

**Minutes of the Pre-Bid Conference held on 30.01.2017 at Conference Hall, Administrative Block, Room No.F1-02 (First Floor), CUTN in connection with pre-bid queries raised by prospective bidders against our Tender Enquiry No.29/2016-17 for supply and installation of Laboratory Equipment for department of Life Sciences**

The following members of the Committee were present:

- (1) Dr. E.M. Shankar, Associate Professor & Head, Dept. of Life Sciences.. Chairperson
- (2) Dr. Meganathan Kannan, Assistant Professor, Dept. of Life Sciences ... Member
- (3) Dr. Indranil Chattopadhyay, Assistant Professor, Dept. of Life Sciences ... Member
- (4) Dr. Dinakar Challabathula, Assistant Professor, Dept. of Life Sciences - Member & Convener

Dr. Jayalakshmi Krishnan, Assistant Professor, Dept. of Life sciences could not attend the meeting due to pre-occupation.

The representatives from twenty three firms participated in the Pre Bid Conference. The attendance sheet is enclosed in **Annexure-I**.

An email communication received from M/s. Towa Optics (India) Pvt. Ltd., & M/s. Beckman Coulter India Private Ltd., with regard to specification has been addressed by the Committee.

**Opening Remarks:**

- (i) Dr. E.M. Shankar, Associate Professor & Head, Department of Life Sciences at the beginning welcomed the participating members and after introduction, he briefed all participants about the tender.
- (ii) It was explained that purpose of Pre-Bid Conference is to explain the various important provisions of the bidding documents to the prospective bidders and to clarify the queries that the bidders may have in the subject, bidding documents.

The technical queries and clarification sought by the prospective bidders and reply to the query is enclosed in **Annexure II**.

The techno-commercial queries and clarification sought by the prospective bidders are given as under:-

Sl. No.	Query / Clarification Sought	Reply
1.	The Annual Turnover of at least <b>Rs. 3 Crore</b> per year for the last THREE financial years may be reduced considering the value of the quote.	After detailed discussion, it was decided to go for following slab:  The tenderer should have an annual turnover of at least <b>Rs. 3 Crore</b> during the last THREE financial years. However a reduction of requisite annual turnover to <b>Rs.2 Crore</b> per annum may be considered, if the total value of the quoted items is less than Rs.50 Lakhs and <b>Rs.1 Crore</b> per annum may be considered, if the total value

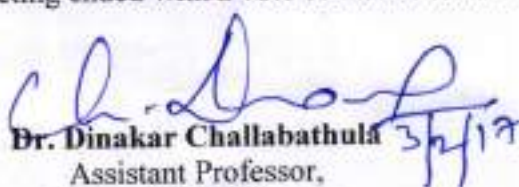
		of the quoted items is less than Rs.25 Lakhs. Such bidder has to declare in the technical bid that their total value of items quoted in the bid is less than Rs.50 Lakhs (or) Rs.25 Lakhs. The technical clearance shall be conditional subject to verification of their total quotes.
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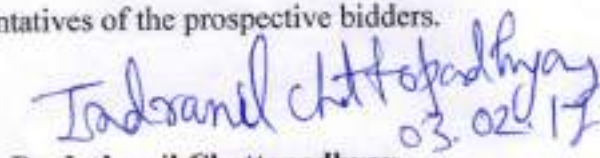
The bidders were informed to ensure that all mandatory documents / certificates / undertakings are enclosed with the bids, as specified in the tender document.

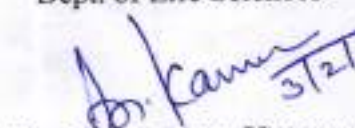
The bidders were informed that the minutes of the pre-bid conference and amendment of the bidding forms shall be published on the website of Central University of Tamil Nadu. The bidders were also informed that they should also regularly visit the CUTN website for any amendments issued.

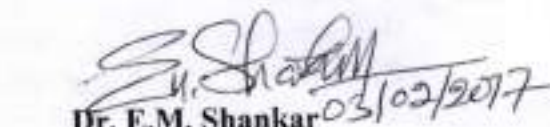
In case of any further information/clarification, they were asked to contact over phone, to the Purchase Section at 04366-277359 (or) send email on [purchase@cutn.ac.in](mailto:purchase@cutn.ac.in); Individual visits are not entertained.

The meeting ended with a vote of thanks to the representatives of the prospective bidders.

  
**Dr. Dinakar Challabathula**  
 Assistant Professor,  
 Dept. of Life Sciences

  
**Dr. Indranil Chattopadhyay**  
 Assistant Professor,  
 Dept. of Life Sciences

  
**Dr. Meganathan Kannan**  
 Assistant Professor,  
 Dept. of Life Sciences



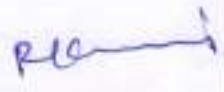

  
**Dr. E.M. Shankar**  
 Associate Professor & Head,  
 Dept. of Life Sciences



**CENTRAL UNIVERSITY OF TAMIL NADU**  
**PRE-BID MEETING FOR TENDER NO.29/2016-17, SUPPLY & INSTALLATION OF**  
**LABORATORY EQUIPMENT FOR DEPARTMENT OF LIFE SCIENCES, HELD ON**  
**30.01.2016 AT 11:00 AM AT F1-02, PRO-VC's CONFERENCE HALL,**  
**ADMINISTRATIVE BUILDING, CUTN, THIRUVARUR.**

**ATTENDANCE SHEET**




Sl. No.	Name & Designation	Company Name & Address	Contact Number	Signature
1.	P. Mani Maran Sr. Sales Engineer	S.V. Scientific # 23A, 2nd Floor, Serpentine road, Kumara Park, Bangalore - 560020	8056068306	P. Mani Maran
2.	S. Mathukumar Sales Engineer	SV Scientific, # 23A, 2nd Floor, Serpentine Road, Kumara Park, Bangalore - 560020	9944526104	S. Mathy.
3.	P.J. Kannan Datacenter.	Ponmani Pl, 1, 10th cross Thiruvai Nagar Trichy.	9080227788	P. J. Kannan
4.	Yasir Irfan	Merck life science Peenya, Bangalore	9986326288	Yasir Irfan
5.	AVINASH SAHOO Key Accounts Manager	Berkman Cultor India Pvt Ltd. Chennai.	9831045396	A. Sahoo.

Sl. No.	Name & Designation	Company Name & Address	Contact Number	Signature
6.	SANTHANAGOPAL DIRECTOR	INEXUS BIOTECH	93602 94752	
7.	SUBRAJIT NATH Regional Manager	SPECTRA AGRITEC New Delhi	9177751182	
8.	J A VICTOR ROZARIO General Manager	Towa Optics Pvt Ltd. Chennai	9382334388	J.A. Victor Rozario
9.	R. KRISHNA MOORTHY Sales & customer Support	Seigenics bio tech Pvt Ltd	9790939601	
10.	S. Anand Kumar Asst. Manager - Sales	INLAP Instruments Chennai	9840820147	

Sl. No.	Name & Designation	Company Name & Address	Contact Number	Signature
11.	L. MUTHURAJAN SUNBIO SYSTEMS Regional manager	SUNBIO SYSTEM 30 E II Main Road, ANNA NAGAR, PEELAMEDU COIMBATORE - 4	9489821191	
12.	Mr. Sampath Kumar BIOMERIEUX Regional manager	BIOMERIEUX India Pvt Ltd CHENNAI 9944990881	9944990881	
13.	B. SERAR A. vellivel. <del>Eppandont India Pvt Ltd</del> Chennai	Eppandont India Pvt Ltd Chennai	9266011314 9382822253	
14.	R. Viswanathan (Asst. Manager) SPINCO Analytica Pvt Ltd Chennai	SPINCO Analytica Pvt Ltd	9566293330	
15.	M. Rajkumaran Sr. Engg	Scientific Innovations	9840168240	



Sl. No.	Name & Designation	Company Name & Address	Contact Number	Signature
16.	Viswakarma R.R.S. Area Sales Manager.	S.k. Biosystems. No. 1050, 1 Block, 35 <sup>th</sup> Street, 18 <sup>th</sup> Main Road, Anna Nagar West Chennai - 600040. Distributor for Thermo Scientific	9884894792	
17.	Y. GUGAN Customer Support Eng	MABTEH Instruments 914 Gini Street West Hamkha Chennai 33 T. Nagar HiTACHI LABORATORY	9962188800	
18.	N. Anand Kumar ASM	Cole parmer Chennai	9672068106	
19.	Ebenezer. S. Account Manager	Thermo fisher Scientific Invitrogen Bioservices India Pvt Ltd Bangalore	9884496131	
20.	R. Dharani Dharan Account Manager	Bio-Rad Laboratories India Pvt Ltd. Chennai	9884813554	

Sl. No.	Name & Designation	Company Name & Address	Contact Number	Signature
21.	ARUN PETER Sales & Service Engineer	Ultra Instrument Paday field Road Pannur bar Chennai	9840092163	
22.	BHARATH A Deputy Manager-Sales	DSS Smartech Pvt Ltd Common Smith Road, Kopelapuram Chennai - 86	7791596975	
23.	M. ARUN AROKIAARAJ Accounts Manager	Gene Technologies Chennai - 39	9952000346 7597798534	
24.				
25.				





REF: CUTN/LS/Dr.EMS/...563

02.02.2017

To

The Registrar  
Central University of Tamil Nadu  
Thiruvavur

Kind Attention: Assistant Registrar (Purchase)

The minutes of the pre-bid meeting held on 30-01-2017 at F1-02, Pro-VCs Conference Hall, Administrative Building, CUTN, Thiruvavur against Tender Enquiry No. 29/2016-17 for the supply and installation of laboratory equipment for the Department of Life Sciences.

The following members were present from the Department of Life Sciences.

1. Dr. E.M. Shankar
2. Dr. Meganathan Kannan
3. Dr. Indranil Chattopadhyay
4. Dr. Dinakar Challabathula

Dr. Jayalakshmi Krishnan did not attend the meeting due to preoccupation.

The personnel from various companies attended the pre-bid meeting, raised queries and provided suggestions regarding the tender notification. The specifications accepted by the committee in view of the suggestions raised by the bidders are enclosed herewith for your kind perusal. The finalized specifications (after modification) for the instruments are enclosed in Annexure 1.

All the equipment proposed should be supplied by the corresponding vendor together with voltage stabilizers and appropriate UPS system.

DEPARTMENT OF LIFE SCIENCES  
CENTRAL UNIVERSITY OF TAMIL NADU  
THIRUVARUR-610 101.

DEPARTMENT OF LIFE SCIENCES  
CENTRAL UNIVERSITY OF TAMIL NADU

DATE 03.02.2017

REF.No. 563

Dr. E.M. Shankar  
2/2/17

Dr. Meganathan Kannan  
02/02/2017

Dr. Indranil Chattopadhyay  
02.02.17

Dr. Dinakar Challabathula  
02/02/2017  
3/2/17

Dr. Jayalakshmi Krishnan  
02.02.17

Dr. E.M. Shankar  
2/2/17  
Dr. Meganathan Kannan  
2/2/17



The technical queries and clarifications sought by the prospective bidders along with the modifications accepted by the committee are mentioned as follows.

ANNEXURE - II

S. No	Query/Clarification Sought	Modifications accepted by the committee
<b>S. No 1 –Real Time PCR</b>		
1	Minimum reaction volume range should be decreased to 15-20µl	Minimum reaction volume range is 15-20µl
2	Excitation source – LED should be mentioned.	Excitation source - LED
3.	Real-Time PCR machine should also be used as a conventional PCR.	Conventional PCR can also be run on a Real-Time PCR machine.
4	CMOS camera for detection should be added.	CMOS camera for detection has been added.
<b>S. No. 3. Automated Cell Counter</b>		
1.	Brand name of the laser need to be removed	The 'Countess II FL' has been removed.
<b>S. No. 4. Flow Cytometry</b>		
1.	Flow cytometer with 3 solid state lasers: 488nm (Blue) + 633nm (Red) + 407 nm (Violet) with 10 colors should be included.	Bench top flow cytometer with 3 solid state lasers with minimum of 8 colors; 488 nm laser (4 colors), 640 nm laser (2 colors), and 405 nm laser (2 colors) have been included.
2.	The instrument should be able to analyse the samples with a minimum dead volume of 50µl, and should be mentioned.	The instrument should be able to analyse samples with a minimum volume of 50 ul
3.	Inbuilt Auto Tube Loader Carousel can be minimum 25-30 tubes instead of 40 tubes with tube identification bar code reader to avoid sample mix up.	The system should have built in greater than 30 tube carousel sample loader with barcode reader to avoid sample mix up.
4.	Flow cytometer should be clinical flow cytometer with all its FL Channels validated for IVD use. I.e., covering analysis for all kind of patient and research samples and not just paediatrics alone.	Flow cytometer should be clinical flow cytometer with all its FL Channels validated for IVD use. I.e., covering analysis for all kind of patient samples including paediatrics and research samples .
5.	Optional plate based loader can be removed.	The automatic loader carousel should automatically load tubes in the machine system without operator intervention. Plate based loader attachments for future ELISA plate based tests (optional).
6.		System: PC workstation with at least Intel processor, 3.0 GHZ processor, 8 GB RAM (≥DDR3), 1TB Hard drive; LCD: minimum of 20" TFT with licensed windows OS  Online UPS (Pure sine wave output voltage with +/- 1% regulation) with minimum of 1 Hr backup.



	Appropriate air-conditioner should be provided Start-up reagents must be included
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#### S. No. 5. Phase Contrast Microscope with Fluorescence

1.	Revolving nosepiece vertical movement minimum 5 objectives can be included	Resolving nosepiece: Minimum five objectives should be mountable
2.	10X Eye piece, Field of view should be mentioned.	10X wide field eyepieces (22mm; Field of view)
3.	40x objective; Cover glass correction 0-2 mm should be mentioned.	40X objective : Cover glass correction; Long working distance achromat phase contrast (precenter) objective 40X/0.55, WD 2.2.
4.	Fluorescence 100W Mercury Lamp or LED Light source	Fluorescence 100W Mercury Lamp / Fluorescence LED Source illuminator with blue and green excitation filters (For GFP/Alexa Fluor). 3 positions for fluorescence fields and 1 position for bright field/phase contrast application.

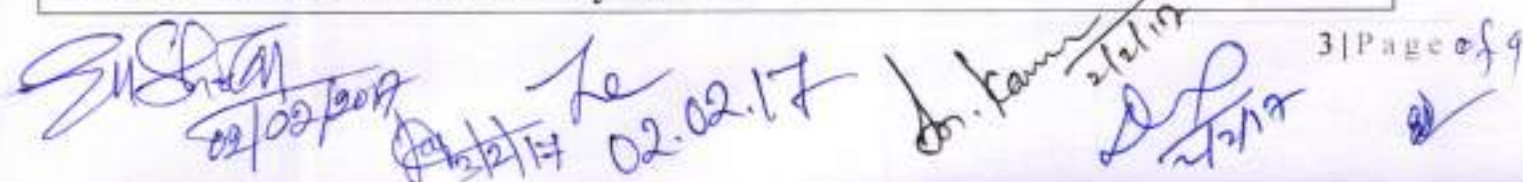
#### S. No. 7. -86°C ULT Deep Freezer Upright model

1.	Capacity range of the deep freezer should be mentioned as 500 and above	-86°C ULT Deep Freezer Upright model (700 litres and above)
2.	One or above access ports should be mentioned.	Minus 80 Deg Celsius Freezer should have one 1" (2.5cm) or more access ports enable use of inexpedient probes.
3.	Data logger can be mentioned instead of chart recorder	Minus 80 Deg Celsius Freezer should have Optional, data logger for continuous monitoring.
4.	Fixed dimensions and weight can be removed.	Dimensions and weight removed from the specifications.
5.	BTUH represents particular brand, hence remove.	Similar technology to BTUH each
6.	All the branded freezers may not be using the same technology of Vacuum Relief Port, hence modify.	Minus 80 Deg Celsius Freezer should have Vacuum relief port or equivalent technology which permits easy access for frequent door openings

#### S. No. 8. CO<sub>2</sub> Incubator

1.	Volume Range 150 Lit and above should be mentioned	Interior Volume : Minimum 150-200 litres
2.	Specifications of sensor should be changed to either T/C or IR	CO <sub>2</sub> : 0-20%. Control, Range Better than $\pm 0.1\%$ , measures with T/C sensor or IR sensor
3.	Heat Sterilization cycle of 140° C should be modified as 120° C and above	Heat Sterilization cycle of 120°C and above for 12 hours to safely kills all organisms within the chamber

#### S. No. 9. Class II Biohazard Safety Cabinet


 The bottom of the page contains several handwritten signatures and dates. On the left, there is a signature that appears to be 'S. S. S.' with the date '02/02/17' below it. In the center, there is a signature 'Le' with the date '02.02.17' below it. On the right, there is a signature 'J. Kamm' with the date '2/2/17' below it. Further right, there is a signature 'S. S.' with the date '2/2/17' below it. At the far right, there is a signature 'S.' with the date '2/2/17' below it.



1.	Since oven-baked epoxy antimicrobial powder coated finish represents particular brand, the Galvanised Iron/SS should be mentioned which is used for all temperature dependent instruments	Main Body: 1.2 mm (0.06") 16 gauge electrogalvanized steel with white oven-baked epoxy antimicrobial powder coated finish/Galvanised Iron/SS
2.	Since ULPA Filter represents particular brand, it may be modified as HEPA filter which is standard filter used by companies.	ULPA/HEPA filters with efficiency greater than 99.999 % for superior operator and product protection

#### S. No. 11. Lyophilizer

1.	Cold trap temperature -40 °C or Below should be modified as -50 °C or Below	Cold trap temperature -50 °C or below
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#### S. No. 12. Liquid nitrogen tank (Storage and transport)

1.	Liquid nitrogen tank (Storage and transport), only storage should be mentioned and transport should be removed.	Liquid nitrogen tank (Storage) <ul style="list-style-type: none"> <li>Capacity of the tank should be 20 -50 ltr with canister system to store samples.</li> <li>Number of canes should be <math>\geq 4</math> with capacity to store minimum of 100 vials in each.</li> <li>Static evaporation rate should be less than 0.2 L/day</li> <li>Inside neck diameter should not be less than 5cm.</li> <li>Static holding time should be more than 150 days.</li> <li>Should have manual filling and Dewar for Liquid N<sub>2</sub>.</li> </ul>
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#### S. No. 13. Vertical Deep Freezer(-25° C)

1.	Capacity range should be mentioned.	Capacity : 300-400 Ltrs <ul style="list-style-type: none"> <li>It should be imported with ISO 9001 certification.</li> <li>Should have CFC and frost free refrigeration system.</li> <li>Should include suitable online UPS (sine wave) with internal battery system which can provide minimum of 60 min power backup to the freezer.</li> </ul>
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#### S. No. 14. Vertical Electrophoresis apparatus with Wet transfer blot system (Trans Blot Module)




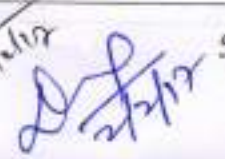
1.	Remove the power pack specifications	Power pack specifications deleted.
2.	Incorporate system should run 2- 4 mini gels of 8.6cmx6.8cm simultaneously in less than hour	System should run 2-4 mini gels of 8.6 cmx6.8cm simultaneously in less than hour  Cooling apparatus for wet blot system

#### S. No. 15. Dry block thermostat

1.	Temperature – Control range of block : change from -5 ° C to 99° C to -10°C to 99° C	Temperature – Control range of block : -10°C to 99° C
2.	Include adapter sizes of 0.2 to 0.5ml, 1.5 ml and 2.0 ml micro tubes.	Adapters: 0.2 to 0.5ml, 1.5 ml and 2.0 ml micro tubes.
3.	Requirement : 75W can be deleted	Requirement: As per standards






4.	Weight (without block) can be deleted	Deleted
<b>S. No. 16. PowerPC Basic Power Supply</b>		
1.	Safety provisions should be included	Power PC Basic Power Supply with safety provisions
<b>S. No. 17. Hot Air Oven</b>		
1.	Chamber volume should be mentioned	Chamber volume: Above 220 ltrs
<b>S. No. 19. Gradient Thermal Cycler</b>		
1.	2x 48; 3x 32 x 0.2 ml or 32: 64 modes should be included.	2 x 48, 3x 32 or 32: 64 modes for 0.2 ml tubes
2.	Upgradable to Real Time PCR can be kept as optional	Upgradable to Real Time PCR (Optional)
3.	Feather touch can also be included in addition to touch screen	Touch screen/Feather touch will be an added advantage for user friendly operation
4.	Email notification can be kept as optional	Email Notification of run completion (Optional).
5.	In 96 Well Gradient PCR Machine, the system to have maximum ramp rate of 4 degree/ sec can be modified as 3 degree/sec	The system should have ramp temperature range of 3- 4 degree/sec
<b>S. No. 20. Gel documentation system with Chemi-Docmentation Image System</b>		
1.	Change the equipment name to Gel documentation system with Chemiluminescence	Gel documentation system with Chemi-documentation image system.
2.	Upgradable to plant/animal imaging should be kept optional	Upgradable to Plant/Animal imaging (Optional)
3.	Upgradable to EP/IR should be mentioned.	Upgradable to EP/IR.
4.	Multicolour image with 2 dyes and above should be mentioned.	Multi-colour image target with multi-channel image display for study of more than 2 dyes at a time for differential expression.
5.	Illumination area of more than 20 x 20cm should be mentioned	Instrument should have a large trans-illumination area of which is capable of taking sample of more than 20x20 cm and should have a minimum imaging area of 26 x 35 cm
6.	Serial mode should also be mentioned along with Signal Accumulation Mode	Software should have Signal Accumulation Mode (SAM)/ Serial Mode for easy optimization of exposure time for chemiluminescent detection
<b>S. No. 21. Automated Shakers</b>		
1.	Model MaxQ 4000 Benchtop should be deleted	Removed from the specification
2.	Speed Range 15 to 500 $\pm$ 1rpm should be replaced with 20 to 400 and above	Speed Range 20 to 400 $\pm$ 1rpm and above
3.	Temperature Range (Metric) Ambient+10° to 60°C should be modified as +5° to 60°C and above	Temperature Range (Metric) Ambient+5° to 60°C and above
4.	Orbit 1.9cm (0.75 in.) and above should be included	Orbit 1.9cm (0.75 in.) and above
5.	Holders quantity should be mentioned	Holders for test tube stands, 15 ml, 50 ml, 100ml, 250ml, 500ml and 1Litre flasks (at least 3 each)
<b>S. No. 22. Water bath with wide temperature ranges</b>		

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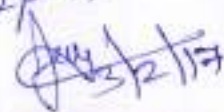
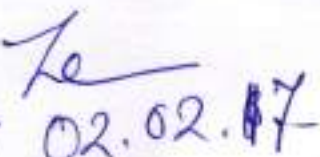



1.	Capacity of 5-12 litres should be included.	Capacity 10ltr -20ltr Hinged gable cover will be preferable Viewing the sample through the cover will be preferable.
<b>S. No. 23. Shaking Incubator Combines Incubated temperatures with Orbital Shaker</b>		
1.	Speed range 20-400 and above should be mentioned.	Variable speed control from 20 to 400 rpm and above
	Shipping Weight can be removed	Deleted from the specifications
<b>S. No. 24. Shaker</b>		
1.	Capacity 5 and above can be mentioned	Capacity Five and above Ehrlenmeyer flasks
<b>S. No. 26. Refrigerated Centrifuge for 1.5 ml</b>		
1.	6x50, 2x MTP from the specifications can be deleted	Max capacity 44x 1.5/2.0 mL and above
2.	Maximum RCF of 28,000g and above should be mentioned	Max RCF: 28,000g and above
<b>S. No. 27. Refrigerated Centrifuge</b>		
1.	Swinging bucket rotors from 2ml to 250ml should be mentioned.	Swing-bucket rotors and adapters accommodate tubes and bottles from 2 mL to 250 mL
2.	Access height less than 40cms should be mentioned.	Fixed-angle rotors for high-speed applications in tubes from 0.2 mL to 85mL. Low access height less than 40cms.
<b>S. No. 30. Cold Room</b>		
1.	Height should be 8 ft	Height should be 8 ft
<b>S. No. 34. General Incubator 37° C</b>		
1.	Temperature - Natural Convection/Forced air circulation should be mentioned Volume should be 65Lit and above Temperature range should be: $\pm 5-70^{\circ}\text{C}$	Temperature - Natural Convection/Forced air circulation  Volume range: 65lit and above Temperature range should be: $\pm 5-70^{\circ}\text{C}$
<b>S. No. 35. Ultra Purification System</b>		
1.	Type II- Flow rate should 15 ltrs/hrs and above should be included	Type II- Flow rate should 15 ltrs/hrs and above
2.	Specifications for External Pre Filtration assembly with RO system should be incorporated.	Flow rate: 50 litre/hour Pre-filtration should include 1 micron, 5 micron and activated carbon (Additional 3 sets of spun should be supplied along with the system) 24 volt pump with Float switch facility for automatic Cut-Off 100 Litre storage tank
3.	Electrode ionization, Type II water conductivity and feed water should be mentioned.	Electrode ionization 0.2 $\mu\text{s/cm}$ conductivity of Type II water Source of feed water is tap water.
<b>S.No.41. Ice Flaking machine</b>		
1.	Bin capacity and Dimensions should be mentioned	Bin Capacity: 100-150kg Dimension: Variable
<b>S. No. 42. Micropipettes</b>		

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1.	NABL calibration facility in Tamil - nadu can be removed	Deleted Should give pipette holding stand/ carousel with minimum holding capacity 5 numbers of pipette.
<b>S. No. 43. Three Tier Arabidopsis Growth Chamber with H3 Pan Type Humidifier &amp; Dehumidifier with Electronic RH sensor</b>		
1.	Change the equipment name to Plant Growth Chamber	Plant Growth Chamber
<b>S. No. 45. Compound Microscope</b>		
1.	Fine focus graduation, change from 2.5 $\mu\text{m}$ to 2.0 $\mu\text{m}$	Fine focus graduation: 2.0 $\mu\text{m}$
2.	Camera with PC as optional.	CMOS Camera with PC will be optional
<b>S. No. 46. Gene Pulser Xcell total system (Electroporation)</b>		
1.	Equipment name can be changed as Electroporator	Electroporator
<b>S. No. 49. PAM Fluorimeter</b>		
1.	The equipment title can be modified as Photosynthesis system with fluorescence and oxygen system	Photosynthesis system with fluorescence and oxygen system
2.	Chlorophyll fluorescence and Photosynthesis parameters can be simultaneously measured, hence add details about the infrared gas analyzer, CO <sub>2</sub> conditions, Leaf temperature measurement, Light sensor, Temperature measurement	Highly accurate 4-channel infrared gas analyzer (2 x CO <sub>2</sub> and 2 x H <sub>2</sub> O abs., 20 cm optical path) CO <sub>2</sub> Control: Integrated CO <sub>2</sub> -control via thermal valve, range 0 to 2000 ppm, CO <sub>2</sub> supply via CO <sub>2</sub> cartridges (8 g CO <sub>2</sub> , provide more than 48 h continuous supply at 350 ppm) or via CO <sub>2</sub> cylinder with pressure reducer. H <sub>2</sub> O Control: Integrated H <sub>2</sub> O control range 0 to nearly 100% r.h. (noncondensing) Temperature control: Three modes of temperature control: tracking ambient temperature, set value for cuvette temperature and set value for leaf temperature Leaf temp. Measurement: Thermocouple, range -10 to +50°C, accuracy $\pm 0.2^\circ\text{C}$ . 4 temperature sensors (2 for upper and lower leaf surface, 1 for cuvette air temperature and 1 for external air temperature) Internal light sensor: Selective PAR measurement, range 0 to 2500 $\mu\text{mol m}^{-2} \text{s}^{-1}$ PAR, accuracy $\pm 10\%$ , three sensors, (one in the upper and one in the lower part of the cuvette and 1 on the measuring head) Cuvette ventilation system: Two frequency controlled impellers, one each in upper and lower part of the cuvette, speed adjustable. Mass flow measurement: Thermal mass flow meter, range 0 to 1500 $\mu\text{mol s}^{-1}$ , accuracy $\pm 1\%$ Leaf area: interchangeable adapter plates from 1 to 8 cm <sup>2</sup> , flexible shape
<b>S. No. 52. Helios Gene Gun system PDS-1000/He System (Biolistic Particle Delivery System)</b>		
1.	Change the equipment name to Biolistic Particle Delivery System	Biolistic Particle Delivery System

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2.	Include the important samples that are needed to be used.	System should be efficient in transforming Plant leaves (thin and thick). Recent publications with Leaf bombardment citing the equipment should be provided.
3.	Include the statements about consumables and microparticles required for the experiments	The manufacturers should supply necessary consumables, coated microparticles and suitable ruptured discs.

**S. No. 53. Trinocular Stereo Zoom (Parallel-optics Zoom System) with Epifluorescence attachment and Digital Color Camera**

1.	Zooming ratio of 8:1 or more can be mentioned.	Apochromatic Zooming Body with zooming Ratio 8:1 or more (Preference will be given to highest Zooming ratio) Highest magnification using 10x eyepiece and 1x objective should be obtained.
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**S. No. 54. Dissection Microscope**

1.	Zoom ratio of 6.7:1 should be changed to 7:1 or more	Microscope Zoom body with a zoom ratio of 7:1 or more
2.	With fibre optic illuminator for cold light and LED light should be mentioned. Choice for LED and Fibre optic illuminator should be given.	With fibre optic illuminator/LED for cold light

**S. No. 56. Blood culture equipment**

1.	Position 40 and above should be mentioned	Position: 40 and above
2.	Technology: Fluorescence, calorimetry and above should be mentioned	Technology: Fluorescence/calorimetry and better
3.	Unique features should be removed from Advanced algorithm	Advanced Algorithm- more than 16 Growth Curves
4.	Exclusive BD Vacutainer Safety Lock should be deleted	Removed from the specifications.
5.	Exclusive media for both bacterial and Fungal Culture should be included	Exclusive media for both bacterial and Fungal Culture from Blood Specimen
6.	Include a dedicated and compatible online UPS System	Dedicated and Compatible online UPS System should be provided with minimum 60 min battery backup (pure sine wave with output voltage with $\pm 1\%$ regulation). Should provide minimum of 100 vials (Each) of higher model aerobic and anaerobic blood culture. Should include computer system with minimal features as bellow: Intel core I processor , $\geq 2$ GB ( $\geq$ DDR 3) RAM, $\geq 500$ GB Hard disk , CD-DVD writer, $\geq 15''$ LCD monitor, mouse and 101 number key board, UPS, licensed windows OS and Microsoft office, Printer , software for data acquisition/ analysis and storage from the equipment.

Vendors should provide Voltage Stabilizer and Power Back up where ever it is applicable for all the above Instruments mentioned in this tender document.

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