

# UGC-DAE Consortium for Scientific Research

(Formerly Inter University Consortium for DAE Facilities)

An Autonomous institution under UGC,Min of Edn, Government of India, Mumbai Centre

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Ref. No.UDCSR/MUM/642/AO/2025-26/

Dated: 13<sup>th</sup> February 2026

## **NOTICE INVITING GLOBAL TENDER**

UGC-DAE Consortium for Scientific Research, Mumbai Centre invites Offers in sealed cover, from eligible bidders for supply of the under mentioned.

Tender No.	Description of the Item	Quantity	Due date for Submission of Bid
NIT NO.01/2025-26 Dated : 13 <sup>th</sup> February 2026	Closed Cycle Refrigerator (CCR) based CRYOFURNACE for Neutron Diffraction Experiments	As per Annexure-I	12 <sup>th</sup> March 2026

1. Details of the tender document i.e. Technical Specification and Commercial terms & conditions is mentioned at Annexure-I and Annexure-II respectively.
2. Corrigendum and/or Addendum if any, shall only be hosted at [www.csr.res.in](http://www.csr.res.in). Bidders are requested to see the website for such information
3. The tender documents shall be available at <http://www.csr.res.in/tender.html>

**Administrative Officer-I**

## **ANNEXURE-I {PART A} (TECHNICAL SPECIFICATION)**

**Scope of supply:** The bids are invited in two parts (i.e. technical and financial) for Closed Cycle Refrigerator (CCR) based CRYOFURNACE for Neutron Diffraction Experiments (hereafter referred to as CRYOFURNACE). The system should be offered as a complete package with all the necessary ancillary equipment for smooth operation. The CRYOFURNACE should be equipped with variable temperature insert (VTI) for loading samples from the top position (top-loading mode) and should be capable for carrying out neutron diffraction experiments by utilizing neutron beam in wide temperature range from 4.2 K to 800 K. Options/attachments for achieving temperature down to 2 K (or less) on the low temperature side and up to 1000 K (or higher) on the high temperature side are desirable and may also be quoted separately. All necessary safety interlocks should be provided to ensure **24×7** operations of the CRYOFURNACE with minimum human intervention. The system should be quoted preferably with high purity (99.9% or higher) vanadium window in the diffraction area.

- The bidder/supplier must have built and supplied similar type CRYOFURNACE for scattering based instruments earlier.
- The list of users to whom such equipment has been supplied should be provided along with quotation.
- Financial bid will be considered subject to technical qualification.
- **Potential vendors/manufacture should provide detailed specifications pertaining to quoted model.**

Further Detailed specifications for such CRYOFURNACE must adhere to following technical specifications.

**Top Loading Variable Temperature insert (VTI) based Cryostat with close cycle refrigerator (CCR) for Neutron Diffraction experiments:**

I.	CRYOFURNACE system (mounting configuration on neutron diffractometer table)	<p>The proposed system should have provision for flange/base plate so that it can rest on present sample table.</p> <p>Cold head hanging down with thermally attached VTI.</p> <p>The VTI should be extended so that sample centre should coincide with neutron beam.</p> <p>The sample stick should be accessible from top.</p> <p>For more details of sample table and neutron beam refer to sketch of neutron diffraction beamline as described in <b>Part – B of this Annexure.</b></p>
II.	Temperature Range:	4.2 K or lower to 800 K or higher with stability: $\pm 0.1$ K or better (in temperature range up to 100 K)
<i>Additional temperature range down to <math>\approx 2</math> K in low temperature side and up to 1000 K in high temperature side may be quoted separately.</i>		
III.	System cool down time:	Less than 4 hours (from switching on condition)
IV.	CCR Cooling Technology (for cryocooler):	Two stage Pulse tube type cold head/expander
V.	CCR Cooling Power:	~1.5 W (or better) at 4.2 K (50 Hz) on the second stage and with first stage cooling power 35 W (or better) at 50 K (50 Hz)
VI.	<p>Compressor Unit:</p> <ul style="list-style-type: none"> <li>• Appropriate compressor unit to achieve and maintain required cooling.</li> <li>• <i>Electrical Power Supply:</i> Our standard electrical mains: <b>230 V AC, 50 Hz, for single phase</b> and <b>415 V AC, 50 Hz for 3 phases</b>. Unit must be wired accordingly.</li> <li>• Charge and vent adapters should be provided.</li> <li>• Flexible Helium gas lines (pair) with standard length</li> </ul> <p>Additional accessories required for smooth operation such as cold head cable, power supply cable etc. should be provided.</p>	

VII.	<p>Sample Mounting for diffraction experiments:</p> <ul style="list-style-type: none"> <li>• Provision should be provided for screwing vanadium sample can/holder to the sample stick/probe which is to be inserted in sample chamber/Variable temperature insert (VTI).</li> <li>• Our vanadium can/holder has a male thread of 1/4-20 UNC-2A and thread length of 1/2 inch (<i>enclose details of sample mounting arrangement; can be finalized later on mutual consultation</i>). Our diffractometer sample holder has 1inch flange on which 1/4-20 UNC-2A threaded stud projects out.</li> <li>• Provision must be provided for easy loading/changing samples from top.</li> <li>• Sample mounting should be possible while system is in operating condition (without need to power off the CCR).</li> <li>• Necessary safety measures such as load lock chamber with evacuation valves and pressure relief valves must be provided. In case vacuum in intermediate space is required then it should terminate with NW (KF) –25 flange along with simultaneous provision of supplying exchange gas if necessary.</li> <li>• Sample probe should have one 10-pin hermetic electrical feedthrough for temperature sensor and one 19-pin hermetic electrical feedthrough for any future modification purpose.</li> </ul>
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	<ul style="list-style-type: none"> <li>• All the Construction material should be Non-magnetic.</li> </ul>
VIII.	<p>Temperature variation and Sensors:</p> <ul style="list-style-type: none"> <li>• Appropriate capacity heater should be installed at appropriate place for temperature variation as per the desired range.</li> <li>• The access may be provided for replacing heater at later stage as and when required.</li> <li>• These temperatures should be readable with calibrated sensors/ thermocouple to cover entire temperature range in one stretch or segment.</li> <li>• Sufficient numbers (at least two) of sensors should be mounted in cryostat (cold head and VTI sample stick) for control and sensing sample temperature nearest to sample. •  <ul style="list-style-type: none"> <li>• The heater power may be sourced through the appropriate temperature controller.</li> </ul> </li> <li>• Appropriate cabling (5-meter-long) for heater and sensors with appropriate connectors for connecting with temperature controller.</li> </ul>

IX.	<p>Temperature Controller:</p> <ul style="list-style-type: none"> <li>• Auto tuning digital temperature controller (preferably Lakeshore make) capable of working for variety of sensor types.</li> <li>• It should be capable of providing milli-Kelvin resolution and control.</li> <li>• It should have provision for appropriate heater power for desirable temperature range</li> <li>• Various communications ports such as GPIB, RS232, ethernet and USB may be provided for standard computer interface.</li> </ul>
X.	<p><b>Radiation Shield(s) and outer shroud dimensions (for cryostat):</b></p> <ul style="list-style-type: none"> <li>• Radiation shield(s) and outer shroud should be preferably made of <b>vanadium</b> (99.9%) radiation shield with appropriately thick window for neutron beam.</li> <li>• <i>Sample holder is 50 mm</i> in height so sample tube /Sample/Diffraction Zone should be <b>70 – 90 mm in height</b> and <b>360 deg window for incoming and outgoing neutrons</b> (in case of difficulty, the angular spread of the window can be reduced by mutual consultation).</li> <li>• <b><u>Detailed sketch of the cold head sample mounting, window region, etc., should be provided and approval must be taken before the supply of unit.</u></b></li> <li>• <b><u>Provision must be kept for minor revision/changes with regard window region design and sample mounting portion.</u></b></li> <li>• <b><u>The vanadium window and sample mounting portion should be properly welded for long term operation. Use of screws and adhesives must be avoided.</u></b></li> <li>• Diameter of most radiation shields and outer shroud <i>at the sample/diffraction zone</i> <b><u>should be around 100 mm</u></b> (exact dimension can be decided on mutual consultation)</li> </ul>
XI.	<p><b>General specs:</b></p> <ul style="list-style-type: none"> <li>• Detailed sketch/drawings of sample mounting, diffraction window region must be provided.</li> </ul>
	<ul style="list-style-type: none"> <li>• Necessary connecting cables, power cables and connectors for <i>sensors</i>, heater.</li> <li>• Auxiliary 10 pin and 19-pin connector should be provided.</li> <li>• Necessary accessories for commutation between temperatures controller and desktop PC may be provided.</li> <li>• The software for controlling temperature may be provided.</li> <li>• Standard service kit and operating/technical manuals</li> </ul>
	<p><b>Additional Equipment accessories: May be quoted separately</b></p>

I.	<p><b>Vanadium Sample Can(s) of outer diameter ~ 6.00 mm for Neutron Diffraction Experiments compatible with above mentioned CRYOFURNACE system (Required quantity for one set: 10 numbers)</b></p> <p>Each assembly consists of one vanadium sample can electron beam welded to a titanium 6al-4v flange (caps not required).</p> <p>Vanadium cylindrical container of size ~6.00 mm outer diameter and ~ 50 mm height for neutron scattering experiments.</p> <p>The container should be usable in high temperature (up to 1000 K) environments. If not usable at high temperature, then appropriate metal may be quoted.</p>
II.	<p><b>Water Chiller of compatible cooling capacity may be quoted separately in case water cooled compressor is offered.</b></p>
III.	<p><b>Turbo Molecular vacuum pump along with read out system: (May be quoted separately)</b></p> <p>Standard make turbomolecular pump (pumping speed ~ 250 lit/sec) with vacuum level less than <math>10^{-7}</math> mbar along with readout system with measuring range <math>5 \times 10^{-9} - 1 \times 10^3</math> mbar may be quoted. The pump should have provision of isolation vacuum valve with NW (KF)-25 flange</p>
IV.	<p><b>Additional accessories (quote for each item separately)</b></p> <ol style="list-style-type: none"> <li>a. Quote for all essential spares (additional set) and optional items</li> <li>b. Spare adsorber Assembly for compressor, (&amp; any other critical parts)</li> <li>c. Complete set of 'O'-rings, fuses, etc.</li> <li>d. Spare heater kit</li> <li>e. Extra temperature sensors: 2 sets</li> <li>f. Desktop PC for controlling temperature by remote mode may be quoted separately</li> <li>g. Any essential spares not stated above</li> <li>h. Standard warranty for one / two years on parts and performance should be provided even after installation.</li> </ol>

## Part - B

### Sketch of neutron diffraction beam line: Top view

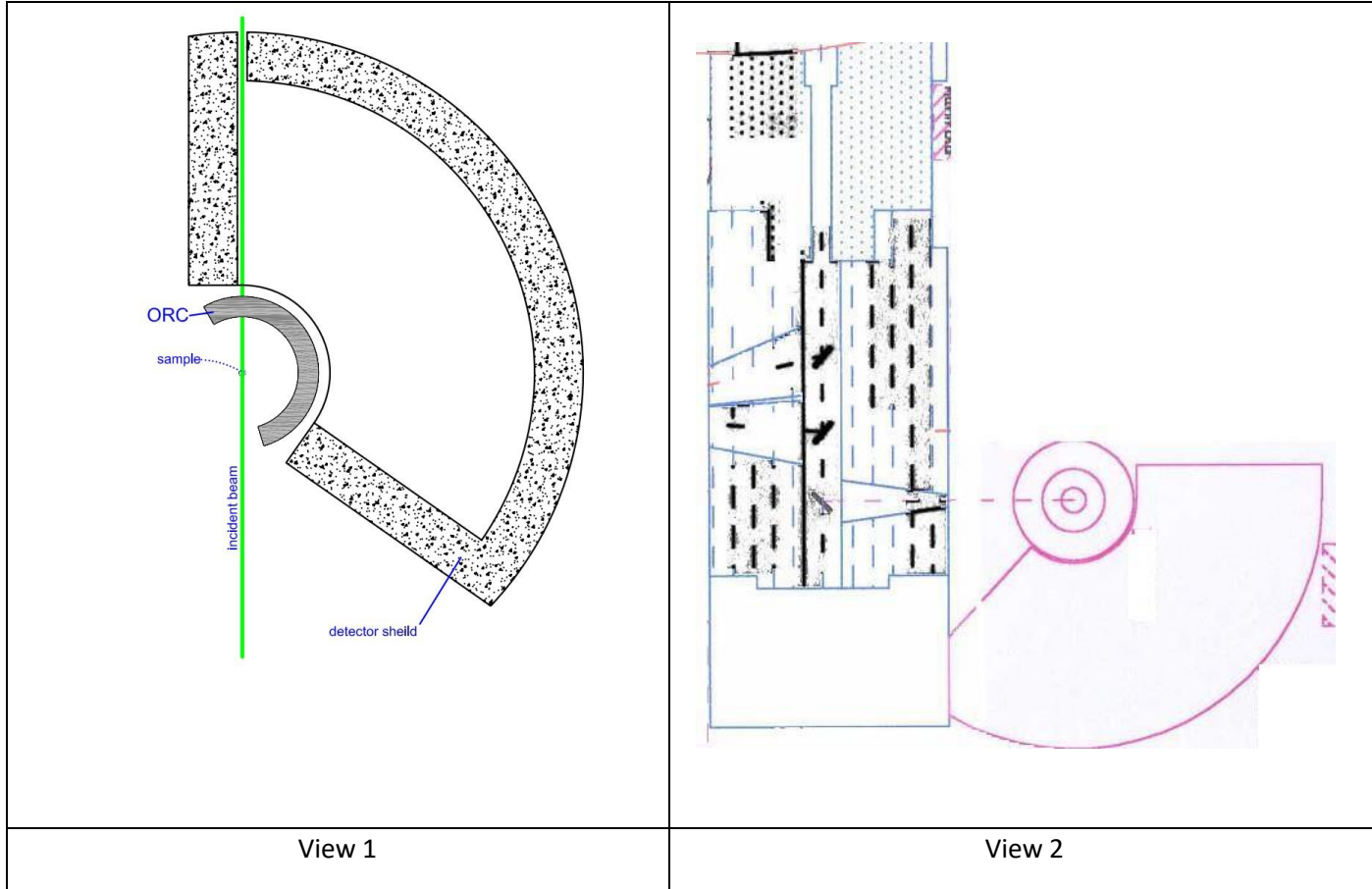


Fig. 1. Top view of diffractometer

### Sketch of neutron diffraction beam line: side view

Dimension for Installing  
CRYOFURNACE at sample table

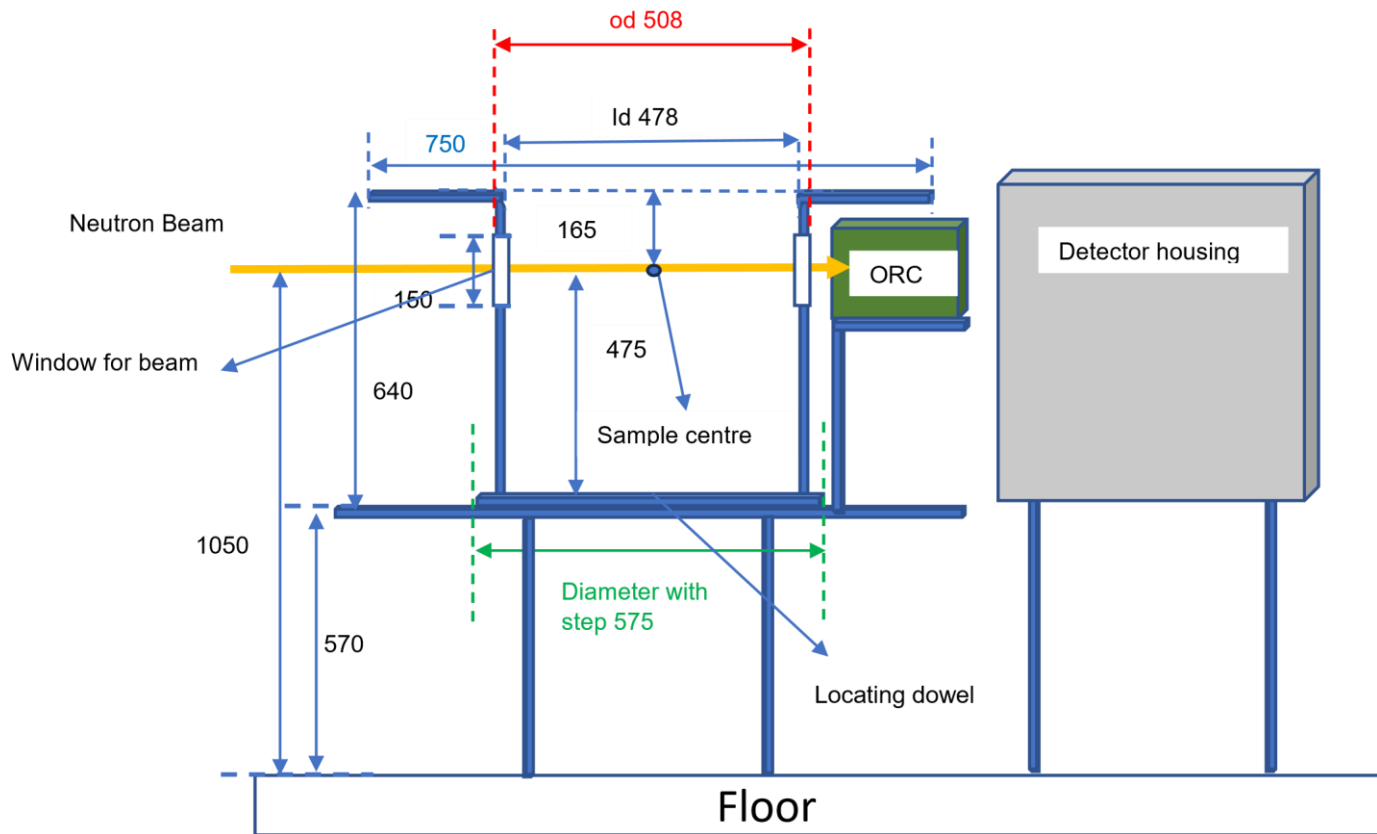


Fig. 2. Relevant dimensions of Diffractometer (dimension in mm), proposed CRYOFURNACE System should be designed with vanadium window in such a way that sample centre should be able to position at beam line centre

**Note:** Above dimensions are given to convey the maximum space available on instrument for CRYOFURNACE, so that for proper design for same can be worked. The Supplier should submit the design drawings to us and get our approval before finalising the design and fabrication. Supplier should keep a provision for any minor changes/corrections at that time.

## ANNEXURE-II

Sl. No.	General Terms and Conditions
1.	<p><b>Submission of Bid</b> : Tender in sealed cover duly superscribed "Tender No. .... dt.... due on .....for ..... item ..... "Complete with all details, otherwise tender may not be opened/considered. If you are interested to quote more than one items, you shall submit the quotations in sealed cover separately. (*) items as mentioned in the Tender No GLOBAL TENDER ENQUIRY (GTE) No. 01/2025-26 dt 13-FEB-2026 due on 12-MAR-2026 at 16:00 hrs must be quoted in two parts (Part A-Technical and Part B-Financial). The two parts show separate sealed covers.</p> <p><b>Bid Opening</b> : Bid will be opened on <u>12-MAR-2026 at 16:30 hrs.</u></p> <p>The sealed Offer should be send by Speed/Register Post Only (No private/local couriers are permitted) to the following address latest by 12<sup>th</sup> March 2026:-</p> <p>To The Administrative Officer, UGC-DAE CSR, Mumbai Centre, CFB, 246-C, 2<sup>nd</sup> Floor, BARC, Trombay, Mumbai – 400085</p> <p>Documents submitted by emails, messages or any other means apart from the above shall not be accepted and considered. Any clarifications regarding tender shall only be communicated through email <a href="mailto:pawankumar@barc.gov.in">pawankumar@barc.gov.in</a> and no other means of communications shall be accepted and considered. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof. Quotations received incomplete or beyond the stipulated time will be summarily rejected</p>
2.	Price should be quoted CIP Mumbai & Insurance up to Mumbai separately.
3.	The decision of the Centre shall be final in all the cases.
4.	The acceptance of tender, will rest with the Centre-Director, UGC-DAE CSR, Mumbai, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received without assignment of any reason.
5.	<p><b>Place of Delivery &amp; Installation:</b> The facility shall be installed at UGC-DAE Consortium for Scientific Research, Mumbai Centre, 246-C, CFB, BARC, Trombay, Mumbai, India.</p> <p>Delivery and Installation period must be mentioned. (if Installation required).</p>
6.	<b>Liquidated Damages:</b> The penalty for late delivery will be imposed @ 2% per month or a part there of, subject to a maximum of 10% of the total value of the order.
7.	The tender shall remain open for acceptance for a period of 90 days from the date of receipt.

8.	The decision of the Director, UGC-DAE CSR, Indore, shall be final in all the cases.
9.	Centre-Director, UGC-DAE CSR, Mumbai, shall not be liable for postal delays. The incomplete tenders or the tenders received after due date will not be considered.
10.	<b><u>Make, Model Number and Product Literature:</u></b> All relevant technical literature pertaining to items quoted with full and complete specifications (Drawing, if any), information about the products quoted,

	including brochures if any should accompany the quotation. All documents should be enclosed along with the Techno Commercial Bid. The model number, make and a printed literature of the product should be submitted in the techno-commercial Bid.
11.	<b><u>Custom Duty :</u></b> We are exempted from the custom duty. The custom duty exemption certificate is issued by Department of Scientific & Industrial Research (DSIR), Govt. of India, New Delhi. Customs duty exemption is in terms of Government Notifications No. 51/96-Customs dated 23.07.1996; No. 24/2007-Customs dated 01.03.2007; No. 43/2017-Customs dated 30.06.2017; No. 42/2022- Customs dated 13.07.2022; No. 07/2024- Customs dated 29.01.2024; No. 38/2024 – Customs dated 23.07.2024.
12.	<b><u>Rate:</u></b> The rate quoted should be submitted in the Financial Bid only. Justification or Price break up of quoted Rate quoted must be enclosed in the Financial Bid. GST must be quoted separately, if applicable. Special care should be taken to write the rates in figures as well as in words. No overwriting be done on the rates and units. No claim for any tax or duty, not stipulated in the tender will be admitted at any stage.
13.	<b><u>Client List:</u></b> The list of users specifically for the same model/make of the quoted item (not the list of general users) along with the complete name, address & contact numbers of the User Organizations/Persons may be submitted with the quotation along with the Performance Certificates from all/some of them. An extensive user list with the similar Cryofurnace to be provided with the Techno-Commercial bid document in support of the functionality of the equipment
14.	<b>Arbitration:</b> In case of Dispute or difference arising out of or in connection with the tender, the same shall be settled amicably by mutual consultation. If such resolution is not possible then the unresolved disputes or differences shall be referred to Arbitration as per the Indian Arbitration and conciliation Act, 1996. It shall be subject to Mumbai Jurisdiction only.
15.	<b>Warranty:</b> The warranty of the equipment should be for 24 months from the date of commissioning / installation.
16.	<b><u>Global Participation:</u></b> The bidder should fully comply with the OM no. F.No. 6/18/2019-PPD dated 23-07-2020 inserting rule 144 (xi) in GFR 2017 by the Ministry of Finance, Department of Expenditure, Public Procurement Division. (fill Annexure-I)
17.	<b><u>Terms of Payment:</u></b> Payment will be made through irrevocable Letter of Credit in two instalments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument.
18.	Bidder should have registered office and/or authorized Service Centre and/or authorized dealer in India.

19.	The Performance bank guarantee as per policy of the Government time to time, must be provided till the warranty period.
20.	The last date for submission of the tender documents is 12-03-2025 up to 16:00 hrs.
21.	<u>Pre-Dispatch Inspection:</u> The successful bidder should submit the Pre-Inspection Report / Manufacturer's Test Certificate with data sheet to UGC-DAE CSR Mumbai Centre before dispatch of the material at no extra cost to the purchaser (if required by UGC-DAE CSR Mumbai Centre).
22.	<u>Amendments/Corrigendum/Addendum:</u> At any time prior to the bid due date, UGC-DAE CSR, Mumbai Centre may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the CPP portal and/or Centre's website. Prospective bidders are advised to visit the Centre's website ( <a href="https://www.csr.res.in">https://www.csr.res.in</a> ) or <a href="http://www.eprocure.gov.in">www.eprocure.gov.in</a> .
23.	<u>Price Variation:</u> Quoted rate should be firm and Fixed in nature. Variations due to any reasons including Exchange Rate variations shall not accepted and considered under any circumstances.
24.	<u>Availability of Spares Parts and Components:</u> The most recent series/models incorporating the latest improvements in design of the equipment must be quoted. The vendor should issue an undertaking for the availability of spare parts for at least 10 (TEN) YEARS from the date of successful installation. All the essential and recommended spares parts of the equipment should be mentioned and quoted separately. Lifetime License Fee with free upgrades of Software beyond the Warranty period must be provided by the bidder and should be clearly mentioned in the Techno-Commercial bid.
25.	<u>Compliance Statement:</u> Equipment's point-by-point comparison & compliance statement in respect of Techno-Commercial specifications should be enclosed along with quotation as well as any other additional features of the equipment must be shown separately and the same should be enclosed along with the Techno-Commercial Bid. Comprehensive Compliance statement in line with each and every technical specification in the bid document must be provided. All the claims made by the bidders in Compliance documents must be duly supported by the original equipment manufacturer's Product Literature or Existing Verifiable documents. Any other claim will not be accepted and may lead to rejection of the bid. Minimum 2(Two) previous installations of the similar equipment globally should be provided for similar quoted measurement options in support of the functionality of the equipment. The tender should accompany a compliance Chart. It will be obligatory on the part of the tenderer to sign on each page of the offer.

26.

Other terms & Conditions:

- (I) Even after qualifying in the technical bid, the financial bid may be rejected if not found in order. Merely qualifying in the technical bid does not ensure acceptance of financial bid. UGCDAE CSR, shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest tender or any other tender. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof. Quotations received incomplete or beyond the stipulated time will be summarily rejected.
- (II) UGC-DAE CSR reserves the right to accept or reject any or all the tenders in part or whole or may cancel the tender at any stage of the tendering process at its sole discretion without assigning any reason whatsoever and decision of UGC-DAE CSR in this regard shall be final and binding on all the tenderers. No further correspondence in this regard shall entertained.
- (III) In case of any dispute, the decision of UGC-DAE Consortium for Scientific Research, Mumbai Centre authority shall be final
- (IV) The competent authority of UGC-DAE Consortium for Scientific Research, Mumbai Centre reserves the right to reject any or all of the tenders received without assigning any reason thereof.

## APPENDIX- A

To,  
Centre Director,  
UGC-DAE Consortium for Scientific Research,  
Mumbai Centre  
CFB, BARC, Trombay, Mumbai-400085.

WHEREAS M/s. \_\_\_\_\_ having its registered office at (hereinafter called the contractor), entered into an agreement (No. \_\_\_\_\_ dated \_\_\_\_\_) with the Centre Director, UGC-DAE Consortium for Scientific Research, c/o- Administrative Officer, Mumbai Centre, 246-C, CFB, BARC, India (hereinafter called "The Purchaser") for manufacture and supply of \_\_\_\_\_ as per Purchase Order No.

\_\_\_\_\_ (hereinafter called / the Contract) to the purchaser. AND  
WHEREAS under the terms and conditions of the contract final payment amounting to \_\_\_\_\_ Under this contract is to be made against supply of the aforesaid system and a Performance Bond in the form of Bank Guarantee furnished by the contractor/supplier. -

- i) For payment of \_\_\_\_\_ equivalent to 3% (Three percent) of the contract towards satisfactory performance of the \_\_\_\_\_ etc. Under the aforesaid contract (hereinafter called the Equipment) in case the said equipment does not give satisfactory performance for the period of 12 months from the date of installation and commissioning of the item.
- ii) In case the equipment starts malfunctioning during the period of 12 months from the date of installation and commissioning of the item the contractor will have to take liability for correcting the defect immediately or supply another equipment or repayment of the entire cost of the equipment along with interest @18%. NOW WE the (Bank) in consideration of the promises and payment of the final amount of INR under the contract to the contractor hereby agree and undertake to pay on demand and without any demur to the Centre Director UGC DAE Consortium for Scientific Research , Mumbai Centre, India on behalf of the contractor.
- iii) For compensatory any other loss or damage that may be suffered by the reasons of any unsatisfactory performance of the said equipment. AND WE hereby also agree that the decision of the said Director of the UGC-DAE Consortium for Scientific Research Mumbai Centre India as to whether the said equipment is giving satisfactory performance or not and as to the amount of loss or damage suffered by the Purchaser on account of unsatisfactory performance of the said equipment shall be final and binding on us. AND WE (Bank) hereby further agree that our liability hereunder shall not be discharged by virtue of any agreement between the Purchaser and the Contractor whether with or without knowledge and/or consent or by reason on the Purchaser showing any indulgence or forbearance to the contractor whether as to payment time performance or any other matter what so ever relating to the contract which but for this provision would amount to discharge of the surety under the Law. OUR guarantee shall in force until and unless a claim under the guarantee is lodged with us within reasonable time after 12 months from the date of installation and commissioning of the said item all right of the Purchaser under the guarantee shall be forfeited and we shall relieve and discharged for all our liabilities hereunder. OUR liability under this guarantee shall not be affected by any change in our consortium or the constitution of the contractor.

(Stamp & Signature)