



कृषिमूला ऋद्धिः

Directorate of Research  
Navsari Agricultural University, Navsari-396450, Gujarat.

Tender Document

For

Purchase of Scientific Instruments

NAU/DR/02-2015-16

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- Note:** 1. All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed / photocopy material.
2. The same page numbers are required to be mentioned in CHECK LIST provided

## Chapter 1: Tender Notice - NAU/DR/02-2015-16

### Purchase of Scientific Instruments

Bids from manufacturer/supplier/company are invited for the purchase of Scientific Instruments for Navsari Agricultural University. The list of purchase items under this tender are given underneath. The bids are invited by e-tender through website [www.nprocure.com](http://www.nprocure.com) or [au.nprocure.com](http://au.nprocure.com).

Tender Fee	Rs. 1000
Period for Bid Document Downloading & Uploading	19/10/2015 to 17/11/2015 up to 18:00 Hrs.
The Last date for online tender submission	17/11/2015 up to 18:00 Hrs
Last date for submission of tender fee, EMD and other documents by RPAD / Courier / Speed post	23/11/2015 up to 17:00 Hrs
Bid Validity Period	130 Days
Earnest Money Deposit (EMD)	As per Chapter-5 of tender document
Technical documents available on	<a href="http://www.nprocure.com">www.nprocure.com</a> / <a href="http://au.nprocure.com">au.nprocure.com</a>

### List of Purchase Items:

No.	Item Name
1	SPECTRORADIOMETER (300 to 1100 nm)
2	DOUBLEL-BEAM –SPECTROPHOTOMETER
3	LYOPHILIZER
4	FLURESCENCET MICROSCOPE
5	SPECTRORADIOMETER with computer interface and software for spectral analysis (190-730nm)
6	TREE (PLANT) CANOPY ANALYZER
7	ATOMIC EMISSION SPECTROMETER for Elemental Analysis
8	VETERINARY FUNDUS IMAGING CAMERA
9	BLOOD AUTO ANALYZER/BLOOD CELL COUNTER
10	PRESSURE CHAMBER
11	REAL TIME PCR

Director of Research

## Chapter 2: Instructions to bidders for Online Tender Participation

1. All tender documents can be downloaded free from the website **<http://au.nprocure.com>** or **<http://www.nprocure.com>**
2. All bids should be submitted online on the website **<http://au.nprocure.com>** or **<http://www.nprocure.com>**
3. All bids should be digitally signed. For the details regarding digital signature certificate and related training involved the below mentioned address should be contacted

(n)Code Solutions  
A division of GNFC  
301, GNFC Infotower, Bodakdev,  
Ahmedabad 380054 (India)  
Tel. : +91 79 26857316 / 17 / 18  
Fax : +91 79 26857321  
Toll Free Number : 1-800-233-1010  
[www.ncodesolutions.com](http://www.ncodesolutions.com)

4. The user can get a copy of instructions to online participation from the website **<http://au.nprocure.com>** or **<http://www.nprocure.com>**
5. The service provider should register on the website through the "New User" link provided at the home page, the registration on the site should not be taken as registration or empanelment or any other form of registration with the tendering authority.
6. The application for training and issue of digital signature certificates should be made at least 72 hours in advance to the due date and time of tender submission.
7. For all queries regarding use of digital signature certificate should be addressed to personnel in M/s. (n) Code Solutions.
8. For all queries regarding tender (except item specification) should be addressed to personnel in tendering office address provided below.

Director of Research,  
Navsari Agricultural University,  
University Bhavan, Eru Char Rasta,  
Navsari – 396 450 (Gujarat)  
E-mail: [dr@nau.in](mailto:dr@nau.in)  
Phone / Fax No.: 02637 283160(O)

9. For queries regarding item specifications, contact concerned person as per chapter 7

## Chapter 3: List of Purchase Item

No.	Item Name
1	SPECTRORADIOMETER (300 to 1100 nm)
2	DOUBLEL-BEAM –SPECTROPHOTOMETER
3	LYOPHILIZER
4	FLURESCENCET MICROSCOPE
5	SPECTRORADIOMETER with computer interface and software for spectral analysis (190-730nm)
6	TREE (PLANT) CANOPY ANALYZER
7	ATOMIC EMISSION SPECTROMETER for Elemental Analysis
8	VETERINARY FUNDUS IMAGING CAMERA
9	BLOOD AUTO ANALYZER/BLOOD CELL COUNTER
10	PRESSURE CHAMBER
11	REAL TIME PCR

**Note:** Detail specifications with special terms and conditions of all above listed 11 purchase items are described under respective files mentioned in above list.

## Chapter 4: Terms and Conditions

**Note:** Terms and Conditions listed under chapter 4 are applicable to all purchase items. In addition to this, the product specification document of items may contain additional terms and conditions applicable to respective items.

### 1. **General:**

- 1.1 Navsari Agricultural University (hereinafter referred to as "NAU"), for its various Departments (hereinafter referred to as "the purchaser") for their requirement of Items (as mentioned in Chapter-3) intend to invite offers for supply and installation of Scientific Instruments across the various offices at Head Quarter as well as its sub centers across the seven districts (Surat, Bharuch, Navsari, Dang, Narmada, Tapi and Valsad) of South Gujarat region of Gujarat state. The scanned copy of the demand draft of the Tender Fee and Earnest Money Deposit (EMD) as well as other relevant documents as per check list of the tender are required to be submitted online with the commercial bid on the website **www.au.nprocure.com / www.nprocure.com**. It is compulsory to submit the original / attested photocopies of these all the documents (except commercial bid), company printed literature / catalogue and other necessary documents physically in hard copy to the Office of the Director of Research, Navsari Agricultural University, University Bhavan, Eru Char Rasta, Navsari-396 450, Gujarat State on or before 23/11/2015 up to 17.00 hrs.
- 1.2 Authorized dealers can quote their rates provided they attach a certificate of authorized dealership issued during current financial year: 2015-16 from the manufacturer / principal company. Authorized dealers representing the same company / instrument are free to compete for price, terms, warranty period etc.

In case the vendor is a distributor authorized by an OEM (Original Instrument/Machinery Manufacturer), the following documents must be additionally provided

- **Certificate from OEM that the dealership/channel partnership arrangement with the bidder is in force for a minimum of 2 years.**
- **A letter by the OEM stating that they shall honor the supply/warranty/ AMC commitments independent of continuation of the dealership/ channel partner arrangement with the authorized dealer/channel partner.**

Irrespective of whether the bidder is an OEM or a distributor authorized by the OEM, the following eligibility criteria must be fulfilled

- The bidder should have made a positive operating profit
- The bidder should not be blacklisted by any Government or Government entity.
- The bidder should be in existence for a minimum of three years.

- 1.3 Technical Supporting Documents (TSD) should contain original Demand Drafts of Tender Fee and Earnest Money Deposit (EMD). In addition to these, TSD should also contain the original / photocopy of relevant documents as per check list of the tender (except commercial bid), company literature / catalogue, VAT/CST registration certificate. The envelope must be marked as "**E-tender-2-2015-16: Technical Supporting Documents (Technical bid)**". If bidder fails to submit the TSD offline within time limit, the commercial bid will be disqualified. Please note that the scan copy of any document uploaded must tally with physical submission of original / attested photocopies.
- 1.4 The prices shall be inclusive of all freight, packaging and forwarding, transit insurance, installation charges, applicable taxes like Central Sales Tax, VAT, Excise Duty, Other prevailing taxes / charges as per government rules & regulations as well as FOR destination. The rate should be quoted per unit as specified in Chapter 3.
- 1.5 The bid is non-transferable.
- 1.6 Amendment of bidding documents (corrigendum)
  - 1.6.1 At any time prior to the deadline for submission of bids, NAU may, for any reason, whether its own initiative or in response to the clarification request by a prospective bidder, modify the bidding documents.
  - 1.6.2 The corrigendum will be published on website <http://www.nau.in> and [www.nprocure.com](http://www.nprocure.com) only.
  - 1.6.3 In order to allow prospective bidders reasonable time to take into consideration the amendments while preparing their bids, at its discretion, NAU may extend the deadline for the submission of bids.
- 1.7 Bid currency - Prices shall be quoted in Indian Rupee only.
- 1.8 The items shown in the Chapter-3 are subjected to requirements and the same may be purchased or may not be purchased without assigning any reason.
- 1.9 The successful bidder shall have to execute the purchase orders placed on any date during the validity of the tender at the rate, terms and conditions of the tender.
- 1.10 All the electronics items should comply to international standards for safety, Electromagnetic Emissions, Electromagnetic Immunity etc.
- 1.11 NAU may not issue 'C' or 'P' form of sales tax or any other type of tax relaxation form of Government and the bidders are therefore requested to quote the rates of sales tax or any other taxes payable in absence of such forms/declarations.
- 1.12 Rate should be quoted along with excise duty / custom duty and other taxes. However, NAU being educational institute, therefore, NAU is eligible for exemption of such duty from final payment.

- 1.13 The lowest price is not the criteria and emphasis is placed on quality and specifications of the material. The NAU has right to reject any or all the offers and invite fresh quotations if need arises. The NAU further reserves the right of selecting the brand and accepting or otherwise any of the conditions stipulated by bidder.
- 1.14 If in any case the quoted item is not available in the market, the successful bidder will have to supply higher version/replacement of that item in the quoted cost in the same time duration with prior approval of NAU.
- 1.15 The successful bidder will held responsibility for the items sufficiently and properly packed for transport so as to ensure their being free from loss / damage / injury on arrival of destination NAU premises. The material should be supplied in the original company's packing which shall indicate packing details and other particulars as required under the statutory provisions. Inner and outer packing of boxes / cartons should be of standard design. The final packing of cartons of corrugated boxes shall be complying with ISS standards. A packing slip shall indicate clearly and legibly the name of the product, batch number, quantity, date of manufacturer, date of expiry, gross and net weight, and consignee's name & address and other particulars as required. In the event of breakages or loss of items during transit / installation against requisition order the said quantity will have to be replaced/supply by the supplier (Selected bidder) without any additional charges.
- 1.16 Tender Supporting Documents (TSD) received late and/or not submitted in the prescribed formats or in the prescribed manner, incomplete in any respect or not accompanied by prescribed documents are liable to be rejected. NAU will not be responsible for non-receipt of tender within the specified date and time due to any reason including postal delays.
- 1.17 **All rights are reserved with the University Authority to accept or reject any or all the tenders received without assigning any reasons thereof.**
- 1.18 The NAU may place repeat orders against the acceptance of tender within a period of validity, subject to the same terms and conditions originally provided in advertised tender and selected bidder shall accept the same.
- 1.19 Successful bidder failing to provide after sales services would be permanently blacklisted.
- 1.20 All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed /photocopy material. The same page numbers are required to be mentioned in CHECK LIST provided.



**2. Payment:**

Advance or part payment will not be entertained.

**3. Delivery:**

The application for extension of delivery period shall be sent to concerned ordering office of Navsari Agricultural University at least 5 days prior to the expiry of delivery period of each items. The officer in charge, who is placing the order may grant extension or reject the application and their decision in the matter shall be final and binding to all.

**4. Warranty:**

4.1 Period of Warranty: The bidder must provide comprehensive onsite warranty for **minimum 2 years or as asked in specifications**, from the date of installation for all items. Please clearly mention the parts, which are not covered under warranty, separately.

4.2 If any instrument(s), properly not working and repetitively fault is found, say twice a week during the warranty period, the bidder shall replace the item with new item without any additional cost to the purchaser.

**5. Demonstration:**

Supplier has to perform on-site live demonstration as per trial requirements of concerned scientist with bidders'/ suppliers' consumables and reagents.

**6. Dispute:**

In case of any dispute, final decision of The Executive Engineer, Navsari Agricultural University, Navsari – 396 450 will be binding upon all. In case of any dispute arises in respect of this tender, a suit in that behalf shall be subject to Navsari Jurisdiction.

## Chapter 5: Tender Fee, EMD and Security Deposit

**Bidder has to submit non refundable Tender Fee Rs. 1000 in the form of Bank Draft in favor of "Navsari Agricultural University Fund A/c", payable at Navsari.**

### **Earnest Money Deposit Calculations:**

The bidder shall calculate Earnest Money Deposit (EMD) Amount is depending upon the items quoted. EMD for the respective items is listed in below table.

No.	Item Name	EMD amount in Rs.
1	SPECTRORADIOMETER (300 to 1100 nm)	42000
2	DOUBLEL-BEAM –SPECTROPHOTOMETER	15000
3	LYOPHILIZER	30000
4	FLURESCENCET MICROSCOPE	75000
5	SPECTRORADIOMETER with computer interface and software for spectral analysis (190-730nm)	42000
6	TREE (PLANT) CANOPY ANALYZER	42000
7	ATOMIC EMISSION SPECTROMETER for Elemental Analysis	105000
8	VETERINARY FUNDUS IMAGING CAMERA	30000
9	BLOOD AUTO ANALYZER/BLOOD CELL COUNTER	14500
10	PRESSURE CHAMBER	15000
11	REAL TIME PCR	36000

*Example (for learning purpose only): If bidder is quoting for Item No.2 and Item No. 4, then EMD will be 15000+75000=90000.*

**Earnest Money Deposit:** Tender shall be accompanied by an Earnest Money Deposit, without which tenders will not be considered. The amount should be deposited in the form of Bank Draft only, in favor of "Navsari Agricultural University Fund A/c", payable at Navsari.

**Refund of Earnest Money:** The earnest money of unsuccessful Bidder will be refunded.

**Forfeiture of Earnest Money:** The earnest money will be forfeited in the following cases:

- When Bidder withdraws or modifies the offer after opening of tender but before acceptance of tender.
- When Bidder does not execute the agreement if any, prescribed within the specified time.

**Security Deposit:** Successful bidder has to submit 5 % of purchase order as a Security Deposit in the form of Bank Draft only, in favor of "Navsari Agricultural University Fund A/c", payable at Navsari.

**Refund of Security Deposit:** The amount of security deposit will be refunded after successful installation/demonstration of the instruments and same will be released after two years of installation on the demand made by the bidder.

**Forfeiture of Security Deposit:** The security deposit will be forfeited if,

1. Successful bidder fails to supply the items within the delivery period.
2. Supplier fails to comply specifications of instruments, installation/demonstration of the instruments.
3. Supplier is not providing satisfactory post sale services and support.

### **Tender Fee, EMD and Tender Supporting Document Submission Address:**

The Director of Research,  
University Bhavan,  
Navsari Agricultural University, Eru Char Rasta, Navsari – 396450 (Gujarat)

## **Chapter 6: Technical Bid Document (TBD) Submission**

This chapter consists of forwarding letter, company detail, declaration and signed terms and conditions.

All these pages required to be submitted in hard copy with physical document submission. While Company Detail page is also required to be submitted in n-procure as well.

Do not provide other unnecessary documents like explaining company profiles, nature of the company, services and miscellaneous things which is not inquired.

Do not put financial bids of the Items anywhere in the Technical Bid Document submission under physical submission.

From :

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

To,  
The Director of Research  
Navsari Agricultural University,  
Navsari 396 450, Gujarat

**Subject:** Submission of tender for the purchase of Scientific Instruments  
[NAU/DR/02-2015-16]

Sir,

I/We hereby submit the offer (duly filled) in response to the advertisement/tender notice **NAU/DR/02-2015-16** for **Scientific Instruments** in accordance with the terms and conditions of such supply and declare as under:-

I/We hereby offer to supply to Navsari Agricultural University, Navsari in accordance with the terms and conditions, hereto annexed and at the prices given by me/us in commercial section of online tendering.

I/We enclose herewith Tender Fee and EMD in favor of "Navsari Agricultural University Fund Account" drawn on State Bank of India, Navsari [Branch Code No. 3889.] with following details.

	Amount (Rs.)	Amount in Words	DD No. and Date
Tender Fee	1000	Rs. One Thousand only	
EMD			

EMD against Item Nos.: \_\_\_\_\_,  
\_\_\_\_\_  
(Specify Items Nos. exactly you are bidding as per chapter-3)

I/We carefully read and understood and agree to abide by the said terms and conditions set in the tender document hereto annexed and the description/ specifications of the items.

I/We agree to hold this **offer open till 130 days** from the date of due date of opening of the tender.

I/We agree that in case of dispute, if any, the decision of the The Executive Engineer, Navsari Agricultural University, Navsari 396 450 shall be final and binding upon me/us.

Signature of bidder  
(with Stamp, Name and Designation)

**COMPANY DETAIL- supported by document proof**

1. Name of supplier / firm :
2. Complete postal address : Document copy
3. Telephone Number :
4. FAX Number (if any) :
5. E-mail address (if any) :
6. Sales Tax No. : Document copy
7. VAT / TIN No. : Document copy
8. PAN No. : Document copy
9. Registration No. : Document copy
10. Any other details:

We agree to abide by the terms and conditions of supply mentioned in this tender document.

Signature of Bidder  
(With Stamp, Name & Designation)

### **Check list- COMPULSORILY DULY COMPLETED**

<b>Sr. No.</b>	<b>Document / Certificate</b>	<b>Attached Yes/No</b>	<b>Sequential Page Number</b>
1	Tender Fee: Demand draft of Rs. 1000/- (Non-Refundable)		
2	EMD : Demand draft as applicable (Refundable)		
3	Company details (only in tender format given)		
4	Valid Registration Certificate of bidder's firm. (Shop Act Registration / Partnership deed / Memorandum of article / Registration of firm / Small Scale Industry Registration etc.)		
5	Original affidavit from the bidder that business entity is not blacked listed (notarized on Rs. 100 stamp paper)		
6	IT returns of last 3 financial years i.e.,2012-13, 2013-14, 2014-15		
7	Manufacturer certificate / subsidiary company certificate / Fresh Authorization Certificate (whichever is applicable)		
8	Specification Supporting Documents with color catalogue		
9	Valid quality certificate like ISO or equivalent		
10	Signed Terms & Conditions (Chapter -4)		

- Note:** 1. All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed / photocopy material and same should be provided in the CHECK LIST above
2. All photocopied documents must be attested with seal and signature **bearing page numbers.**
3. List of Institutes/organizations where supply of quoted item/s is made is preferable.

#### **DECLARATION**

I/We solemnly declare that we have attached all the documents mentioned here above and mentioned in the tender. It is verified that all the certificates / permissions/ documents are valid and current as on date and have not been withdrawn / cancelled by the issuing authority.

I/We further undertake to produce on demand the original certificate / permission / document for verification at any stage during the processing of the tender.

I/We also understand that non-compliance of any documents will be treated as non-respective tender and we will lose our claim to participate in the Tender Enquiry automatically and our tender will be liable to reject.

Name of the Firm:

Signature of Bidder  
(With Stamp, Name & Designation)

## Chapter 7: Contacts and Correspondence details

### Correspondence address for submission of Physical documents :

Director of Research,  
University Bhavan,  
Navsari Agricultural University,  
Eru Char Rasta, Navsari – 396450 (Gujarat)  
Mo. 9726138886 (For Overall queries related to tender, Contact in office hours only)

### Item wise Contact Persons

(For queries related to item specifications only, contact in office hours only)

1	SPECTRORADIOMETER (300 to 1100 nm)	09974583890
2	DOUBLE-BEAM –SPECTROPHOTOMETER	07600059128
3	LYOPHILIZER	09662030836
4	FLURESCENCET MICROSCOPE	09662030836
5	SPECTRORADIOMETER with computer interface and software for spectral analysis (190-730nm)	09408720173
6	TREE (PLANT) CANOPY ANALYZER	09408851342
7	ATOMIC EMISSION SPECTROMETER for Elemental Analysis	09724304673
8	VETERINARY FUNDUS IMAGING CAMERA	9879687630
9	BLOOD AUTO ANALYZER/BLOOD CELL COUNTER	8128686716
10	PRESSURE CHAMBER	9725018791
11	REAL TIME PCR	09662030836

## **SPECIFICATIONS OF ITEMS notified in eTender : NAU/DR/02-2015-16**

### **1. SPECTRORADIOMETER (300 to 1100 nm)**

A dual channel spectroradiometer (VIS/NIR), portable instrument capable of unattended, simultaneous measurement of incident and reflected light under any sky conditions including clouds with following features:

Inbuilt memory, screen display, long life battery, GPS capability, fibre optic along with data acquisition and analysis software; carrying case, can be used for monitoring of ecosystems, measuring leaf/canopy reflectance and quantifying Chlorophyll in leaves along with standard accessories.

#### **Technical specifications:**

- Spectral wavelength: VIS/NIR (300 to 1100 nm),
- Raleigh Resolution: < 10 nm
- Bin Size (diode array): 3.3 nm
- Absolute Accuracy: < 0.3 nm
- Synchronization Accuracy: 20  $\mu$ s (Approximate)
- Scan Time: < 1 second (plus integration time)
- A/D Converter: 16 bit (dynamic range of 65,000 A/D counts)
- Integration time: 4-3,200 ms
- Fiber Optic Inputs: Standard SMA 905 connectors
- Power: Internal rechargeable 7.2V Li-Ion battery (including charger) providing up to 10 hours operation.
- Operating Temperature: 0-50<sup>0</sup>C
- Display: 7.2"VGA (640 x 480) color STN LCD
- User Input: 24 keys plus touchpad for data input, virtual keyboard, and display contrast
- PCMCIA: Type 1. For additional data storage. Memory dependent upon RAM card used.
- Weight: light weight
- Straight Fiberoptic, Straight Fiberoptic-2m, SMA-custome serrule (for cosine receptor), Cosine receptor, reference standard, basic spares, software & operating manual *etc.*
- Provide other optional information on absorption /transmittance sensor separately.

### **2. DOUBLE BEAM SPECTROPHOTOMETER**

A new type of optical structures and CT Monochromator, Coupled with special PC and software.

#### **Function**

- Automatically deducted cuvette error
- automatic wavelength: keyboard input minimum interval is 0.1nm.
- Photometric Measurements: Testing given wavelength transmittance, absorbance coefficient and energy absorbance measurements.
- Quantitative determination: single-wavelength method, 1-3 order linear standard curve fitting, curve up to establish a standard 9 standard points.
- Multi-wavelength measurement: having set up five wavelength can be set for continuous determination of the same sample.

#### **Feature**

- Automatic eight joint pool: one can put seven samples greatly improved measurement sample analysis speed.
- Automatically deducted cuvette error: photometric accuracy (measured at low sample concentration) is more accurate.
- Spectral bandwidth is small: pure instrument monochromatic high resolution. Ultra-low stray light: the high-concentration samples test more accurate.
- Lasting stability: the ratio of monitored double-beam optical, electrical systems, ensure long-term



stability instrument.

- Display and Operation: LCD display, menu-based interface work, user-friendly design, simple user actions.
- Light source replacement is simple and convenient: deuterium lamp base flange structure, deuterium lamp replacement without special tools, replacing road lamp replacement time debugging steps, the instrument commissioning and maintenance easier.
- With USB interface: coupled with special software can be connected to a PC, extended to a variety of test functions (spectral scanning, power measurement, etc.) including the number of stored data.

**Standard Specifications:**

Optical system	Monitoring the proportion of double-beam
Spectral Bandwidth	1.8nm
Wavelength range	190 ~ 1100 nm
The wavelength of maximum permissible error	± 0.5nm
Wavelength repeatability	≤0.2nm
Photometric Range	T: 0 ~ 200.00% TA: -0.301 ~ 4.000Abs
Transmittance than the maximum permissible error	± 0.3% T
Transmittance Repeatability	≤0.1% T
Stray light	≤0.05% T (220nm, 340nm Office)
Baseline flatness	± 0.002A
Drift	≤0.001A / h (500nm Office)
Noise	100% (T) line noise ≤0.1% (T) 0% (T) line noise ≤0.05% (T)
Monitor	128 × 64 large-screen LCD
Dimensions	540x445x230 (mm)

The imported version with 8 Quartz cuvette, PC and software is preferable.

ISO/CE/any other certificate is mandatory

**3. LYOPHILIZER**

Compact, multi-tasking unit with 5 ltr sample capacity, with work surface of 375 mm diameter and can accommodate variety of drying accessories used for flasks/vials/ampoules and bulk tray etc. All the accessories are modular in construction, independent, drop-on type and do not require any fastening.

<b>Instrument</b>	<ul style="list-style-type: none"> <li>• Condenser volume: 7.2 litres.</li> <li>• Max ice capacity: 5kg.</li> <li>• Condenser Temperature ≤ -105°C± 5 °C @ 200</li> <li>• Digital display of vacuum, with provision for set point vacuum control thru manual fine control needle valve.</li> <li>• Continuous digital display of ice condenser temperature</li> <li>• CFC Free cascade refrigeration system.</li> <li>• 2 X 1/3 HP hermetically sealed compressors.</li> <li>• Single ice bank SS chamber with smooth walled vertical, corrosion resistance</li> <li>• Condenser chamber with hot gas defrost.</li> <li>• Independent switch control. A solenoid acting isolation valve is provided between the pump and the ice condenser chamber.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Independent bench top unit with caster wheel.</li> </ul>
<b>Drum</b>	<ul style="list-style-type: none"> <li>• Drying chamber/drum manifold: Fully functional Drying chamber /drum manifold and full set of compatible adaptors for different applications.</li> <li>• Other Manifold: Fully functional standalone manifold with changeable Rubber adapter for 50ml, 100ml, 250 ml Flasks and Vials.</li> <li>• Chamber with a top lid and sealing gaskets.</li> <li>• Suitable for freeze drying pre-frozen bulk samples in Petri dishes and trays <i>etc.</i></li> <li>• <b>Accessories for freeze-drying in large quantity of ampoules and sealing under vacuum</b> (Spin Freezer for primary drying, &gt;24 port secondary drying manifold, Hand Held Sealing Torch)</li> </ul>
<b>Accessories</b>	<ul style="list-style-type: none"> <li>• quick seal rubber valves, Rubber adapters, shelf heated bulk rack assembly, shelves, trays, accessories for freeze drying pre frozen samples (Bulk rack assembly, Heatable shelves, SS product trays Acrylic cylinder, Top cover, Heater control unit)</li> </ul>
<b>Application</b>	<ul style="list-style-type: none"> <li>• Lyophilization of bacterial cultures, biomolecules, Chemicals <i>etc.</i></li> </ul>
<b>Warranty</b>	<ul style="list-style-type: none"> <li>• <b>Five</b> years extended warranty.</li> </ul>
<b>Training</b>	<ul style="list-style-type: none"> <li>• One pre and post installation at company's training facility and one onsite training each year up to warranty period for the three persons for three days</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>• Any accessories and necessary requirement for the installation and to perform our application tenderer has to provide all such facilities like housing and temperature control requirement (AC, table <i>etc.</i>), electrification and specific power supply requirement, sample preparation tools and any other requirement for IQ/OQ/PQ of the instrument <i>etc.</i></li> <li>• Any glassware, plastic ware chemicals, standards or any other consumables required at the time of installation and checking of the OQ/PQ must be provide by the tenderer.</li> <li>• 5.0 KVA UPS of 1 hour backup</li> </ul>

#### 4. FLURESCENCET MICROSCOPE

- Fluorescent Trinocular Motorized Microscope with Imaging attachment
- High quality optics with latest Infinity Colour Corrected System (IC2S) for high brightness, rich contrast and superb colour correction. All optics coated with anti- reflection / anti-fungal treatment.
- Fully Apochromatically Corrected light path
- Microscope stand with Z-drive motorized with TFT monitor for microscope control.
  - Z-drive mot. basic, stepsize 25 nm, with fine drive knob and fine drive disk, flat with scalable, changeable
  - Key Ring Function: Configurable to control shutter, RL, TL Shutter, Objective change, work/load position of stage, changing of reflector cubes.
  - transmitted-light illumination motorized.
  - Light Control motorized.
  - main controller incl. USB, RS 232 and TCP/IP interface
  - stage/condenser carrier, detachable
  - external 12V DC 100W power unit, stabilized, 100V...240V AC/ 50...60Hz/ 230VA
  - USB cable and country-specific line cable
- Seven position Motorized objective nosepiece
- 6-position reflector turret motorized
- Continous Luminous field diaphragm with Apochromatic beam path
- Filter set transm. light with neutral-density and color filters, d=25mm consisting of 4 neutral-density filters 1x25%, 2x6% and 1x1.5% transmission, as well as 1x green filter and 1x conversion filter 3200-5500K. For integration in filter wheels, discrete, motorized
- Binocular phototube 15°/23 (100:0/0:100), upright image adjustable, camera port with interface 60N
- Shutter for transmitted-light illumination
- Mechanical stage 75x50 R basic,

- Hard coat anodized surface 220 x 170 mm stage plate, covered X-guide positioned at bottom, right drive 135 mm (extendable by 15 mm) with friction setting
- Halogen Illumination of 100W
- Objectives should be A-Plan "A-Plan" 5x/0.12 (WD=9.9mm), "A-Plan" 10x/0.25 Ph1 (WD=4.2mm), "A-Plan" 20x/0.45 Ph2 (WD=0.5mm), "Plan-Neofluar" 40x/0.75 Ph2 (WD=0.71mm), "Plan-Neofluar" 100x/1.30 Oil Ph3 M27 (WD=0.20mm), incl. , oil 20 ml
- 8 Position Achromatic-aplanatic universal condenser 0.9 BF, DF, Phase DIC motorized with motorized front lens, Motorized aperture diaphragm and motorized turret disk, with centerable Ph1, Ph2, Ph3 and DF stops integrated, 3 mounts for DIC condenser modules, 1 separate position for bright field For objective magnifications 1.0x-100x, WD=1.2mm
- Achromatic/Aplanatic 0.9 condenser for Bright field, Dark field and DIC. The darkfield condenser for 2.5X to 100X.

### 5. SPECTRORADIOMETER with computer interface and software for spectral analysis (190-730nm)

Items	Specifications
<b>Portablespectroradiometer</b>	
<i>Single channel (VIS/NIR)</i>	High precision
Range:	190-730 nm (VIS/NIR)
Calibration	No recalibration to be required after standardization
Rapid measurement	(< 1 second)
Lightweight Field portable	Rugged aluminum enclosure with field carrying case
Interface	Flexible foreoptic
User interface and software	User friendly
Data storage	Unlimited storage
Compatibility	Should be compatible with GPS
<b>Software Features</b>	
<i>capability</i>	<i>Manual or auto-scan</i>
<i>integration time</i>	<i>User selectable</i>
<i>graph scaling</i>	<i>Manual or automatic</i>
<i>Selection R/A</i>	<i>Switch from raw data to reflectance/absorbance data</i>
<i>Calculation of common vegetation indices</i>	<i>NDVI, mNDVI, PRI, WBI, summed green reflectance and red/green ratio</i>
<i>Functions</i>	<i>mathematical functions on stored data</i>
<i>Data saving</i>	<i>Manual or auto-save data</i>
Compatibility	Should be compatible with GPS
<b>Accessories with system</b>	
Fiber Optic Cable	with 20° FOV
Leaf Clips	Standard Leaf Clips
Reference Standard	for calibration
Receptor	Cosine Receptor
FOV Lens Assembly	(°): 3°, 6° & 12°

### 6. TREE (PLANT) CANOPY ANALYZER

**General requirement:** Tree (Plant) Canopy Analyzer for measurement of Leaf Area Index at above and below the forest/ tall canopy and it is measured with built-in GPS and possible for corrections due scattering. Instrument should provide Leaf Area Index and other parameters (described below) of tall trees in Forest Canopy, Isolated tree condition, plantation trees/ seedling (Row trees).

**Desirable output:** Leaf Area Index, Foliage Density, Standard Error of LAI, Mean Tip Angle, PAR, Gap

Fraction, Canopy (crown) Volume, Total Foliage Area, Standard error of the Mean Tip Angle

**Control Unit: Instrument with built-in GPS and software for corrections due to scattering:**

- Sensor Inputs: 2 no. for both beneath the canopy and outside (open condition)
- Connectors for Optical Sensors
- Connectors for Light Sensors
- Inbuilt Memory: minimum of 128 MB for Data Storage with extendable up to 2GB or more
- Display: atleast 128x64 graphics display
- Communications: USB port for connecting external hard disc or memory card

**Optical Sensor:**

- Two optical sensor –one for beneath the canopy and other for outside the canopy (open condition)
- Sensor output: connector for control unit interface
- Memory: minimum of 1 MB flash memory for record storage.
- Battery Life: minimum of 180 hours of typical operation
- Optics: 1.00° maximum decentering error as measured from center of mass of ring 4. 0.50° maximum magnification error as measured from the center of mass of ring 4
- Radiation Rejection: > 99% from 490-650 nm; > 99.9% above 650 nm
- Wavelength Range: 320-490 nm
- Nominal Angular Coverage: five rings-Ring 1: 0.0-12.3° ; Ring 2: 16.7-28.6° ; Ring 3: 32.4-43.4° ; Ring 4: 47.3-58.1° ; Ring 5: 62.3-74.1°
- Lens Coating: MgF2 for improved transmission at oblique angles (external and internal lenses).
- View condition: Provide view of 10°, 45°, 90°, 180°, and 270° quadrants

**Battery:** Rechargeable- NiMH/ Lithium ion

**Other accessories:** Data cable, USB cable, Carrying case, Charger, operating manual, associated software with laptop for data processing and storage, view-restrictors, diffuse cap, belt clip.

## 7. ATOMIC EMISSION SPECTROMETER for Elemental Analysis

<b>Technical</b>	<p><b>SPECTROMETER:</b></p> <ol style="list-style-type: none"><li>1. The instrument must use a fast scanning, high resolution optical system with a min. focal length of 600 mm incorporating a single solid state detector with holographic diffraction grating.</li><li>2. The entire spectrometer system must be enclosed in a purgeable optical enclosure.</li><li>3. The spectrometer must not require any source lamps – either for the sample measurement or for the background measurement. The vendor should specify how this is achieved in their response to this tender.</li><li>4. The spectrometer must view the atomization source end on (axially) with radial torch.</li><li>5. The instrument must be capable of continuously measuring wavelengths over the range from 180 to 780 nm or more to enable determinations across the entire spectrum, both UV and visible.</li><li>6. The instrument must include a user replaceable pre-optics window for easy and simple maintenance when running difficult samples and should provide capability to purge the optics with either nitrogen or air to exclude dust, dirt and acid fumes and maximize instrument performance throughout the life of the instrument.</li></ol> <p><b>SYSTEM DETECTOR:</b></p> <ol style="list-style-type: none"><li>1. The instrument must utilize a single focal plane with one solid-state detector must be a UV sensitive solid state CCD or better that is optimized for performance across the entire emission spectrum.</li><li>2. The detector should be hermetically sealed, eliminating any need for purging of the detector.</li><li>3. The detector must feature high speed binning for anti-blooming protection to enable the measurement of trace levels in the presence of major matrix constituents and must be Peltier cooled to at least 0 Deg C.</li></ol> <p><b>ATOMIZATION SOURCE:</b></p>
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	<ol style="list-style-type: none"> <li>1. The atomization source must run at an operating frequency of 2450 MHz. The atomization source must be computer controlled and provide optimum performance with a power output of 1,000 watts.</li> <li>2. The universal atomization source must be an air cooled design with a solid-state, high voltage power supply, eliminating the need for an external water re-circulator.</li> <li>3. Ignition and shut down of the atomization source must be computer controlled and totally automated.</li> <li>4. The instrument must include a gas flow across the atomization source to protect the pre-optics from the heat of the atomization source. <b>The vendor should specify how this is achieved in their response to this tender.</b></li> </ol> <p><b>GAS FLOW CONTROL:</b></p> <ol style="list-style-type: none"> <li>1. Gas flows for the atomization source must be computer enabled with fixed flow settings for optimum use. Optimum performance must be achieved using a fixed outer flow of 20 L/min. and a fixed intermediate flow of 1.5 L/min. The nebulizer gas flow controlled using a mass flow controller.</li> </ol> <p><b>SAMPLE INTRODUCTION SYSTEM:</b></p> <ol style="list-style-type: none"> <li>1. The system must use a three channel, variable speed, computer controlled peristaltic pump for sample introduction, and with future scope of up-gradation to 5 channel system. Option for online hydride vapor generation system and provision to measure non hydride and hydride forming elements in a single run.</li> <li>2. The instrument must use sample introduction components viz., glass double pass spray chamber, inert nebulizer and multi-purpose peristaltic pump tubes.</li> <li>3. The atomization source must be a single piece design and be incorporated into a cassette design enabling easy removal and replacement without requiring the use of special tools. Must be mounted vertically for improved matrix tolerance.</li> </ol> <p><b>SOFTWARE:</b></p> <ol style="list-style-type: none"> <li>1. The software must provide capability for a novice user to automatically load a preset method by simply clicking an icon on the desktop. The method should have all required parameters already set to the optimum parameters, enabling the user to simply ignite the plasma and start analysis.</li> <li>2. The software must have a library of preferred analytical wavelengths providing relative intensities of each wavelength and graphically highlight potential interferences based on other selected analytes, for easy method development.</li> <li>3. To improve analytical precision, the instrument must be able to read both background and analyte emission data simultaneously and allow for manual or automatic background correction. Must provide at least three different forms of background correction.</li> <li>4. The software must also provide the capability to apply correction for spectral interferences using spectral modeling techniques in real time. The correction technique used must be able to correct for up to 10 interfering elements simultaneously. The system must be able to apply spectral interference correction in addition to background correction post sample analysis, eliminating the need to reanalyze the sample.</li> <li>5. The software must provide capability to measure the same analyte using different wavelengths in the same determination so that the most sensitive line can be used to achieve the best detection limits and less sensitive lines can be used to measure higher concentrations. This enables extended dynamic range during the measurement, without re-measuring samples.</li> <li>6. The software must continuously monitor gas pressures, safety interlocks, temperatures inside the atomization source and operation of the atomization source. If any interlock is tripped, the atomization source should be shut down immediately and automatically.</li> </ol>
<b>Application</b>	<ol style="list-style-type: none"> <li>1. Able to analyze plant available elements like P, K, Fe, Mn, Zn, Cu, S, Ca, Mg, Mn, Co, Hg, Ni, As, Pb, Cr, Cd, Si, Se, Mo, Al &amp; B etc. from soil up to ppb level. As well as the machine should be able to analyze above mentioned elements from diverse kind of</li> </ol>

	<p>samples like water , effluent, fertilizer, plant , food, animal etc. in ppb level.</p> <ol style="list-style-type: none"> <li>2. Capable of simultaneous measurement of sample and background using a solid-state CCD detector to measure waste water samples and future upgradable to acid and organic samples including oils.</li> <li>3. Determination all desired elements as above in one analytical method/run.</li> <li>4. System should run with N<sub>2</sub> gas and does not require expensive gases.</li> </ol>
<b>Additional accessories</b>	<p>The supplier should quote all the accessories required for operating the instrument and other accessories required for running the instrument</p> <ol style="list-style-type: none"> <li>1.N2 generator.</li> <li>2.Wavelength calibration solution 500mL with concentration 50 ppm/ multi-element standards</li> <li>3.Plasma Torch-2nos.</li> <li>4.Compatible Air compressor with desired flow to N<sub>2</sub> generator / Gas Cylinders/Gas Generators/regulators</li> <li>5.Appropriate UPS with one hour back up.</li> <li>6.Fume hood with exhaust.</li> <li>7.PC (64-bit running under the Microsoft Windows 7 operating system)-printer.</li> </ol>
<b>Warranty:</b>	Five years extended warranty.
<b>Training:</b>	One pre and post installation at company's training facility and one onsite training each year up to warranty period for the three persons for three days
<b>Other:</b>	<p>Any accessories and necessary requirement for the installation and to perform our application tenderer have to provide all such facilities such as housing and temperature control requirement (AC, dehumidifier, non-vibrating table <i>etc.</i>), special electrification and specific power supply requirement, sample preparation tools and any other requirement for IQ/OQ/PQ of the instrument <i>etc.</i></p> <p>Any glassware, plastic ware chemicals, standards or any other consumables required at the time of installation and checking of the OQ/PQ must be provide by the tenderer.</p>

## 8. VETERINARY FUNDUS IMAGING CAMERA

### Specifications

- Dimensions: 82.30 (w) x 166.50 (h) x 66.50 (d) mm
- Power supply: Rechargeable Ni-MH Battery

### Handset features

- High resolution 2.4" TFT-LCD display with 262000
- Colors and antireflective coating
- 2 GB SD memory card
- Bayonet connector for attachable optics modules
- Integrated lens for general imaging
- Average usage time 1 h 30 min continuous use with full battery

### Imaging Functionality

- 5 Mega Pixel CMOS image sensor
- Image format: JPEG
- Video format: MPEG-4/MPEG-1
- Resolution in general mode: 2560 x 1920 Pixels
- Autofocus

### Connectivity

- PC with USB port – no driver installation needed

### Fundus imaging camera

- Imaging with a wide 40° field of view
- Targeting and image capturing with white light or infrared (IR) light
- Image resolution: 1920 x 1440 Pixels

- Dimensions/weight: 132.10 (h) x 55.20 (d) mm/180 g
- Diopter compensation: -20 D to +20 D

#### Anterior segment lens

- White and blue LEDs for image targeting and capturing
- Autofocus and optional manual adjust
- 6 x Digital zoom
- Image resolution 2560 x 1920 pixels
- Dimensions / weight: 79 x 70 mm / 80g

### 9. BLOOD AUTO ANALYZER/BLOOD CELL COUNTER

1	Fully automated
2	Specially designed for <b>Veterinary Hematology Analysis</b>
3	Compatible with routinely used anticoagulants
4	Able to analyze all important parameters ( <b>listed in Column no. 6</b> ) of following species: Cattle, Buffalo, Sheep, Goat, Horse, Camel, Dog, Rat, Mice, Rabbit, Cat
5	Four/ five part analysis <b>Rates for four parts as well as five parts analyzer is to be quoted separately with all other specifications will remain same.</b>
6	Shall analyze the following parameters: <b>RBC Parameters:</b> Total Erythrocyte Count (TEC), Hemoglobin (Hb, Hgb), Hematocrit (Hct), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC), Red Cell Distribution Width (RDW), <b>Reticulocyte Count under RBC parameters</b> <b>WBC Parameter:</b> Total Leukocyte Count (TLC), Absolute and Relative Neutrophil Count, Absolute and Relative Lymphocytes Count, Absolute and Relative Monocytes Count, Absolute and Relative Eosinophil Count, <b>Absolute and Relative Basophil Count under WBC parameter</b> <b>Platelets Parameter:</b> Total Platelet Count, Mean Platelet Volume
7	Allows analysis of low volume (50 microliter) samples
8	Cyanide free reagents shall be used by analyzer
9	Minimum run of 20 blood samples per hours.
10	Analysis other body fluids viz. thoracic fluid or ascitic fluid
11	Inbuilt touch screen for easy operation
12	Inbuilt blood sample mixer
13	Supplied with either in built printer or external printer
14	Analyzer must be supplied with all other required accessories
15	USB port for easy software and data management
16	Shall have integrated cleaning system and blood clot shall not be formed in the system
17	<b>One year extended warranty</b>
18	List of system consumables should be quoted with prices valid for next two years

### 10. PRESSURE CHAMBER

#### Specifications:

Stainless steel body

Providing reading in Mpa (upto 4 Mpa)

Including Nitrogen gas portable cylinder, grass compression gland, instrument mounted eye lens, water potential begs having zip lock type opening on the top and fitted better into the chamber.

### 11. REAL TIME PCR

- Real time PCR with block of 96 x 0.2 ml tubes or plate to run typical 0.2ml tubes, strips, and plates"
- Peltier Cooling and Heating for uniform temperature control.

- The base thermal cycler for standard PCR.
- Gradient capacity to run eight different temperature with Dynamic Ramping in Real-time.
- Detection of 5 or more different fluorescent reporters in the same tube.
- Capable of Detecting Cy5, FAM/SyBR Green, VIC/JOE, TAMRA/Cy3, Texas Red, Quasar705, ROX
- Maximum Ramping speed :  $\geq 4.5$  °C/Sec
- With one channel dedicated for FRET experiments.
- Excitation – Emission range: 450 – 730 nm
- No internal reference dye required. True 5 Color Multiplexing with use of 5 different fluorophores without the need of addition of any internal reference dye.
- LED excitation source with Photodiode detector.
- Dynamic range of 10 orders.
- Open system capable of running various chemistries using TaqMan, Molecular Beacon, SYBR green etc.
- Open system to accommodate universal plastic wares like tubes, strips and plates.
- Temperature range 0 – 100 °C with accuracy of  $\pm 0.2$ °C and uniformity of  $\pm 0.4$  °C within 10 sec of arrival at 90 °C
- Automatic allelic discrimination by end point fluorescence or threshold cycle.
- Gene expression analysis by relative quantity ( $\Delta Ct$ ) or normalized expression ( $\Delta\Delta Ct$ ).
- End point analysis for up to 5 fluorophores
- Mode for Melt curve analysis
- The amplification traces viewed on the LCD screen in real time while a run is in progress with touch screen facility.
- Software with express load feature which allows entry of data after experiment.
- Should be licensed for Research and IVD applications.
- Compliance with the MIQE Guidelines.
- Option of software which is RDML compliant and compatible with all computer operating systems including Microsoft windows, Mac and Linux.
- Software for absolute and relative quantification, primer design software, Tm calling, melting curve based genotyping and endpoint genotyping, Q base software for normfinder, genorm with features for automatic master mix calculations.
- Provision of suitable Desktop (Intel 4th Gen Processor: i3, 4 GB RAM, 1 TB HD, DVD RW/R Drive) PC, printer and scanner and 5.0 KVA online UPS with one hour back up.

### **Application**

- Gene expression analysis, absolute quantification, plus-minus assay, allelic discrimination, end point analysis, SNP genotyping, Melt Curve Analysis

### **Additional requirement (Free of cost)**

- SybrGreen Mastermix for 200 reactions of 30  $\mu$ l final volume.
- System Compatible 96 well low profile plate total 50 plates ,100 sealing films
- One Verification plate should be provided to check the system performance.
- One 1 Ton Split AC should be provide with the system to maintain the room temperature.

### **Warranty:**

- One year Warranty and extended one year AMC.

### **Training:**

Post installation onsite training provided after installation to our technical staff with training certificate.