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Government of West Bengal

# LADY BRABOURNE COLLEGE

P-1/2, SUHRAWARDY AVENUE ❖ KOLKATA - 17

No. 692/14A/TEN/LBe/19

Dated... 9.01.19

From : The Principal, Lady Brabourne College, Kolkata.

To :

Office of the Principal, Lady Brabourne College

P-1/2 Subrawardy Avenue, Kolkata – 700017

Memo No.:

### Tender Notice

Sealed Tenders are invited on behalf of the Principal, Lady Brabourne College, P-1/2 Suhrawardy Avenue, Kolkata-700017 from interested vendors for purchasing the following scientific instruments as per the specifications given below:

| Sl. No. | Product description  | Quantity |
|---------|--|----------|
| 1.      | <b>Sub-compact non-optical Helium Closed Cycle Refrigerator (10K) system with sample in vacuum</b> <ul style="list-style-type: none"><li>• Required temperature range: 10 K - 325 K</li><li>• Initial cool down time: Not more than 2 hours to 10 K</li><li>• Cooling power: 2 watts at 20 K at the cold head</li><li>• Air cooled compressor with a full charge of high-purity helium gas</li><li>• Two-stage cold head and appropriate flexlines</li><li>• Cold finger extension with 0.63" diameter copper sample mount extension should be there, 50 ohm control heater, and standard curve silicon diode temperature sensor should be installed</li><li>• 1.0" OD sub-compact highly polished aluminum radiation shield should be mounted on first stage;</li><li>• Charcoal getter assembly mounted on the radiation shield to improve cryostat vacuum;</li><li>• 1.25" OD sub-compact tubular vacuum shroud;</li><li>• Instrumentation skirt with one (1) 10-pin electrical feedthrough for heater and temperature sensors, one (1) 10-pin electrical feedthrough , two (2) blank feedthrough ports, evacuation valve and safety pressure relief valve;</li><li>• Sub-compact gold plated OFHC copper 8-pin resistivity sample holder with tapped hole for temperature sensor; at least 4 twisted pairs (=8 wires) of PhBr wires from the second 10-pin electrical feedthrough to the</li></ul> | 1        |

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No. 692/1AA/TEN/LBC/19

Dated 9.01.19

From : The Principal, Lady Brabourne College, Kolkata.

To :

|                                     |  |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
|-------------------------------------|--|----------------------------------|--------|-------------|------|--------------------------|-----|--------------|----------------|-------------------------------------|---------------------------|----------------------------|-------------|-------------------|-----------------------------|---|
|                                     | <p>resistivity sample holder has to be installed.</p> <ul style="list-style-type: none"><li>System should come with proper Refrigerator stand.</li></ul> <p><b>General terms:</b></p> <ul style="list-style-type: none"><li>The bidder should have a registered Office at Kolkata/nearby region for immediate service support.</li><li>Operation and service manual in English (electronic and hard copy) should be provided with the equipment.</li><li>Training: Free complete training to user members, onsite.</li><li>Enclose pre-installation guide for the details on electrical power, space and other accessories.</li><li>Bid should include all other essential auxiliary equipment and spares for its operation (please provide list with details).</li><li>A list of institutes (with details) in India where similar equipment has been sold or is under operation should be provided.</li></ul> |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| 2.                                  | <p><b>Temperature Controller compatible with Closed Cycle Cryogenic Refrigerator with</b></p> <ul style="list-style-type: none"><li>i) 2 or more input channels and heater with required connectors and controller cables</li><li>ii) Temperature stability approximately 0.01 K or better</li><li>iii) Computer controlled/Programmable with software</li></ul>   | 1                                |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| 3.                                  | <p><b>Turbo pumping System with</b></p> <table><tr><td>Pumping speed for N<sub>2</sub></td><td>35 l/s</td></tr><tr><td>Flange (in)</td><td>NW40</td></tr><tr><td>Cooling method, standard</td><td>Air</td></tr><tr><td>Backing Pump</td><td>Diaphragm Pump</td></tr><tr><td>Pumping speed backing pump at 50 Hz</td><td>1 - 1.5 m<sup>3</sup>/h</td></tr><tr><td>Mains requirement: voltage</td><td>100 - 240 V</td></tr><tr><td>Ultimate pressure</td><td>&lt; 1 · 10<sup>-7</sup> mbar</td></tr></table>   | Pumping speed for N <sub>2</sub> | 35 l/s | Flange (in) | NW40 | Cooling method, standard | Air | Backing Pump | Diaphragm Pump | Pumping speed backing pump at 50 Hz | 1 - 1.5 m <sup>3</sup> /h | Mains requirement: voltage | 100 - 240 V | Ultimate pressure | < 1 · 10 <sup>-7</sup> mbar | 1 |
| Pumping speed for N <sub>2</sub>    | 35 l/s   |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Flange (in)                         | NW40   |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Cooling method, standard            | Air  |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Backing Pump                        | Diaphragm Pump   |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Pumping speed backing pump at 50 Hz | 1 - 1.5 m <sup>3</sup> /h  |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Mains requirement: voltage          | 100 - 240 V  |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |
| Ultimate pressure                   | < 1 · 10 <sup>-7</sup> mbar  |                                  |        |             |      |                          |     |              |                |                                     |                           |                            |             |                   |                             |   |

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No. 692/14A/TEN/LBC/19

Dated 9.01.19

From : The Principal, Lady Brabourne College, Kolkata.

To :

|   |   |   |
|---|---|---|
| Fore line Pressure for Turbo Pump   | Higher than 20 mbar   |   |
| Rotation speed  | 90000 rpm   |   |
| Protection Category   | IP 54   |   |
| Automatic Venting Valve for Turbo Pump  | 1 Number  |   |
| Pressure Gauge  | 1 Number  |   |
| Flange  | 25 ISO-KF   |   |
| Pressure range  | 1000 mbar to $1 \times 10^{-9}$ mbar  |   |
| Pressure Max  | 10 bar  |   |
| Repeatability: $1 \cdot 10^{-8}$ – 100 mbar   | $\pm 5 \%$  |   |
| Sensor Cable  | 3 meter length  |   |
| Display unit for above gauge  |   |   |
| Angle Valve 25 ISO-KF   | 1 Number  |   |
| Splinter Shield 40 ISO-KF   |   |   |
| Tee Piece 25 ISO-KF   | 1 Number  |   |
| Clamping Ring 40 ISO –KF  | 1 Number  |   |
| Centering Ring 40 ISO-KF  | 1 Number  |   |
| Hose 25 ISO-KF, Length 1000 mm  | 1 Number  |   |
| Conical Reducer 40 ISO –KF to 25 ISO- KF, SS  | 1 Number  |   |
| Clamping Ring 25 ISO –KF  | 5 Numbers   |   |
| Centering Ring 25 ISO-KF  | 5 Numbers   |   |
| <b>After Sale Service Facility:</b> - In case of break down, Following repairs should be possible at site |   |   |
| Bearing replacement   |   |   |
| Rotor & Stator replacement  |   |   |
| Motor part replacement,   |   |   |
| Complete cleaning of the pump   |   |   |
| 4.  | <b>Keithley Precision AC+DC Low Noise Current Source</b><br>◆ DC Source Resolution:100fA.<br>◆ ~2 nA-100 mA Range (better lower range is preferred with matching higher range)<br>◆ AC current from 4 pA to 210 mA. | 1 |

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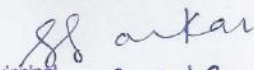
No. 692/14A/TEN/LB2/19

Dated 9.01.19

From : **The Principal, Lady Brabourne College, Kolkata.**

To :

|    |   |   |
|----|---|---|
|    | <ul style="list-style-type: none"> <li>◆ Build in current ARB waveform generator.</li> <li>◆ Frequency 1 mHz to 100KHz.</li> <li>◆ Voltage Compliance: ~30 V-100 V (Better lower range and steps are preferred)</li> <li>◆ Output Impedance: ~10<sup>14</sup> Ohms</li> <li>◆ Noise on (2 nA Range): ~400 fA p-p</li> <li>◆ Response Time: ~1-20 μs</li> <li>◆ Built in Guarded Sourcing for Faster Low Current:</li> <li>◆ Source Update: 0.5 ms</li> <li>◆ Automatic reversal of current,</li> <li>◆ Stability better than 10 ppm/hr</li> <li>◆ Communication/programming Port: GPIB /RS232 support SCPI commands, Digital I/O, Trigger link</li> <li>◆ Drivers/ software support: Start up Instrument control software, LabVIEW, LabWINDOWS, CVI, IVI, VB, VC/C++ Instrument Drivers should be provided.</li> </ul> <p><b>GPIB controller: To be used along with external standalone / Laptop Computer to control the current meter.</b></p> <p><b>Propriety specs</b><br/><b>Current ARB generator :fA to 100 mA.</b></p> |   |
| 5. | <p><b>Keithley Digital NanoVoltmeter</b></p> <ul style="list-style-type: none"> <li>◆ System should have capability of working together with external current source with alternating current pulses</li> <li>◆ 7(1/2) Digits Display Resolution</li> <li>◆ 1nV @ 10 mV range Sensitivity</li> <li>◆ Noise @ 0.1 sec response (lowest range) ~50 nV p-p</li> <li>◆ Noise @ 1 sec response ~13 nV p-p</li> <li>◆ Accuracy @1 mV/ 90 day ~40 ppm + 40 nV</li> <li>◆ Accuracy @10 V/24 hr ~2 ppm + 10 μV</li> <li>◆ Speed @ rated accuracy ~0.5 sec/rdg</li> <li>◆ Dual channels (Maximum range Ch1 100V and Ch2 10 V)</li> <li>◆ Should be compatible with an external current source to perform Resistance and Low voltage measurements using current reversal techniques</li> </ul>   | 1 |

  
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To:

|    |   |   |
|----|---|---|
|    | <ul style="list-style-type: none"><li>◆ Input Resistance should be &gt;10 GOHM (~ 10 MOHM for 100 V range).</li><li>◆ Ratio mode should be available.</li><li>◆ Temperature (T/C) mode should be available</li><li>◆ Line Synchronization 50 / 60 HZ</li><li>◆ RS232, GPIB (IEEE488) Interfaces supported and Support for SCPI commands.</li><li>◆ 1024 readings of Measurement Memory</li></ul> Math Functions like Rel, Min/Max/StdDev, and Peak-to-peak of stored reading, Limit test, % and $mX + b$ with user defined units displayed. |   |
| 6. | <b>Desktop</b> with<br>Intel <b>Core i5-7500</b> Processor / <b>4GB DDR4</b> RAM - upto 32GB RAM -DDR4 /<br>Onboard Graphics / Intel H110 Chipset / <b>1TB Hard</b> Disk Drive / <b>DOS / No</b><br><b>ODD / HP 18.5"</b> TFT Monitor / 1 x PCIe x16,(1) PCI Express x1 ,(1) PCI 2.1,<br>8 USB Port / TPM 1.2 / 180W APFC Chassis / VGA Port / DVI-D supports<br>dual display with Serial Port  | 1 |
| 7. | <b>Laser Printer (Black &amp; White)</b>  | 1 |

The sealed quotation must reach the undersigned not later than Monday, 21<sup>st</sup> January, 2019.  
Quotations received after the deadline will not be considered.

*S. Siuli Sarkar*  
9.1.19

Prof. Siuli Sarkar

Principal

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