Annexure-1: Amendment to Tender IISERM (1396)20/21-Pur

As per the requests and queries received during pre-bidding, clarification & additional information is provided through this document. Bidders must comply with all conditions and specs as per this document as well as all other documents along with the original NIT document. Please check carefully all the sections (Annexure –1, Annexure –2, Annexure –3 and prebid-answers) for more detailed explanations wherever it is applicable. No further clarifications will be entertained.

1. Technical evaluation shall be made strictly based on the original terms and conditions of NIT as well as this document.
2. Annexure-1,2,3 and the replies to the questions from the vendors also form a part of NIT.
3. If any vendor still desires to see the site, they are free to do so.

All vendors/bidders/OEMs must understand that this is not a standardized data-center facility, nor a monotonic high-performance computing (HPC) facility. Instead, it is a heterogeneous computing facility where HPC is a component. This computing facility is expected to offer a boost to the modelling and simulation research efforts encompassing across departments and disciplines. Thus, the proposed facility is expected to run a wide-range of applications and home-grown packages/codes/algorithms. Thus, any justification that applies to generalized monolithic high-performance computing may not be always relevant.

In view of this, all vendors and bidders are required to fully comply with our requirements as per technical specifications as expressed in original NIT, corrigendum and associated annexures.

Sl. No.	Item No. in NIT	Specifications in NIT	Amendment
1.	Item No. 1: CPU Only compute Nodes Point No. 4 : Disk	**1x480GB** or more Solid-State Disk of Enterprise grade. **1x8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding 2nd 8TB HDD in future.	**1x480GB** or more Solid-State Disk of Enterprise grade. **1x8TB** or more Hard Disk Drive **in LFF** (7200RPM) **or 4x2.4TB in SFF (10k RPM) or 2x4TB in either LFF** (7200RPM)/**SFF (10k RPM) or higher**, Enterprise grade in hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding **2nd HDD** in future.
2.	Item No. 1: CPU Only Compute Nodes	There must be at least one PCI-Express expansion slot available for future expansion.	**Either of the following is acceptable**: There must be at least one PCI-Express expansion slot available for future

	Point No. 10: Expansion Slots	(after populating all the required components).	expansion. (after populating all the required components). **Or** **An additional slot for 1G/10G ethernet port. (after populating all the required components).**
3.	Item No. 2: CPU-GPU compute nodes Point No 3: GPU	4 x Nvidia Tesla T4 GPUs System must be capable of supporting up to 6 x T4 or 6 x V100 GPUs (system should support both types of GPUs with suitable PCIe expansion slots)	**4 x Nvidia Tesla T4 GPU's** System must be capable of supporting at least **4 x T4**
4.	Item No. 2: CPU-GPU compute nodes Point No 11: Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Platinum or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails (or is removed). This is to be substantiated by means of a detailed power budget for configuration with 6 x Tesla V100	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks with 80Plus Platinum or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails (or is removed). This is to be substantiated by means of a detailed power budget for configuration with at least **4 x T4 GPUs.**
5.	Item No 7: Storage Server Type 2 Point No 4: Disk	**16 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6	**Must provide a RAW capacity of 128 TB or higher** Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays with JBOD technology or configurable RAID 0, 1, 5, 6. Bidders must certify that this server must be attachable to a parallel file system like Lustre in followup upgradation.
6.	Item No 13: UPS	UPS system should be in N+N mode	**UPS system should be in N+N mode Energy Management System – ISO 45001:2018 certification or better should be provided**

		Energy Management System – ISO 50001 certification should be provided	
7.	Item No 13: UPS	12V Cells with at least 150 AH or more AH. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating.	12V Cells **with APPROPRIATE AH value** to match the backup time. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating.
8.	Item No 13: UPS		An Additional UPS of 10kW must be provided as per the spec mentioned in Annexure-2
9.	Item No 13: UPS		**Battery packs and UPS Units must be independently placed. Battery packs must be properly protected with an enclosure and fully covered with ventilation that may be required.**
10.	Item No 13: UPS	Energy Management System - ISO 50001 certification should be provided	Energy Management System - ISO 50001 or ISO 45001:2018 certification should be provided
11.	Item No: 12 (Racks)	Integrated Cooling Solution; Standard Size; available clear space (length x width x height) 26 ft x 13 ft x 7.5 ft. Vendor must provide the detail dimension of the racks to fit all the equipment and still keep more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.	Integrated Cooling Solution; Standard Size; available clear space (length x width x height) 28 ft x 23 ft x 93 inch. (Check the layout in Annexure-3) Vendor must provide the detail dimension of the racks to fit all the equipment and still keep more than 34 U contiguous empty space in one rack.
12.	Item No: 12 (Racks)	Integrated Cooling Solution;	Cooling units must be integrated to the server racks as per our requirement. The cooling units must be placed adjacent to the server racks as an integrated solution (inrow cooling). The cooling solution must provide the cooling only for the server racks and not for the room where the racks are installed. The cold and hot aisle

			containment is required to be part of the integrated cooling solution.
13.	Item No: 12 (Racks) Cooling	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	Must be UL-Certified/CE-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling with at least 110CFM of air-flow to maintain a temperature gradient of 12C across the servers with the cold point (entry point at server) at 20+-2 C. And Delta T should not be more than 12 C between cold point to the hot point (exit point at server). Total heat dissipation is 35kW. The vendor must note that the above mentioned value of 110CFM is only a minimum allowed and the actual value will depend on the solution. A justification of the quoted CFM must be done by submitting a detailed calculation of the flow-rate as per the given temperature gradients and the load. Redundancy of cooling units should be at half of cooling capacity that is 17kW.
14.	Item No: 12 (Racks) Cooling	Must include Standalone Ultrasonic Rodent Repeller one per rack Must include 40% Blanking Panels Temperature, Humidity monitor across racks Preventive Maintenance for entire period of warranty should be covered by vendor (in every 6 months without any down time) Vendor must provide the input raw power requirements and specs.	Must include Standalone Ultrasonic Rodent Repeller one per rack **as well as for the room.** Must include 40% Blanking Panels Temperature, Humidity monitor across racks Preventive Maintenance for entire period of warranty should be covered by vendor (in every 6 months without any down time) Vendor must provide the input raw power requirements and specs.

		Vendor must provide detail layout and drawing of the placing of racks, cooling units and outdoor units.	Vendor must provide detail layout and drawing of the placing of racks, cooling units and outdoor units.
15.	**(14) Installation and Acceptance**	Demonstration of the full capabilities of the system that are listed in the proposal by the engineers of the HPC solutions is essential before it is accepted.	Demonstration of the full capabilities of the system that are listed in the proposal by the engineers of the HPC solutions is essential before it is accepted. Following specific tasks must be demonstrated: 1. Job Scheduling test, auto-recovery test and stress test with full load. 2. User management and disks sharing structures. 3. Network bandwidth tests across various network paths. 4. User usage accounting - Storage and compute 5. Remote Switching on, starting up and shutting down the cluster. 6. Auto shutdown during power failure and auto restart upon power recovery. 7. Scheduled data backup and scratch cleanup 8. Another relevant test that may be required to demonstrate the functionality of the entire systems which are mentioned elsewhere.
16.	**(18) Terms and Condition**	The bidder (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years.	Either of the conditions 1 or 2 are to be met: 1. The bidder (HPC Solution provider) should have performed at least 5 HPC

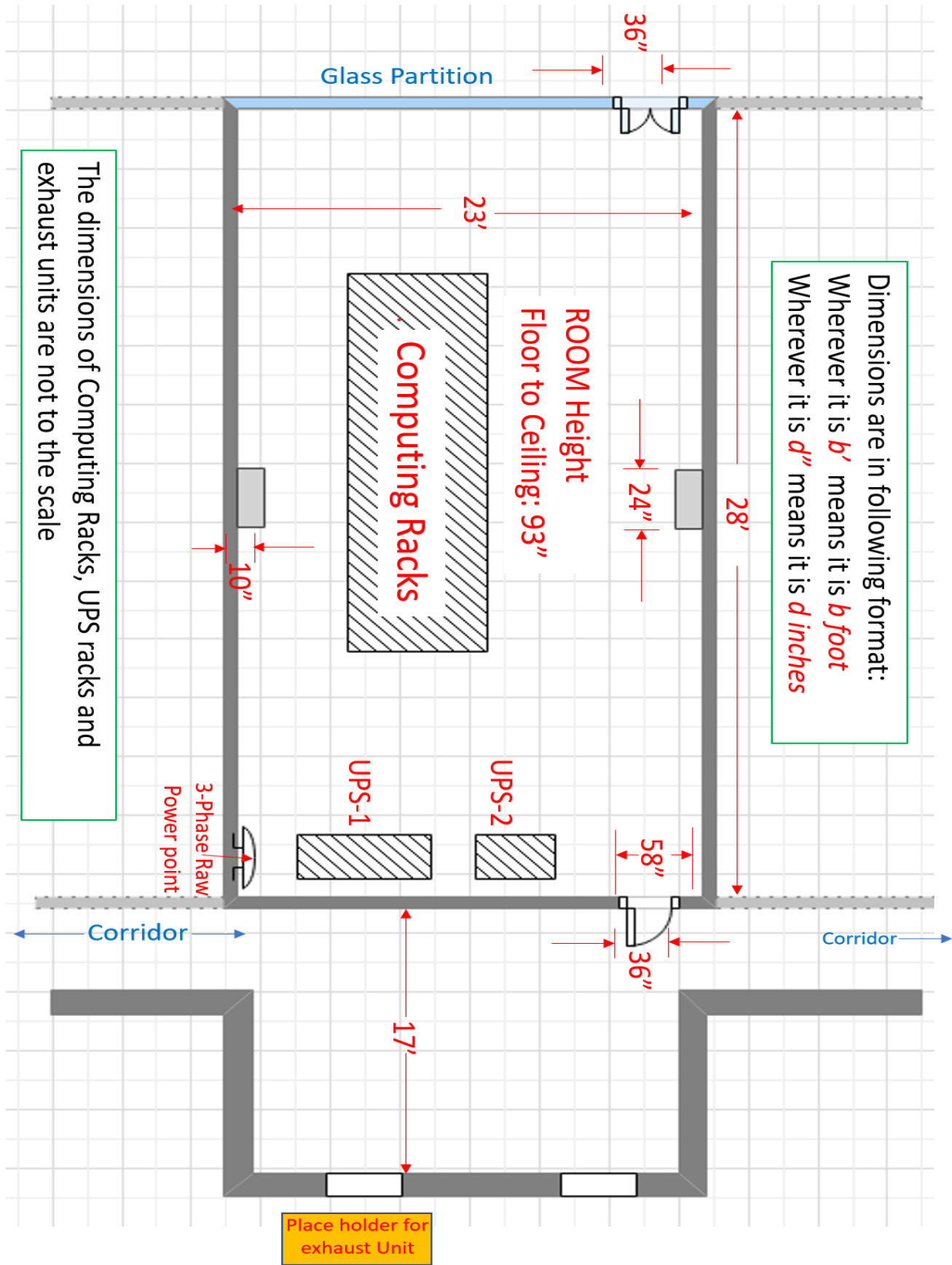|		Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution. **OR** 2. The **bidder/OEM** (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution. Additionally, within the last 3 years, the bidder must have completed at least one HPC solution of at least 15TF installation with the same OEM involved in this bidding. Both OEM and Bidder have to give a joint agreement certificate.

| 17. | Tender clause number VIII under the heading A-IMPORTANT NOTES on page number 3 of the tender. | 60% payment shall be released after supply and installation and commissioning and 30% payment shall be released after testing of installation for 3 months. 90% payment shall be released within 6 months' time after supply, installation and successful testing. Balance 10% payment shall be released after submission of PBG for the warranty period + 60 days from the stipulated date of completion of work. | **The Tender clause number VIII under the heading A-IMPORTANT NOTES on page number 3 of the tender is amended as follows:-**

40% payment shall be released after receipt of complete bill of material as per order against certification/undertaking from the supplier that all the bill of material has been supplied as per order of the Institute.

20% payment shall be released on the installation of complete hardware and satisfactorily working certification by End User.

30% payment shall be released after testing of installation for 3 months as per certification from End User. 90% payment shall be released within 6 months' time after supply, installation and successful testing.

Balance 10% payment shall be released after submission of Performance Security @ 3% of total order value for the warranty period + 60 days from the stipulated date of completion of Installation and Testing of HPC.. |

Annexure - 2: (13.a): Additional UPS of 10kVA/10kW (One Complete and independent unit from item.13 in main NIT) IISERM (1396)20/21-Pur

(13.a) **UPS-2**	CE/UL-certified 10 kVA UPS should be provided along with Battery bank, interlink cabling, battery DC Breaker. This UPS must be an independent UPS and battery bank unit. Backup time: 1 hour Bidders must provide a proper connectivity as a secondary power to DB-Servers, Masternode(s), FLash Storage Server and all switches (Primary power supply must be provided from UPS1).
	Overall efficiency of UPS system in double conversion mode : > 95 % for 25 - 75% loading
	UPS should be designed to unity power factor at output kVA=kW; Input Power factor of UPS > 0.99; Input Voltage Window : 304 v - 477 v at Full Load; Input Frequency range: 50 - 60 Hz
	Overload Capacity : 110% for 30 Minutes, 125 % for 10 Minutes, 150% for 2 minutes; Provision for UPS functional testing without external load bank; Input/Output/Bypass/Maintenance Bypass switch to be present within UPS
	UPS system should be provided with embedded dust filter and conformal coating PCBA; UPS should have EPO and Wave form capturing for fault analysis.; Logging/Monitoring through SNMP to be integrated into the HPC solution for control and monitor UPS status. Battery type must be of VRLA Sealed Maintenance Free (SMF) 12V Cells with at least 150 AH or more AH. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating. Vendors must provide input power requirements for the UPS. Vendors should provide all compatible items like switches/breaker/cables/wires etc. are required for the connection between UPS to racks.
	UPS system should support common battery bank to improve overall availability for Back up time
	Each UPS should be provided **with minimum 60 minutes** back up at full load of 10 kW
	UPS system should be in N+N mode; Energy Management System - ISO 50001/ISO-45001:2018 certification should be provided
	App based 24x7 real time UPS Monitoring System which can generate alert/alarms, provide dashboards for minimum data of past 7 days and can transmit the message on mobile phones up to 10 users. App should also be capable of providing Benchmarks & actionable recommendations.

Annexure - 3: Layout; IISERM (1396)20/21-Pur

36"

Glass Partition

23'

ROOM Height
Floor to Ceiling: 93"

Computing Racks

24"

28'

10"

The dimensions of Computing Racks, UPS racks and exhaust units are not to the scale

Dimensions are in following format:
Wherever it is *b'* means it is *b foot*
Wherever it is *d"* means it is *d inches*

3-Phase Raw
Power point

UPS-1

UPS-2

58"

Corridor

36"

Corridor

17'

Place holder for
exhaust Unit

Answers to queries received through emails and pre-bid meeting - Tender IISERM (1396)20/21-Pur

In the presence of the members of the institute committee, an online pre-bid meeting was held with the potential bidders listed below of tender IISERM (1396)20/21-pur at 11:00am on 23/11/2020.

1. M/s Netweb Technology (Hriday Bikram, Mani Kiran, Hemant Aggarwal)
2. M/s Pramatrix Info (Vishal Gupta, Kartik, Pararamatrix)
3. M/s Intel (Vivek Rai)
4. M/s Inspira Enterprises (Aranya Choudhary, Amit Choudhary)
5. M/s NEC Corporation (Lalit Saraswat)
6. M/s Vertiv Energy (Vikash Khanna, Rakesh Chauhan)

Also queries from following vendors/OEM have been received:

7. M/s Dell Solution
8. M/s Lenovo Solution
9. M/s AMD
10. M/s HPE
11. M/s Rittal India

S. No.	Page No/Clause No/Sub-Clause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	Page No . 2/Critical Date Sections	Critical Date Sections- Bid Submission End date and Time 10th December 2020 Up to 11:00am	We request to kindly extend bid submission date by 2 weeks or 14 days from corrigendum response. This will help to prepare better response on time under covid-19 crisis.	Please check the Corrigendum
2	Page No. 24/Clause No. 18/Subclause No. 5	The bidder (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	We request to kindly amend this clause into Bidder/OEM should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations worldwide in the last 3 years. Of these installations, the bidder/OEM must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same capacity architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	Please check Annexure-1 and corrigendum

			This help in more no of bids and price competitive.	
3	Page No.24/Clause No.18/ Subclause No.4	The bidder must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. The documentary evidence in this regard must be attached. Contact details of the concerned person of institutions where installation have been made by the bidder should also be enclosed. During technical evaluation IISER Mohali would seek information/feedback from these organisations/labs. Therefore, the bidder must provide accurate contact information of the contact person of these previous installation outside IISER Mohali. Any incorrect information would make the bid liable to reject.	We request to kindly clarfiy that global experience is considered for supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. The documentary evidence in this regard must be attached. Contact details of the concerned person of institutions where installation have been made by the bidder should also be enclosed. During technical evaluation IISER Mohali would seek information/feedback from these organisations/labs. Therefore, the bidder must provide accurate contact information of the contact person of these previous installation outside IISER Mohali. Any incorrect information would make the bid liable to reject.	Please comply
4	Page No. 32/Annexure III/Subclause No. 7	Document to show that the bidder has supplied and installed at least one solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	We request to kindly ammed this clause with Document to show that the bidder has supplied and installed at least one solution using the same capacity architecture (Intel-64/AMD-64) as being proposed in the current bid/solution. This help all the bidder to prepare better response.	Please comply.

Amending/modifying the clause may make it restrictive for other vendors/OEM. |

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	3/ A(VIII)	Payment Terms with timeline: - 60% payment shall be released after supply and installation and commissioning and 30% payment shall be released after testing of installation for 3 months. 90% payment shall be released within 6 months' time after supply, installation and successful testing. Balance 10% payment shall be released after submission of PBG for the warranty period + 60 days from the stipulated date of completion of work.	Kindly Amend the same to :-Payment Terms with timeline: - 60% payment shall be released after supply and 30% payment shall be released after installation and commissioning testing of installation for 1 months. 90% payment shall be released within 6 months' time after supply, installation and successful testing. Balance 10% payment shall be released after submission of PBG for the	Please Check the Corrigendum and Annexure - I.

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
			warranty period + 60 days from the stipulated date of completion of work.	
2	24/18/4	The bidder must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations.	Kindly Amend the same to , The bidder / OEM must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. As it will help in more participation for the tender	Conditions have been changed. Please check Annexure-I.
3	24/18/5	The bidder (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	Kindly amend the same to :-The bidder (HPC Solution provider) / OEM should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder/OEM must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder/OEM must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	Conditions have been changed. Please check Annexure-I

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	16 / 12/ Racks	Integrated Cooling Solution;	Kindly clarify whether we need to consider cold and hot aisle containment as part of integrated cooling solution	Please check Annexure - 1
2	16 / 12/ Racks	Vendor must provide the detail dimension of the racks to fit all the equipment and still keeping more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.	Kindly clarify overall usable space required in 2 Racks together	84 Usable space in two racks.
3	16 / 12/ Racks	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	Kindly clarify whether 35 kW is Sensible cooling capacity or Nominal Cooling Capacity required	The 35 kW is the sensible cooling capacity required to dissipate the heat produced for both phase-I (current) and phase-II (in future).
4	16 / 12/ Racks	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	Kindly clarify whether we need to consider room based perimeter cooling or closed couple/inrow cooling which would be installed next to server racks	Closed couple in row cooling solution with units installed adjacent to the racks. Please refer to the

				schematic layout diagram in Annexure-3.
5	16 / 12/ Racks	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	For closed couple/inrow cooling considering high density applications CFM required for IT devices in general would be 100 CFM to 110 CFM, request to clarify the same	Please check Annexure-1
6	16 / 12/ Racks	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	Kindly clarify if we have consider any redundancy for cooling units	Please check Annexure-1
7	17 / Racks	Must include Standalone Ultrasonic Rodent Repeller one per rack	Kindly clarify whether we need to consider rodent system for complete room or only rack, it is recommended to consider for complete room and cables shall enter rack from outside the cabinet.	Rodent repellent system is necessary for the complete room as well as for individual racks. Please check Annexure-1
8	17 / 12/ Racks	Must include Standalone Ultrasonic Rodent Repeller one per rack	Rodent system would be common for complete racks and cooling; it cannot be standalone for each rack; Request to confirm on same	Rodent repellent system is necessary for the complete room as well as for individual racks. Please check Annexure 1
9	18 /13/ UPS	12V Cells with at least 150 AH or more AH. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating.	Kindly clarify whether battery back up to be considered for 10 minutes on 40 kVA or consider 150 AH Batteries	Please refer to the Corrigendum and Annexures-1 and 2.
10	18 /13/ UPS	Vendors must provide input power requirements for the UPS. Vendors should provide all compatible items like switches/breaker/cables/wires etc. are required for the connection between UPS to racks	Kindly clarify on who would be provided the Input Power and cabling, breakers, panels; sockets as required for Cooling machines; Server rack PDUs; Rodent repellent system	IISER Mohali will only provide a point of raw input power outlet. All other connections from raw power to UPS and to various equipment must be provided by the bidder. The position of raw input power points are mentioned in the Annexure-3.
11	General		Kindly clarify the location of batteries as Batteries would require cooling and temperature of 25 degrees for warranty support	Please see schematic diagram (Annexure-3). Further, the bidders are welcome to visit the site before placing their bids.
12	General		Kindly clarify the location of UPS if it has to be placed outside the Rack as 40 KVA UPS would generally installed in Utility Cabinet and does not occupy any U Space	Please check layout Annexure - 3.
13	General		Can we propose 40 KVA UPS and 10 minutes battery installed inside Utility cabinet which shall help in space optimization	No. Battery packs and UPS units are to be installed separately. Please refer to Annexure-I.
14	General		kindly clarify if Fire detection system is to be considered for the Integrated solution	There must be provision for future adaption & integration of fire alarm

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
15	General		Kindly clarify the location of outdoor units for cooling units and approximate distance between indoor and outdoor units	and suppression system. It is not necessary as of now. Please check Annexure - 3 for dimensions
16	General	Payment terms as mentioned in the tender	Very long period for release of payment - 3 months	Please comply and please check Annexure-I
17	General	Bank Guarantee clause	GoI rules	GoI/GFR rules are followed, performance security may be read as 3% in place of 10%. Please check Corrigendum

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	24/18/4	4. The bidder must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. The documentary evidence in this regard must be attached. Contact details of the concerned person of institutions where installation have been made by the bidder should also be enclosed. During technical evaluation IISER Mohali would seek information/feedback from these organisations/labs. Therefore, the bidder must provide accurate contact information of the contact person of these previous installation outside IISER Mohali. Any incorrect information would make the bid liable to reject.	Please change this to bidder/OEM. This condition is restrictive in nature and allows only limited participants who fullfills this clause. We have past experience in HPC and works closely with OEM on implementation and support for HPC cluster	Please refer to the corrigendum and Annexure-1.
2	24/18/5	5. The bidder (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	Please change this to bidder/OEM This condition is restrictive in nature and allows only limited participants who fullfills this clause. We have past experience in HPC and works closely with OEM on implementation and support for HPC cluster	Please refer to the corrigendum and Annexure-I.
3	18/14/3 Acceptance Criteria	Demonstration of the full capabilities of the system that are listed in the proposal by the engineers of the HPC solutions is essential before it is accepted.	Please clarify the criteria of acceptance	Please refer to Annexure -1 of the corrigendum.

| 4 | Compute Nodes | It should be possible for memory to scale up to at least a total of 512 GB per node | please change this to 768 GB or 1.5TB.

512 GB GB scalable is possible by most OEM with lower node model but 512 GB is not balaned meory configuration, so even after scalability perfromance will not be good, next steps in balanced memory configuration are 768Gb and 1.5TB, so plese ask scalability for upto 1.5TB. | Please comply.

Amending/modifying the clause may make it restrictive for other vendors/OEM. |
|---|---|---|---|---|
| 5a | Hard disk HDD | 1 x 8TB, 7200 RPM, enterprise grade | Please change this to 4 x 2.4TB SAS 10K RPM, enterprise grade

In form factor 0.5U nodes are asked, in 0.5U nodes SATA/NLSAS LFF disks are not supported and 8TB disks only come in LFF format, so to get equal capacity (8TB) 4 x 2.4TB SAS 10K disks should be asked. | Please check Annexure - 1 |
| 5b | Additional bays | At least 1 x Free hot-pluggable disk bay for adding 2nd 8TB HDD in future | Please change this to 2 additional bays or 6 disk bays in total

ref to above point since LFF form factor disks are not possible in 0.5U nodes so total of 4 disks to be offered for 8TB capacity hence additional 2 bays should be asked for spare disks | Please check Annexure - 1 |
| 5c | Expansion Slots | At least one PCI Express expansion slot for future expansion (after populating all required components) | Please remove this point

Ref to the 0.5U nodes asked, in 0.5U nodes only 2 slots are avilable and after populating all components no free slot will be available. | Please check Annexure - 1 |
| 6 | GPU Memory | It should be possible for memory to scale up to at least a total of 1024 GB per node. | please change this to 1.5TB

1024 GB GB scalable is possible by most OEM with lower / mid segments node model but 1024 GB is not balanced meory configuration, so even after scalability perfromance will not be good, next steps in balanced memory configuration is 1.5TB, so plese ask scalability for upto 1.5TB. | Please comply.

Amending/modifying the clause may make it restrictive for other vendors/OEM. |
| 7 | GPU | System must be capable of supporting up to 6 x T4 or 6 x V100 GPUs (system should support both types of GPUs with suitable PCIe expansion slots) | System must be capable of supporting up to 5 x T4 or 4 x V100 GPUs (system should support both types of GPUs with suitable PCIe expansion slots) | Please refer to Annexure - 1. |

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
			This clause is specific to few OEMs only, not all major OEM supports 6 x T4 cards due to thermal limitation, so to all include all major OEMs we request you to kindly change this point.	
8	Power supply.	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Platinum or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails (or is removed). This is to be substantiated by means of a detailed power budget for configuration with 6 x Tesla V100	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Platinum or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails (or is removed). This is to be substantiated by means of a detailed power budget for configuration with 5x T4

In refrence to above point indly change this for power supply to take care 5 x T4 cards power requirement (power and pciE slot requirement for T4 & V100 cards are different) | Please refer to Annexure - 1. |
| 9 | Storage Server Type 2 | 16 x 8TB or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6 | Please change this to 12 x 12TB drives

with most of OEM the hard disks capacity for internal disks is 12 drives in LFF disk format (SATA/NLSAS with abobe 2TB capacity), hence 16 LFF disks is specific to particular OEM, though additional (more than 12) disks are possible by adding external JBOD but adding additional JBOD will give commecial advantage to partcular OEM having 16 drives bays | Please check Annexure-1. |
| 10 | Minimum memory asked is not balanced memory | | Please refre the minimum meory asked in the mentioned nodes and we suggest to change this to balanced memory as 192 GB or 384 Gb or 768 GB.

Balanced memory gives better performance | Please comply. |

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	Page 16 / (12) Racks	Standard Size; available clear space (length x width x height) 26 ft x 13 ft x 7.5 ft.	Kindly clarify whether the height mentioned is slab to slab height or there	Please note that false ceiling/access flooring can not be used. Only the size

			is any existing false ceiling / access flooring available in the proposed area .	specified in the Annexures needs to be used in the proposed solution.
2	Page 16 / (12) Racks	Vendor must provide the detail dimension of the racks to fit all the equipment and still keeping more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.	Bidder can propose either rack mountable or external UPS placed along with the battery bank . Kindly Confirm	Please refer to the Corrigendum and Annexure-1 and 2 regarding UPS. Please check the schematic layout diagram of Annexure - 3. The UPS must be a separate unit from server racks.
3	Page 16 / (12) Racks /Cooling	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	Request you to kindly ammend as : Must be R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 3250 CFM considering 90 CFM per kW. Given specification seems to be specific to an OEM .	Please check Annexure - 1
4	Page 17 / (12) Racks /Accessories	Must include Standalone Ultrasonic Rodent Repeller one per rack	Request you to kindly ammend as : Must include Common standalone rodent repellant system for entire solution An common ultra sonic rodent repellant system can easily cover the entire area of the proposed solution	Please check Annexure-1. The rodent repellent system is required to be provided for the complete room as well as for the server racks (see Schematic diagram Annexure-3)
5	Page 18 /(13) UPS	If the UPS is included in the racks, it must not exceed 2U of space.	Request you to kindly ammend as : If the UPS is included in the racks, it must not exceed 4U of space per UPS or the UPS system can be placed externally along with the battery bank Given specification seems to be specific to an OEM	Please refer to Annexures-1,2,3
6	Page 18 /(13) UPS	Battery type must be of VRLA Sealed Maintenance Free (SMF) 12V Cells with at least 150 AH or more AH. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating.	Kindly clarify whether the bidder can select the battery AH as per the battery calculation as the back up asked is for only 10 min per UPS @ 40 kVA load . Asked battery back up can be achieved with batteries with lesser AH value .	Please refer to Annexures-1,2,3
7	Page 18 /(13) UPS	Energy Management System - ISO 50001 certification should be provided	Request you to kindly ammend as : ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certification should be provided for the manufacturer	ISO 45001:2018 will be accepted. Please see Annexure-1 of the corrigendum.

1	Additional Query: Fire Safety	Provision for fire alarm & suppression system for the Rack infrastructure	Kindly clarify whether fire alarm & gas based suppression sytem to be considered as same is not mentioned in the RFP . Fire alarm & gas based fire suppresion system are critical system to provide safety to IT infrastructure from any fire incident	There must be provision for future adaption & integration of fire alarm and suppression system. It is not necessary as of now.

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	Page 6	The double performance of the system must be calculated as "Total No. of Physical Cores x Processor Base Clock Frequency x Maximum number of double precision floating point operations per clock cycle for a processor core under AVX2 or AVX512 modes supported by the processor''.	The double performance of the system must be measured with open source HPL from netlib.org with AVX2 or AVX512 without any tweaking to the actual code. At this point in time the RFP significantly benefits systems with Intel Xeon processor and to be precise Intel Xeon 6230R. Intel Xeon processors has 2 FMA engines which allows them to drive more floating point operations. In general not many HPC applications understand such dual FMA engine architecture and result in poor performance. More specifically if you consider your applications pertaining to molecular dynamics and molecular modelling such as CP2K, LAMMPS, GROMMACS and QE , they are heavily memory dependent. While computing core is essential at the same time having an equally better cache structure and CPU to memory bandwidth is very much required to meet the performance considerations. The present clause demands vendors to quote 2x core count to meet a peak TF which is in actual of no use. This way all the processor vendor can participate in a neutral way.	Please comply
2	Page 6 (1)CPU Only compute nodes	7 GB memory per physical CPU core present or more with at least 384 GB DDR4-2933 MHz or higher;	Atleast 256 GB DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent	Please comply.

	Page 9 (3) Master Node Page 10 (4) Login Node	Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed in a fully balanced mode (equally populated across all channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.	technology. It should be possible for memory to scale up to at least a total of 512 GB per node. We have tested all the Molecular Modelling applications which are listed in the RFP with various input data sets and observed two critical parameters. All the runs we have never seen applications going beyond 200 GB per node. All the applications perform well on system with memory in power of 2. It will be an over kill to have 7 GB per core and 384 GB of memory per node. The 2nd part of the clause which defines "The number of memory channels should be such that for every memory channel, there are not more than 6 cores." is fully biased and forces vendors to quote Intel Xeon processor only. In an open RFP it looks unethical.	
3	Page 7 (2) CPU-GPU compute nodes	14 GB or more per physical CPU core with at least 768 GB DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, ChipKill or equivalent technology. It should be possible for memory to scale up to at least a total of 1024 GB per node.	Atleast 512 GB DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 1024 GB per node. Generally T4 GPUs are used for Image analytics and the memory usage of the GPU for such code is extensive. The system memory can be lowered.	Please comply

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	24/18/4	4. The bidder must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. The documentary evidence in this regard must be	We request you to relax this clause for both Bidder and OEM.	Please check Annexure - 1

		attached. Contact details of the concerned person of institutions where installation have been made by the bidder should also be enclosed. During technical evaluation IISER Mohali would seek information/feedback from these organisations/labs. Therefore, the bidder must provide accurate contact information of the contact person of these previous installation outside IISER Mohali. Any incorrect information would make the bid liable to reject.		
2	24/18/5	5. The bidder (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years. Of these installations, the bidder must have provided at least one HPC cluster with 50 TeraFlops (double precision CPU peak performance) in the last 3 years. The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	We request you to relax this clause for both Bidder and OEM.	Please check Annexure - 1
3	25/18/14	14. Bidder (HPC Solution provider) should have a direct local sales & support office in Chandigarh-Mohali-Panchkula Tri-city or in Delhi NCR.	We would request to relax this clause and allow partners from Pan India to particiate in the Tender so that Insititute can get a wider participation.	Please comply.
4	Item - 1 CPU Only compute nodes, Item - 2 CPU-GPU nodes Item - 3, Master Nodes, Item -	x86-64 architecture multi-core processor with base clock frequency of at least 2.1 GHz, with **26 or more cores per processor**, must support DDR4-2933 or faster memory. Native support for AVX2.	Memory operating at 2933MHz offers far lower overall Memory Bandwidth especially when the latest Processor OEMs support motherboards with Memory at 3200MHz. Memory operated at 2933MHz are supported by Intel and AMD old motherboards and chipsets. System thruput is also determined by overall memory bandwidth per node and across cluster especially for memory bound applications. Having latest CPU , Interconnects but lower	Please comply. Amending/modifying the clause may make it restrictive for other vendors/OEM.

| | | | memory operating frequencies will adversely affect the overall system performance and render a sub-optimal system.

Thus to ensure that IISER-M has the latest and the best system the Motherboard shoud support Memory operating at 3200 MHz as it is also available with all major OEMs. | |
|---|---|---|---|---|
| 5 | Item- 1 CPU Only compute nodes, Item - 3, Master Nodes, and other nodes | **7 GB memory per physical CPU core present or more with at least 384 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. | We request that this clause be amended to 5.33GB per core or more. This clause along with clause " Total number of Processor cores 1650 and Total peak performance 105TF" are higly skewed to favor a specific CPU vendor thereby putting other x86 CPU OEMs at sever disadvantage as the other CPU OEM would have to quote higher memory and offer higher core count overall. | This is the minimum requirement. Please comply. |
| 6 | Item- 1 CPU Only compute nodes, Item - 3, Master Nodes, and other nodes | 7 GB memory per physical CPU core present or more with **at least 384** GB DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. | We request that this clause be modified as 512GB or more as 384GB offers undue advantage to a particular CPU OEM | Please comply.

Amending/modifying the clause may make it restrictive for other vendors/OEM. |
| 7 | Item- 1 CPU Only compute nodes, Item - 3, Master Nodes, and other nodes | 7 GB memory per physical CPU core present or more with at least 384 GB DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill **or equivalent** technology. It should be possible for memory to scale up to at least a total of 512 GB per node. | Advanced ECC, Chip Kill are propritery computer memory technologiies specific to a particular OEM. We request you to change this clause to ECC only | Please comply. |
| 8 | Item- 1 CPU Only compute nodes, | **1x8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding 2nd 8TB HDD in future. | We request that this clause be amended as "1 x 2.4TB 10K RPM or more" as 7.2K RPM drives are not supported with 1U form factor . We would also like to suggest that IISER-M opts for a PFS based solution for local scratch as it wold offer a single global name space | Please check Annexure - 1 and please comply. |

			across all nodes and much higher IOPs and bandwidth as compared to a single 8TB 7.2K RPM drive.	
9	Compute node	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all the required components).	We request that this this clause be completely relaxed as there are limited PCI slots in 1U Rack Mount Formfactor which are already consumed by the RAID Controller, 10G and Infiniband Cards without any additional PCIe slot to spare	Please check Annexure - 1 and please comply.
10	Compute node	Rack mountable enclosure Server Chassis with suitable mounting kit; Modular multi-node systems may be quoted but each node must not effectively take more than 0.5 U space **(For example 2 nodes in 1U or 4 nodes in 2U)** . Must be compatible with the rack quoted in item #12.	We request that this clause be relaxed to also include 1U Rack Mount as there are severe limitations with 2U/4N dense chassis form factor w.r.t CPU TDP, Large FF HDDs, PCIe slots.	Please comply.
11	Item - 2 CPU-GPU nodes	**14 GB or more per physical CPU core with at least 768 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, ChipKill or equivalent technology. It should be possible for memory to scale up to at least a total of 1024 GB per node.	We request that this clause be amended to 10.66GB per core or more. This clause is higly skewed to favor a specific CPU vendor thereby putting other x86 CPU OEMs at sever disadvantage as the pther CPU OEM would have to quote higher memory and offer higher core count overall.	This is the minimum requirement. Please comply.
12	Item - 2, item-3, item-4, item-5	Total memory	We request that this clause be modified as 512GB or more as 384GB offers undue advantage to a particular CPU OEM	Please comply
13	Item - 2 CPU-GPU nodes	7200 RPM	NVMe SSDs are non-spinning drives. This clause is not applicable for the asked drive type.	Please check Annexures
14	Item - 3 Master nodes Item - 4 Login nodes	**5 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays configured as RAID0,1,5,6.	We request that this clause be amended as"Hot-Pluggable configured as RAID 0,1,5,6,10,50,60 with 4GB NVCache" NVCache will enable higher RAS capabilities which are required for Master Node configurations.	Please comply. Amending/modifying the clause may make it restrictive for other vendors/OEM.
15	Item - 3 Master nodes	Quantity:	Kindly clarify whether the 2 Login Nodes need to be configured in High Availability . Also if HA is required	These are not login nodes; Please comply

			kindly clarify whether separate HA shared storage is required.	
16	Item - 4 Login nodes	Quantity:	Kindly clarify whether the 2 Login Nodes need to be configured in High Availability . Also if HA is required kindly clarify whether separate HA shared storage is required.	No
17	Item - 5 Database Server	The memory DIMMs must be installed **in a balanced mode (equally populated across all memory channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor.	We request that this clause be amended as "The memory DIMMs must be installed in a balanced mode (equally populated across all memory channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor. The memory should be configured to run at highest possible performance for the quoted processor."	Please comply
18	Item - 5 Database Server	Quantity:	Kindly clarify whether the 2 Login Nodes need to be configured in High Availability . Also if HA is required kindly clarify whether separate HA shared storage is required.	These are not login nodes; Please comply
19	Item - 6 Storage Server Type – 1 (All-Flash)	**9 x 3.2TB** NVMe Solid State Disks in hot-swappable bays (endurance of 3 DWPD or better over 5 years). Must be configures in RAID0,1,5,6 **Must have at least 5 free expansion slots for future upgradation**	We request to relax this clause to " 8 x 3.2TB NVMe SSD in hot swappable bays confiured in RAID 0,1,5,6,10,50,60 with min 4GB Nvcache" as max 8 NVMe drives are supported with 2.5" FF Drives.	Please comply
20	(7) Storage Server type -2	**16 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6	Max 12 x 3.5 " FF Drives can be configured in a 2 U FF System. We request that bidder be allowed to configure 16 x 8TB in an external DAS based solution	Please check Annexure - 1
21	(7) Storage Server type -2	**16 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6	We request that this clause be amended as"Hot-Pluggable configured as RAID 0,1,5,6,10,50,60 with 4GB NVCache" NVCache will enable higher RAS capabilities	Please check Annexure-1 and comply. Amending/modifying the clause may make it restrictive for other vendors/OEM.
22	(7) Storage Server type -2	Rack mountable enclosure Server Chassis with suitable mounting kit; one node per chassis. **Modular multi-node systems are not allowed – one node in a single chassis.** Each node must not	We request to relax this clause to 7U	Please comply.

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
		effectively take more than 4U space.		
23	(7) Storage Server type -2	Quantity	Kindly clarify whether the 2 Login Nodes need to be configured in High Availability . Also if HA is required kindly clarify whether separate HA shared storage is required.	These are not login nodes; Please comply.
24	14/18/Interconnect		We request IISER-M to kindly allow bidders to quote Mellanox 200Gbps Switch capable of operating 80 ports at 100Gbps each. Also kindly confirm if a Managed switch is required to be proposed	Please Comply

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	Racks	Integrated Cooling Solution; Standard Size; available clear space (length x width x height) 26 ft x 13 ft x 7.5 ft. Vendor must provide the detail dimension of the racks to fit all the equipment and still keeping more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.	Please clear the No of racks required	Please check Annexures. 84 U total usable space.
2	Cooling	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	1) UL certified is not possible for any vendor. Kindly consider CE certified Cooling units which are acceptable to all the major research institutes.	Please check Annexure-1.
3	Cooling	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW	2) Kindly please mention the per rack heat load. 3) Cooling redundancy is required or not? 4) Distance between the indoor and outdoor unit need to be mentioned.	Please check Annexures-1, 2, 3.
4	Usage Space	2 x 42 U usable slots; The cables used to bring power to cooling units, sensors or any other such units should not block or occupy the network cabling path or power dispensing plug.	Considering 2 nos. of 42U racks ?? Is it possible to give the Utility rack extra to provide you the maximum space available	Yes, 2 x 42 U racks provided all U space available for computing/storage nodes (check the NIT document item-14, usable space). Check Annexures and please comply.
5		App based 24x7 real time UPS Monitoring System which can generate alert/alarms, provide dashboards for minimum data of past 7 days and can transmit the	OEM Specific…wheresas we can support monitoring through SNMP/IP based by which you can even attach the	SNMP/IP based protocol is allowed provided a dedicated frontend APP

		message on mobile phones up to 10 users. App should also be capable of providing Benchmarks & actionable recommendations.	third party components.	should be provided as per tender specifications.
6			Please mention the distance between the Electrical room and server room and earthing scope.	Check Annexure-3 for a schematic layout diagram.
7	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day	Warranty need to considered of 3 years??	Please comply
8	PDU	Number of properly configured power distribution units (PDUs) for the enclosures/rack's solution. Must be able to connect all power cables needed for components mentioned in this solution. PDUs must be placed in such a way that it doesn't interfere with other cabling like networking arrangements	Please confirm the type of PDU and no. of socket outlets.	Please comply

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
1	Page 6	Total double precision floating point performance of 105 Tera Flops or more	Kindly confirm if the requirement is for theoretical or sustained HPL. As per the formula given in page 6, it is theoretical HPL	Theoretical.
2	Page 6 - Compute Nodes	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all the required components).	Kindly delete this, since it is not possible in the dense form factor nodes. Else kindly allow us to offer 1U nodes.	please check Annexure-1.
3	Page 6 - Compute Nodes	80 Plus Titanium or better.	Kindly change it to 80 Plus Platinum or better	Please comply and check Annexure -1
4	Page 7 - GPU Nodes	6 x T4 or 6 x V100 GPUs & 2U form factor	Kindly change it to 3 x V100 GPUs. Systems with 2U form factor cannot accommodate 6 x V100 GPUs	Please check Annexure-1.
5	Page 9, 10,12,13,14 - Master Node, Login Node ,DB Server and Storage Servers	80Plus Titanium or better.	Kindly change it to 80 Plus Platinum or better	Please comply and check Annexure -1

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
			We hereby requesting you to kindly extend the due date of bid submission atleast by a Week, as we are working on the final and best solution of all the components from the respective OEM's.	Please check Corrigendum

S. No.	Page No/Clause No/SubClause No.	Clause Particulars	Clarification sought/Revised suggested	Response
	Cooling section		With regards to cooling, we request you to confirm exact cold aisle temperature, hot aisle temperature, ambient temperature for required capacity of cooling to be defined in the Tender . And for a clear & fair understanding bidders must be asked to submit computerized software based selection sheet as supporting document to ensure right comparison among product quoted by respective bidders.	Please Check the Annexure - 1