TENDER DOCUMENT

For providing Equipments/Instruments for Establishment of Quality Control Laboratory at Regional Ayurveda Research Institute, Jhansi.

Tenders in sealed cover are invited under two-bid system from manufacturers and their authorized dealers/distributors for providing Equipments/Instruments for Laboratories of Regional Ayurveda Research Institute (RARI), Jhansi. The tender document containing basic information, technical and financial bids, terms & conditions and draft agreement can be purchased from RARI, Jhansi on any working day from 20/06/2019 to 20/07/2019 between 11.00 AM to 4.00 PM on payment of non-refundable charges of Rs. 500/- (Rupees Five Hundred only) or can be downloaded from CCRAS website “www.ccras.nic.in”. The interested manufacturers and their authorized dealers/distributors are required to submit the bids at the office of “The Assistant Director I/C, RARI, Jhansi, 284003, on or before 2.00 PM on 22/07/2019. The Tender Documents are non-transferable. Any future clarification and/or corrigendum(s) shall be communicated through Assistant Director I/C on the CCRAS website: www.ccras.nic.in.
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TENDER NOTICE

Tenders in sealed cover are invited under two-bid system from manufacturers and their authorized dealers/distributors for providing Equipments/Instruments for Laboratories of Regional Ayurveda Research Institute (RARI), Jhansi, U.P. - 284003.

1. Original
   To be submitted in sealed cover addressed to The Assistant Director in-charge, Regional Ayurveda Research Institute, Gwalior Road, Jhansi - 284003. Clearly super scribining on envelop “Bid for providing Equipments/Instruments for Laboratories”.

2. Tender Document Cost
   D.D. of Rs. 500/- (Non refundable) with quotation in favour of Regional Ayurveda Research Institute, Jhansi payable at Jhansi.

3. Obtain of tender documents
   a) Download from the [www.ccras.nic.in](http://www.ccras.nic.in)
   b) From institution during office hours
   c) CPP Portal.

4. Last date & place for submission
   22nd July 2019 till 02.00 p.m. drop in “Tender Box” placed at RARI, Gwalior Road, Jhansi.

5. Date & Time of tender opening
   22nd July 2019 at 3:00 p.m. at RARI Jhansi.

6. EMD Cost:
   2.5% of the base price quoted by tenderer

Assistant Director In-charge
TENDER FORM

Name of the firm/Agencies:

-----------------------------------

Full name, address and
contract number of Tenderer:

-----------------------------------

Amount of tender document:

D. D. No.-----------date: / /

EMD amount:

D. D. No.-----------date: / /

Name of the bank:

Consignee Officer/Institute:

Assistant Director In-charge, RARI, Jhansi.

GST No.:

PAN No. / Sale tax No.:

-----------------------------------

Authorized signatory name
and signature:

Seal:

Date:

Place:
TERMS AND CONDITIONS

(A) Information and Conditions relating to Submission of Bids

1. The tender document containing eligibility criteria, scope of work, terms & conditions and draft agreement can be purchased from RARI, Jhansi on any working day from 20/06/2019 to 20/07/2019 between 11.00 AM to 4.00 PM on payment of non-refundable charges of Rs. 500/- (Rupees Five Hundred only) or can be downloaded from CCRAS Head Quarter website www.ccras.nic.in. Those who have downloaded the tender document from website should enclose a Demand Draft/Pay Order for Rs. 500/- (Rupees five hundred only) in favour of “Regional Ayurveda Research Institute, Jhansi”, payable at Jhansi, not later than the date of 20/07/2019, along with their bid in the Cover- I containing “Technical Bid”.

2. The interested firms/suppliers are required to submit the Technical and Financial Bids separately in the format enclosed. The bids in sealed Cover- I containing “Technical Bid” and sealed Cover- II containing “Financial Bid” should be placed in a third sealed cover super scribed “Tender for Equipments/Instruments for establishment of QC Laboratory at RARI, Jhansi” should reach RARI, Jhansi on or before 02.00 PM on 22/07/2019. The Technical bids shall be opened on the same day i.e. 22/07/2019 at 03.00 PM at RARI, Jhansi in presence of the bidders or their authorized representatives who choose to remain present. The tenders received after due date & time will be rejected and no claim shall be entertained whatsoever may be the reason. The envelope containing technical Bid shall be opened first on the scheduled date and time. Financial bids of only technically qualified bidders shall be opened in presence of bidders/agencies or their authorized representatives.

3. All the duly filled/completed pages of the tender should be given serial/ page number on each page and signed by the owner of the firm or his Authorized signatory. In case the tenders are signed by the Authorized signatory, a copy of the power of attorney/authorization may be enclosed along with tender. A copy of the terms & conditions shall be signed on each page and submitted with the technical bid as token of acceptance of terms & conditions.

4. Tender with unsigned pages/incomplete/partial/part of tender if submitted will be rejected out rightly.

5. All entries in the tender form should be legible and filled clearly. If the space for furnishing information is insufficient, a separate sheet duly signed by the authorized signatory may be attached. No overwriting or cutting is permitted in the Technical Bid as well as in Financial Bid unless authenticated by full signature of bidder. Any omission in filling the columns of Financial Bid form (Schedule of Rates) shall debar a tender from being considered. Rates should be filled up carefully by the Tenderer. The corrections made by using fluid and overwriting will not be accepted and tender would be rejected.

6. The bidder shall pay the respective amount of Bid Security (EMD) as mentioned in Table-1 along with the Technical Bid by Demand Draft in favour of “RARI, Jhansi” drawn on any Nationalized Bank/ Scheduled Bank and payable at Jhansi and must be valid for (3) three months. Bids received without Earnest Money deposit (EMD) shall
stand rejected and thus shall not be considered for evaluation, etc. at any stage. The
original EMD will be put in cover-1 containing Technical bid.
a) The Public Sector Undertaking of the Central/State Govt. are exempted from
furnishing Earnest Money along with tender.
b) The firms Registered with DGS & D/SSI and any approved source of Centre/States
Govt. are not exempted from furnishing Earnest Money in so far as this institute is
concerned.

7. The bid security (EMD) without interest shall be returned to the unsuccessful bidders
after finalization of contract.

8. The successful bidders has to constitute a contract on Indian non judicial stamp
paper of Rs.1000/- (Rupees one thousand only) and also required to furnish the
performance security @ 10% of contract value in the form of Fixed Deposit or
Bank Guarantee, for a period of 36 months, of any nationalised bank in favour of
"Regional Ayurveda Research Institute, Jhansi" payable at Jhansi only. The EMD
deposited by successful bidder may be adjusted towards Security Deposit as demanded
above. If the successful bidder fails to furnish the full performance security or
difference amount between performance security and EMD within 15 (fifteen) days
after the issue of Letter of Award of Work, his/her bid security (EMD) shall be forfeited
unless time extension has been granted by RARI, Jhansi.

9. The EMD shall be forfeited if successful bidder fails to supply the goods/ equipment in
stipulated time or fails to comply with any of the terms & conditions of the contract or
fails to sign the contract.

10. The bid shall be valid and open for acceptance of the competent authority for a period
of 180 (one hundred eighty) days from the date of opening of the tenders and no request
for any variation in quoted rates and /withdrawal of tender on any ground by bidders
shall be entertained.

11. To assist in the analysis, evaluation and computation of the bids, the Competent
Authority, may ask bidders individually for clarification of their bids. The request for
clarification and the response shall be in writing but no change in the price or substance
of the bid offered shall be permitted.

12. After evaluation, the work shall be awarded normally to the Agency fulfilling all the
conditions and who has quoted the lowest rate as per financial bid after complying with
the all the Acts / provisions stated /referred to for adherence in the tender.

(B) Other Terms and Conditions of the Tender

1. All the rates should be mentioned in Indian national currency (INR) only.
2. Rates quoted should be inclusive of all applicable taxes, levies, freight, packing,
forwarding, postage insurance, delivery and installation at RARI, Jhansi.
3. In case of imported items / equipments the rates should be quoted in the light of
exemptions enjoyed by research institutions, otherwise BID will be considered as
invalid. The Institute (Council) is registered with Department of scientific & Industrial
Research (DSIR) for the purpose of availing custom duty exemption and the necessary
certificates/forms can be issued by the Institute.
4. Rates should be mentioned both in figures and in words. The offer should be typed or written in Ink Pen/Ball Pen without any correction. Offers in pencil will be cancelled. Telegraphic/Telex/Fax offers will not be considered and cancelled straightaway.

5. If the price of the contracted articles is/are controlled by the Government, in no circumstances the payment will be higher than the controlled rate.

6. Tender will be regarded as constituting an offer open to acceptance in whole or in part at the discretion of the competent authority of the institute for a period of 180 days (6 months) valid from the date of opening of the tender by the committee.

7. The time for the date of delivery/dispatch stipulated in supply order shall be deemed to be essence of the contract and if the supplier fails to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch in the supply order, liquidated damages may be deducted from the bill @ 0.5% per week subject to maximum of 10% of the value of the delayed goods or services under the contract. The competent authority of the institute may also cancel the supply. In such a case, bid security of the supplier shall stand forfeited.

8. In case the quality of goods supplied are not in conformity with the standard given in tender and as per the samples supplied or the supplies are found defective at any stage these goods shall immediately will be taken back by the supplier and will be replaced with the tender quality goods, without any delay. The competent authority reserves all rights to reject the goods if the same are not found in accordance with the required description/specifications and liquidated damages shall be charged.

9. In case the Tenderer to whom the supply order has been placed, fails to make supplies within the delivery schedule and the purchaser has to resort risk purchase, the purchaser (RARI, Jhansi) may recover from the tenderer the difference between the cost calculated on the basis of risk purchase price and that calculated on the basis of rates quoted by Tenderer. In case of repeated failure in supplying the order goods, the supply order may be cancelled and bid security deposit will be forfeited.

10. The name and quantity of the item needed is mentioned in Table 1 but it is approximate detail and is subject to increase/decrease at the discretion of the competent authority of RARI, Jhansi. The payment would be made for actual supply taken and no claim in this regard should be entertained.

11. Where the specifications are as per Tenderer’s range of product & Tenderer’s offer should mention that the item meets all specifications as per the tender enquiry and if there are improvements/deviations the same should be brought out on separate Letter Head of the firm. It would be discretion of the competent authority of the institute to accept or reject such deviations which are not in accordance with our required specifications as per given in Annexure - I.

12. It must be mentioned clearly whether Tenderer is a manufacturer/sole distributor/sole agent for the items for which he is quoting. Assemblers of Equipments are not eligible to participate in tender.

- **Manufacturer** must add a certificate of original equipment manufacturer (OEM) and item(s) manufactured by them as per range of products.

- **Sole Distributor** must add a certificate that they are the sole distributor of the Item for which they are quoting in this tender enquiry & item is/are their proprietary Item in India. The rate certificate is also required from the sole distributor that the rates quoted
are the same as they quote to other State/Central Govt./reputed Private Organisation and DGS&D rate for the similar item(s) and these are not higher than those quoted by them.

c. **Authorized agents** must add authority letter from their Manufacturer/ Principals on the letter head of the manufacturer/principals in proforma given in Annexure- II duly supported by an undertaking that they are quoting Rates on behalf of them. The authorization letter must give/mention the purpose for which it is allowed. The validity period of the authorization letter must be mentioned in the authority letter otherwise tender will be liable to rejection.

13. **Performance Certificate**: A Certificate about satisfactory performance & quality of after sales service of the equipment duly authenticated by the HOD/MS of the institution must be furnished as per Annexure III. Installation report/user list will not be considered as Performance Certificate.

14. The Tenderers should furnish a copy of GST registration number of State / U.T. and the date of such registration. Tenders not complying with this condition will be rejected.

15. The Tenderers should submit along with the tender, a photocopy of the Income Tax return of last two years otherwise tender may be ignored.

16. Full description & specifications, make/brand and name of the manufacturing firm must be clearly mentioned in the tender failing which the tender will not be considered. The Tenderer must also mention whether the goods are imported / indigenous. Descriptive literature /catalogues must be attached with the tender in original failing which tender may be ignored.

17. Any failure or omission to carryout of the provisions of this supply by the supplier shall not give rise to any claim by supplier and purchaser one against the other, if such failure or omission arise from an act of God which shall include all acts of natural calamities from civil strikes compliance with any status and or requisitions of the Government lockout and Strikes, riots, embargoes or from any political or other reasons beyond the suppliers control including war (whether declared or not) civil war or state of incarceration provided that notice of the occurrence of any event by either party to the other shall be within two weeks from the date of occurrence of such an event which could be attributed to force majeure.

18. **Payment terms**: No advance payment will be provided by the Institute.
   
i) 80% payment against certification of receipt of material in good condition, installation and due certification of the concerned authority and 
ii) Balance 20% after test run, within a month.

19. The Courts at Jhansi alone and no other Court will have the jurisdiction to try the matter, dispute or reference between the parties arising out of this tender/ supply Order/contract.

20. Tenderer will have to provide complete warranty with CMC for all equipments for 3 (three) years & AMC for 2 (two) years of these equipments after expiry of warranty period. Financial bid should be quoted accordingly. In this regard, the Tenderer shall submit an undertaking on Company’s letterhead that they will provide complete warranty with CMC for all equipments for 3 (three) years & AMC for next 2 (two) years of these equipments.

21. If at any time, any question, dispute or difference whatever shall arise between supplier and the institute (Purchaser) upon or in relation to or in connection with the agreement,
either of the parties may give to the other notice in writing of the existence of such a question, dispute or difference and the same shall be referred to two arbitrators one to be nominated by the institute (Purchaser) and the other to be nominated by the supplier. Such a notice of the existence of any question dispute or difference in connection with the agreement shall be served by either party within 60 days of the beginning of such dispute failing which all Rights and claims under this Agreement shall be deemed to have been forfeited and absolutely barred. Before proceeding with the reference the arbitrators shall appoint/nominate an umpire. In the event of the arbitrators not agreeing in their award the Umpire Appointed by them shall enter upon the reference and his award shall be binding on the Parties. The venue of the arbitration shall be at Jhansi, (Uttar Pradesh, India). The arbitrators/Umpire shall give reasoned award.

22. Tenderer should ensure and give an undertaking with technical bid that spare parts and consumables for these equipments/instruments will be available and rates will be reasonable for next 10 (ten) years.

23. Demonstrations and post-contract training: In case asked, Tenderer must personally give the demonstration of the equipments/instruments to the competent authority of the institute and in that case all the expenses will be borne by the supplier.

24. The Assistant Director In charge, RARI, Jhansi reserves the right to cancel/annul the tendering process at any stage without assigning any reason. No communications in this regard will be entertained.

25. After award of the work, training of equipments within the stipulated time should be done by the supplier at his cost. The time & place of training shall be stipulated by the purchaser. Training should be of 2 Scientists and 2 technicians of user department.

I / We hereby accept the terms and Conditions given in the tender.

________________________________________
(Signature & Stamp of the bidder)

Note- Please sign each page of document including terms & conditions & tender.
TECHNICAL BID
For Equipments/Instruments for Establishment of QC Laboratory at RARI, Jhansi.

(In separate sealed Cover-I super scribed as “Technical Bid”)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name &amp; Address of the manufacturer and their authorized dealers/distributors/Agency with phone number, email, name and telephone/mobile number of Authorized person</td>
<td></td>
</tr>
<tr>
<td>2. Specify whether your firm/company is a manufacturer/authorized dealer/distributor/Agency</td>
<td></td>
</tr>
<tr>
<td>3. Name, Address &amp; designation of the authorized person (Sole proprietor/partner/Director)</td>
<td></td>
</tr>
<tr>
<td>4. Attach copy of Income Tax Returns of last three years</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>5. Attach balance sheet (duly certified by Chartered Accountant) for last three (3) years (Annual minimum turnover should not be less than 50 lakhs)</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>6. PAN No. (Please attach photocopy)</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>7. GST Registration Number. (Please attach photocopy)</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>8. Acceptance of terms &amp; conditions attached (Yes/No). Please sign each page of terms and conditions in token of acceptance and submit as part of tender document with technical bid. [Otherwise your tender will be rejected.]</td>
<td>Yes/No</td>
</tr>
<tr>
<td>9. Power of Attorney/authorization for signing the bid</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>10. Submit an undertaking on Company’s letterhead that there is no vigilance case or court case pending against the firm/supplier and the company is/has not been black listed by Central Govt. Department/State Govt./Statutory bodies/Autonomous bodies/PSUs/Private sector.</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>11. Submit an undertaking on Company’s letterhead that the manufacturing firm will provide complete warranty with CMC for all equipments for 3 (three) years &amp; AMC for 2 (two) years after expiry of warranty of these equipments.</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>12. Furnish an undertaking on Company’s letterhead that they will supply spare parts/Consumables for next 10 years at reasonable price.</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td>13. Furnish an undertaking on Company’s letterhead indicating that they have not supplied the said equipment to any individual, Govt. or private institution at the rate lower than the quoted rate. [If Tenderer doesn’t fulfill this criterion, tender will be out rightly rejected.]</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td><strong>14.</strong> 05 (five) Satisfactory performance certificates from different users (Govt. institutions/PSUs)</td>
<td>Attached/Not attached</td>
</tr>
<tr>
<td><strong>15.</strong> Details of the bid security (EMD):</td>
<td></td>
</tr>
<tr>
<td>Demand Draft No:</td>
<td>Date:</td>
</tr>
<tr>
<td>Payable at -</td>
<td></td>
</tr>
<tr>
<td><strong>16.</strong> Detail of cost of Tender form (if downloaded from website)</td>
<td></td>
</tr>
<tr>
<td>Demand Draft No</td>
<td>Date:</td>
</tr>
<tr>
<td>Payable at -</td>
<td></td>
</tr>
<tr>
<td><strong>17.</strong> Technical details of the quoted items with reference to tender specifications mentioning clearly make &amp; model of the Equipment offered and attach a Catalogue/literature.</td>
<td>(Attach Technical details/specification sheet separately for each equipment)</td>
</tr>
</tbody>
</table>

**Date:**

**Authorized signatory name and signature**

**Place:**

**Seal**
FINANCIAL BID

For Equipments/Instruments for Establishment of QC Laboratory at RARI, Jhansi

(In sealed Cover-II super scribed “Financial Bid”)

To,

The Assistant Director I/C
RARI, Jhansi.

Dear Sir,

Our quoted rate for supplying the Equipment/Instruments at RARI, Jhansi will be as follows.

<table>
<thead>
<tr>
<th>Name of Equipment/Instrument</th>
<th>Unit Price (In Rs.) With 3 years warranty with CMC</th>
<th>AMC for 2 years after completion of three years CMC (In Rs.)</th>
<th>EMD (2.5% of the quoted base price of the instrument)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In figure In words</td>
<td>In figure In words</td>
<td></td>
</tr>
</tbody>
</table>

The unit cost should be mentioned as per Table-1. The above quote should include all applicable taxes and F.O.R. RARI, Jhansi.
List of Equipments/Instruments required for Establishment of QC Laboratory at RARI, Jhansi

Table 1

Table 1: Details of items and their tentative quantity

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of equipment/instrument required</th>
<th>Quantity required</th>
<th>Technical specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemistry Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Inductively coupled plasma spectrophotometer (ICP-OES)</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>2</td>
<td>High Performance Thin Layer Chromatography (HPTLC)</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>3</td>
<td>Particle Size Analyzer</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>4</td>
<td>UV-Vis spectrophotometer</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>5</td>
<td>Floor Model Powder X-Ray Diffractometer with accessories</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>6</td>
<td>Electronic balance</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>7</td>
<td>Tablet Disintegration Tester</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>8</td>
<td>Friability tester</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>9</td>
<td>Automatic Digital Polarimeter</td>
<td>01</td>
<td>Annexure I</td>
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<tr>
<td>10</td>
<td>Multiparameter pH meter</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>11</td>
<td>ABBE Refractometer</td>
<td>01</td>
<td>Annexure I</td>
</tr>
<tr>
<td>12</td>
<td>Digital Infrared Moisture Analyzer</td>
<td>01</td>
<td>Annexure I</td>
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<tr>
<td>13</td>
<td>Digital Muffle Furnace</td>
<td>01</td>
<td>Annexure I</td>
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<tr>
<td>14</td>
<td>Hot Air Oven</td>
<td>01</td>
<td>Annexure I</td>
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<tr>
<td>15</td>
<td>Portable Hot Plate Long Size</td>
<td>02</td>
<td>Annexure I</td>
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<tr>
<td>16</td>
<td>Laboratory Model Vacuum Oven</td>
<td>01</td>
<td>Annexure I</td>
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<tr>
<td>17</td>
<td>Digital Water Bath (Single Hole)</td>
<td>02</td>
<td>Annexure I</td>
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<td>18</td>
<td>Digital Water Bath (Six Hole)</td>
<td>03</td>
<td>Annexure I</td>
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<td>19</td>
<td>Heating Mantle</td>
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<td>Hardness Tester</td>
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<td>Digital Vernier Calliper</td>
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<td>Lab Stirrer</td>
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<td>Advanced UV Cabinet with long and short UV light</td>
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<td>24</td>
<td>Electronic Digital Balance</td>
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<td>25</td>
<td>Essential Oil Determination Apparatus</td>
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<td>26</td>
<td>Thermometer</td>
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<td>28</td>
<td>Digital Viscometer</td>
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<td>Annexure I</td>
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Technical Specifications

Technical Specifications of the Equipments/Instruments required for Establishment of QC Laboratory at RARI, Jhansi

Inductively Coupled Plasma Spectrophotometer (ICP-OES)

1. Technical Specifications

- An ICP spectrometer system, bench top model with compact size able to determine trace elements in diverse samples including proteins, peptides, small molecules, extended and nano materials. System should be able to determine major, minor and trace elements in single run measurement.

Optics:
True simultaneous thermostated polychromator optics using solid state detectors like SCD or CMOS or CCD detectors to cover a wavelength range of 165 - 800nm or better with a resolution of 0.008nm or better.

Mode of View:
Simultaneous/Synchronous Dual View by a horizontal/vertical torch to simultaneously perform determinations across the entire spectrum, both UV and Visible without any change over with all the wavelengths must be viewed in any view.

Gas Supply:
Supplier to provide free uninterrupted gas or with alternatives arrangement i.e., refillable sufficient capacity gas bank to maintain the polychromator optics inert for a period of at least 2 years.
Software based gas flow to ensure variable gas flow and not pre-fixed flow for all the gas flow to the Torch. All the gas flow must be operated by Mass Flow Controller / Volume Flow Controller and should display in ml/min or litres/min

For cold plasma tail management suitable technology like shear gas/CCI or any equivalent should be offered, it should be of ultrahigh pure nitrogen or argon and not air, so as not to mitigate measurement of the UV lines range of 165 to 200nm.

RF Output:
RF Output should be 1500W or better from 25-40 MHz for water cooled system/ solid state/maintenance free water cooled chiller / Air cooled.

Peristaltic Pump:
Five or more channel peristaltic pump with a auto-sampler valve/switching valve system or better system for reducing rinse delay and sample uptake time.

Sample Introduction Kit:
Sample Introduction Kit for aqueous mode which should include cross flow nebulizer, scott spray chamber, torch and tubes as well as for HF mode which should include burgener nebulizer, torch, cyclonic HF resistant spray chambers and tubings or better

Computer System:
The computer system should be supplied from the manufacturer with pre-loaded software and tested for all the parameters.
Software should be 21 CFR Para 11 compliant for internal audit and electronic signatures.
Computer compatible with the operating software having minimum following configuration should be supplied: Intel Core i7, 3.2 GHz, 64 bit, 8 MB Cache, 4 GB RAM, 500 GB SSD, DVD RW, 22" LED Monitor, Optical Mouse, Latest Licensed Window Version compatible with the instrument, MS Office 10 or latest official version with license.

The instrument software must have the features to store all the spectrum/image of every analysis digitally for non-destructive readout facility.

Connection port to be provided wherein in future the ICP Spectrometer can be connected with an Electro Thermal Vaporizer or Laser Ablation system.

**Accessories should include**

- a. High purity argon gas cylinder (10 nos) for plasma,
- b. High purity nitrogen gas cylinder (10 nos) for optics or 500 litre gas bank
- c. Double stage gas regulator with SS diaphragm (2 nos),
- d. Gas purification panel for argon, gas piping etc,
- e. Fume hood with 10 feet ducting, additional feet to be quoted separately
- f. Imported air compressor and water re-circulator if required,
- g. 10 KVA line conditioner with 30 minutes back up
- h. NIST traceable Multi-Elements Standards (Mg, K, Na, Mn, Fe, Co, Cu, Si, Pd, Pt, Ca, Au, Rh, Ru, Ti, Ta, Ni, Zn, Al, Ag, Hg, As, Pb, Cd 1000 ppm/100ml) with a shelf life of 3 years, should be provided.

**Additional Conditions:**

- a. Two years warranty
- b. System should be quoted with 5 year warranty inclusive of all parts.
- c. Full installation and commissioning of the instrument and it accessories, and if any other items are required to complete the full commissioning. For the same all pre-installation details to be provided. The institute will only provide power, water, table and AC room.
- d. Training of two of our scientist for a period of week after installation.

- Standards for should be included.
- Vendor should supply suitable Chiller re-circulator of appropriate capacity along with the system with warranty of minimum 5 years.
- Air compressor and purification panels for argon and nitrogen should be included. The vendor should take care of the installation of ducting from the gas cylinders to the instrument.
- Hydride generator kit should be included for hydride forming elements like As, Hg, Se.
- Suitable Fume exhaust system should be quoted.
- Microwave sample digester should be included (see specifications below).
2. Specifications for Microwave Sample Digester:
   - Vessel type: 16 vessels or better
   - Power: Unpulsed Microwave power from 0 to 1400 W using 1 to 2 magnetrons.
   - Built-in software with screen display for Temperature, weight, method search, power profile, and method set-up.
   - TFM type vessel (50 to 100 ml capacity) to be quoted which can withstand up to 40 bars working pressure and 240°C temperature.
   - Pressure and temperature sensor of immersing type/probe/contact free for one reference to be included in the offer and the same should be provided of control using transducers and gas bulb respectively with wireless transmission.
   - Built-in integrated cooling system for removal of gases and cooling of vessel without use of external chiller/thermostat in less than 20 minutes.
   - System should have in-built pressure venting safety features.
   - System should be quoted with 5 year warranty inclusive of all parts.

3. Pre Installation Requirement
   - Complete technical details of pre-installation requirements should be furnished along with the technical bid. RARI, Jhansi (UP) will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost. Preference will be given to whole system/ parts of same manufacturer.

4. Manual and Software
   - Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system. Original Software along with other qualitative and quantitative software compactable to window 8 or higher system.

5. Computer & Printer
   - Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5 TB or higher), wireless mouse and keyboard.
   - Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
• Separate table for computer or Data processing unit with rack case should be provided.
• Original Antivirus software should be provided alongwith computer system.

6. Warranty & Spares
• 5 Years comprehensive warranty including consumables and lamps etc. after successful installation/commissioning.
• The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system.
• Tool Kit to play with system (1 No.), Calibration kits (2 No.), lamps (2 No.), Syringes (2 No.) and any other spares minimum one unit should be provided.

7. UPS /Power requirements
• Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.

8. Training
• Necessary on-site/ off-site training to scientific staffs on Operation, Maintenance, Calibration of the offered system and for minimum 3 working days after the installation of the system. This is an integral part of the acceptance criteria of the system by the user.
Technical Specification for High Performance Thin Layer Chromatograph (HPTLC)

Advance model of HPTLC with applicator, scanner, video documentation & accessories. System should as per CE/GMP/QQ/IQ etc protocols. The HPTLC system should comprise of following modules with desired specifications.

1. **HPTLC Applicator with Software**
   - Spray-on-technique Stand alone or System Manager Control accurate application of the samples as dot or as line or as layer.
   - HPTLC plates or foils up to 20 x 20 cm with all types of dosing syringes

2. **TLC / HPTLC SCANNER (with Densitometer) with Data Evaluation**
   - Suitable software controlled scanner
   - Densitometer for automatic spectrum scanning for identity check as well as purity check.
   - Automatic quantitative measurement by absorbance & fluorescence.
   - All TLC / HPTLC plate sizes acceptable; with three lamps (Deuterium, Halogen and Mercury)
   - Scan speed 100 mm/sec @ 25μm resolution
   - Wavelength range 190-900 nm
   - Data sampling rate – 4000 / sec
   - Special optics Macro / Micro for HPTLC measurements
   - Spectrum scan speed 100 nm / sec; Max 999 spectra / plate
   - Visible pilot slit image / scan compartment illumination with UV to check sample alignment with scan beam; D2, Hg, W band width selectable 5 or 20 nm.
   - Latest windows based software.

3. **Chromatogram Development Chambers**
   - All glass, moulded, one piece, bubble free chamber with lid (SS leak - proof ), bottom divided into two halves.
   - Chamber ground finish on top for good seal and at bottom for perfect level.
   - Heavy chamber to minimize effects of vibration.
   - One-piece joint less chambers to prevent leakage.
   - For appropriate sizes for 20x20 cm, 20x10 cm and 10x10 cm plates.

4. **Professional TLC / HPTLC Photo-documentation System**
   - Comprising of Illumination Unit, Industrial Camera and HPTLC specific software.
• Illumination unit with 254 and 366 nm UV-Visible light
• Uniform illumination to process the image.

5. Software
• Single software to link, control, integrate, manage the individual instruments for application, development, scanning and image documentation.
• Automatic image optimization.
• Automatic exposure time to suit brightest zone within dynamic range of CCD. Full function annotation.
• Rf scale.
• Auto image capture at 254nm or 366nm and white light. Raw data inaccessible to user.
• Spot application tool to detect faintest fractions. High speed data transfer 1 sec./image.
• Control by System Manager options

6. Pre Installation Requirement
• Complete technical details of pre-installation requirements should be furnished along with the technical bid. RARI, Jhansi (UP) will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost. Preference will be given to whole system/parts of same manufacturer.

7. Manual and Software
• Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system. Original Software along with other qualitative and quantitative software compatible to window 8 or higher system.

8. Computer & Printer
• Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5TB or higher), wireless mouse and keyboard.
Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.

- Original Antivirus software should be provided alongwith computer system.

9. Warranty & Spares
- 5 Years comprehensive warranty including consumables and lamps etc. after successful installation/commissioning.
- The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system.
- Calibration kits (2 No.), lamps (2 No.), Syringes (5 No. each Size) and any other spares minimum one unit should be provided.
- HPTLC Plates: Silica Gel60 F254: 5Pkts should be supplied with the system.

10. UPS /Power requirements
- Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.

11. Training
- Necessary on-site/off-site training to scientific staffs on Operation, Maintenance, Calibration of the offered system and for minimum 3 working days after the installation of the system. This is an integral part of the acceptance criteria of the system by the user.

12. Future Scope
- System should be upgradable to MS Interface, price of all accessories with prices to be quoted (attach the brochure, upgrade should be possible with existing system).
Technical Specifications for Particle Size Analyzer

Compact sized particle size analyzer with dry and liquid assembly is required for qualitative and quantitative analysis of herbal and mineral drugs including powders, oils and liquids. System should as per CE/GMP/QQ/IQ protocols. The system should comprise of following modules with desired specifications.

1. Technical Specifications

   Dispersion: Liquid & Powder

   Measuring Range: 5 nm – 2000 µm or better

   Laser Power: 3 mW nominal or better

   Typical Analysis Time: 10 to 140 seconds or better.

   Repeatability: < 2 & Accuracy: 3%, or better.

   Detection System: Fixed photo-electric detectors or Laser Based or better.

   Data Handling: Volume, Number and Area distributions as well as percentile and other summary data. Databases to ensure compatibility with external statistical software applications. Data integrity may be ensured using FDA 21 CFR Part 11.
UV-Vis Spectrophotometer

1. PC based UV-Vis Spectrophotometer with the following specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tr>
<td>Photometric System</td>
<td>Double beam optics</td>
</tr>
<tr>
<td>Photometric Accuracy</td>
<td>± 0.004 Abs. or better at 0.5 - 1.0 Abs &amp; ± 0.002 Abs. or better at 0 - 0.5Abs</td>
</tr>
<tr>
<td>Wavelength Range</td>
<td>190 to 900 nm or more</td>
</tr>
<tr>
<td>Wavelength Accuracy</td>
<td>± 0.3 nm or better</td>
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<tr>
<td>Wavelength Repeatability</td>
<td>± 0.1 nm or better</td>
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<tr>
<td>Photometric range</td>
<td>Up to 3 Abs or better Transmittance, Reflectance 0 to 99.9% or better</td>
</tr>
<tr>
<td>Spectral Bandwidth</td>
<td>Selectable from 0.1 nm to 5 nm or better</td>
</tr>
<tr>
<td>Wavelength Scan Speed</td>
<td>Up to 2500 nm/min or better</td>
</tr>
<tr>
<td>Stray light</td>
<td>0.05% or less</td>
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<tr>
<td>Detector</td>
<td>Photomultiplier or silicon photodiode</td>
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<tr>
<td>Light source</td>
<td>Tungsten and Deuterium lamp</td>
</tr>
<tr>
<td>Quartz Cuvettes</td>
<td>1 - 3 ml (2 No. each) capacity 10 mm path length</td>
</tr>
</tbody>
</table>

2. Manual and Software

- Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system. Original UV-visible Software along with other qualitative and quantitative software compactable to window 8 or higher system.

3. Computer & Printer

- Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5TB or higher), wireless mouse and keyboard.
- Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
- Original Antivirus software should be provided along with computer system.

4. Warranty & Spares
• 5 Years comprehensive warranty including consumables and lamps etc. after successful installation/commissioning.
• The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system.
• Calibration kits (2 No.), lamps (2 No.) and any other spares minimum one unit should be provided.

5. UPS /Power requirements
• Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.

6. Training
• Necessary on-site/off-site training to scientific staffs on Operation, Maintenance, Calibration of the offered system and for minimum 5 working days after the installation of the system. This is an integral part of the acceptance criteria of the system by the user.

7. Future Scope
• System should be upgradable to Florescence & Raman, price of all accessories with prices to be quoted. (attach the brochure, upgrade should be possible with existing detector).
1. Basic System configuration

The X-ray Diffractometer to be supplied should be primarily designed for performing X-ray diffraction studies on various samples (powder, thin films, polymer blocks etc.) and grazing incident diffraction (GID) for polycrystalline thin film. The offered XRD system must be upgradable in future at site for various other applications like Texture and Residual Stress, SAXS, Reflectometry etc. It has to be an integrated system inclusive of X-Ray source, X-Ray Generator, Primary & Secondary optics, Goniometer, Sample stage and detector assembled in suitable radiation shielded cabinet.

2. The detailed specifications of individual modules must comply with following requirements.
   - Voltage: 20-50 kV or better with an increment of 1 kV or better controllable though external PC.
   - Max. Current: 5-60 mA or better with an increment of 1 mA controllable through external PC.
   - Power: Max power should not be less than 3 kW.
   - Output stability: < 0.005% for high voltage and current at 10% variation of mains.
   - Input power should be single phase 220/230V ±10%, 50-60 Hz.

3. X-ray tube
   - Ceramic X-ray Tube, minimum 3.0 kW Rating, Long Fine Focus (one line and one point focus); Cu Target.
   - Additionally, one Molybdenum X-Ray tube, minimum 3.0 kW rating.
   - Tube voltage: Minimum 20-50 kV or better.
   - Tube current: Minimum 5-60 mA or better.
   - Tube Mount: Easy switching from line focus to point focus without disconnecting any water hose or High Voltage Cable and opening the tube housing.

4. Goniometer
High-resolution vertical goniometer with theta-theta configurations which can be used for Bragg-Brentano reflection geometry, transmission geometry and parallel beam geometry.

- 2θ Angular range: -10°<2θ<160° or higher range
- Angle positioning: Stepper motors with optical encoders for optimum scanning speed and positioning precision.
- Sample stage in horizontal position
- Scan speed: 0.001° / minute to 10°/min or better
- Angular reproducibility ±0.0002° 2θ or better.
- Minimum step size: 0.0001° 2θ or lower
- Diameter: minimum diameter of 500 mm.
- Peak position accuracy should be ±0.01° for entire 2θ angular range and to be verified at site against a NIST Standard
- Scan mode: θs/θd coupled and θs/θd decoupled, The Goniometer should be with independent θ and 2θ drives for accurate positioning. It should perform Continuous scan, Step scan, Fast scan, Rocking curve.

5. Optics

- Necessary computer controlled variable divergence slit.
- Necessary computer controlled Anti scatter arrangement & suitable Soller Slits for use with parallel beam geometry.
- Variable slits, filters and optics systems to be included in the system for all the applications.
- Fully Automated Motorized Optics change from (Bragg-Brentano to Parallel Beam geometry and vice versa with variable slits and parabolic curved multilayer mirror in Primary side and variable slit and Equatorial Soller Slit in Secondary side.
- Alignment free (automated)
- Proper K-beta filtering
- Motorized Anti Scatter Slit to improve signal to back ground ratio.
- Polycapillary optic in the primary side for Texture and Residual Stress application to be quoted as Optional item.

6. Sample stage

- Rotating/spinning sample stage
• Rotation speed should be selectable by system software
• Necessary sample holder (Steel/Aluminum / PMMA type) – 15 Nos.
• Si low/zero back ground sample holder with flat single crystal- 3 nos.
• Transmission Sample Cup
• Foils for use during sample analysis in transmission mode
• Easy mounting of different sample stages without major alignment will be highly preferred
• Sample stage for Texture and Residual Stress measurement (Optional) – Eulerian Cradle stage with motorized chi, phi and Z movement. X and Y movement should be provided

7. Detector
• 1-Dimensional ultrafast detector suitable for Cu, Co, Mo, Ag, Cr x-ray radiation. Necessary switching over to 0D 1D and 2D mode. The detector must have built-in energy discriminator to take care of sample fluorescence while working with Copper x-ray tube. Vendor should clearly mention the energy resolution of the detector in their quotation. The detector must be air cooled and should not use any liquid or gas in its operation.

8. Calibration Standard
• NIST Standards (SB-15 Si and Si/Corundum) should be supplied along with main equipment. Performance on peak position and FWHM as per the NIST certificate to be demonstrated at the time of installation and commission.

9. Electronics
• The electronics should have an integrated shutter control and capable of monitoring and controlling all diffractometer functions such as angles, counts, slits, generator safety, etc.

10. Software
• The software should be capable of simultaneous Diffractometer control, data collection and analysis, peak search, search-match and elaborate pattern treatment such as data smoothing, background subtraction, Ka2 stripping, Crystallinity determination
• Instrument monitoring maintenance tool software. Ten-year Free updates to be provided.
11. Chiller Unit

- Suitable closed loop chiller to cool the X-ray sources and Generator to be quoted. The Chiller unit must have in-built safety mechanism against water pressure/flow rate & water temperature variation. The water chiller must have external display for water temperature (inlet and outlet), water flow rate. Necessary alarms to be built-in to the chiller in case of there is any deviation from the set temperature and water flow rate as an additional protection mechanism of the XRD system from any major failure. The chiller quoted must be manufactured in India by reputed Indian manufacturer having their service facility in southern part of India/Kerala. Imported Chiller will be considered only in case authorized after sales service support is available directly by the OEM in Southern part of India.

12. Safety

- As per the highest international standards and regulations, fully X-ray protected enclosure safety system is essential. X-ray protected enclosure as per international safety norms and CE certified, EC declaration of conformity certificates is essential and should be provided along with system.
- The X-ray leak rate should be < 1 $\mu$Sv/hr which should be measured and certified by the supplier.
- Leak current breaker
- Shutter malfunction detection
- Any other safety requirement which supplier feels essential & necessary and not covered above may be included in the scope of supply.
- The quoted XRD system must be approved by AERB, Mumbai.

13. Performance Guarantee

- System should be guaranteed for auto alignment accuracy. The accuracy of each peak position should be equal or better than $\pm 0.01^\circ$ (2Theta) over the
whole angular range based on the internationally accepted Standard Reference Material by NIST.

14. Computer & Printer
- Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, HDD-1TB or higher, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5tb), wireless mouse and keyboard.
- Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
- Separate table for computer or Data processing unit with rack case should be provided.
- Original Antivirus software should be provided alongwith computer system.

15. Manual
- Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system.

16. Installation and Commissioning
- The XRD machine to be installed, tested and commissioned by the manufacturer's qualified engineer and performance must be tested by the engineer on supplied standard.

17. Warranty & Spares
- 5 Years comprehensive warranty/CMC including consumables and x-ray tube after successful installation/commissioning.
- The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the XRD system.

18. Essential Spares and Consumables
- Tool kit with all mechanical tools and accessories for the system installation and regular operation should be provided. Necessary spares and consumables required for smooth and efficient operation of X-ray Generator and goniometer for 5 years should be listed separately as optional item.

19. Training
• Necessary training to scientific staffs on Operation, Maintenance, Calibration of the offered system and X-ray diffraction studies will have to be provided for minimum 5 working days after the installation of the system. This is an integral part of the acceptance criteria of the XRD system by the user.

20. Additional Software
• Please quote separately for original and latest release ICDD PDF2 data base.
• A comprehensive and vendor integrated advanced GUI crystallographic Software should be offered separately for powder patter analysis, Rietveld refinement, Structure refinement and Phase Quantification with Proper Training Crystallographic and Rietveld based quantitative phase analysis software which should cover:
  ▪ Qualitative analysis
  ▪ Phase quantification
  ▪ Peak/Line Profile analysis
  ▪ Lattice parameter determination
  ▪ Crystallite size determination
  ▪ Percentage of Crystallinity determination
  ▪ Phase quantification based on Rietveld method
  ▪ Unit Cell determination Space Group determination
  ▪ Electron density Fourier Mapping
  ▪ Ab-initio Structure determination Method

All software licenses must be in the name of the RARI, Jhansi.

21. UPS /Power requirements
Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.
ELECTRONIC BALANCE

**Technical Specifications:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>220 g approx</td>
</tr>
<tr>
<td>Readability</td>
<td>0.1 mg or better</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.1 mg or better</td>
</tr>
<tr>
<td>Pan Size</td>
<td>90 mm approx</td>
</tr>
<tr>
<td>Dimensions (D×W×H)</td>
<td>350 mm x 200 mm x 300 mm approx.</td>
</tr>
<tr>
<td>Display</td>
<td>Touch screen display with Tare option</td>
</tr>
<tr>
<td>Power Supply</td>
<td>The balance shall work at 230V, 50Hz AC power.</td>
</tr>
<tr>
<td></td>
<td>If it requires DC power, the supplier shall supply AC adaptor along with the balance.</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>5 to 50° C</td>
</tr>
<tr>
<td>Interface</td>
<td>Mini USB</td>
</tr>
<tr>
<td>Draft Shield</td>
<td>Rectangular all glass draft shield opening from three sides, removable glass for proper cleaning.</td>
</tr>
<tr>
<td>Level Indicator</td>
<td>Level indication on front display</td>
</tr>
<tr>
<td>Calibration</td>
<td>Calibration shall be Fully Automatic (ISO CAL - Time and temperature controlled calibration), internal motorized calibration, External calibration.</td>
</tr>
</tbody>
</table>

1. **General Condition:**
   - The Model shall have type approval Certificate for legal compliance.
   - Analytical draft shield chamber with doors that glide open smoothly for fatigue free weighing. All shall be capable of individually cleaned or exchanged.
   - Chemically resistant finish of the housing for the easiest cleaning.

2. **Additional Facility/requirements:**
   - Balance shall be supplied with a Density Determination kit suitable to be used in the Electronic Balance.
   - The Balance shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

3. **Manual & Spare**
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits and Calibrated weighing box) etc should be provided.

4. **Warranty and Maintenance**
   - 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
Tablet Disintegration

1. Technical Specification
   - Compact size, advanced microcontroller based tablet disintegration tester is required with PC compatibility and GLP/USP/IP compliance.
   - Programmable Temperature & Time, Moulded, Clear water bath for better visibility. Capability for dual buffer disintegration test, low water level, and other error detection is required.
   - Operating temperature (water) up to 50°C or more with dual buffer disintegration test is needed.
   - System should be supplied with all accessories required for smooth handling.

2. General Condition:
   - The Model shall have type approval Certificate for legal compliance.
   - Chemically resistant finish of the housing for the easiest cleaning.

3. Additional Facility/requirements:
   - The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

4. Manual & Spare
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.

5. Warranty and Maintenance
   - 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
Friability Tester

1. Technical Specification
   - Friability tester with two drums which complies with USP, BP & IP etc Protocols.
   - System offers both RPM counts & Time count mode.
   - System has a unique feature of Automatic Discharge of Tablets into individual sample Tray after completion each cycle.
   - System supports Friability Drums as well as Abrasion Drums.
   - If possible, built-in provision for Tilting of Drums as per USP recommendations.
   - Built-in provision for calculation of Friability i.e. Percentage weight loss.
   - Complete GLP compliant report of Tablet measurements as well as Calibration Report.
   - Connectivity to Balance, Printer & PC as well or better options.

2. General Condition:
   - The Model shall have type approval Certificate for legal compliance.
   - Chemically resistant finish of the housing for the easiest cleaning.

3. Additional Facility/requirements:
   - The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

4. Manual & Spare
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.

5. Warranty and Maintenance
   - 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
Automatic Digital Polarimeter

1. Technical specifications
   - Measuring Mode: Optical Rotation, Specific Rotation, Concentration, Sugar Scale, Z(IS).
   - Accuracy: ±0.004 deg Arc or better.
   - Repeatability: 0.002 deg Arc optical rotation
   - Resolution: 0.001 deg
   - Measuring Range ±89.9 deg Arc Optical Rotation
   - Optical Wave length: 589 nm, 546 nm as Standard and others wavelength upgrade facility should be available
   - Prism: Glan Thompson Calcite prism with life time Guarantee Temperature probe Range Inbuilt Temp. probe Range 10 to 100 Deg C
   - Temperature probe Accuracy: ±0.1 deg C
   - Measurement Time: 5 measurements in less than 25 sec Avg.
   - Light Source: Tungsten Halogen Lamp
   - Sample Chamber: Accept sample tube upto 200 mm
   - Data Storage: System must be Inbuilt data storage facility at least 30 GB
   - Communication Interface: 3-USB Ports, 2-Rs 232 Ports, Ethernet Port for Network Connection
   - Automatic Sensibility Control Measures samples with transmittance as low as 0.01% (upto O.D. 4.0).
   - Input Power: 100-240V, 50/60 Hz
   - System should be advanced model for research and QC purpose in herbal drug industry with GLP/USP/IP compliance. PC compatibility (optional).

2. General Condition:
   - The Model shall have type approval Certificate for legal compliance.
   - Chemically resistant finish of the housing for the easiest cleaning.

3. Additional Facility/requirements:
   - The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

4. Manual & Spare
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.

5. Warranty and Maintenance
   - 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
Multiparameter pH Meter

1. Technical Specification
   - The easy-to-use, microprocessor-based multifunctional pH-meter measures pH/EC/TDS etc. as per the compliance of GLP/IP/USP etc.
   - Automatic temperature compensation (ATC) to maintain reading accuracy even with fluctuating temperatures.
   - 5 pointer digital pH meter with 0.01 accuracy. pH range: 1-14; ±0.01 or better; resolution: 0.01; Temperature range: 0-50 °C or better with inbuilt PT-100 sensor.
   - Computer interface will be preferred.
   - Instrument should be supplied with additional electrodes (pH/EC/TDS) and calibration buffers.

2. General Condition:
   - The Model shall have type approval Certificate for legal compliance.
   - Chemically resistant finish of the housing for the easiest cleaning.

3. Additional Facility/requirements:
   - The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

4. Manual & Spare
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.

5. Warranty and Maintenance
   - 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
ABBE Refractometer

- Digital ABBE refractometer to measurement refractive index of liquid, viscous and solid samples, regardless of their turbidity, viscosity, transparency and absorption.
- Measurement range: nD 1.3000-1.7000 (0–95 % Brix) or better.
- Measuring Accuracy: nD ±0.0002 (±0.1 % Brix) or better.
- Resolution: nD 0.0001 (0.1 %Brix) or better.
- Digital Temperature Range (Min 0.1°C): 0.-50°C or better.
- Temperature Resolution: 0.1°C.
- Measurement Prism: Optical glass or better.
- Light Source: LED or better.
- Wavelength: 589 nm.
- Interface: Serial interfaces for PC or printer.
- Power Supply: 220V / 50Hz.
- Electronic evaluation of the measured data.
- Integrated thermometer.
- Automatic temperature compensation for the Brix scale can be optionally activated.
- Connections for temperature control with a circulating thermostat.
- Robust housing and easy handling.
1. Technical Specification

- Digital Infrared Moisture Analyser having interface for connecting to a computer / printer. Compliance with GMP/FDA/HACCP/USP/IP etc regulations.
- Working range: 0.01 to 99.9%
- Measurement method: By infrared heat drying or better
- Display mode for result: % moistures, % dry weight
- Minimum display in weighing: 0.001g or more better
- Maximum sample capacity: 120g or better
- Weighing pan diameter: 100-130 mm or better
- Heat source Quartz heater
- Accuracy: 0.01% or better
- Temperature range 30-180 °C or better
- Operational range: 5-50 °C, 90% RH maximum or better
- Built in calibration weight: Yes
- Power: 220v/50Hz
- Preferable Accessories: Sample pan 2 nos. Spoon, spatula, Printer set with printer paper (10 roll).
1. Technical Specifications

- CE/GMP/ISO certified, Compact in size, corrosion resistant, touch screen temperature controller Digital Muffle furnace.
- Internal Size / Holding Capacity: 40 cm (L/W) x 20 cm (L/W) 15 cm (H) or better
- Design temperature: 1000°C or better
- Operating temperature: 900°C or better
- Temperature accuracy: ±2°C or better
- Heating rate: ≤40°C/min
- Temperature control device: PID/ PLC control system or better
- Furnace door: Power cutting off when furnace door open
- Thermocouple: B type (Pt-Rh to Pt-Rh) with 99.7% purity Alumina tube or better
- Heating element: MoSi₂ heating elements or better
- Power Supply: 100-240V,50/60 Hz or Double Phase AC type
- USP port and pot for attachment to computer or printer (optional).
- Accessory: Electric codes (1 Pc), crucible (10 pcs) crucible writing pencil (1 Pc) and extra fuse (1 Pc).
1. Technical Specifications

- Digital Temperature Controller, Standard size, anticorrosion property, CE/GMP/ISI/NABL etc certified, Lab Hot Air Oven
- Temperature controlled by microprocessor based Auto Tune PID digital controller with sensor.
- Proper facility for ventilation and air circulation.
- Temperature Range: 50°C to 250°C or better
- Material: Stainless Steel or better
- No. of Shelves: 3 or more
- Chamber Size: 18"X18"X18" or better (Should be fitted on 2.5 feet bench).
- Accuracy: ±2°C or better
- Accessory: Electric codes (1 Pc), Gloves (1 pair), and Tong (2 Pc), removable stainless steel racks (2 pc extra).
- Power Supply: 100-240V, 50/60 Hz
Portable Hot Plate Long Size

1. Technical Specifications

- **Top Material:** Glass ceramic heating top or better having anticorrosion properties
- **Use:** Ideal for heating samples (organic and inorganic solvents) and concentrated acids
- **Maximum heating:** Plate temperature up to 400 °C or better
- **Temperature Control:** Should include a separate Temperature Control Unit with PTFE or any acid resistant cord connection
- **Heating area:** Approx. 400 × 300 mm or better
- **Heating plate dimension:** Not more than 500 × 500 mm
- **Accessories:** Cord, tong, fuse, cleaning kit etc.
Laboratory Model Vacuum Oven

Technical Specifications

- Laboratory Model Vacuum Oven with NABL/GMP/CE etc certification and sensor and alarm controlled.
- Total Capacity: 20-30 liters.
- Operating temperature: Room temperature +5°C to 200°C or better
- Temperature Control accuracy: ±2.0°C or better
- Operating pressure range: inch Hg (-3.0 to -29.9) kPa (-10 to -101) mbar (-101 to -1010)
- Display: Digital LED/LCD Display with Back-Light Function
- No. of shelves: 2/3 stainless steel
- Control System: Programmable Microprocessor PID
- Temperature Set and Display Sensitivity: 0.1°C
- Power Supply: AC 220 V, 50 Hz
- Vacuum Gauge Reading Sensitivity: 0.05 bar
- Safety Device: Over Temperature, Over Current Protector Sensor Error Detector, Leakage Additional options (Data control software and RS 232 interface) for pressure and temperature documentation
1. Technical Specifications

- Water bath made of anticorrosion material (SS/Copper or better), anti-shock property and GMP/CE etc certified.
- Size: Compact and attractive for Lab Use
- Capacity: **single hole** of 75 mm diameter with concentric rings
- Heater Load: 1.0 KW, 1.5 KW
- Temperature Control: Thermostatic and Digital
- Insulation: Mineral Wool or better
- Temperature Range: Ambient +5°C to 95 °C ±0.5°C or better
- Electrical Supply: 220/230V AC, 50/60Hz
- Safety: Should have over-temperature safety regulator, ISI mark, fitted with rust resistant material (3 years guarantee) and insulated cover.
- Accessory: Tong (3 Pc), Test tube wooden handler (5 Pc), fuse (optional), electric cord and wires.
Digital Water Bath (Six Hole)

Technical Specifications

- Water bath made of anticorrosion material, anti-shock property and GMP/NABL/CE etc certified.
- Size: 30 x 25 x 10 cm (6 holes of 75 mm)
- Capacity: 6 Holes of 75 mm diameter with concentric rings
- Heater Load: 1.5 KW
- Temperature Control: Digital
- Insulation: Mineral Wool or better
- Temperature Range: Ambient +5°C to 95 °C ±0.5°C or better
- Electrical Supply: 220/230V AC, 50/60Hz
- Safety: Should have over-temperature safety regulator, ISI mark, fitted with rust resistant material (3 years guarantee) and insulated cover.
- Accessory: Tong (3 Pc), Test tube wooden handler (5 Pc), fuse (optional), electric cord and wires.
Heating Mantle

1. Technical Specifications
   - Heating Mantle: Made of yarn providing uniform heating of flasks up to 400 °C
   - Construction: Built In energy regulator, temperature controlled, indicator light fitted in painted metallic box
   - Holding capacity: Holding capacity for 100, 250, 500, 1000, and 5000 ml flask
   - Power requirement: 220 ± 10 volt 50 Hz AC
1. Technical Specification
   - Hardness Tester (digital type is desirable) which complies with USP, EP & IP etc Protocols.
   - Hardness:
     Unit: N, kg, etc. user defined factor
     Accuracy: Better than +1N Max
     Force: 500 N or better
     Thickness / Diameter: Units: mm/inch (desirable)

2. General Condition:
   - The Model shall have type approval Certificate for legal compliance.
   - Chemically resistant finish of the housing for the easiest cleaning.

3. Additional Facility/requirements:
   - The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

4. Manual & Spare
   - Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.

5. Warranty and Maintenance
   - 3 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like ISI/BIS/GLP/ISO/CE etc.
1. Technical Specification

- Digital vernier calliper with clear LCD readout and smooth slider movement makes for comfortable operation.
- Measuring Range: 0-150 mm (Length 20 cm, Height 5 cm, Width 20 cm) or better,
- Resolution: 0.01 mm
- Jaw Length: 16.5 mm (Upper) and 40 mm (Lower) or better
- Battery Type: Silver oxide Battery or better with minimum battery backup 15000 hours.
- Made up of anticorrosion material and GMP/NABL/CE etc certified.
1. Technical Specification

- Lab Stirrer with Teflon stirrer blades should be able to manage stirring solutions from 250 ml or less to 2 L or more round bottom flasks, reaction vessels, beakers etc.
- Exceptional control in stirring, noiseless, jerks less.
- Should be designed for continuous operation.
- Parts should be made of anti corrosive and chemical resistant.
- Should have motor cut-out feature in a permanent over-load situation.
- Speed range: 60 rpm or les and 1800 rpm or more.
- Should have digital speed display of speed.
- Sturdy vertical stand along with clamps should be quoted
- Should be efficient for both viscous and less-viscous medium.
- Power supply: 220 V, 50 Hz.
- The system should be CE/GMP/NABL etc compliant.
Advanced UV Cabinet with long and short UV Light

1. Technical Specifications
   - Should incorporate 2 kinds of UV Light sources for different requirements or better
   - Should have Shortwave UV light Wavelength: 254 nm
   - Should have Long wave UV light Wavelength: 366 nm
   - Should have Fluorescent light.
   - Should be safe for the user.
   - Should have Glass filter for eye protection of reflected UV light
   - Should be easy to open window for quick insertion of TLC plates.
   - Should be convenient & user friendly design and easy to maintain
   - Should be simple and easy to use
   - Should have voltage: AC 220V±10V; 50Hz.
Electronic Digital Balance

1. Technical Specifications
   - Capacity: 0.01g to 5 kg or better
   - Accuracy: 0.001g or better
   - Pan Size: 165-175 mm or better
   - Display: LED
   - Having the function of counting, unit conversion (lb, kg, g, ct, oz) steady change, full scale flay, zero point track, the operation is simple and reliable.
   - More convenient use of external weights, Rechargeable battery, Reaction time ≤2s, Error ≤0.2g.
1. Technical Specifications

ISI/GMP grade Essential Oil determination or Clevenger Apparatus of Borosilicate Glass grade or better with 5 ml receiver with stopcock, an oil separator tube and a condenser

- Capacity: 500 ml to 5 litres or more.
- Temperature Capacity: 400 °C or better
- Accessories: Two piece of each RBF (with flat base) of 500 ml, 1000 ml, 2000 ml and 5000 ml.
Thermometer

1. Technical Specifications

• To measure the temperatures of ice-bath and hot oil/solvents for different experiments in typical chemistry Lab.

• Range of the thermometers: 0 to 300 °C or better.

• Least count: 0.1 °C or better.
1. Technical Specifications

- Compact instrument, it can be hanged on the wall or kept on the table. Measures temperature and indicates weather condition. Measures Humidity as well time and temperature.
- Temperature Measuring Range: 0°C-50°C or better
- Accuracy: Temperature Measurement: ±1.0°C (1.8°F) or better
- Operating Humidity measuring Range: 10% RH-90% RH Measuring Accuracy: ±5% (40% RH-80% RH) other ±8%
- Resolution Temperature Display: 0.1°C (0.1°F)
- Specifications Calendar shows that the real time, daily alarm functions, 12/24 hour clock
- Highest & lowest temperature and humidity memory function
- Accessories: Battery with 1000 hrs backup/ rechargeable, carrying case, Instruction manual, Test Certificate (CE/GMP/ISI/NABL etc.).
Digital Viscometer

1. Technical Specifications

- Displayed: 5 inch or better with info including viscosity (cP/mP·s), temperature (°C/°F), shear rate/stress, % torque, spindle/speed, step program status etc.
- Enhanced Security with customizable user access, date/time stamp file, password access, portable log-in settings.
- Built-In options include timed tests, data averaging, programmable QC limits/alarms, customizable speed/spindle lists, on screen data comparison.
- Auto range shows maximum viscosity measured with any spindle/speed combination.
- USB PC interface provides optional computer control and automatic data gathering capability.
- Built-in temperature probe.
- Accuracy of ±1.0% of range with displayed test data.
- Repeatability of ±0.2% or better.
- NIST traceable viscosity standards should be made available.
- Test Data to be recorded directly on a local printer or sent to a PC.
- System should be GMP/NABL/CE/ISI etc certified.
1. Technical Specifications

- Compact size, advanced microcontroller based Bulk Density Apparatus is required with PC compatibility and GLP/USP/IP compliance.
- Measure the bulk density property of herbal powder, pellets etc (powder form).
- Bulk Density Apparatus Display: 4 digit seven segment Bright Red LED
- Maximum Counts: 9999 or better
- Cylinders Drop Height: 25 mm. Approx. Or better
- Power: 230 V 10% AC 50 Hz
- Dimensions: 600×450×200 mm (Approx.) (L×B×H) or better
- System should be supplied with all accessories required for smooth handling like calibrated measuring cylinders (50 and 100 ml) - 2 Nos each, Instruction Manual & Dust Cover etc
Digital Melting Point and Boiling Point Apparatus

Technical Specifications

- Simple menus and programs are easy to navigate on the intuitive LCD display, with either manual or automatic, real time video instrument for determination of melting and boiling points
- Fully automatic melting point and boiling point determination
- Large illuminated magnification lens
- Temperature range from room temperature up to 350 °C or better
- Compliant with Pharmacopeia protocols QQ/ GLP/GMP/ISI etc.
- Includes: Melting Point instrument, Sample Loader, 100 melting capillaries, 10 boiling tubes, 10 boiling capillaries, calibration set, sample holder, packing wire and cleaning tool.
- Accessory: 100 melting capillaries, 10 boiling tubes, 10 boiling capillaries, calibration set, sample holder, packing wire, sample holder, and cleaning tool.
Electronic lift of rotary evaporator. Auto lift from heating bath at the time of power failure.

- Heating bath temperature 200 °C or more, Capacity – 5 lit.
- Having heating power of 1200-1500W.
- Cordless power supply allowing safe emptying and refilling of water bath without unplugging.
- Display for set and actual temperature of heating bath.
- Display indicating set and actual values of heating bath temperature, rotation speed and lift height adjustment.
- Should accommodate flask size from 50 ml to 5000 ml.
- Multifunction clip
- Long life graphite filled PTFE Vacuum seal.
- Vapor tube which can be Removed easily eliminating breaking of glass.
- Rotation speed adjustment between 20 to 280 RPM.
- Receiving and evaporation flask of 1000 ml each flask with flask joint SJ29/32 should be supplied.
- Evaporation flask feeding via stopcock.
- Single stroke regulated vacuum pump.
- Vacuum flow rate - 1.5 m3/h
- Ultimate vacuum - <10mbar
- Number of stages – 2
- Double diaphragms
- Longer operating life due to a thicker PTFE membrane.
- Sound level - 40-52 db
- Regulate vacuum pump conveniently
- Digital display for set and actual vacuum
- Maximum measurement range of 1400 – 0 mBar
- Control range of 1100 – 0 mBar
- Should have timer function and hysteresis
- Operating voltage: 220 – 240 V at 50/60 HZ frequency.
Sieve Shaker

**Technical Specifications**

Sieve Capacity: 8 sieves (200 mm Dia x 50 mm H)

Vibration Source: Electromagnetic vibrator

Construction: Cast Iron, Painted Mild steel or better

Display: LCD Display

Sieving Timer: Digital / Analog

Set Time: 0 ~ 99 min

Vibration Frequency: 3000 times / min

Noise Level: > 61 db w/o sieves at max. power level / > 71 db w/ sieves & material at max. power level

Test Sieves: Brass or Stainless Steel

Accessories: Two supporting SS Rods, Sieve retaining assembly, Rubber pad etc.

Power Supply: 220 Volts

Certifications: CE and ISO
Stability Chambers as per ICH/WHO/GMP Guidelines for precise monitoring of temperature and humidity conditions required for long term, intermediate & accelerated stability studies at chemical and pharmaceutical manufacturing.

Performance:

Specifications: Designed as per ICH guidelines to meet, WHO and USFDA requirement i.e. fulfill storage conditions of 25°C - 60% Rh, 40 °C -75% Rh, 30 °C -65% Rh, 25 °C -40% Rh.
Precise monitoring of temperature and humidity conditions Comply with GMP requirements
Water tank capacity about 400 litre or better, powerful fan motor for forced air circulation to maintain uniform conditions inside chamber within permissible limit Heating by long life SS tubular heaters
Validation protocol with IQ, OQ, DQ Documentation as per ICH guidelines
Microprocessor controller with LCD display & capacitance type sensor for precise control of temperature and humidity and Battery Backup 5 hours or better.
Automatic Calibration of set parameters. Self-Diagnosis for errors
Power failure and resumption recorded with date and time.
Machine filled PUF insulation to eliminate void pockets
Unique design of thermal barrier for better energy efficiency
Hermetically sealed Compressor with CFC free refrigerant
Histogram format of 24 hours temperature and humidity recording
Settable High/low alarm points with date and time
Memory for storage of up to 1000 records
Centronic interface to record Temperature, Humidity, Date, & Time by attaching Dot Matrix printer with adjustable print interval
Chamber calibration port on side. Adjustable trays
PC communication with RS-485 and software complying to 21 CFR part 11 as per USFDA guidelines. Data logger for 8 Point (4 4) temperature/humidity recording with sensor, printer interface and software.


Features of Software complying to 21 CFR part 11: Multiple level alpha numerical password with password ageing. Electronic signature and menu entered comment. Secured
Audit trail report. Alarm report with mention of alarm condition. Mean Kinetic Temperature able to be calculated for any days & alarm deviation report. Reports in graphical and tabular form. Data Stored in PC server with Lan connectivity and can be monitored on any PC with password authentication. Multi chamber data acquisition on single software.

**Accessories:** New generation computer system with printer and all software’s of stability chamber system.
An ISI grade electric heavy duty mixture grinder (700 W or better) to crush/reduce the size of the herbo-mineral drugs including the raw material (Woods etc.).
FUME HOOD

Polyester coated steel or better chemical fume hood (preferably with digital functions) for rough use in chemical laboratory having noise < 80db or better. Includes features like non-conductive, chemical resistant, corrosion proof, precision design, accurate functioning. Design Portable fume cabinet with robust epoxy coated. Material should be as per BIS/ISI/CE/GMP etc guidelines.

Bench top mounted system of standard size having minimum length 5 feet having standard anticorrosive/ chemical resistant accessories like Sink, Water tap with drain arrangement, exhaust, light etc.

Brass, powder coated fittings. Taps should be tapered in shape to use with flexible tubing of sizes from $\frac{1}{4}'' - \frac{1}{2}''$ in diameter.

Fluorescent/LED light with vapour-proof fitting and of minimum 400 lux intensity at worktop level. Minimum 4 nos. electrical sockets of reputed make (230 V, 6/16 A, 50 Hz).

The electrical wiring should have built-in starter of reputed make, suitable to blower motor capacity. Starter should not be mounted on the wall and it should be part of the fume hood wiring itself.

Easy access of cables from fume hood to electrical sockets is desired.

1. Technical Specifications

Capacity: 350 lit or better, Double Door, Auto Defrost, Works without Stabilizer, 5 Star rating (BEE level)
DEEP FREEZER

Digital controlled deep freezer with stainless steel body and 3 door having capacity 700 Litre or better to preserve chemicals and herbal medicines etc.
ROTARY SHAKER

Variable speed from 20 RPM to 300 RPM with heating facility. Digital display of speed with presetting facility. Shaking amplitude 40 mm. Universal Platform to accommodate interchangeable clamps of assorted sizes for different capacity of flasks. Automatic restart at preset speed in case of power failure.
HUNTER LAB METER

Hunter Color Lab- L, a, b, Hue and croma values.
TECHNICAL SPECIFICATION OF LOVIBOND TINTOMETER

Measuring principle: Visual, in terms of LOVIBOND Tintometer Equipment

Modes: Transmittance, reflectance

Range: 0.1-79.9 Red, Yellow; 0.1-49.9 Blue; 0.1-3.9 Neutral

Resolution: 0.1 LOVIBOND Unit

Optical system: 11 glass-filled Nylon Racks Containing a Graduated range of LOVIBOND colour Glasses.

Viewing system: Fully adjustable prismatic with integral blue filter for light standardization.

Light source: 2 x 12 volt, 10 watt tungsten halogen lamp

Path length: upto 153mm (6”)

Power pack: 12 volt ac, switchable to suit 220/110 volt supply
TECHNICAL SPECIFICATION FOR MAGNETIC STIRRER WITH HOT PLATE

a) Maximum stirring speed-1200 rpm with stepless speed control and good speed stability

b) Heating Capacity - 600W

c) Hotplate Size - 175mm dia.

d) Supply – 220/240V, 50Hz, A.C

e) Hotplate-Should be chemically resistant to acid and alkali

f) Top Plate Material – Stainless steel

g) Stirring Unit – Should be enclosed so that corrosive fumes do not enter it.

h) Controls for both hotplate and stirrer should be provided with suitable indicators.

i) Necessary electrical cables should be provided.

j) Warranty – 1 year
Technical Specification

Advance compact sized model of GC with suitable detectors & accessories. System should as per CE/GMP/NABL/QQ/IQ etc protocols. The GC system should comprise of following modules with desired specifications.

1. **Gas Chromatograph**
   - Electronic pneumatic control (EPC) control on both inlet and detector.
   - Pressure set points: 0.001 psi with typical control ± 0.001 for the range 0.000 to 99.999 psi.
   - One-button access to routine maintenance information.
   - Two inlets and three detectors.
   - GC should be capable of field Up gradation to any third detector and Mass Spectrometer.

2. **Column Oven**
   - Accommodates up to two 105 m × 0.530 mm id capillary columns.
   - Operating temperature range: suitable for all columns and chromatographic separations. Ambient temperature +4 °C to 450 °C.
   - Oven cool down 450 to 50 °C in 4.0 min or better.
   - Maximum achievable temperature ramp rate: 120 °C/min.
   - Temperature set point resolution: 1 °C.
   - Supports 15 oven ramps with 16 plateaus.
   - Ambient rejection: < 0.01 °C per 1 °C or better.

3. **Injectors**: 2 No.
   - Split/Splitless Capillary Injector & Packed column injector.
   - Suitable for all capillary columns (50 μm to 530 μm id).
   - Split ratios up to 7,000:1 to avoid column overload.
   - Splitless mode for trace analysis.
   - Maximum temperature: 400 °C.
   - Special inlet system must be built in standard with S/SL inlet for quick, easy, injector liner changes.
   - Gas saver mode should be available with the GC.

4. **Flame Ionization Detector with EPC**
   - Detection Limits – 1.5pg C/s or better.
   - Dynamic Range – 10/7 or better, Temp. Range up to 400 °C or more.
   - Flameout detection & automatic re-ignition of FID should be possible.
5. Electron Capture Detector with EPC
- Minimum Detectable limit should be 4.4 fg/ml lindane or better
- Linear Dynamic Range should be >5.0 X 10^4 with lindane or better
- Data Acquisition rate should be 50 Hz or better.
- Maximum operating temperature should be 400 °C or better.

6. Nitrogen Phosphorus Detector with EPC
- Detection Limit: < 0.4 pg N/s, < 0.2 pg P/s with azobenzene/malathion/ octadecane mixture
- Dynamic range: > 10^5N, > 10^5P with azobenzene/malathion mixture
- Selectivity: 25,000 to 1 g N/g C, 75,000 to 1 g P/g C with azobenzene/malathion/octadecane mixture
- Data acquisition rate: up to 200 Hz
- Standard EPC for three gases:
  - Air: 0 to 200 mL/min
  - H₂: 0 to 30 mL/min
  - Makeup gas: 0 to 100 mL/min
- Maximum operating temperature should be 400° C or better.

7. Auto-Sampler
- 100 vials or more should be quoted with the system

8. Data Communication:
- CFR 21 compliant, single point control of all GC and its modules, customizable reports, GLP features should also have software for data acquisition, control, chromatographic data evaluation, reporting sequencing. IQ, OQ to be provided by vendor after successful installation.

9. Pre Installation Requirement
- Complete technical details of pre-installation requirements should be furnished along with the technical bid. RARI, Jhansi (UP) will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost. Preference will be given to whole system/ parts of same manufacturer.

10. Manual and Software
• Operation and maintenance manuals (hard and soft copy) in English language should be supplied along with the system. Original Software along with other qualitative and quantitative software compactable to window 8 or higher system.

11. Computer & Printer
• Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5tb or higher), wireless mouse and keyboard.
• Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
• Separate table for computer or Data processing unit with rack case should be provided.
• Original Antivirus software should be provided along with computer system.

12. Warranty & Spares
• 5 Years comprehensive warranty including consumables and lamps etc. after successful installation/commissioning.
• The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system.
• Calibration kits (2 Nos), lamps (2 Nos), Syringes (5 Nos each Size) and any other spares minimum one unit should be provided.
• Dual Stage Regulators (3 Nos), Regulators for necessary Gas Cylinders (01 each), Air, N₂, H₂-Cylinder (01 each), Gas Purification system with Traps (01), Injection Port Septa (200 No’s), Glass Insert for Split & Split less (5 each), Graphite Ferrule 0.5 mm (30 No.), Microliter Manual Syringes [1 µL (2 No.), 5 µL (2No.), 10 µL (2 No.),] Auto sampler syringes (2 no) 1000 Pcs of Auto sampler Vials with Caps and Septa - 2 No’s. Optional: Air , N₂, H₂-Gas Generators 01 each. All accessories and spare parts should be from the same manufacturer.

13. UPS /Power requirements
• Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.

14. Training
• Necessary training to scientific staffs on Operation, Maintenance, Calibration of the offered system and for minimum 3 working days after the installation of the system. This is an integral part of the acceptance criteria of the system by the user.
Gas Chromatograph- Triple Quadrupole Mass Spectrometry (GC-MS/MS) system

Technical Specification

Advance compact sized model of GC-MS/MS system with suitable detectors & accessories. System should as per CE/GMP/QQ/IQ etc protocols. One Gas Chromatography- Triple Quadrupole Mass Spectrometry (GC-MS/MS) system involving highly sensitive, accurate and reproducible Gas Chromatograph, Mass Spectrometer and Flame Ionization Detector system for qualitative and quantitative metabolomics of natural products, pesticides (Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethroids, PCBs), synthetic molecules with user friendly software. The system should have Triple Quadrupole geometry, capable of carrying out MS and MS/MS experiments. The GC system should comprise of following modules with desired specifications.

1. Gas Chromatograph
   - The auto sampler should have >15 (2 ml) vial capacity with area reproducibility of 0.3% RSD or better; it should be upgradable to 150 vial capacity.
   - The auto sampler should be capable of handling large volume injection with syringe size from 0.5μL to 250μL or better.
   - Pre-programmed leak tests and Automatic Liquid Sampling fully integrated into mainframe control
   - Advanced electronic flow control modules with Pressure set points adjustable in increments of 0.001 psi, with typical control ± 0.001 for the range 0.00 to 99.99 psi
   - Flexibility to select pressure units as psi, kPa or bar should be there
   - Atmospheric pressure and temperature compensation should be available so that results are not affected by the laboratory environment varies
   - Flow sensor for control and storage of split ratio should be available
   - Should be capable of split or splitless injection for all capillary columns from 0.05mm to 0.32 mm.
   - Injector should have heating rate of 800 degree/min and above and should be programmable with more than 8 steps heating and ramps
   - Split ratio up to 7500:1 and suitable Electronic septum purge
   - Total flow setting range for N₂ to be 0- 200 mL/min, while He or H₂ up to 1200 mL/min or more
• Provision to install two or more columns in the oven: At least two >100 m capillary columns or two 20 ft steel-packed columns.
• Operating temperature range should be 4°C above-ambient to 450°C or better
• Facility to program ≥20 temp ramps (≥20 plateaus); negative ramping should be possible.
• Oven temperature ramp rate of oven should be ≥120°C
• The GC should have a Retention Time Repeatability of <0.0008 min or better
• The Peak Area Repeatability should be <1 % RSD or better
• Three each of FID-grade and MS-grade inert DB5/HP5 or equivalent columns (30 m × 0.32 mm ID × 0.25 μm film thickness) should be provided the system should come with the hardware for efficient and leak-free sample splitting into two or more detectors and preferably with a capability of changing the analytical column without vacuum breaking.
• The system should have column end or mid column backflush to remove unwanted components/contaminants/high boilers.

2. Triple Quadrupole Mass Spectrometer
• It should have a non coated inert EI source with dual filaments and it should be programmable up to 350 °C
• It should have a high capacity, split flow, dual-stage turbomolecular vacuum pump for high vacuum build-up.
• The triple quadrupole should be inert. It should be heatable (≥180 °C) for self-cleaning or should be equipped with an equivalent or better cleaning technique not requiring the removal of quadrupole or prequadrupole
• Source cleaning should be automated and vent free with jet cleaning option
• The triple quadrupole assembly should include a neutral noise removal system, which should not cause ion suppression
• It should have hexapole collision cell or better technology
• The collision cell should be able to use nitrogen as a collision gas in addition to argon.
• Collision Energy must be selectable up to 60 eV
• It should have an adjustable electron energy up to 300 eV
• Transfer line temperature should be adjustable (100 to ≥350 °C)
• The detection system should have dynode electron multiplier detector
• The MS should have scan speed up to 10000 u/sec or better
- Mass range (m/z) up to ≥1000 amu or better
- Mass axis stability should be 0.10 amu/24 hrs
- Mass resolution must have unit mass adjustment by tune, 0.7 to 2.5 daltons
- Minimum MRM Dwell Time must be at least 0.5 msec
- MRM speed (transitions/sec) 800 or more
- Selective quantification of target compounds in high chemical background samples should be possible
- Mass range (m/z) 1 - 1,050 20. Dynamic range (electronic) 10^6
- Femtogram-level limits of detection and quantification should be possible
- The sensitivity of the MS/MS system should be as follows: EI MRM Instrument detection Limit: 4 fg or less octafluoronaphthalene (OFN) for MS/MS transition of m/z 272→222, statistically derived at 99% confidence level from the area precision of at least eight sequential splitless injections of 10fg/uL OFN Standard using 30m x0.25mm ID x0.25μm film thickness column. This sensitivity of the MS/MS system MUST be demonstrated on site at the time of the installation
- The system should have software controlled auto or manual tune.

3. Libraries
- Latest and licensed versions of the following mass spectral libraries containing mass spectral and GC data of natural products, flavors, fragrances, pheromones, drugs, pesticides, pollutants and their metabolites should be integrated with the MS search mode. 1. NIST library, 2. Willey library, 3. Fiehn GC/MS Metabolomics RTL Library (>1000 RTL spectra with free updates)

5. Flame Ionization Detector
- It should respond to most of the organic samples.
- Electronic gas control for Air, Hydrogen, Nitrogen, Helium & Argon
- Minimum detectable level of dodecane or tridecane should be 107 (±10%)
- Data Acquisition Rate: ≥300 Hz or ≥4 ms 5. 450° C maximum operating temperature

7. Workstations and Software Specifications
- Original and licensed perpetual operating software required to operate all the specified equipment. Software should include free upgrades up to 5 years. All software (and potential upgrades) should be compatible with the given operating system.
- GCMS software solution should be capable to obtain data of MS and GC detectors simultaneously or separately.
- It should optimize MS parameters automatically or manually through software tuning programs and print an auto tune report
- Software should display the real-time plot for chromatograms and instrument parameters (both GC-FID and GC-MS) and print a real-time plot report
- Operating Software should be amenable to automated calibration, auto tuning, automated switching from MS to MS/MS and should have all ion MS mode and effective data mining tools.
- For the annotation of unknown compounds, the software should be able to access and use the compound library, should include the tools for empirical formula calculation, structure correlation.
- Software should also include profiling tools for metabolomics analyses, an integrated pathway approach for searching a compound list against a pathway database.
- The software should be compatible with MS Office for easy import and export of the data.
- The software should have a flexible report publisher to make report in desired format.
- Considering the future expansion of the metabolomics platform with various LCMS/MS systems, the vendor should be able to provide an LC-MS/MS system of the same manufacturer and GC-MS/MS and LC-MS/MS system software and libraries should have the same data acquisition, analysis and management software platform

6. Pre Installation Requirement
- Complete technical details of pre-installation requirements should be furnished along with the technical bid. RARI, Jhansi (UP) will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost. Preference will be given to whole system/ parts of same manufacturer.

7. Manual and Software
- Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system. Original Software along with other qualitative and quantitative software compatible to window 8 or higher system.
8. Computer & Printer
- Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM- 8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5TB or higher), wireless mouse and keyboard.
- Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
- Separate table for computer or Data processing unit with rack case should be provided.
- Original Antivirus software should be provided alongwith computer system.

9. Warranty & Spares
- 5 Years comprehensive warranty including consumables and lamps etc. after successful installation/commissioning.
- The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system. It may include but not restricted to plumbing, wiring, air, N₂, He and H₂ cylinders (Note: Gas generators are welcomed), gas cylinder regulators, gas purifiers, gas pipe panelling, tubing, nuts, ferrules and computer hardware and software installations, extra electrical wiring, switches etc. to bring the instrument to PQ level. All the instruments should be provided with necessary tool kits.
- Calibration kits (2 No.), lamps (2 No.), Syringes (5 No. each size) and any other spares minimum one unit should be provided. Sample injector: For liquid injection (5 No. each), For HS syringe (5 No. each), Air tight syringe (for manual injection) (2 No. each), Manual syringe for liquid injector (2 No. each), Auto sampler vials: 500 vials with screw cap. Vials with cap for 1.5 ml capacity (100 No.), Vials with cap for 10 and 20 ml capacity (each 50 No.), Column Ferrules- injector end and interface end (20 No. each), Septa for injector (100 No.), Appropriate nuts to fit capillary columns to the injector and MS interface (10 each), Inlet liner for Splitless, Split (with glass/quartz wool at optimum position) and PTV (with glass/quartz wool at optimum position) (10 No. each), O-ring for injector liner (20 No.), Split vent trap (2 No.), El Filaments (5 No.), Cl Filaments (5 No.), Column cutter (2 No.), Gas tube cutter, Oil mist trap for pump (2 No.), Tool kit and any other accessory as felt required for the proper functioning of the equipment.
- QuEChERS Kits (1000 No. each) for pesticides etc. in following matrices: Water, High fat containing food, High Water content food, Highly Pigmented foods (e.g. chlorophyll, lycopene, carotene etc.).
- Natural products, pesticides (Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs) standards of size pack 1-5 gm of AR grade preferably Sigma/Merck.
- Air, N₂, H₂—Gas Generators 01 each are welcomed. All accessories and spare parts should be from the same manufacturer.

10. UPS /Power requirements
- Suitable capacity on line UPS (preferably 5 KVA) with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs backup.

11. Training
- Necessary on-site/off-site training to scientific staffs for operation, maintenance, calibration of the offered system and for minimum 3 working days after the installation of the system. This is an integral part of the acceptance criteria of the system by the user.
High Performance Liquid Chromatography (HPLC)

Technical Specification

HPLC with quaternary gradient pump capable of pumping four solvents at a time with a wide range of flow rate and with minimum dead volume and inbuilt degasser. The system should have reliable and stable solvent delivery over a wide range of flow rate. The HPLC system should comprise of following modules with desired specifications.

1. Delivery System (quaternary, four pumps with in-built degasser)
   - Mode of operation: Isocratic and gradient
   - Flow rate range from 0.01 to 20 ml/min or more with capability of minimum 0.01 ml/min increment for carrying out semi preparative applications
   - Flow Accuracy: ±1.0% or better
   - Max. Operating pressure: 5000 psi or better
   - Flow Calibration: Programmable
   - Flow Precision: ≤ 0.1% RSD
   - Operating pressure limits: Programmable high and low pressure limits, user selectable in psi, bar, kpa.
   - Corrosion resistant pump
   - It should allow stable delivery for non-polar organic solvents such as hexane.
   - Maintenance kit, reservoir tray (with 4 solvent bottles complete with fittings) & automatic rinsing kit must be supplied Gradient Mixer for semi-prep volume

2. Detectors (Four)
   (A). PDA (Photodiode Array Detector)
   - Wavelength range: 190-800 nm
   - Wavelength accuracy: ±1nm
   - Wavelength Repeatability: ± 0.1 nm
   - Resolution: 1.2 nm per photodiode, with a total of more than 512 Photodiodes, digital, and optical (3D mode)
   - Digital Resolution: 1.2 nm – 600 nm
   - Noise Level 0.6x10⁻⁵ AU at 254 nm or better
   - Data Acquisition: Up to 80 Hz
   - Path-length: 10 nm-standard
   - Semi-prep flow cell
Light source: Pre-aligned, deuterium and tungsten lamps, dual lamp design for optimum sensitivity along with lamp warranty of minimum 2000 working hrs.

(B). RID (Refractive Index Detector)
- Refractive Index range: Approx. 1-1.75 R/U.
- Flow rate: Approx. 0.2 ~ 0.3 ml/min.
- Noise: $2.5 \times 10^{-9}$ RIU or better.
- Temperature Control: Approx. Internal oven 30°C to 55°C.
- Automation: Software and manual controls. The detector should have lamp optimization software, Variable Scanning and analysis facility.

(C). FD (Fluorescence Detector)
- Excitation Wavelength Range: 200 – 890 nm
- Emission Wavelength Range: 210 – 900 nm
- Bandwidth: 20 nm
- Wavelength Accuracy: ± 3 nm
- Wavelength Repeatability: ± 0.25 nm
- Sensitivity: $\text{S/N} > 1000$ (Raman Spectrum of Water)
- Measurement Range: 0.001 to 10,000 emission units
- Data Acquisition: Up to 80 Hz
- Light Source: Hg/Xenon Arc Lamp with 1000 hr. warranty
- Flow Cell Design: Axially illuminated
- Cell Volume: < 2 μL
- Unattended Operation: Leak Sensors, full diagnostic data captured through console software.
- Suitable assembly for electrochemically generated Bromine for derivatization of Aflatoxins.

(D) ELSD (Evaporative Light Scattering Detector)
- It must be highly compatible with system both isocratic and gradient separations with nebulizer options to cover a wide range of analytical and preparative flow rates.
- Work Temperature range for Evaporator and Nebulizer in OFF 10–90 °C (1 °C increments) or better.
- Flow Rate: 0.2 mL to 5 mL or Better to meet the requirement of preparative flow rates.
- Sampling rate: 80 points /s or better.
Detector: Photomultiplier tube with digital signal processing.

- It must be operated through system software and user friendly display to operate manually.
- Working pressure range (N₂): 60-100 psi or better.
- Both the detector should be connected through flow splitter in such a way so that two chromatogram can be obtained for a single run.

3. Injector and Auto sampler

- Injection volume range: 0.1 to 100 μl with 1 μl increment upgradable to 500 μl or better (with one standard loop and an additional 1.5 or 2 ml loop); should have provision of manual injection with 2 mL loop.
- Injection Reproducibility: RSD < 0.3% or better.
- Carry over: <0.05% or better.
- Provision of wash between injections with variable injection volume pre mounted on standalone panel, supplied with maintenance kit, syringe and supply of at least 300 sample vials of two standard size capacities with caps and septa (May be quoted as optional).

4. Column Heater Compartment with temperature regulator

- The temperature range should be room temperature to ≥ 80°C.
- Temperature control precision: ±0.5°C or better.

5. Fraction Collector should be programmable

- Fraction collector with standard rack, with minimum 120 tubes capacity.

6. Columns & Sonicator

- Automatic/digital sonicating baths of appropriate size — 1 Nos.
- Analytical Column C₈ (250 x 4.6 mm x 5μ) - 2 Nos.
- Analytical Column C₁₈ (250 x 4.6 mm x 5μ) - 2 Nos.
- Semi-prep column C₁₈ (150 x 10 mm) — 2 Nos.

7. HPLC System Software

- The software should be original, authenticated and compliant for GLP/GMP/CFR.
- Provision of manual Integration.
- A software compatible database.
- Versatility for multitasking without multiple software packages.
- Customizable data reports, online help and answer wizards.
- Data integrity along with advanced security.
8. Computer & Printer

- Compatible branded computer with genuine OS Windows (Windows 8 or higher) loaded with all the required software, Processor- Intel core i5 or better, RAM-8 GB or better, Graphics Card, Additional internet port, LED Monitor-23 inch or large, additional hard disk (minimum 5TB or higher), wireless mouse and keyboard.
- Suitable wireless Colour Laser jet Printer (All-in-One Wireless Ink Tank Colour Printer with Auto-Duplex Printing having scanner option) to be included.
- Separate table for computer or data processing unit with rack case should be provided.
- Original Antivirus software should be provided along with computer system.


- Operation (hard and soft copy) and maintenance manuals in English language should be supplied along with the system.

10. Warranty & Spares

- 5 Years comprehensive warranty/CMC including consumables after successful installation/commissioning.
- The Spares and service support from the supplier should be available for minimum 10 years from the date of installation of the system.

11. Essential Spares and Consumables

- Tool kit with all mechanical tools and accessories for the system installation and regular operation should be provided. Necessary spares and consumables required for smooth and efficient operation of system for 5 years should be listed separately.
- Calibration kits (2 No.), lamps (2 No.), Gas (N₂ etc.) generator/ cylinders including pipes (as per site distance 10 - 20 m) and regulators of ISI/ BIS/ GLP etc. grade, Compressors and any other spares minimum one unit each should be provided.

12. Training

- Necessary training to scientific staffs on Operation, Maintenance, and Calibration of the offered system will have to be provided for minimum 5
working days after the installation of the system. This is an integral part of the acceptance criteria of the HPLC system by the user.

13. UPS /Power requirements

Suitable capacity on line UPS with latest technology from any reliable, nationally reputed manufacturers/brand which is compatible with the unit should be quoted. The UPS should provide 4 hrs. backup.
### Specifications for Instruments: Pharmacognosy Section

#### Pharmacognosy Section

<table>
<thead>
<tr>
<th>1. Microtome (Rotary)</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-automatic type microtome for precise and controlled sectioning of the object under study/paraffin blocks (hard and soft) with an accurate feeding mechanism, lock and safety measures, smooth and stable operation to work with standard power supply.</td>
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<tr>
<td>Compact, with lockable wheel, retraction on/off function and blade holder for disposable blades.</td>
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<tr>
<td>- Easy orientation of specimen holder in two axis. The vertical stroke of 50 mm and horizontal specimen travel range of 25 mm or better.</td>
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<tr>
<td>- Trimming thickness: 1-500 μ</td>
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<tr>
<td>- Section thickness: 0.5 to 100 μ</td>
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<tr>
<td>- Provided with 1 packet of low disposable blades (50/packet), sample blade holders, sample specimen clamps and sample cassette clamps, honing glass plate, oil can for lubrication, dust cover/cabinet.</td>
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</tr>
<tr>
<td>- Should be supplied along with all other accessories/requirements for functioning (if required).</td>
<td></td>
</tr>
<tr>
<td><strong>Purpose:</strong> For sectioning of sample for microscopic observation.</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>2. Dissecting Microscope</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>For visualization of objects, light dissecting microscope with variable magnification range of 5x-40x.</td>
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<tr>
<td>- 360° rotated viewing head/45 degree inclined eyepieces with dioptr and inter-pupillary adjustment.</td>
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<tr>
<td>- Both top and bottom illumination with high intensity LED light/tungsten bulbs.</td>
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<tr>
<td><strong>Purpose:</strong> For observation of morphologic characteristics under low magnification.</td>
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</tbody>
</table>

| 3. Camera-lucida: Prism Type (Swift Ives Type) and Mirror Type (Abbe Type) | |

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Specifications for Instruments: Pharmacognosy Section

### Specifications

**For optical superimposition of object under microscope and the drawing surface to enable the viewer to draw the image of magnified view.**

- **Prism type (Swift Ives type):** High grade, fine, transparent, durable glass
- **Mirror type (Abbe type):** High grade, fine, transparent, durable glass and high grade, fine, sharp, accurate vision, durable mirror.
- **Smooth, easy rotation**

**Purpose:** For drawing of microscopic view.

### 4. Binocular Microscope with Camera

**Specifications**

**Microscope:**
Binocular system with provision for computer attachment / printer compatible with windows operating system.

**Stand**
- Automated for transmitted light LED (light emitting diode) with 6-fold automated nosepiece, automatic adjustment of light intensity, with height adjustability of focus knobs, mains 90-250V, commutable 50/60 Hz.
- Toggling Facility – between any two selected objectives.

**Focus drive**
- 3 step coarse, medium and fine focusing.

**Stage**
- Ergo stage with vernier reading, exchangeable X-Y drive 76x25 mm. travel range.

**Stage plate**
- For ergostages with ultra hard ceramic surface

**Observation tube**
- Binocular Ergo Phototube with fixed photo tube, with tubelens 00/1x, with 0-30° viewing angle, with inter-pupillary adjustment of 47-75 mm, with constant focus and beam-splitter positions vis/phot: 50/50%, fixed.

**Condenser**
- Automated condenser with automated switchable condenser top, with color coding, for BF, DF, PH & Pol.

**Eyepiece:** PLAN 10x (20 mm.) adjustable with graticule

**Objectives:** Brightness synchronized objectives: Obj. PLAN 4x, 10x, 40x and 100x (oil, immersion, Oil 518 C ISO 8036/1; 20ml.)

Dust cover.
Specifications for Instruments: Pharmacognosy Section

b. Digital Camera

Digital Microscope Camera with Software
High Definition [ HD ] Scientific grade camera
Digital Color Camera with CMOS sensor (1/2”)
Max. Resolution 7Mega pixel 3072x2304
Fast live image XGA 1024x768 with 22 fps
Live image with Flat Panel TV and PC monitor
Pixel size 3.2µm x 3.2µm
Dynamic range >55dB / 600:1
Gain 1x - 4x
Single Firewire - B connector for data and power
Supported Operating systems WinXP/Win7/MacOSX
Recommended c-mount adapter 0.5x (- 0.5x c-mount adapter)

c. Image Analysis Software: For automatic calibration, point to point measurement, annotation, sequence control, measurement of position, orientation and intensity, size and shape, histogram, pie chart, image export, sequence wizards, binary image processing methods, image editing, suitable for Comet assay and timely free updates of the Software.

- Microscope camera and software must be of same manufacturer.

Should be supplied with suitable branded PC 15 with appropriate RAM, 18.5" TFT and HD monitor original windows 8 or 10 software.

Purpose: For magnification of histologic characteristics, capturing and analysis of microscopic images.

5. Trinocular Microscope with Accessories

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>a. Microscope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trinocular System with provision for computer attachment / printer compatible with windows operating system.</td>
</tr>
<tr>
<td></td>
<td>Stand – Automated for transmitted light LED (light emitting diode) with 6-fold automated nosepiece, automatic adjustment of light intensity, with height adjustability of focus knobs, mains 90-250V, commutable 50/60 Hz.</td>
</tr>
</tbody>
</table>
Specifications for Instruments: Pharmacognosy Section

Toggling Facility – between any two selected objectives.
Focus drive – 3 step coarse, medium and fine focusing.
Stage – Ergo stage with vernier reading, travel range 76x25 mm, with exchangeable X-Y drive
Stage plate - for ergostages with ultra hard ceramic surface
Observation tube - Binocular Ergo Phototube with fixed photo tube, with tubelens 00/1x, with 0-30° viewing angle, with inter- pupillary adjustment of 47-75 mm, with constant focus and beam- splitter positions vis/phot: 50/50%, fixed.
Condenser - Automated condenser with automated switchable condenser top, with color coding, for BF, DF, PH & Pol.
Eyepiece: PLAN 10x (20 mm.) adjustable with graticule
Objectives: Brightness synchronized objectives: Obj. PLAN 4x, 10x, 40x and 100x (oil, immersion, Oil 518 C ISO 8036/1; 20ml.)
Dust cover.

b. Digital Camera
Digital Microscope Camera with Software
High Definition [ HD ] Scientific grade camera
Digital Color Camera with CMOS sensor (1/2”)
Max. Resolution 7Mega pixel 3072x2304
Fast live image XGA 1024x768 with 22 fps
Live image with Flat Panel TV and PC monitor
Pixel size 3.2µm x 3.2µm
Dynamic range >55dB / 600:1
Gain 1x - 4x
Single Firewire - B connector for data and power
Supported Operating systems WinXP/Win7/MacOSX
Recommended c-mount adapter 0.5x (- 0.5x c-mount adapter)

c. Image Analysis Software:
For automatic calibration, point to point measurement, annotation, sequence control, measurement of position, orientation and
intensity, size and shape, histogram, pie chart, image export, sequence wizards, binary image processing methods, image editing, suitable for Comet assay and timely free updates of the Software.

- Microscope camera and software must be of same manufacturer.
- Should be supplied with suitable branded PC 15 with appropriate RAM, 18.5” TFT and HD monitor original windows 8 or 10 software.

**Purpose:** Magnification of histologic characteristics, 3D viewing, capturing and analysis of microscopic image.

### 6. Stereo Microscope with Accessories

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo zoom microscope with incident and transmitted light facilities with provision for computer attachment / printer compatible with windows operating system.</td>
</tr>
</tbody>
</table>

#### a. Microscope

- Apochromate stereo-zoom, zoom ratio 8:1, zoom range 10x-80x, with [Eyepiece 10x/23B], Greenough optics, with apochromatically corrected zoom optics, viewing angle 38°, 75 mm working distance (standard) with 1x objective, "ZeroStat" antistatic polymer microscope covers, adjustable zoom stops with video/photo tube (100% eyepieces or 100% camera)
- Resolution 300lp/mm [with Eyepiece 10x/23B]
- Additional objectives: 2x to get 160x magnification with 10x eyepiece. Eyepiece 10x/23B, adjustable dipters, for eyeglasses wearers and non-eyeglass wearers, field number 23, incl. symmetrical eye cup, built in reticle holders
- Transmitted Light and Reflected Light base with Illumination Light Emitting Diode LED stand with incident and transmitted light, 25 000 hours LED service life time, 6500°K, 100 - 240V, adjustable focus torque.

#### b. Optional Digital Camera
### Specifications for Instruments: Pharmacognosy Section

- **Digital Microscope Camera with Software**
  - High Definition [ HD ] Scientific grade camera
  - Digital Color Camera with CMOS sensor (1/2"
  - Max. Resolution 7 Mega pixel 3072x2304
  - Fast live image XGA 1024x768 with 22 fps
  - Live image with Flat Panel TV and PC monitor
  - Pixel size 3.2μm x 3.2μm
  - Dynamic range >55dB / 600:1
  - Gain 1x - 4x
  - Single Firewire-B connector for data and power
  - Supported Operating systems WinXP/ Win7/ MacOSX
  - Recommended c-mount adapter 0.5x

  c. **Image Analysis Software**: For Automatic calibration, point to point measurement, annotation.

  - Microscope camera and software must be of same manufacturer, appropriate RAM, 18.5” TFT and HD monitor original windows 8 or
  - Should be supplied with suitable branded PC 15 with Win.10 software.

  **Purpose**: Magnification of morphologic characteristics, 3D viewing, capturing and analysis of microscopic images.

### 7. Micro Image Projection System (MIPS)

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Micro Image Projection Systems (MIPS) to view and capture images on PC (PC I 4/5 or better) and option for micrometer scale and software for image analysis.</td>
</tr>
<tr>
<td>- With inbuilt optical correction adapter and UBS2 to fit with any binocular, trinocular or similar microscope as well as with LCD projector.</td>
</tr>
<tr>
<td>- Compact design and simple operation with single cod operation.</td>
</tr>
<tr>
<td>- High resolution images with actual colours and broad viewing field.</td>
</tr>
<tr>
<td>Supplied with all required accessories as per the model.</td>
</tr>
</tbody>
</table>
# Specifications for Instruments: Pharmacognosy Section

**Purpose:** Creation, display and processing of microscopic images.

<table>
<thead>
<tr>
<th>8. SLR Camera with Lenses</th>
</tr>
</thead>
</table>

**Specifications**

<table>
<thead>
<tr>
<th>a. Camera:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital SLR (single lens reflex) full frame camera with 20 or above effective megapixel, should support ISO sensitivities from 50 to 25000 or above, should possess advanced scene recognition system, noise reduction.</td>
</tr>
<tr>
<td>Telephoto lenses: 80-400mm f/3.5-5.6G ED VR 5x telephoto lens, minimum aperture: f/32-40; should have IM and USM facility, should be compatible to the above mentioned DSLR Camera.</td>
</tr>
<tr>
<td>Telephoto lenses: 18-140mm f/4.5-5.6G ED VR, should have IM and USM facility, should be compatible to the above mentioned DSLR Camera.</td>
</tr>
<tr>
<td>Macro Lens; 105mm f/2.5, should have IM and USM facility.</td>
</tr>
<tr>
<td>Ring flash.</td>
</tr>
<tr>
<td>Rechargeable Li-ion battery</td>
</tr>
<tr>
<td>S B Flash light (with AC adaptor).</td>
</tr>
<tr>
<td>Image: RAW, RAW+JPEG</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b. Accessories:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tripod stands for camera and for tele lenses.</td>
</tr>
<tr>
<td>32GB, class 10, SD card.</td>
</tr>
<tr>
<td>Extra Li-ion battery for the same.</td>
</tr>
<tr>
<td>GP -1 GPS Unit</td>
</tr>
<tr>
<td>AC adapter EH – 5 B</td>
</tr>
<tr>
<td>Remote cord MC – 36 A.</td>
</tr>
<tr>
<td>Wireless Transmitter.</td>
</tr>
<tr>
<td>Bag for storing camera and bag for storing lenses and flash.</td>
</tr>
<tr>
<td>Camera control Pro 2 (software)- usually company provide.</td>
</tr>
<tr>
<td>Elichrom Light 400 BX (or) Elinchrom light D-Lite 4 – 400Ws units, adjustable in 1/10 stop steps to 1/16 of full power, i.e. to 25Ws.</td>
</tr>
<tr>
<td>Chamber for close-up photography.</td>
</tr>
<tr>
<td>Rechargeable batteries: 8 No. with charger (compatible for Flash).</td>
</tr>
</tbody>
</table>
### 9. Aluminium Slide Trays

**Specifications**
Anodized, anti corrosive aluminium slide trays for holding standard microscopic slides (approx. 7.5 cm x 2.5 cm/ 3” x 1”) with groove for systematic and separate arrangement for every slide.
- Aesthetically designed tray, compact size with slotted aluminium carrier/ grooves for holding each slide.
- Groove/any ridges for easy removal of each slide.
- Capacity: 10 slides or more

**Purpose:** To capture microscopic image through single lens reflex.

### 10. Micro Slide Cabinet

**Specifications**
To store and protect at least 1000 standard microscopic slides (approx. 7.5 cm x 2.5 cm/ 3” x 1”) or more.
- Compact dust proof design with protection to slides.
- Durable, resistant steel construction with enamel/epoxy.
- Includes warp- resistant drawers with self stop mechanism and suitable partitions/trays to hold slides.
- Lockable drawers with easy and smooth sliding, outer identification labels and suitable handles.

**Purpose:** To capture microscopic image through single lens reflex.

### 11. Chemical Balance

**Specifications**
Chemical balance for accurate weighing.
- Capacity: 0.00001 - 100g
- Readability: 0.01 mg
- Repeatability: ±0.01 mg
- Pan Size: 80-90 mm approx.
- Dimensions (D×W×H): 350mm x 200mm x 300mm approx.
- Display: Alpha numerical, readable LCD touch screen display with Tare option and user menu.
- Power Supply: The balance shall work at 230V, 50Hz AC
Specifications for Instruments: Pharmacognosy Section

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature: 5 to 50° C</td>
</tr>
<tr>
<td>Interface: Mini USB</td>
</tr>
<tr>
<td>Draft Shield: Rectangular all glass draft shield opening from three sides, removable glass for proper cleaning.</td>
</tr>
<tr>
<td>Level Indicator: Level indication on front display.</td>
</tr>
<tr>
<td>Calibration: Calibration shall be Fully Automatic (ISO CAL Time and temperature controlled calibration), internal motorized calibration, External calibration.</td>
</tr>
<tr>
<td>The Model shall have type approval Certificate for legal compliance.</td>
</tr>
<tr>
<td>Analytical draft shield chamber with doors that glide open smoothly for fatigue free weighing. All shall be capable of individually cleaned or exchanged.</td>
</tr>
<tr>
<td>Chemically resistant finish of the housing for the easiest cleaning.</td>
</tr>
<tr>
<td>CE/GMP/GLP/ISI/NABL/BIS etc certified.</td>
</tr>
</tbody>
</table>

Additional facilities/requirements:
Balance shall be supplied with a Density Determination kit suitable to be used in the Electronic Balance.
The Balance shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.

Manual & Spare
Operation manuals (hard and soft copy), cleaning tool kits, calibration kits and Calibrated weighing box) etc should be provided.

**Purpose:** For weighing of small quantities with high readability.

12. Water Bath (Digital, body -6 holes)
### Specifications for Instruments: Pharmacognosy Section

| Specifications | Water bath made of anticorrosion material, anti-shock property and CE/GMP/GLP/ISI/NABL/BIS etc certified.  
|               | - Size: Compact and attractive for Lab Use  
|               | - Capacity: 1 and 6 Holes of 75 mm diameter with concentric rings  
|               | - Heater Load: 1.0 KW, 1.5 KW  
|               | - Temperature Control: Thermostatic and Digital  
|               | - Insulation: Mineral wool or equivalent  
|               | - Temperature Range: Ambient +5°C to 95 °C ±0.5°C or better  
|               | - Electrical Supply: 220/230V AC, 50/60Hz  
|               | Safety: Should have over-temperature safety regulator, ISI mark, fitted with rust resistant material (3 years guarantee) and insulated cover.  
|               | Accessory: Tong (3 Pc), Test tube wooden handler (5 Pc), fuse (optional), electric cord and wires.  
| **Purpose**   | To heat sample indirectly at specific temperature for long time.  

### 13. Stage Micrometer

| Specifications | High grade, fine, transparent, durable glass slide (approx. 7.5 cm x 2.5 cm./3” x 1”) with linear, sharp, contrast and accurate graduated scale.  
|               | Scale: 1 mm. divided into 0.1 and 0.01 parts of a mm.  
| **Purpose**   | For measurement of microscopic characteristics.  

### 14. Occular Micrometer

| Specifications | High grade, fine, transparent, durable glass small disc with linear, sharp, contrast and accurate graduated scale.  
|               | Scale: 10 mm. divided into 1 mm. and 0.1 mm.  
| **Purpose**   | For measurement of microscopic characteristics.  

### 15. Hot Air Oven (Digital)

| Specifications | Digital temperature controller, standard size, anticorrosion property, CE/GMP/GLP/ISI/NABL/BIS etc certified laboratory hot air oven  
|               | - Temperature controlled by microprocessor based Auto Tune PID digital controller with sensor.  
|               | - Proper facility for ventilation and air circulation.  

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# Specifications for Instruments: Pharmacognosy Section

- **Temperature Range:** 50°C to 250°C or better  
- **Material:** Stainless Steel or better  
- **No. of Shelves:** 3 or more  
- **Chamber Size:** 18"×18"×18" (Should be fitted on 2.5 feet bench).  
- **Accuracy:** ±0.2° or better  

**Accessories:** Electric codes (1 Pc), Gloves (1 pair), and Tong (2 Pcs), removable stainless steel racks (2 pcs extra).  

**Power Supply:** 100-240V, 50/60 Hz  

**Purpose:** For dry heat evaporation/sterilization.

## 16. Clavenger Apparatus

**Specifications**  
CE/GMP/GLP/ISI/NABL/BIS grade essential oil determination or Clevenger apparatus of borosilicate glass grade or better.  
- **Capacity:** 500 ml to 5 litres or more.  
- **Temperature Capacity:** 400 °C or better  

**Accessories:** Two pieces of each RBF (with flat base) of 500 ml, 1000 ml, 2000 ml and 5000 ml.  

**Purpose:** For extraction and determination of essential oil using steam.

## 17. Hot Plates

**Specifications**  
Glass/ceramic/metal or better, anti-corrosive heating top, ideal for heating of various laboratory samples and reagents, CE/GMP/GLP/ISI/NABL/BIS etc certified.  
- **Maximum heating:** Heavy duty heating, plate temperature upto 400 °C or better.  
- **Temperature control:** Separate temperature control unit with PTFE or any acid resistant cord connection with indicator.  
- **Heating plate dimension:** Not more than 500 × 500 mm. with heating area of approx. 400 × 300 mm.  
- **Electrical supply:** 220/230V AC, 50/60Hz  

**Accessories:** Cord, tong, fuse, cleaning kit etc.  

**Safety:** Should have over-temperature safety measure.
### Specifications for Instruments: Pharmacognosy Section

<table>
<thead>
<tr>
<th><strong>18. Refrigerator</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>19. Cryostat</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td></td>
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</tbody>
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### Specifications for Instruments: Pharmacognosy Section

- Holder, object holders - 01 set including all sizes, object holder rack (SS)-03, honing stone - 01, cryostat low temperature oil bottles - 02, embedding medium bottles - 02, cryo glue - 02 bottles, freezing spray - 02, brush - 01 and any other required accessory.
  - Smooth surface for proper cleaning and disinfection.
  - Adequate space in cooling chamber with removable waste collection system.
  - Effective, controlled operation with coarse and fine adjustment, including specimen fast freeze function to work with standard power supply.
  - CE/GMP/GLP/ISI/NABL/BIS etc certified.

**Purpose:** For sectioning of frosted sample at low cryogenic temperatures.

### 20. Metal Lab. Island Tables with Sink

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island Working Bench, consisting of following items</td>
</tr>
<tr>
<td>- Table top: 18 to 20 mm thick black granite</td>
</tr>
<tr>
<td>- Frame: Pedestal frame 30x30 mm Sq. tube, powder coating</td>
</tr>
<tr>
<td>- Under bench storage unit:</td>
</tr>
<tr>
<td>a. One Drawer Two Shutters &amp; One Shelf: 2 numbers</td>
</tr>
<tr>
<td>b. Two Shutters &amp; One Shelf: 2 numbers</td>
</tr>
<tr>
<td>- Size: Variable to be customized as per the area, with reagent racks.</td>
</tr>
<tr>
<td>- With Both Side 4 Nos of Ele Switch sockets. North-West Make i.e. 16 A-6 A, 250 V AC and MCB with wiring</td>
</tr>
</tbody>
</table>

**Purpose:** For bench top operations along with storage.

### 21. Double Distillation Unit

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double distillation unit of high grade borosilicate glass or quartz, with primary and secondary boilers, double walled- coiled condenser, collector, receiver, supplied with all required glass and electric fittings, metal stand, tubes and clamps etc.</td>
</tr>
</tbody>
</table>
  - Capacity of 2.5 litre or more with Single or double stage supply options. |
### Specifications for Instruments: Pharmacognosy Section

- Stable and safe heating element.
- Auto cut in low water supply and other safety features.
- Electrical supply: 220/230V AC, 50/60Hz or similar.
- CE/GMP/GLP/ISI/NABL/BIS etc. certified.

**Purpose:** For preparation of high purity pyrogen free double distilled water.

### 22. Desiccator (Laboratory)

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Desiccator made up of good quality transparent borosilicate glass and plastic knobs.</td>
</tr>
<tr>
<td>• To work upto 400 °C</td>
</tr>
<tr>
<td>• Each of 100 and 200 mm diameter.</td>
</tr>
</tbody>
</table>

**Purpose:** For cooling, drying and storage of moisture sensitive substance.

### 23. Desiccator (Vacuum)

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum Desiccator of compact design.</td>
</tr>
<tr>
<td>• Polyethylene or similar strong material cabinet.</td>
</tr>
<tr>
<td>• Approx. 1 square feet internal area.</td>
</tr>
<tr>
<td>• Leak proof, chemical resistant (gasket for an excellent seal).</td>
</tr>
<tr>
<td>• Vacuum release valve (3-way) for release and refilling of inert gas.</td>
</tr>
<tr>
<td>• Glass door.</td>
</tr>
<tr>
<td>• With powder-coated steel wire frame, removable aluminum shelves.</td>
</tr>
<tr>
<td>• Stainless steel pan for granular desiccant.</td>
</tr>
<tr>
<td>• Well tested to a upto 25&quot; of mercury.</td>
</tr>
<tr>
<td>• To work upto 100 °C</td>
</tr>
<tr>
<td>• All the features for safe, effective and controlled operation with standard power supply.</td>
</tr>
<tr>
<td>• CE/GMP/GLP/ISI/NABL/BIS etc certified.</td>
</tr>
</tbody>
</table>

Specific accessories of particular model (if required) should be provided.

**Purpose:** For cooling, drying and storage of moisture sensitive substance.

### 24. Muffle Furnace (Digital)
Specifications for Instruments: Pharmacognosy Section

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Compact, insulated, corrosion resistant, touch screen temperature controller Digital Muffle furnace.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Internal Size / Holding Capacity: 40 cm (L/W) × 20 cm (L/W) 15 cm (H) or better</td>
</tr>
<tr>
<td></td>
<td>• Design temperature: 1000° or better</td>
</tr>
<tr>
<td></td>
<td>• Operating temperature: 900° or better</td>
</tr>
<tr>
<td></td>
<td>• Temperature accuracy: ±2° or better</td>
</tr>
<tr>
<td></td>
<td>• Heating rate: ≤40° /min</td>
</tr>
<tr>
<td></td>
<td>• Temperature control device: PID/PLC control system or better</td>
</tr>
<tr>
<td></td>
<td>• Furnace door: Power cutting off when furnace door open</td>
</tr>
<tr>
<td></td>
<td>• Thermocouple: B type (Pt-Rh to Pt-Rh) with 99.7% purity Alumina tube or better</td>
</tr>
<tr>
<td></td>
<td>• Heating element: MoSi2 heating elements or better</td>
</tr>
<tr>
<td></td>
<td>• Power Supply: 100-240V,50/60 Hz or Double Phase AC type</td>
</tr>
<tr>
<td></td>
<td>• USB port and cord for attachment to computer or printer (optional).</td>
</tr>
<tr>
<td></td>
<td>• Accessory: Electric codes (1 Pc), crucible (10 pcs) crucible writing pencil (1 Pc) and extra fuse (1 Pc).</td>
</tr>
<tr>
<td></td>
<td>• CE/GMP/GLP/ISI/NABL/BIS etc certified.</td>
</tr>
<tr>
<td>Purpose:</td>
<td>For incineration &amp; determination of ash contents.</td>
</tr>
</tbody>
</table>

25. Grinder

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Heavy duty mixture-cum-grinder.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 900 W.</td>
</tr>
<tr>
<td></td>
<td>• CE/GMP/GLP/ISI/NABL/BIS etc certified.</td>
</tr>
<tr>
<td></td>
<td>• Electrical supply: 220/230V AC, 50/60Hz or similar.</td>
</tr>
<tr>
<td>Accessories:</td>
<td>Cord, Jars (0.5-1.5 litre dry and wet) or cleaning accessories etc should be provided along with.</td>
</tr>
<tr>
<td>Purpose:</td>
<td>For size reduction of raw drugs.</td>
</tr>
</tbody>
</table>

26. pH Meter

<table>
<thead>
<tr>
<th>Specifications</th>
<th>The easy-to-use, microprocessor-based multifunctional pH-meter measures pH/EC/TDS etc. as per the compliance of CE/GMP/GLP/ISI/NABL/BIS</th>
</tr>
</thead>
</table>
Specifications for Instruments: Pharmacognosy Section

- Automatic temperature compensation (ATC) to maintain reading accuracy even with fluctuating temperatures.
- 5 point digital pH meter with 0.01 accuracy.
- Range: pH 1-14; ±0.01; resolution: 0.01; temperature: 0-100 °C with inbuilt PT-100 sensor, mV: 0+2000 mV.
- Computer interface will be preferred.
- Instrument should be supplied with acrylic or glass electrodes and additional electrodes (pH/EC/TDS) as applicable and calibration buffers etc as required.
- Chemically resistant finish of the housing for the easiest cleaning.
- The system shall be calibrated to its full range in any NABL accredited Laboratory and certificate shall be issued along with supply.
- Operation manuals (hard and soft copy), cleaning tool kits, calibration kits etc should be provided.
- 5 years warranty from the date of installation. Training on operation and calibration etc. System should be well certified like CE/GMP/GLP/ISI/NABL/BIS etc.

Purpose: For determination of pH of solutions.

Warranty, Maintenance and General Requirements:

- Should be well certified like CE/GMP/GLP/ISI/NABL/BIS as applicable.
- 5 years warranty from the date of installation.
- Appropriate power back-up should be provided along with the respective instrument/s if required for proper functioning.
- Training on operation and calibration (as applicable) should be provided.
- Operation manuals (hard and soft copy), cleaning tool kits and calibration kits (as applicable) should be provided.
ANNEXURE-II

Authorization certificate

To,
The Assistant Director I/c
RARI,
Jhansi.

Respected Sir,

Authority letter against Tender No.________________________ due on ____________

We, M/s________________________________, who are established & reputed
manufacturers of________________________________________ having factory at
_____________________________________________________

(Name & address of agent) to bid, negotiate & conclude the contract
with your institution against above tender for the above goods manufactured by us.
We hereby extend our full guarantee/warranty as per Clause at S. No. 20 of the Other Terms &
Conditions of tender for the goods offered for supply against this invitation of bid from the
above firm. We also confirm that we will provide spares and other consumable items for at
least 5 years after complete warranty/CMC/AMC for next 2 (two) years of these equipments at
reasonable price.
Our other responsibilities include:
1. Information regarding the name of new agent, in case of change of agent
2. -------------------------------------- (Here specify in detail manufacturer’s responsibilities)
The services to be rendered by M/s----------------------------------------------- are as under
1. ----------------------------------------
2. ----------------------------------------
(Here specify the services to be rendered by the agent)

Yours faithfully,

(Signature & Name of manufacturer with address & seal)

Note: This letter of authorization should be on the letter head of the manufacturing concern & should
be signed by a person competent & having the authorization to issue the said certificate on behalf of
the manufacturing firm. The said certificate should also bear the signature of participating bidder as
a witness.
SATISFACTORY PERFORMANCE CERTIFICATE

Certified that M/S __________________________ has supplied the equipment __________________________ which has been functioning satisfactorily at __________________________ department of this Hospital/Institution since ___________.

It is also certified that after sales service provided by the manufacturer M/S __________________________ has been satisfactory.

(Note: This certificate should be on the letter head of the Hospital/Institution & should be signed by HOD/MS/CEO of the Hospital/Institution. The said certificate should also bear the signature of participating bidder as a witness.)

Yours faithfully,

(Signature & Name of manufacturer/Principal with address & seal)
Declaration by the Bidder/tenderer:

I, .................................................................................................................. daughter/ son/ wife of
Shri ..................................................................................................................
........................................................................ Proprietor /Partner/Director/Authorized Signatory of
.......................................................................................... Competent to sign this declaration and execute this tender document.

I/we have carefully read and understood all the terms and conditions of the tender No. RARI/JHS/2019-20/01 Dated: 20/06/2019 and hereby convey my/our acceptance of the same. The information/ documents furnished along with the above application are true and authentic to the best of my knowledge and belief.

This is to certify that I/We before signing this tender have read and fully understood all the terms and conditions contained in Tender document regarding purchase of equipment for Laboratories of RARI, Jhansi. I/we agree to abide them. I /we, am /are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law. No other charges would be payable by Client and there would be no increase in rates during the Contract period.

Date: 

Signature of bidder/tenderer

Name:

Place:

Designation:

Seal:
ANNEXURE-V

CONTRACT AGREEMENT FORM (Specimen)

(Tender No.________________________________________)

THIS CONTRACT AGREEMENT made the ....................... day of ....../....../2019 between
Rate Contracting Authority [Assistant Director I/c, Regional Ayurveda Research Institute, Jhansi]
(Name of Rate Contracting Authority) of India (country of Rate Contracting Authority) (hereinafter
called “the Rate Contracting Authority”) of one part and M/s .............................................................
called “the supplier”) of the other part:

WHEREAS the Rate Contracting Authority invited bids for certain goods and ancillary services viz.
EQUIPMENTS (Brief description of goods” and services) and has accepted a bid by the supplier for
the supply of those goods and services.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this agreement words and expression shall have the same meaning as are respectively assigned to
them in the conditions of contract referred to:
2. The following documents shall constitute the contract between the Rate Contracting Authority and
the supplier, and each shall be read and construed as an integral part of the contract:
   a. This contract agreement:
   b. All the terms and conditions of contract:
   c. Technical Specifications:
   d. The supplier’s financial bid
   f. The Rate Contracting Authority’s notification of rate contract (Letter of award).

3. This contract shall prevail all other contract documents. In the event of any discrepancy or
inconsistency with the contract documents, then documents shall prevail in the order listed above.
4. In consideration of the payments to be made by the Purchaser to the supplier as hereinafter
mentioned, the supplier hereby covenants with the Purchaser to provide the goods and services and to
remedy defects therein in conformity in all respects with the provisions of the contract.
5. The Purchaser hereby covenants to pay the supplier in consideration of the provision of the goods
and services and the remedying of defects therein, the contract price or such as may become payable
under the provisions of the contract at the times and in the manner prescribed by the contract.
Brief particulars of the goods and services which shall be supplied / provided by the supplier are as
under:-
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Item with make, model and catalogue no.</th>
<th>Quantity</th>
<th>F.O.R. Rate per unit (Rs.)*</th>
</tr>
</thead>
</table>

*The above rates are inclusive of excise duty, transportation, insurance, inspection & testing charges and any incidental charges, but exclusive of GST.

6. The prices shall be valid for one year from the date of agreement, unless revoked and thereafter for a further period as agreed upon mutually.

7. The supplier shall agree to deposit 10% performance security, along with as mentioned at Sr. No. 8 of “A. information and conditions relating to submission of bids”, in advance by FDR / Bank Guarantee, for a period of 12 months.

8. The suppliers are not authorized to supply material directly to any state Govt. / Semi Govt. / any other organization on the rate lower than the rate contract.

9. The supplier shall supply the goods directly to the indentor / purchaser at the address given in the supply order.

10. The supplier shall raise bills directly in the name of indenting officer / purchaser against the supplies made directly by them to the indentor’s satisfaction in compliance with the conditions contained in the supply order.

11. The supplier shall receive payment against its bill after all the necessary verifications and installation of equipments. No advance payments will be made in any circumstance.

12. The supplier shall carefully read all the conditions of tender for supply of equipment and accept all terms and conditions in the tender document. Signing this contract means that the supplier has read all the terms and conditions and abide by it.

IN WITNESS whereof the parties hereto have caused this agreement to be executed in accordance with their respective laws the day and year first above written. That, in token of this agreement, both parties have today affixed their signature at Jhansi.

Signed, Sealed and delivered by the Said ................................................. (For the RATE CONTRACTING AUTHORITY)

In the presence of: (1) ........................................................

In the presence of: (2) ........................................................

Signed, Sealed and Delivered by the Said ................................................. (For the supplier)

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