be provided.	No Change	

<b>Item Name: MRI 1.5 T(2022 HLL 121185 5)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 84; Para i.4	Dry chemical power type MRI compatible fire extinguisher of 4.5kgs capacity (2 Nos), with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc. complete, confirming t IS:2171 of approved make & complete as directed by EIC	Fire extinguisher <b>ABC type of 2kg each</b> as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming t IS:2171 of approved make & complete as directed by EIC. <b>4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied.</b> (Since it is ABC extinguisher - are most commonly available at market and are similiary to CO2)	<b>Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos., with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make &amp; complete as directed by EIC. 4.5 kg MRI compatible fire Extinguisher - 2 nos to be also supplied</b>	For better clarity in turnkey scope



<b>Item Name: CR System (Tender ID: 2022 HLL 121185 6)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 87; Para 1.1	The keyboard should have Height adjustment. The adjustment should also include Keyboard rotation	System Should have Motorized control panel movement (up/Down, back and forth & side-ways) for better ergonomics. (For ease of use & better patient throughput.)	No Change	
Page 88; Para 1.3	The system shall include at least a 21" LCD/LED monitor for both excellent image viewing as well as providing for workflow and productivity features	Request to kindly retain this point for wider participation  The system shall include at least 23" or more Flat Panel Monitor with 1920 X 1080 resolution. (preferably LED) for both excellent image viewing as well as providing for workflow and productivity features. (For ease of use & better patient throughput.)	No Change	

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 87; Para 1.6	The system shall have minimum Four active probe Ports in a convenient, easy to access location to maximize the availability of needed probes.	The system shall have shall have 4 universal active port and 1 parking port in a convenient, easy to access location to maximize the availability of needed probes. (For ease of use).	No Change	
Page 88; Para 4	Shearwave Elastography should be available in Linear & convex probes stress/strain elastography should be available in Linear, convex and trans vaginal Probes.	Shearwave Elastography should be available in Linear and convex probes and <b>strain elastography</b> should be available in Linear, convex and transvaginal Probes.  Shearwave Elastography should be available in Linear, convex trans vaginal Probes. (For better & High end feature)	Shearwave Elastography should be available in Linear & convex probes <b>strain elastography</b> should be available in Linear, convex and trans vaginal Probes.	Dept requirement
Page 88; Para 7.1	The system shall allow following Post-Storage image manipulation a Overall B-Mode gain and gray scale maps. b Overall Doppler gain, sweep speed and inverted spectral waveform.	The system shall allow following <b>Post-freeze</b> image manipulation a Overall B-Mode gain and gray scale maps. b Overall Doppler gain, sweep speed and inverted spectral waveform. (Post Storage Image Manipulation possible for 3D/4D Raw Data Images.)	No Change	

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 88; Para 8.1	The system should have minimum 65,000 digital system processing channels.	The system should have minimum 45,00,000 digital system processing channels. (Higher end system having high end features like Shearwave, should have higher digital channels for processing the image.)	No Change	
		The system should have minimum 10,000,000 digital system processing channels. (For better & fast image processing)		
		We have attached a comparative sheet of the main technical parameters of our ultrasounds and our main competitors. The specifications, at some levels, clearly lacks the inclusions of the current generation of innovations and technology such as processing channels and dynamic range. The processing channels of 65000 mentioned in 4D model is out dated and obsolete.		
Page 88; Para 8.4	The system shall provide scan depth of 2 - 30 cm or more	The system shall provide scan depth of 1 - 40 cm or more. For better penetration and resolution.	No Change	

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
		The system shall provide scan depth of 2 - 50 cm or more (For better scan of bulky patient)		
Page 89; Para 15	Transducers (freq tolerance: $\pm$ 1 MHz)	Transducers (free tolerance: $\pm$ 1 MHz) for all probes	No Change	
Page 89	Added Para : System should onboard tutor / online support for learning and enhancing the technical skill for patient scanning.	Request for deletion for wider participation. System should online support for learning and enhancing the technical skill for patient scanning. Online Support can be given through SRS.	Added Para : System should <b>have</b> onboard tutor / online support for learning and enhancing the technical skill for patient scanning.	For better clarity
Page 89	Added Para : Multi Parametric Report page should be Available for Comprehensive Liver Package Report with Shear wave, Fatty Liver Information along with BMI and Blood Test Information to give Current condition of Liver status whether Normal to Severe Cirrhosis Condition (OPTIONAL)	Request for deletion for wider participation. Multi Parametric Report page should be Available for Comprehensive Liver Package Report with Shear wave, Fatty Liver Information depicting whether Normal to Severe Cirrhosis Condition (OPTIONAL) Possible to give Shareware values in the reporting for Liver stiffness/Fatty Values	No Change	
Page 89	Added Para: The System should Upgradable to Auto Volume	Request for deletion for wider participation.	No Change	

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
	Measurement for Hypo echoic structures. (OPTIONAL)	The System should Upgradable to Auto Area and Circumference Measurement for Hypo echoic structures. (OPTIONAL) Auto measurement for Hypoechoic and anechoic anatomical areas.		
Page 89	Added Para: System should Upgradable to Automatic Fetal Heart Volume scan using Volume probe. (OPTIONAL)	Kindly remove this point for wider participation	No Change	
Page 89	Added Para : The System Should Upgradable to 2D Strain/Wall Motion Tracking for Fetal Heart using Normal Convex probe. (OPTIONAL)	Kindly remove this point for wider participation Request for deletion for wider participation.	No Change	
Page 89	Added Para : System should be upgradable to Fusion Imaging with Convex, Linear and Endocavity Probe (OPTIONAL)	System should be upgradable to Fusion Imaging with Convex, and Linear Probes (OPTIONAL) Fusion Imaging with Convex and Linear Probe	No Change	
Page 89 Para 15.a	Convex, with biopsy attachment. Operating Frequency: 2 - 5 MHz with elastography & CEUS	<b>Single Crystal or equivalent Convex</b> , with biopsy attachment. Operating Frequency: 2 - 5 MHz with shaerwave elastography & CEUS (For latest & better technology in the probe)	No Change	

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 89 Para 15.b	Linear, with biopsy attachment. Operating Frequency: 5 – 13 MHz with elastography & CEUS	Single Crystal or equivalent Linear, with biopsy attachment. Operating Frequency: 5 – 13 MHz with shaerwave elastography & CEUS (For latest & better technology in the probe)	No Change	
Page 89 Para 15.c	Trans-vaginal Probe with Biopsy attachment, Operating Frequency : 4-9 MHz with elastography & CEUS	Trans-vaginal Probe with Biopsy attachment, Operating Frequency: 4-9 MHz with strain elastography. (For wider participation.)	No Change	
Page 89 Para 15.d	3D / 4D Volume Convex Probe of frequency of probe: 1 to 5MHz with post processing softwares such as MPR, SSD	Single Crystal or equivalent 3D / 4D Volume Convex Probe of frequency of probe: 1 to 5MHz with post processing softwares such as MPR, SSD. (For latest & better technology in the probe)	No Change	
NA	Suggestion from Vendor	12inch touch screen with twin display for ease of use and faster throughput.	<b>Added Para :</b> <b>Atleast 12 inch touch screen with twin display for ease of use and faster throughput.</b>	Dept requirement
NA	Suggestion from Vendor	System should have auto biometry measurement in OBS application For ease of use & high end features	<b>Added Para :</b> <b>System should have auto biometry measurement in OBS application</b>	Dept requirement

<b>Item Name: Colour Doppler 4D (2022 HLL 121185 7)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
NA	Suggestion from Vendor	System should have more than 12" wide LCD Touch Screen Control with 1920 X 1080 resolution For ease of use & high end features	Amended as above	
NA	Suggestion from Vendor	System should have gesture detection technique for all active probes selection Gesture detection is extremely useful while performing intervention procedures.	No Change	
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance

<b>Item Name: Colour Doppler (2D &amp; 3D) (2022 HLL 121185 8)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 90; Para 1.2	The system shall include at least a 19" LCD monitor to allow for both excellent images viewing as well as providing for workflow and productivity features	Request to retain 19inch display for wider participation.	No Change	
		The system shall include at least a 21" LCD monitor to allow for both excellent images viewing as well as providing for workflow and productivity features. For ease of use & better patient throughput.		
Page 90; Para 5.3	System should have minimum of 17,000 Digital Channels for better resolution.	System should have minimum of 800,000 Digital Channels for better resolution. For better & fast image processing	No Change	
		System should have minimum of 65,000 Digital Channels for better resolution. Low end ultrasound systems start from min 65000 channels.		
Page 90; Para 5.4	System should have Dynamic Range of atleast 170 Db.	System should have Dynamic Range of at least 250 Db. For better processing	No Change	
Page 91; Para 9.2	The system shall include at least 100 GB of dedicated hard drive for large local storage capacity,with 20000 image storage capacity or more.	The system shall include at least 500 GB of dedicated hard drive for large local storage capacity, with 20000 image storage capacity or more. For storage of large patient data	The system shall include <b>at least 500 GB of dedicated hard drive</b> for large local storage capacity,with 20000 image storage capacity or more.	For better specification
Page 91; Para 11.e	Pediatrics micro convex probe (Optional)	Request for deletion for wider participation.	No Change	
Page 91; Para 12	Transducers (freq tolerance: $\pm$ 1 MHz)	Transducers (free tolerance: $\pm$ 1 MHz) for all probes	No Change	



<b>Item Name: Colour Doppler (2D &amp; 3D) (2022 HLL 121185 8)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 91; Para 14	Added Para : The System Should Upgradable to advanced Contrast Package available in the Industry (OPTIONAL).	Request for deletion for wider participation as this is available in High end machines.	No Change	
Page 91; Para 14	Added Para : The System should be Upgradable to Shear wave Elastography (Support for Convex Probe) (OPTIONAL).	Request for deletion for as this is available in High end machines. wider participation.	No Change	
Page 91; Para 14	Added Para: System should be upgradable for 4D imaging and STIC for fetal echo (OPTIONAL).	System should be upgradable for 4D imaging (OPTIONAL). Convex and TVS 4D Imaging	No Change	
NA	NA	NA	<b>Added Para : Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance

<b>Item Name: Portable Colour Doppler (2022 HLL 121185 9)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
Page 92; Para 5	Scanning depth to be 30 cm or more	Scanning depth to be 38 cm or more. For better scan of bulky patient	Scanning depth to be <b>28 cm or more</b>	For wider participation
		Scanning depth to be 28 cm or more For wider participation.		
Page 92; Para 6	The system to have a dynamic range of 165 decibels or more.	The system to have a dynamic range of 250 decibels or more. For better processing	No Change	
Page 92; Para 12	The system must have integrated high resolution TFT /LCD/LED of 11" or more	The system must have integrated high resolution TFT /LCD/LED of 14" or more The 14" monitor size will support better patient throughput.	No Change	
		We request you to kindly amend the specification and it should be asked as 'the system must have integrated high resolution TFT/LCD/LED of 15" or more'. As doing the amendment will provide a better visualisation of images.		
Page 93; Para 22	The system should be able to store at least 5000 Images.	The system should have integrated storage of at least 250 GB. For storage of large patient data	<b>The system should have integrated storage of at least 250 GB.</b>	Dept requirement
Page 93; Para 24	In built battery backup should be at least 1 hour	In built battery backup should be at least 50 minutes	In built battery backup should be at <b>least 50 minutes</b>	For wider participation

<b>Item Name: Portable Colour Doppler (2022 HLL 121185 9)</b>				
<b>Page No. &amp; Para No.</b>	<b>Technical Specification</b>	<b>Representations received from the firm</b>	<b>Committee Recommendation</b>	<b>Justification</b>
NA	NA	NA	<b>Added Para :</b> <b>Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.</b>	For better quality assurance
NA	NA General queries	We have attached a comparative sheet of the main technical parameters of our ultrasounds and our main competitors. We would like to request you to kindly upgrade this as this may inadequately benefit some bidders to quote their previous generation models and derail the earnest efforts to obtain the best in class equipment for world-class institutions of the likes of AIIMS.	No Change	

**All other contents of the Tender enquiry including terms & conditions remain unaltered.**

**Note:**

- I. Prospective Bidders are also advised to check the website regularly prior to the closing date and time of online submission of bids**