



KERALA AGRICULTURAL UNIVERSITY  
**PINEAPPLE RESEARCH STATION**

Vazhakulam, Muvattupuzha, Kerala- 686 670, India



**No.PRS/R39/2015**

**Date: 17 August 2015**

*'Quality products, prompt service, lasting warranty and easy access at reasonable cost for long years of trouble free performance'*

**LIMITED TENDER/QUOTATION NOTICE**

Competitive, sealed tenders/quotations are invited for the supply of the following items to this station, the details of which, with the conditions, are specified hereunder.

**1. DIGITAL VISCOMETER**

**Features & Specifications**

- Direct reading of Viscosity in cP or mPa\*s
- Minimum sample requirement: 2 – 4 g
- 18 or more speeds for complete range capability
- Interface for printer and personal computer
- Parallel display of 4 optional parameters of viscosity, temperature, torque, shear rate, shear stress, (on a 4 line alphanumeric display)
- Enzyme activity measurement desirable
- Dust proof keyboard
- Torque overload protection
- Provided with 4-6 spindles, spindle guard and stand
- Min. Viscosity Range: 1Cp
- Max. Viscosity Range: 20 Lac Cps
- Speeds: 0.3 - 100 RPM
- Accuracy: +/- 1.0 % of range
- Repeatability: +/- 0.2 %
- Temperature: 0 – 100°C

**Optional Accessories**

- Sample Adaptor
- Cylindrical type
- Lower sample measurement

## 2. ANALYTICAL ELECTRONIC BALANCE

### Features & Specifications

- Capacity: 200 - 220 g
- Readability: 0.1mg
- Repeatability (sd): 0.1mg
- Linearity (+/-): 0.2mg
- Pan Size (mm): Around 90 x 90 mm
- Rust resistant pan
- Response Time: 2 - 3 Seconds
- Minimum weight: 0.2 – 0.4 mg
- Display: LCD/LED
- Internal Units of measure: g, mg
- Tare Range: Full
- Operating Temp.: 5°C to 50°C
- Sensitivity Drift: 2ppm ( $2 \times 10^{-6}$  /°C)
- Compliance: ISO, GLP / GMP / USP Compliance

## 3. PRECISION ELECTRONIC BALANCE

### Features & Specifications

- Capacity: 550 - 600g
- Readability: 1 mg
- Repeatability: 1 mg
- Linearity (+/-): 0.002 g
- Pan Size(mm): Around 195x195mm
- Minimum weight: 1 – 4 mg
- Rust resistant pan
- Response Time: 2 Seconds
- Units of Measure: g, mg
- Tare Range: Full
- Operating Temperature: 5°C To 50°C

## 4. DIGITAL PENETROMETER

### Features & Specifications

- To measure the Hardness or Firmness of variety of Fruits and Food Products
- Weight range from 10 g – 50 kg

- Penetration Range 0 to 40mm
- Retention/Release: Manual
- Size (H × W × D): Around 67cm × 30cm × 33cm
- Speed regulator
- Auto calibration
- Minimum display: 0.01 kg
- Power supply: both AC and DC
- Adjustable position
- LCD/LED display
- Dust and drip free
- Overload indication
- PC advancement option
- Working temperature 0 – 40°C
- Humidity: 0 - 90%

## 5. VARIABLE VOLUME MICROPIPETTES

### Features & Specifications

- Fully autoclavable and Chemically resistant
- Lightweight design
- Fit and comfortable in either the right or left hand
- Allow reverse pipetting

#### a. Volume range: 100 – 1000 µl (2 Nos.)

Volume division: 1 µl

Accuracy  $R \leq \pm \%$ : 0.8

Reproducibility  $CV \leq \%$ : 0.3

4-digit volume display

#### b. Volume range: 500 – 5000 µl (1 No.)

Volume division: 10 µl

Accuracy  $R \leq \pm \%$ : 0.8

Reproducibility  $CV \leq \%$ : 0.3

4-digit volume display

#### c. Volume range: 1000 – 10,000µl (1 No.)

Volume division: 20 µl

Accuracy  $R \leq \pm \%$ : 0.6

Reproducibility  $CV \leq \%$ : 0.3

4-digit volume display

## 6. ELECTRONIC VARIABLE VOLUME MICROPIPETTE

### Features & Specifications

- Single channel
- Fully autoclavable and Chemically resistant
- Lightweight design
- Auto Aspiring and dispensing function
- Fully programmable
- Power supply: AC and DC
- Battery life: two years or more
- Internal memory
- Reproducible display
- Volume range: 50 – 1000  $\mu$ l
- 4-digit volume display

### Optional Accessories

- Charging stand for single channel pipette

## 7. DIGITAL BRIX MEASUREMENT SYSTEM

### Features & Specifications

- Scratch , dust and stickiness free
- PC advancement option
- Range: 0 to 100 Brix
- Resolution:  $\pm 0.1\%$  Brix
- Accuracy:  $\pm 0.2\%$  Brix /  $\pm 0.3^\circ\text{C}$
- Automatic Temperature Compensation
- Auto Calibrated
- Measurement Time: below 2 seconds
- Minimum Sample Volume: 2 metric drops
- Display: LED
- Sample Cell: Stainless Steel ring and flint glass prism
- Case Material: ABS

## 8. P<sup>H</sup> METER

### Features & Specifications

- Microprocessor based

- Scratch and rust proof, easily replaceable electrode
- Power supply: AC & DC
- Automatic Temperature Compensation (ATC)
- LCD/LED Display
- Calibration : 3 point
- Accuracy :  $\pm 0.01$
- Range : 1.00-14.00
- Buffer set : acid, alkali & neutral
- Resolution : 0.01

## 9. HOMOGENIZER

### Features & Specifications

- Dispersing, homogenizing and mixing biological tissues
- Provided with lid and motor stand
- Result within 30 Seconds
- Variable-speed adjustments
- Type of Motor: AC / DC
- Horse Power: Around 1/8
- Electric Supply: 230 V 50 Hz
- Maximum Speed: 1000 - 30,000 RPM
- Capacity (Depending on Viscosity): 5 – 100 g
- Stirring Shaft Diameter: Around 9.5 mm
- Stirring Shaft Length: Around 250 mm
- Propeller Sweep & Type: PTFE Grinding Pestle
- Stainless Steel for Shaft and Propeller
- Shaft and Motor Coupled

## 10. AIR CURTAIN

### Features & Specifications

- Air Recirculating
- Horizontal mounting
- Suitable for Door of Height: 6ft 8 inches & Width: 3ft
- MS power coated body
- Velocity: 16 m/sec or more
- With Infrared Sensors

- With Door Magnetic Sensor
- With Micro Switch
- Adjustable angle and velocity of air
- separation of unwanted dust and fumes,
- moisture control system
- Easier control of temperature and pressure
- With Installation

## 11. FULLY AUTOMATED DIGITAL AUTOCLAVE (VERTICAL)

### Features & Specifications

- Triple walled chamber for non-wet autoclaving
- Digital display of front panel lid opening/closing, steam exhaust and water level
- Chamber capacity of approx. 35 - 40 liters with very effective chamber dimension of 350 x 550 mm or more
- Operating temperature range: Sterilizing - 105 - 135°C, Heating –45- 104°C, Warming - 45°C- 95°C
- Pressure fine adjustment function for balance between temperature and pressure deviation
- Power consumption: About 3 KW or below
- Operating pressure: Display range 0 – 30 lb
- The machine be on castors for easy movement in the lab
- Digital Time & Temperature display
- Chamber material: outer and inner S.S
- All the area like Chamber lid handle, Outer body should be easy to handle and not overheat for handling ease.
- Safety Devices: Water level sensor, Current leakage breaker, Lid interlock, over heat & pressure prevention, open temperature sensor detection, Safety Valve
- Stainless steel perforated basket, Casters stoppers, Operation manual
- Suitable drainage system for easy handling
- Timed run, timer function for delayed start. Alarm for end of run
- Error code System for easy maintenance and troubleshooting during use for various safety and alarm features.
- Front display panel should have visual and audible alarm indicator for lid, exhaust and low water indicator
- Time display should be possible in either of the mode of Hour: minute; Hour; Minutes.
- App. 3-4 liters of water should be sufficient for autoclaving.

- Suitable stabilizer
- User client satisfactory certificates should be enclosed
- ISO and CE compliant certificate copy to be enclosed

**Optional accessories**

- External temperature probe, Durham's tubes rack, Stainless basket without holes, Stainless long basket

## **CONDITIONS**

**Specifications:** Stated as above or better is acceptable

**Warranty:** 2 years or more for all items

**Last date for accepting tenders/quotations:** 17 September 2015, 3 PM

The offer stating the total cost in Indian Rupees and separately for the basic unit, accessories and optional, Taxes, customs and excise duty, packing, forwarding, insurance and any other cost for its installation, should be sent to the undersigned in sealed cover.

The sealed cover containing the tender/quotation should be superscribed "Tender/quotation for laboratory items" and send to, The Associate Professor and Head, Pineapple Research Station, Vazhakulam, Pin-686670, Muvattupuzha, Kerala.

Email offer in electronic form as properly signed and authentic document like PDF, encrypted or not, is acceptable.

The supplier should give the details of the nearest service center and response time.

A list of Kerala Agricultural University Institutions who have already purchased the item should be given. The feedback on the performance of equipment and the service response of the firm will be duly considered in purchase of the item.

Warranty should be for two years or more and after sale service offered on expiry of normal warranty period, available should be mentioned.

Leaflets/brochures of each equipment describing its features, applications, specifications etc. should be provided along with tender/quotation.

Tenders/quotations will be received up to 3 PM on 17-9-2015 and opened at 3 PM on the same day in the presence of the parties present at that time.

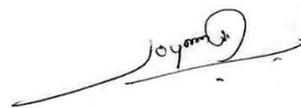
'Quality products, prompt service, lasting warranty and easy access at reasonable cost for long years of trouble free performance' is the prime concern in finalizing the tenders/quotations and utmost care will be taken to ensure this at every stage and the decision of the purchase committee shall be final and binding. The purchase committee reserves the authority to accept or reject any or all the tenders without assigning any reason.

On accepting the offer, firm orders will be sent to the firm/party for supply of the item. The party should supply the item along with invoice/bill to the Pineapple Research Station, Vazhakulam within the stipulated time mentioned in the supply order maintaining the quality

and quantity, successfully install and demonstrate the working operations for effecting the payment.

Supply of inferior quality items and poor servicing from any firm/agency will be notified to all centres /officers of Kerala Agricultural University through emails to [announce@kau.in](mailto:announce@kau.in) and [teachers@kau.in](mailto:teachers@kau.in) cautioning all concerned in dealing with them. Action will be taken to blacklist them by the Kerala Agricultural University for future purchases. The details of blacklisted firms/agencies will be published in the official website of the station ([prsvkm.kau.in](http://prsvkm.kau.in)) and the Kerala Agricultural University ([www.kau.in](http://www.kau.in)) for information of all concerned. Individual cases will be further taken up with appropriate consumer grievance forums for redressal and compensation.

All conditions of the Kerala Agricultural University/Kerala government tenders/quotations are applicable in this case also. Further information can be had from the web site (<http://www.kau.in/tenders>) or from the office of Associate Professor and Head, Pineapple Research Station, Vazhakulam, PIN-686670, Muvattupuzha, Kerala during office time.



**ASSOCIATE PROFESSOR & HEAD**

**Email copy to:**

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