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TENDER FORM
FOR SUPPLY OF
SCIENTIFIC/LABORATORY INSTRUMENTS- EQUIPMENT, ACS, PRINTERS, FURNITURE & FIXTURES, TRACTOR & SOFTWARE REQUIRED
AT DIFFERENT COLLEGES / UNITS / DEPARTMENTS OF ANAND AGRICULTURAL UNIVERSITY, ANAND AND

Last date for online commercial bid submission
24-08-2018 before 6:00 pm

Last date for for Physical Submission of Technical Bid / Tender
31-08-2018 before 4:00 pm

Date of Tender Opening (Technical Bid): **01-09-2018**

DEPARTMENT OF AGRICULTURAL BIOTECHNOLOGY
ANAND AGRICULTURAL UNIVERSITY
ANAND – 388 110 (GUJARAT)
PHONE: 02692 261134
E-MAIL: biotech@aau.in

- **Name of vendor / supplier / firm:**

- **Complete Postal address :**

- **Telephone Number :**

- **Fax Number :**

- **E-mail address :**

- **Details of the Tender Fee :**
  - DD number :
  - Amount :
  - Date :

- **Details of EMD:**
  - DD number:
  - Amount:
  - Date:

    (For multiple items please attach separate sheet, if required.)

- **GST Registration No.:**

- **Firm / Company Registration No.:**

- **Any other details:**

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

Signature of Tenderer
(with stamp, Name & Designation)

On behalf of The Director of Research, Anand Agricultural University, Anand, **The Chairman, E-Tendering Committee, AAU, Anand** invite tenders from the Manufacturer or Authorized Distributor/Dealer through e-procurement portal for the purchase of following items with given specifications, terms and conditions.

<table>
<tr><th>Sr. No.</th><th>Name of the Instrument & Tender Fee</th><th>Specifications</th><th>EMD (in Rs. Lakh)</th></tr>
<tr><td colspan="2">A.</td><td colspan="2">AINP on Pesticide Residues, ICAR, Unit-9, AAU, Anand</td></tr>
<tr><td>1.</td><td>LC-MS/MS – 2 Nos.

Tender Fee:
Rs. 15,000.00</td><td>
<u>The specifications and requirements for each LC-MS/MS are as following:</u>

A. Ultra High Performance Liquid Chromatography System (UHPLC)
(High pressure quaternary gradient pumping system, auto sampler, column oven should be offered.)
Quoted Model: _____
<table>
<tr><th></th><th>Required technical specifications</th></tr>
<tr><td colspan="2">Pump with quaternary gradient</td></tr>
<tr><td>i.</td><td>Quaternary gradient pump with 1 to 4 solvents integrated with inbuilt high efficiency degassing units, minimum 4 lines with facility for auto-sampler rinsing and improved gas flow stability.</td></tr>
<tr><td>ii.</td><td>Purging of pumps automated as well as manually.</td></tr>
<tr><td>iii.</td><td>Pressure tolerance of at least 15,000 psi at 1 mL/min or better should be offered.</td></tr>
<tr><td>iv.</td><td>System should have a handling capacity for pH 2 to 12 for various solvents and buffers.</td></tr>
<tr><td>v.</td><td>Flow rate should be 0.01 to 2.0 mL/min or better in 0.001 mL increments with accuracy ± 1.0% and precision with 0.1% or better at 1mL/min.</td></tr>
<tr><td>vi.</td><td>Mobile phase reservoir system to accommodate at least four bottles each of 1 L.</td></tr>
<tr><td colspan="2">Auto-Sample Injector with Sample Cooler</td></tr>
<tr><td>i.</td><td>Automated operation controllable through MS/MS Software.</td></tr>
<tr><td>ii.</td><td>Automated auto-sampler purging through software.</td></tr>
<tr><td>iii.</td><td>Injection volume between 0.1 µL to 25 µL. Precision should be <0.3% and carryover should be ≤0.01% or better from previous injection.</td></tr>
<tr><td>iv.</td><td>Temperature range should be 4 to 40 °C in 0.1 °C increments with accuracy of ± 0.5 °C.</td></tr>
<tr><td>v.</td><td>Minimum sample capacity should be 96 in nos. (1.5-2.0 mL vial holder) or more.</td></tr>
<tr><td>vi.</td><td>High speed injection system is preferable.</td></tr>
<tr><td colspan="2">Column Compartment</td></tr>
<tr><td>i.</td><td>The temperature control range should be 10°C below room temperature to 85°C or better, settable in 0.1 °C increments.</td></tr>
<tr><td>ii.</td><td>It should be able to handle at least 2-4 columns (length up to 150 mm) within the oven.</td></tr>
<tr><td>iii</td><td>Safety functions like leak sensor, high temperature cut-off, flow divert valve should be available.</td></tr>
</table>
B. Mass Spectrometer System
(A state-of-the-art, high sensitivity Triple Quadrupole with suitable mechanisms for qualitative and quantitative analysis with calibration and auto tuning facility)
Quoted Model: _____
</td><td>15.00</td></tr>
</table>

	Required technical specifications	
Mass Analyzer		
i.	Mass range should be from m/z 10 to 1500 amu or better.	
ii.	The mass stability should be 0.1 Da over 12 hours or better.	
iii.	The scan speed should be 15,000 amu /sec or more.	
iv.	500 MRM data points per second with no loss in sensitivity for co-eluting components at any one point of time.	
v.	The polarity switching time should be 25 millisecond or less.	
vi.	Dwell time and pause time must be below 1 millisecond.	
vii.	Mass Resolution should be 0.7 Da or lower. In high resolution mode; resolution must be 0.5 Da or lower.	
viii.	Sensitivity: a) ESI Positive: 1 pg reserpine, S/N ≥ 1,50,000:1 (RMS) or better based on 1-µL injection without smoothing data. b) ESI Negative: 1 pg chloramphenicol, S/N ≥ 1,50,000:1 (RMS) or better without smoothing data based on 1-µL injection. The sensitivity specifications must be available on the website of the manufacturer and official specifications sheet of the principal company. Performance specifications will not be entertained. The performance as quoted must be demonstrated during installation. *(Documentary Proof to be provided for both the above as company brochure)*	
ix.	Scan mode: Full scan, SIM, Product ion scan, Precursor ion scan, Neutral loss/gain scan and Multiple Reaction Monitoring. Multiple time segmented MRM. Automated tuning.	
Ion Source		
i.	It should include dedicated ESI and ESI-APCI (Dual mode) as ionization source. It should be easy to change the source without the use of sophisticated tools. The cleaning and maintenance of ion source and desolvation line should be simple without breaking the vacuum.	
ii.	Specially designed collision cell allowing less dwell time. Suitable for high sensitivity MRM studies. Should be free of cross talk.	
iii.	The interface between UHPLC and Mass Spectrometer should be capable of handling large batches of samples with complex matrices over a long period of time. Desolvation temperature should be 400ºC or higher will be preferred.	
Vacuum system		
i.	Efficient vacuum system with minimum maintenance. The system should have vacuum safety features to prevent damage to the instrument in case of failure.	
Detector		
i.	The detector having high electron/photon multiplier should be off-axis or any other type meeting the sensitivity and five order of dynamic range.	
ii.	It must operate both +ve and -ve ion mode. It should be able to save the data of both modes in parallel.	
Gas Generator/Gas cylinders		
i.	Suitable filled gas cylinders as required with test certificates, SS double stage regulators, gas pipes with fittings and purifier for the system.	
ii.	Should be portable and highly durable, low noise, vibration free, drying system and auto drain valve with inbuilt compressor.	
iii.	Should be able to supply all the gases required for the LC-MS/MS instrument at required purity, pressure and flow rate.	

Water Purification System	
i.	Merck make Milli-Q Integral Water Purification System for Ultrapure Water (Type-1) Resistivity at 25 °C: 18.2 MΩ•cm, TOC ≤ 5 ppb, Particulates (size > 0.22 µm) < 1 particulate/mL, Bacteria < 0.01 CFU/mL, Pyrogens (endotoxins) < 0.001 EU/mL, RNases < 1 pg/mL, DNases < 5 pg/mL, Flow Rate: Up to 2 L/min. Following Consumables for five years should be provided. 1. Progard® TS2 Pretreatment Pack 2. Progard® TNP2 Pretreatment Pack 3. Quantum® TEX Polishing Cartridge 4. Quantum® TIX Polishing Cartridge 5. Vent Filter for PE Tank (Type 2 Water) 6. Photooxidation UV Lamp A10® TOC Monitor 7. Bactericidal UV Lamp 8. Photooxidation UV Lamp

C. Data Station with software system
(PC with latest configuration and licensed operating system)
Data Station Quoted Model: _____
Software Name for system (*Latest Version*): _____

	Required technical specifications
i.	PC with latest configuration and licensed operating system (At least i7 Processor, Intel Original M/B, 16 TB HDD, 42" LED monitor, DVD R/WR, 32 GB DDR3 RAM, graphic card etc.) with laser printer. However, data station should be compatible to process minimum 400 compounds in a single sample.
ii.	Single software platform must be provided for a seamless control of all the modules of LC and MS.
iii.	The software must be able to perform 'Automatic Optimization of MRM' using flow injection mode.
iv.	MRM database for minimum 500 pesticides is mandatory with LC and MS parameters.
v.	Also latest original company licensed software with life-time validity and should have capabilities to perform the following functions. a. Automated calibration and quantitative optimization. b. Perform alternating positive/negative scans in one run. Automated quantitation and reporting of acquired samples. Should also quote data processing with Automation based review on peak shouldering, interference etc. The available MRM catalogues or tables containing the optimized instrument parameters for thousands of compounds can also be used to save the time with method development. The software should be 21 CFR part 11 compliant, user friendly and compatible with latest operating system. New versions developed during warranty period should be provided free of cost.

D. Essential Accessories
(Essential accessories to run the system)

	Required technical specifications
i.	Online UPS (Preferably Emerson make), 15.0 KVA capacity, SMF batteries (Preferably Exide/Luminous/Amaron make), castor mounted rack for batteries. Entire instrument along with gas generator should be able to run on UPS for at least 4-5 hr back up.

ii.	Mobile data station: Dell / Lenovo make Laptop with 5th/6th Generation i7 Processor, 8 GB RAM, 2 GB Graphics Card, 1 TB HDD, OS: Win 10 License, 15.6" LED Screen, etc.
iii.	Laser Printer : Compact and user friendly, 1200 x 1200 dpi print quality, upto 25 ppm Print speed, Auto duplex printing facility, Wired LAN (Canon/Hp make)
iv.	Tower AC (Diakin/Mitsubishi, minimum 2 ton capacity)
v.	Netgear RN31400 with cloud setting- Ready NAS 300 Series 4-Bay, 4 x 4TB HDD (NAS supported) or superior

E. Spares

(Essential spares to run the instrument)

	Required technical specifications	
No.	**Specifications**	**Quantity**
i)	Column	
	a. RP C-18, 1.7µ, 100 mm X 2.1 mm	10 Nos.
	b. RP C-18, 1.7µ, 50 mm X 2.1 mm	05 Nos.
	c. Biphenyl column 1.9µ, 100 mm X 2.1 mm	10 Nos.
	d. Mixed mode columns (C-18, WCX, WAX)	10 Nos.
ii)	Guard Column	
	i. Suitable cartridge based guard columns from the same supplier as the columns asked, should be provided.	10 Nos.
	ii. Inline filter/Frit/cartridge	35 Nos.
iii)	Auto-sampler needle	5 Nos.
iv)	Inline filter with frit for LC	10 Nos.
v)	Oil for vacuum pump	20 L
vi)	Capillary for ESI	10 Nos.
vii)	Corona needle for APCI	3 Nos.
viii)	Desolvation line	10 Nos.
ix)	ESI O-ring (if required in MS)	10 Nos.
x)	Pump seal for LC system	05 Nos.
xi)	0.22µ Millipore-filter paper disc	1000 Nos.
xii)	Lint free tissues	05 boxes
xiii)	Swab	100 Nos.
xiv)	Tool kit	1 set
xv)	Filter assembly with suitable pump and sonicator to accommodate minimum 4 bottles of 1 L.	1 set each.
xvi)	Nylon Syringe filter, 0.22µ, 13mm diameter	5000 Nos.
xvii)	Mixture of minimum 200 pesticide standard, minimum 1 ppm and 1 mL with at least one year expiry date.	1 set
xviii)	PSA powder	1kilogram
xix)	C-18 powder	1 kilo gram
xx)	Bottle for reservoir (1 L)	12 Nos.
xxi)	Suction filter of mobile phase for LC	24 Nos.
xxii)	Auto sampler tray extra excluding with system	1 No.
xxiii)	Plunger seal wash bottle (if available in LC)	4 Nos.
xxiv)	Alconox powder for cleaning system	10 pks.
xxv)	Sample vials (2 mL capacity) with cap having pre-slit septa	10,000 Nos.
xxvi)	Peek tube	10 feet
xxvii)	Dehumidifier (room size 250 sq ft /2500 ft^3)	1 No.

Note: Bidder must quote single price for this instrument comprising of parts/components as mentioned in A to E.

2.	**GC-MS/MS – 2 Nos.** Tender Fee: Rs. 15,000.00	The specifications and requirements for each GC-MS/MS are as following: **A. Gas Chromatography Tandem Mass Spectrometry System (GC-MS/MS)** *(GLC equipped with MS/MS (triple-quadrupole), split/splitless & PTV injectors, essential accessories, data-station with computer and printer, operating software, etc with specifications)* **Quoted Model: _____**	**7.00**

	Required technical specifications
Gas Chromatograph	
i.	The GC must feature an external LED screen to provide easy accessibility to the GC and immediate interactions with it.
ii.	The LED screen of the GC provides all needed data, including all temperature and pressure/flow parameters, type of carrier gas, carrier gas column pressure, flow rates, split flow, detector gas flow rates and all detector parameters.
iii.	A routine automatic leak checks procedure.
iv.	A routine automatic column evaluation procedure and storing the column pneumatic resistance. It should also allow an automated correction of the nominal column parameters.
v.	The system should be capable of calculating the carrier gas linear velocity and the column void time.
Auto sampler	
i.	Round shape tray design, static (not XYZ axis settable), with at least 100 (2 mL) vials capacity.
ii.	Auto- sampler should not compatible with only manufacturer syringe.
iii.	Should inject from 0.1 µL to 250 µL with variable speed and varying syringe sizes. Should be capable of large volume injection.
iv.	Fully controlled by software as well as manual.
v.	head space with heated transfer line facility with at least 12 vials incubation and ≥ 75 vials in carousal/tray.
vi.	Should have indicator of any error.
Injector (2 Nos.)	
i.	Split/splitless and PTV
ii.	It should be able to operate with narrow bore capillary, normal capillary and wide bore.
iii.	The injector should allow timed closure/opening of the purge line.
iv.	It should have separate back flush facility.
v.	Retention time locking/automatic adjustment of retention time system with constant flow or pressure.
vi.	Maximum temperature should ≥ 400 °C with fast cooling rate, 400 °C to 50 °C with < 4 min or better.
vii.	Split Ratio: ≥ 7,000:1
viii.	Pressure in the range of Range: 0-900 kPa or better.
Oven	
i.	The operating temperature range should be 4°C above ambient to ≥400 °C with fast cool down as well as heat up time
ii.	Oven Ramps/Plateaus Cool down - It should have number of ramps/plateaus: 20/21 or better the maximum heating rate should be >100 °C/min or better
iii	The oven temperature stability is within 0.01 °C/ every °C of actual temperature
iv.	GC analytical performance: - The GC should have a Retention Time Repeatability of <0.008 % or better - The Peak Area Repeatability should be <0.5 % RSD or better

		Mass Spectrometer			
		Detector			
		i.	Scan mode: Full scan, SIM, timed-SRM, SRM/MRM, Combined MRM/SRM/Full scan, Product ion scan, neutral loss		
		ii.	Detection system should have linear range >10^6		
		iii	The mass range should be 10 to 1000 m/z or better		
		iv.	Should have adjustable electron energy from 10 eV to 150 eV or better		
		v.	Should have emission current up to 150 µA or better		
		vi.	The scan speed should not be less than 20,000 amu/sec. Higher scan speed is preferred.		
		vii.	Should have >800 transition/sec from lower transitions to higher transitions without up gradation.		
		viii.	Mass resolution should be at least 0.5 µ FWHM/ unit mass resolution or better		
		ix.	Dwell time should be at least < 0.5 msec or better		
		x.	The mass stability should be 0.1 Da over 24 hours or better		
		xi.	Interface between GC and MS with independent heating up to 350 °C or better		
		xii.	Sensitivity: EI MRM Instrument Detection Limit: 0.5 fg or less octafluoronaphthalene (OFN) statistically derived at 99% confidence level from the area precision of eight sequential injections of 1µL EI full scan: S/N ratio 1000:1 or better for 1 µL of 1pg/µL OFN (m/z 272) EI MRM: S/N ratio >16,500:1 or better for 1 µL of 100fg/µL OFN for the transition of m/z 272 →222) The performance as quoted must be demonstrated during installation. *(Documentary Proof to be provided for the above as company brochure.)*		
		Ion source			
		i.	It should have an EI source with dual filaments, programmable to 300 °C or better.		
		ii.	The system should have improved ion guide/off-axis to reduce excited neutral background to single counts per scan without requiring signal thresholding, background subtraction Or smoothing		
		Vacuum system			
		i.	Efficient vacuum system with minimum maintenance. The system should have vacuum safety features to prevent damage to the instrument in case of failure.		
		Gas cylinders			
		i.	Suitable filled gas cylinders (2 Nos. of each) as required with test certificates, SS double stage regulators, cylinder opening key, gas pipes with fittings and purifier for the system.		

B. Data Station with software system

(PC with latest configuration and licensed operating system)

Data Station Quoted Model: _____

Software Name for system (*Latest Version*): _____

	Required technical specifications
i.	PC with latest configuration and licensed operating system (At least i7 Processor, Intel Original M/B, 16 TB HDD, 42" LED monitor, DVD R/WR, 32 GB DDR3 RAM, graphic card etc.) with laser printer. However, data station should be compatible to process minimum 400 compounds in a single sample.

ii.	It should have Automated SRM/MRM Development.
iii.	It should have Automated acquisition window adjustment based on retention time.
iv.	It should have Compound based acquisition method setup.
v.	It should have a software for controlling and acquiring all the MS and conventional detectors.
vi.	It should have a separate dedicated software for reporting for environ mental and food safety market as per international protocols.
vii.	The latest version of the NIST, 2017 and Pesticide Library (Licensed version) should be included. Should provide dedicated pesticide MRM database for at least 500 compounds.

C. Essential Accessories

(Essential accessories to run the system)

	Required technical specifications
i.	Online UPS (Preferably Emerson/Numeric make), 15.0 KVA capacity, SMF batteries (Preferably Exide make), castor mounted rack for batteries. Entire instrument along with gas generator should be able to run on UPS for at least 4-5 hr back up.
ii.	Mobile data station: Dell / Lenovo make Laptop with 5th/6th Generation i7 Processor, 8 GB RAM, 2 GB Graphics Card, 1 TB HDD, OS: Win 10 License, 15.6" LED Screen, etc.
iii.	Laser Printer : Compact and user friendly, 1200 x 1200 dpi print quality, upto 25 ppm Print speed, Auto duplex printing facility, Wired LAN (Canon/Hp make)
iv.	Tower AC (Diakin/Mitsubishi, minimum 2 ton capacity)
v.	Netgear RN31400 with cloud setting- Ready NAS 300 Series 4-Bay, 4 x 4TB HDD (NAS supported)
vi.	42" LED display for online display of chromatograms

D. Spares

(Essential spares to run the instrument)

	Required technical specifications	
No.	**Specifications**	**Quantity**
i.	He gas filter (tower top)	4 Nos.
ii.	Oxytrap	5 Nos.
iii	Long life, high-temperature low bleeding green septa, maximum setpoint 300 °C	400 Nos.
iv.	a) Auto-sampler syringes - 10µL	30 Nos.
	b) Suitable syringe for head space	10 Nos.
v.	Filament Cartridge	10 Nos.
vi.	Spare EI ion Source	02 No
vii.	a) 2 mL vials and caps with septa	5,000 Nos.
	b) suitable vials for head space and caps with septa, with crimping tool	1,000 Nos.
	c) caps with septa for head space vials	5,000 Nos.
viii.	a) Vespel ferrules for capillary columns of 0.25 mm id	50 Nos.
	b) Vespel ferrules for capillary columns of 0.32 mm id	50 Nos.
	c) Vespel ferrules for capillary columns of 0.53 mm id	10 Nos.
ix.	a) Glass Liners for Split injection	10 Nos.
	b) Glass Liners for Splitless injection	20 Nos.
	c) Glass Liners for PTV injection	10 Nos.
x.	Oil for vacuum pump	20 Litre

		xi.	Capillary Columns		
			a) 30 m X 0.25mm i.d. X film 0.25 µ, Phase-1701	10 Nos.	
			b) 30 m X 0.25mm i.d. X film 0.25 µ, Phase-5	20 Nos.	
			c) 30 m X 0.32mm i.d. X film 3 µ, Phase-5 (for head space) with suitable ferrules	3 Nos.	
			d) 30 m X 0.53mm i.d. X film 5 µ, Phase-5 (for head space) with	3 Nos.	
		xii.	Mixture of minimum 200 pesticide standard, minimum 1 ppm and 1 mL with at least one year expiry date	1 set	
		xiii.	PTFE Syringe filter, 0.22µ, 13mm diameter	5000 Nos.	
		xiv.	PSA powder	1 Kg	
		xv.	C-18 powder	1 Kg	
		Note: Bidder must quote single price for this instrument comprising of parts/components as mentioned in A to D.			
3.	**ICP – MS – 2 Nos.** Tender Fee: Rs. 15,000.00	<u>The specifications and requirements for each ICP-MS are as following:</u> **A. Inductively coupled plasma-mass spectrometry (ICP-MS)** **Quoted Model: _____** ICPMS should be used to analyze Trace and ultra-trace elemental analysis (ppm, ppb and ppt) Isotope fractionation studies from the various food commodities and environment samples. It should be capable to perform analysis from high concentration (%) to ultra-trace level (ppt) in a single run without any dilution.			**5.00**

	Required technical specifications
Sample Introduction System	
i.	Wide range peltier-cooled spray chamber, Temperature range should be -5 °C to 40 °C or more.
ii.	Glass concentric nebulizer.
iii.	High precision peristaltic pump with at least 4 channels.
iv.	System should come with argon dilution accessories for analysing samples with varying TDS >20%.
v.	Sample introduction system and assemble should be easily accessible for maintenance.
vi.	Should have very low dead volume with low uptake rate (0.4 mL/min or better).
vii.	Mass flow controller for all gasses.
Ion Source and Plasma	
i.	Computer controlled RF generator operating frequency should be ≥ 27 MHz or more with fast and dynamic frequency matching and power from 0.6 to 1.6 KW for automatic control and torch ignition, shutdown and system warm up.
ii.	RF generator and coil should be cooled by air/water or without cooling.
iii.	RF coil should consist life time guarantee and if not than should offer required numbers of RF coil for 5 years of operation along with system.
iv.	Digitally driven and programmable plasma generator, with auto tuning features.
v.	Equipped with at least 4-channel mass flow controller for precise and stable control of gas flow.
vi.	Automatic shutdown of the plasma by the system after completion of analysis.
vii.	The plasma should be fully controlled through software.

		viii.	One piece wide bore torch/shield torch injector system. Computer controlled adjustment of torch position (X, Y and Z directions) with independent movements.		
		Ion extraction interface			
		i.	Suitable water-cooled interface under vacuum and with standard high performance Ni and Pt sampling and skimming cones with wide orifice to avoid clogging.		
		ii.	Sampler, skimmer cones/extraction system should be easily mountable/dismountable.		
		iii.	Lens/cones system should be outside the vacuum system to reduce down time.		
		Quadrupole system			
		i.	Quadrupole should be made of molybdenum/stainless steel rods with RF pre-filters.		
		ii.	Mass shift/on mass mode should be available in reaction cell technology.		
		iii.	The mass range should be from 4-260 amu or better with resolution of 0.4 amu or better		
		iv.	Scan speed should be $\geq$ 3700 amu/sec		
		v.	Dwell time should be <0.1 ms or better		
		vi.	Background equivalent concentration should be <1 cps.		
		vii.	Quadrupole driven by digital RF generator (2 MHz or higher)		
		Detector			
		i.	EMT detector (dynode type) with both analogue and digital mode with >10 orders of magnitude or better		
		ii.	Should be able to operate in dual mode.		
		iii.	Minimum dwell time of 100 microseconds (pulse count and analogue mode)		
		iv.	Data acquisition speed should be >10,000 data points/sec or better		
		Sensitivity			
		i.	• Detection limit: 1. 9Be: 1 ppt or better 2. 115In: 0.5 ppt or better 3. 238U: 0.5 ppt or better • Oxide ratio (CeO/Ce): <3% or better • Short term stability: <3% (over 10 minutes) and longtime stability of <3% (over 2 hours) shall be demonstrated. • Doubly charged ratio: Ba^{2+}/Ba^{+} (%): <3% or better • Isotope ratio precision: Ag107/Ag109 <0.1% or better • It shall be possible to measure major and minor concentrations in a single analytical run. • Auto tune facility to optimize plasma conditions, lens and cell voltage, etc. for best ionization and sensitivity. • Abundance sensitivity at high mass (U238) of better than $1X10^{-6}$, $1X10^{-7}$ (L, H) respectively).		
		Vacuum system			
		i.	Efficient vacuum system (at least 3 stages) with minimum maintenance. The system should have vacuum safety features to prevent damage to the instrument in case of failure.		
		Cell technology			
		i.	System should have a collision and reaction cell to remove polyatomic and isobaric interferences.		
		ii.	System should have standard, collision and reaction mode of operation and it should be operate in all the mode in a single method.		
		iii.	System should quoted with dedicated gas line for He, H_2, O_2 and NH_3.		

iv.	Vendor should provide published application notes for quoted model demonstrating the mass shift capability using reactive gases (eg. H_2, O_2 and NH_3) for removing interferences at low level detection.
v.	Vendor should provide the maintenance chart for all of the components in the system with replacement/ cleaning time period.

B. Micro-Wave Digestion System

(Microwave digestion system with suitable exhaust system with following specification)

Quoted Model: _____

	Required technical specifications
i.	Vessel type: at least 40 or more vessels
ii.	Power : Un-pulsed Microwave power from 0 to 1800 W using 1 to 2 magnetrons
iii.	Built-in cook-book methods
iv.	Built-in software with screen display for temperature, weight, method search, power profile, method set-up etc.
v.	TFM type vessel (50-75 mL capacity) to be quoted which can withstand up to 100 bars working pressure and 240°C temperature.
vi.	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
vii.	Built-in integrated cooling system for removal of gases (vapors) and cooling of vessel without a use of external chiller/thermostat
viii.	Various safety features to be incorporated in the basic system.
ix.	Additional 40 vessels with rotor should be provided with the system.
x.	Magnetron

C. Data Station with software system

(PC with latest configuration and licensed operating system)

Data Station Quoted Model: _____

Software Name for system (*Latest Version*): _____

	Required technical specifications
i.	PC with latest configuration and licensed operating system (At least i7 Processor, Intel Original M/B, 4 TB HDD, 42" LED monitor, DVD R/WR, 16 GB DDR3 RAM, graphic card etc.) with laser printer.
ii.	Single software platform must be provided for a seamless control of all modules of ICP-MS.
iii.	The software should be user-friendly that guides users through method and sequence development, and method templates for rapid development of commonly used methods. New version developed during warranty period should be provided free of cost.
iv.	The required IQ, OQ, PQ needed should be generated during installation.
v.	Quantitate analytes on any possible combination of isotopes.
vi.	Calibration for multi-element external calibration, method of standard additions, and isotope ratios
vii.	Fully automated instrument initialization (start-up) routine, including instrument stabilization time, plasma X/Y position adjustment, mass calibration, and quadrupole resolution
viii.	Simultaneous real-time graphical display of signal as full mass scan, segments of mass scan, and signal response vs time for multiple isotopes or ratios.

D. Essential Accessories

(Essential accessories to run the system)

	Required technical specifications
i.	Auto-sampler with 120 vials (15 mL) capacity or more
ii.	Certified filled gas cylinders (6 Argon, 2 Helium, 1 oxygen, 1 hydrogen, 1 NH_3 with exhaust system) with suitable double stage SS regulator, purification & control panel (gas station). Tubing and capping also provided with gas cylinders.
iii.	Online UPS (preferably Emerson make), 20 KVA power supply, SMF batteries, (preferably Exide make), castor mounted rack for batteries at least 2 hr back up power supply.
iv.	Suitable exhaust system
v.	Speciation interface kit for existing LC with suitable column for Cr analysis.

E. Spares

(Essential spares to run the instrument)

	Required technical specifications	
No.	**Specifications**	**Quantity**
i.	a) Ni interface cone set (sampler cone, skimmer cone)	10 Nos.
	b) Pt interface cone set (sampler cone, skimmer cone)	5 Nos.
ii.	Extraction lens set	5 Nos.
iii	torch with fixed 2 mm injector	5 Nos.
iv.	torch 2.5 mm	3 Nos.
v.	1 mm injector	3 Nos.
vi.	cyclonic quartz/glass spray chamber	3 Nos.
vii.	concentric type nebulizer	3 Nos.
viii.	drain tube (aqueous and organic solutions)	5 Nos.
ix.	sample intake capillary tube set (aqueous and organic solutions)	10 Nos.
x.	oil for vacuum pump	10 L
xi.	Chiller coolant mix	10 L
xii.	Pt shield torch with bonnet set	5 Nos.
xiii.	Detector	2 Nos.
xiv.	RF coil	5 Nos.
xv.	At least 30 elements multi standard solution (including Hg, Sb, Sn, Se, Mo, V, B, etc), NIST traceable, 1000 ppm each, 100 mL at least 2 years expiry date from date of purchase	1 set

Note: Bidder must quote single price for this instrument comprising of parts/components as mentioned in A to E.

4.	**Cold Chamber** Tender Fee: Rs. 1,500.00	The required technical specifications of the cold chamber are as follow -			**0.30**
		Proposed room size	:	12 ft x 12 ft x 9 ft (H) Ext. dim.	
		No. of rooms	:	01	
		Installation site	:	Pesticide Residue Lab., AAU, Anand	
		Insulation of room	:	Prefabricated 60mm PUF Panels with 40 ± 2 kg/m3 Density inside and outside Pre Painted 0.5mm Thick GI Sheets with cam lock for air tight construction, facing material GI RPUF slabs and 6 mm marine ply with aluminium checkered sheets on top.	
		Expected temp. before Cooling (Product incoming temp.)	:	+35ºC	
		Temp. after cooling (Final product Temp./ Room temp)	:	0°C to 8°C ± 1°C	
		Time for cooling (Pull down time)	:	24 hours	
		Type of cooling	:	Room Air cooling	
		Outside ambient temp. for insulation purpose	:	52 °C maximum	
		Ambient temp. for design of refrigeration system	:	+45 ºC	
		Door specification	:	0.9 x 2.0 mtr (H) clear opening with manual swing	
		No. of door openings	:	02 times	
		No. of occupants for loading /unloading	:	02 persons for 2 hour	
		Material packing	:	Crates /Plastic / gunny bags/glass bottles	
		Cooling unit	:	Refrigeration unit (10,000 BTU/HR)	
		Refrigerant	:	R-22/R-404 a	
		Compressor make	:	Emerson	
		Compressor type	:	Hermetic	
		Compressor Power consumption	:	1.5 kW per machine	
		Fan for evaporators	:	Axial flow fans	
		Racks	:	1730mm (H) X 900mm (W) X 400mm (D); 5 shelves open type making 4 compartment from slotted angle L 40 X 40 X 3mm thick Shelf from 20 Gauge thick CRC Sheet duly powder coated Grey colour finish	
		Room lighting	:	4 Watt/m2 with vapour proof light fixture	
		Control panels	:		
		Switchgears	:	All of reputed make shall be used	
		Coils & pipe	:	All coils & pipes are of copper make duly insulated	
		Temperature sensor	:	With sensitivity ±1 Deg.C	
		Electrical supply required	:	415V/3 phase/50 HZ	
		Power requirement	:	1.5HP	
		Condenser cooling	:	Air-cooled	
		Servo controlled stabilizer	:	i) The Stabilizer should be 5 KVA 3 Phase wide range Servo type.	

				ii) Should be able to operate in the input voltage range of 225V to 460V. iii) Should provide a three phase steady state output voltage of 400V ± 1% (phase to phase). iv) Output Frequency 50Hz. v) Equipment should be air-cooled/oil cooled. vi) Mode of operation - Auto/Manual. vii) Efficiency shall be 98% at nominal load. viii) Overload Capacity 120% for 10 Minute ix) There shall be separate Meters to measure / monitor the Input / output Voltage, Current etc. x) There shall be a separate bypass mechanism for the mains supply. xi) Protection: -Low Voltage, High Voltage, Overload and short circuit. xii) There shall be separate indicators for Input and Output On.	
			Wiring	:	Power wiring & control wiring with ISI approved PVC insulated copper conductor with supports in PVC piping	
			Warranty	:	5 years comprehensive warranty including allied parts after successful installation.	
5.	**Vacuum Rotary Evaporator - 2 Nos.** Tender Fee: Rs. 1,500.00	The required technical specifications of Vacuum Rotary Evaporator are as mentioned below.				**0.50**
			Specification		***Description***	
			<u>a. Rotary Evaporator</u>		The system Should have integrated Vacuum Controller which should have Digital Display of Actual Vacuum pressure.	
			Evaporating Flask Speed Range	:	10 to 280 RPM	
			Evaporator	:	Evaporator can be used for 50ml to 5000ml Round bottom evaporation flasks with head break 29/32 or 24/29	
			Condenser	:	The system Should have a vertical Condenser with Condensing Surface Area: 1400 cm^2	
			Heating Volume Bath Capacity (L)	:	4.5 L	
			Heating Capacity (W)	:	1300 [Voltage : 220-240V]	
			Water bath temperature	:	20 to 210 °C, ±2 °C, accuracy ±1 °C, bath suitable for oil & water both	
			Heating bath Material	:	Stainless Steel	
			Electronic display panel		For rotation speed, vapour temperature, bath temperature & vacuum pressure	

		Operation	:	Hand Lift operation for condenser & System should be very safe for operation	
		Overheat Cut-off Protection	:	5°C Over Set Temperature	
		Diameter Heating Bath	:	250-260 mm	
		Other	:	The system Should supply with minimum 5 Nos. of each 50 ml, 250 ml, 500 ml Evaporating Flask and 1 L receiving Flask.	
		b. Vacuum Pump	:	The Vacuum pump should be Chemically Resistant and pump all type of Vapours must include Oil free two-stage Diaphragm based vacuum pump with Condenser.	
		General	:	The pump should optimally be suitable with rotary evaporator & cover a wide range of laboratory Solutions.	
		High suction capacity	:	2.0 m^3/h	
		Vacuum	:	An ultimate vacuum of 7 mbar should be achieved.	
		c. Chiller	:	The system should have a display of actual temperature, temp. Set point.	
		Temperature	:	Temperature range from -10 °C to +40 °C With accuracy ± 1 °C	
		Coolant volume	:	3 L (Additional 10 L coolant should be supplied)	
		Re-circulation Chiller	:	Re-circulation Chiller to generate Cooling water for the rotary Evaporator.	
		Cooling liquid capacity	:	+20 °C : 580W	
		d. Warranty	:	Instrument should be under comprehensive warranty for a period of 5 (five) years from the date of installation.	
6.	**Nitrogen Generator with Accessories** Tender Fee: Rs. 1,500.00	The required technical specifications for Nitrogen Generator and accessories are as mentioned below.			**0.10**
		Specification		***Description***	
		a. Nitrogen Generator	:	Supplied with 40µ Air Filter with Auto Drain at inlet & 0.01µ Mist Filter at outlet to remove moisture, dust & mist, Inline Particulate Filter, Power Cord, Instruction & Operation Manual, Manufacturer Test.	
		Capacity of Gas	:	40 liter/min at 6 Kg/cm^2	
		Moisture Content	:	< 5 ppm	
		Oxygen	:	< 2 %	
		CO & CO2	:	< 1 ppm	
		Total Hydro Carbon	:	< 0.5 ppm	
		Micron Particulates	:	< 0.01 Micron	
		Purity of Nitrogen Gas	:	97 % or better	
		Method of Generation Technique	:	Pressure Swing Adsorption (PSA)	
		Room Temperature	:	5 – 40°C	
		Power Supply	:	230VAC ± 10%, 50Hz	

<table>
<tr><td></td><td></td><td>
<table>
<tr><td><u>b. Compressor</u></td><td>:</td><td>Supplied with Storage Tank fitted with Safety Valve, Pressure Gauge, Pressure Switch, Auto Drain Valve, Check Valve, Delivery Pipe, Intake Filter and Delivery Valve.</td></tr>
<tr><td>Type of Compressor</td><td>:</td><td>Oil Free Air Compressor</td></tr>
<tr><td>Pressure Delivery</td><td>:</td><td>17.32 CFM</td></tr>
<tr><td>Free Air Displacement</td><td>:</td><td>11.0 CFM</td></tr>
<tr><td>Working Pressure</td><td>:</td><td>9.0 kg/cm^2</td></tr>
<tr><td>Tank Capacity</td><td>:</td><td>225 Liter</td></tr>
<tr><td>Outlet connection</td><td>:</td><td>½” BSP</td></tr>
<tr><td>Type of Drive</td><td>:</td><td>V-belt Drive</td></tr>
<tr><td>Noise Level</td><td>:</td><td>≤ 76 db (at one meter distance)</td></tr>
<tr><td>Motor</td><td>:</td><td>5.0 HP, 415VAC ±10%, 50 Hz, 3 phase</td></tr>
<tr><td><u>c. Warranty</u></td><td>:</td><td>Equipment with all the essential accessories should be under comprehensive warranty for a period of 3 (three) years from the date of installation.

Also quote the rate on Separate sheet for AMC for 1st, 2nd and 3rd year after warranty period.</td></tr>
</table>
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<tr><td>7.</td><td>Homogenizer - High Volume (Imported) - 2 Nos.

Tender Fee:
Rs. 1,500.00</td><td>The required technical specifications of the homogenizer are -
Power :1500 Watts.
Voltage: Single phase.
Capacity: 3 HP
Speed: Variable 300-3000 rpm (Two speed).
Bowl Capacity: 7 Litres.
Lid: Polycarbonate with provision for addition of liquid, leak proof, see thru lid.
Scraper: To schap the homogenate from sick wall of the bowl, built in, with safety device for operator.
Bowl: Stainless Steel with handle.
Blade: Heavy duty, fine serrated, Stainless steel.
Accessories: With all essential accessories.
Warranty: Minimum 3 years comprehensive warranty for all the parts.</td><td>0.15</td></tr>
<tr><td>8.</td><td>Split Inverter AC

Tender Fee:
Rs. 1,500.00</td><td>Followings are the required technical specifications for Split Inverter ACs. (Voltas/Mitsubishi/Hitachi/Toshiba/Daikin make).
Required quantity of ACs are - 16* Nos. of 2.0 Ton capacity & 4 Nos. of 1.5 Ton Capacity
* - 2 Quantity to be supplied at Polytechnic College, AAU, Vadodara
<table>
<tr><th>Specification</th><th></th><th>Description</th></tr>
<tr><td>Energy Rating</td><td>:</td><td>3 Star ISEER 2018 Rating (3.50-3.99 kWh)</td></tr>
<tr><td>Capacity</td><td>:</td><td>1.5 Ton & 2 Ton</td></tr>
<tr><td>Cooling Capacity</td><td>:</td><td>>3000 kWh</td></tr>
<tr><td>Type</td><td>:</td><td>Split</td></tr>
<tr><td>Moisture removal</td><td>:</td><td>2.5 L/hr</td></tr>
<tr><td>Air circulation</td><td>:</td><td>≥ 450 CFM</td></tr>
<tr><td>Noise level</td><td>:</td><td>≤ 50 dB for Indoor Unit</td></tr>
<tr><td>Mode</td><td>:</td><td>Dry Mode, Dehumidification, Turbo Mode, Sleep Mode, Cool Mode</td></tr>
</table>
</td><td>0.30</td></tr>
</table>

		Features	:	Auto Air Swing, Speed Setting, Operation Control, Auto Restart, On/Off Timer, Chaos Logic, Fuzzy Logic, Jet Cool	
		Filters	:	Anti-Bacteria Filter, Dust Filter, etc.	
		Operation	:	LCD Remote	
		Compressor Type	:	High EER Rotary	
		Wide Operating Voltage Range	:	145-270 V	
		Full Load Capacity	:	35% Min - 110% Max	
		High Ambient Cooling	:	52°C	
		Refrigerant Gas	:	R410A	
		Connecting Pipe	:	Copper (1/2" & 1/4")	
		Condenser Coil	:	Copper	
		Evaporator Fin	:	Blue Fin or better	
		Voltage Stabilizer	:	4 KVA Wall mount type with time delay, high and low voltage and thermal overload protection. Input Voltage range: 130-300 V, Output Voltage: 200-240 V, Efficiency: > 95%.	
		Warranty	:	As per the terms and conditions of manufacturer. (5 year on compressor)	

9. **Columns for LC-MS/MS**

Tender Fee:
Rs. 1,500.00

0.30

1. C-18 (100 mm) : 07 Nos.
2. C-18 (50 mm) : 03 Nos.
3. Security Guard Column C-18 : 7 Nos. with frit / cartridge – 50 Nos.
4. Biphenyl (100 mm) : 10 Nos.
5. Security Guard Column Biphenyl : 10 Nos. with frit / cartridge – 50 Nos.

The required technical specifications for above mentioned columns are as under -

Column Type (Waters/Agilent/Phenomax/ Fortis make)	**Length (mm)**	**I.D. (mm)**	**Particle Size (µ)**
C18	100	2.1	1.7
C18	50	2.1	1.7
Security Guard Column C18	-	2.1	-
Biphenyl	100	2.1	1.9
Security Guard Column Biphenyl	-	2.1	-

10. **Columns for GC-MS/MS**

Tender Fee:
Rs. 1,500.00

0.32

1. 5-MS (30 Meter) : 10 Nos.
2. 5-MS (60 Meter) : 01 Nos.
3. 35-MS : 05 Nos.
4. 1701-MS : 10 Nos.

The required technical specifications for above mentioned columns are as under -

Column type (Restek/Agilent/Thermo /GS-Tek make)	**Length (Mtr)**	**I.D. (mm)**	**Film Thickness (µm)**	**Temp Limit °C**
5-MS	30	0.25	0.25	upto 350
5-MS	60	0.25	0.25	upto 350
35-MS	30	0.25	0.25	upto 350
1701-MS	30	0.32	0.25	upto 350

Sheth D. M. Polytechnic in Horticulture, AAU, Vadodara			
11.	**Color LaserJet Pro Printer** Tender Fee: Rs. 1,500.00	The required technical specifications / features of the printer are as mentioned here under - A. Print up to 16 ppm B. Duty Cycle (Monthly): 30,000 pages C. Resolution: Up to 600 x 600 dpi, Memory: 256 MB D. ePrint, Apple AirPrintTM, MopriaTM Certified; Wireless Direct Printing; Mobile Apps; Wi-Fi Direct. E. Pages in Box: 800(Blk), 700(Color)	**0.01**
12.	**LaserJet Pro B/w Printer** Tender Fee: Rs. 1,500.00	The required technical specifications / features of the printer are as mentioned here under - a) Print, Scan, Copy, Fax, Wireless b) Prints up to 20 ppm (Black, A4) c) 600 MHz Processor with 128 MB RAM d) Duty Cycle up to 8,000 pages per month e) RMPV: up to 250 to 2,000 Pages f) 600 x 600 dpi print resolution g) Hi-Speed USB 2.0 Port, built-in fast Ethernet 10/100Base-TX network port h) ePrint, Apple AirPrintTM, Mobile Apps i) Wi-Fi 802.11 b/g/n j) Supplier must offer 3 years of onsite warranty	**0.02**
13.	**Firewall System (Internet Security System)** **250 NOS. USER POINT** Tender Fee: Rs. 1,500.00	Followings are required technical specifications of the firewall system inclusive of essential hardwares / softwares. 1. USB Port 2. Console Port 3. 2x GE RJ45 MGMT/HA Ports 4. 2x GE RJ45 WAN Ports 5. 14x GE RJ45 Ports 6. 24X GE RJ45 POE Ports 7. 2x GE SFP DMZ Slots 8. Firewall Throughput (1518 / 512 / 64 byte UDP packets) 7.4 / 7.4 / 4.4 GBPS 9. Firewall Latency (64 byte UDP packets) 3 µs 10. Firewall Throughput (Packets Per Second) 6.6 MPPS 11. Concurrent Sessions (TCP) 2 Million 12. New Sessions/Second (TCP) 30,000 13. Firewall Policies **10,000** 14. IPsec VPN Throughput (512 byte) **4 GBPS** 15. Gateway-to-Gateway IPsec VPN Tunnels **2,000** 16. Client-to-Gateway IPsec VPN Tunnels **10,000** 17. SSL-VPN Throughput **250 Mbps** 18. Concurrent SSL-VPN Users 19. (Recommended Maximum, Tunnel Mode) **300** 20. SSL Inspection Throughput (IPS, HTTP) **190 Mbps** 21. Application Control Throughput (HTTP 64K) **1 GBPS** 22. CAPWAP Throughput (1444 byte, UDP) **1.5 GBPS** 23. Virtual Domains (Default / Maximum) **10 / 10** 24. Maximum Number of Switches Supported **24** 25. Maximum Number of FortiAPs (Total / Tunnel Mode) 64 / 32 26. Maximum Number of FortiTokens 1,000 27. Maximum Number of Registered FortiClients 600 28. High Availability Configurations Active / Active, Active / Passive, Clustering 29. 250 Nos. User Point / User Account	**0.15**

Dairy Microbiology Department, SMC College of Dairy Science, AAU, Anand			
14.	**Fluorescence spectrometer** Tender Fee: Rs. 1,500.00	It must be a cuvette based single beam system along with a reference beam, which must be able to perform both fluorescence and UV/Vis spectrometric quantitative application for biochemical analysis. Sample volume handling in the range of <2 µl to 4 ml. Integrated colour display screen of not less than 5 inches. Cuvette shaft should allow use of quartz/transparent plastic cuvettes (UV range); glass/plastic cuvettes (visible range) and micro volume cuvettes. The unit should be supplied with desktop PC having windows 10, 64 bit operating system. **A. In fluorescence mode** 1. For fluoremetric analysis measuring principle should be confocal filter fluorimeter with reference beam, with an excitation wavelength around 400 nm and emission wavelengths around 500 nm and must be able to detect biomolecules even at ultra low concentration. Detection limit for dsDNA should be minimum 1 pg/µl. 2. It must have in-built programs for commonly used nucleic acids and protein fluorescent dyes, with fluorescence intensity across a range of 0.5 nM - 2000 nM fluorescein. LED should be provided as a light source along with a suitable beam receiver. Random errors should be minimum. **B. UV/Vis Spectrometer mode** 1. It should allow measuring and recording of UV/Vis spectral wavelengths from 200 to 830 nm, with smallest increment of 1 nm. It should allow use of sample volume more than or equal to 1 µl. 2. Xenon flash lamp should be provided as a light source, with a suitable beam receiver. 3. Facility of recording of wavelength, in-built methods with analysis via factor, standard or standard series and data evaluation methods for concentration via standard series. It should allow performing dual wavelength method with subtraction and division analysis. 4. It should have facility of spectra zooming to analyze and view peak variations distinctly. 5. It should be supplied with enough numbers (at least 300) of plastic cuvettes to handle minimum of 50 µl of sample.	**0.18**
15.	**Easy printer** Tender Fee: Rs. 1,500.00	This specific instrument should able to dispense reagents on the membranes (example: nitrocellulose) in microliter volume. Minimum working volume should be 100 µl. It should have two printing heads for simultaneous dispensing two lines of maximum 20-30 cm. Should have provision of variable speed controller for dispensing of reagents. Desirable to have auto-reverse facility to make the operation automatic. It should have provision of pressure adjustment on the membrane and inbuilt holding tank of minimum 500µl capacity which would allow printing of 15 laminates before refilling.	**0.05**
Department of Agricultural Biotechnology, AAU, Anand			
16.	**ELISA SYSTEM** Tender Fee: Rs. 1,500.00	The instrument should be capable for ELISAs along with multimode operation for nucleic acid quantification, protein quantification, enzyme kinetics, spectral scanning for unknown compounds etc. The instrument should be equipped with all the basic instruments / equipments and /or accessories required for its optimum working and should meet below specifications:	**0.60**

		1. General Specifications: i. *Wavelength Selection*: Should have Quadruple Monochromators. Should have two excitation monochromator and two emission monochromator for wavelength selection. ii. *Detection method*: Should be capable to read Fluorescence, Time-Resolved Fluorescence, Luminescence and UV-Visible Absorbance. iii. *Read method*: Should be able to perform End-point, kinetic, spectral scanning, well-area scanning assays. iv. *Microplate types*: The system should be open system so as to recognize any brand plates. Should read 6, 12, 24, 48, 96 and 384-well plates. v. *Temperature control*: Ambient +4°C to 45°C. vi. *Shaking*: It should have atleast orbital shaking modes with programmable speed and duration. vii. *Software*: Single integrated windows based software for Reader control and data analysis with minimum 5 user license should be supplied with the instrument. The software should be able to analyze the data and perform the calculations. Software must have Quick Read function to enable read the plate without lengthy protocol definition. **2. Absorbance:** 1. *Light source*: Xenon Flash Lamp. Lamp Life should be at least 1 billion flashes 2. *Wavelength selection*: Monochromator 3. *Wavelength range*: minimum 230 - 999 nm or better 4. *Bandpass*: 4 nm (230-285 m), 8 nm (>285 m) 5. *Dynamic range*: 0 - 4.0 OD 6. *Resolution*: 0.001 OD or better 7. *Pathlength correction*: Pathlength Correction facility should be available as a standard feature. 8. *Monochromator wavelength accuracy*: +/- 2 nm or better. 9. *Monochromator wavelength repeatability*: +/- 0.2 nm or better. 10. *O. D. accuracy*: < 1% at 2.0 OD typical and < 3% at 3.0 OD typical 11. *O. D. linearity*: < 1% from 0 to 3.0 OD typical 12. *O. D. repeatability*: < 0.5% at 2.0 OD typical 13. *Reading speed*: 96: maximum 15 seconds or better and for 384: maximum 45 seconds or better **3. Fluorescence Intensity:** 1. *Sensitivity*: Top: Fluorescein 2.5 pM (0.4 fmol/well or better for 384-well plate) and Bottom: Fluorescein 4 pM (4 fmol/well or better for 384-well plate). 2. *Light source*: Xenon Flash Lamp 3. *Wavelength selection*: Double grating monochromators (Top and Bottom) 4. *Wavelength range*: 250 – 700 nm or better 5. *Dynamic range*: 6 decades or better 6. *Detection system*: Low noise PMT 7. *Gain settings*: Should be able to program Auto or Manual gain settings for PMT. 8. *Reading speed*: 96: maximum 15 seconds or better and for 384: maximum 45 seconds or better **4. Time Resolved Fluorescence:** 1. *Light Source*: Xenon flash lamp 2. *Wavelength range*: 400 – 700 nm or better 3. *Sensitivity*: Europium 1200 fM (120 amol/well in 384-well plate or better)	

		5. Luminescence: 1. *Sensitivity*: 20 amol or better ATP (flash) 2. *Wavelength range*: 360 – 670 nm or better 3. *Dynamic range*: > 6 decades or better **6. Certification:** Instrument should be CE and TUV Safety Agency marked and RoHS compliant**.** **7. Upgradation:** It should be upgradeable on site to include various attachments / spares in the same unit for future needs. Also should be able to add dual reagent dispenser for fast kinetics and flash fluorescence / luminescence assays. **8. Other Accessories specifications:** **A. Microplate Washer** 1. Should be capable of washing all 96 well Microplates – Flat and Round bottom wells. 2. Should have programmable dispense volume from 50 to 400 µl or better 3. Dispense Precision should be < 5% CV 4. Programmable soaking time. 5. Should have LCD Touchscreen display 6. Fluid delivery system: Positive displacement syringe drive pump with adjustable flow rates. Non-pressurised dispensing to eliminate the need of specific shape & capacity reagent bottles. Should allow user to use any shape & Capacity of containers (open end bottles, flasks, beakers etc.) 7. On board software should allow user to store programmable protocols including wash, dispense, aspirate, shaking, rinse and prime. 8. Should have quick menu function to allow using the instrument without defining any protocol 9. Should have wash cycles from 1 to 10 10. Should have facility for multi speed shaking, auto prime and rinse programs, bottom washing, crosswise aspiration and program to program linking 11. Aerosol cover should be supplied for user protection 12. Should have spill over protection, in line vacuum filter. 13. Should have pre-programmed maintenance protocols including rinse and decontamination. **B. Plate for nucleic acid quantification** 1. The system should be capable for nucleic acid quantification as low as 2µl using attachment / trays. The attachment / tray for the quantification are to be supplied **at no extra cost**. **C. Computers** 1. A suitable company computer alongwith all the genuine softwares required for optimum working of the instrument should be supplied with no extra cost. 2. Computer should have minimum 1TB hard drive with 4 GB RAM with 5 or more USB ports. 3. Minimum 50 no. each of 6 and 96 well plates are to be supplied with the system. **Note: *All the above information for ELISA basic system and washer should be clearly mentioned on instrument brochure and / or a certificate from the manufacturing company is to be attached***.	

<table>
<tr><td>17.</td><td>Mass Spectrometry Data Analysis Software

Tender Fee:
Rs. 1,500.00</td><td>A. It should be an advanced updated version.
B. It must offer life time & perpetual license in terms validity.
C. Software should be seamlessly compatible with ABSCIEX QTRAP 4500
D. Quick to calculate and determine all possible elemental formulas.
E. Able to detect masses using both accurate mass and isotope distribution with Formula Finder.
F. Should have algorithms that use chemical logic and available MS/MS data, efficiently and accurately identify and filter through non-targeted samples.
G. Able to links the masses of ions to structures to help identify and characterize compounds, identification of sites of biotransformation and provide insights into fragmentation mechanisms.
H. Able to match compositions and substructures to the MS and MS/MS fragmentation pathways which allows users to confirm identity.
I. Should be embedded with a comprehensive processing tool for quantitative proteomics.
J. Should have in-build tool to characterize biomolecules such as peptide by de novo sequencing, or protein using peptide mapping and intact protein reconstruction.
K. Able to identify extensive post-translational protein modification.
L. Should have potential for compound identification, quantitation, and data review directly from complex LC-MS/MS data files (without converting file format) specifically from ABSCIEX QTRAP 4500.
M. Should have in-build interface that makes data review fast and easy to supports both targeted and untargeted data processing strategies. It also able to linked to the powerful chemical structure database; ChemSpider to ensure confident identification of your unknowns.
N. Determine the intact molecular weights of proteins, peptides, oligonucleotides, and other biomolecules using the mass reconstruction tools and either a charge series or isotope series in positive ion or negative ion mode.
O. Vendor must provide demonstration cum hands-on training on data analysis and other applications of this software.</td><td>0.05</td></tr>
<tr><td colspan="4">AINPVPM: AGRICULTURAL ORNITHOLOGY, AAU, Anand</td></tr>
<tr><td>18.</td><td>Video Camera & Accessories

Tender Fee:
Rs. 1,500.00</td><td>The required technical specifications of video camera are as under –
<table><tr><td>Resolution (24p)</td><td>4096X2160 and higher</td></tr><tr><td>Color space</td><td>"10 -bit 4:2:2 at 4k</td></tr><tr><td>Recording Format</td><td>XF-AVC/XAVC-I /XAVC-L</td></tr><tr><td>Dynamic range</td><td>14 stops and higher</td></tr><tr><td>Slow motion recording</td><td>1080 p at 120 fps and higher</td></tr><tr><td>Recording media</td><td>C-fast2.0/XQD cards</td></tr><tr><td>Buit-in-ND</td><td>Yes</td></tr><tr><td>Weight</td><td>less than 15 lbs</td></tr><tr><td>Sensor</td><td>Super35 and higher</td></tr><tr><td>Highest data rate</td><td>400 Mbps and higher</td></tr><tr><td>Lens Mount</td><td>EF or E-Mount</td></tr><tr><td>Zoom Ratio</td><td>4.8x and higher</td></tr><tr><td>Lense mount</td><td>E or EF mount</td></tr><tr><td>Built-in Microphone</td><td>Omni-directional monoral electret condenser microphone.</td></tr><tr><td>Audio Input</td><td>Specify</td></tr><tr><td>Focal Length</td><td>Specify</td></tr><tr><td>Output</td><td>Dual HD/3G-SDI & HDMI Output</td></tr></table></td><td>0.27</td></tr>
</table>

18.1	**Lense for quoted video camera model**	It should be compatible with the quoted camera.	
18.2	**Mount F lenses to EF mount camera adapter**	It should be compatible with the quoted camera.	
18.3	**Mount EF lenses to E mount camera adapter**	It should be compatible with the quoted camera.	
18.4	**Recording media (cards)**	It should be compatible with the quoted camera.	
18.5	**LED Battery video light (model HVL-LBPC)**	It should be compatible with the quoted camera.	
18.6	**Remote commander**	It should be compatible with the quoted camera.	
Department of Plant Physiology, BACA, AAU, Anand.			
19.	**Leaf Area Meter** Tender Fee: Rs. 1,500.00	The required technical specifications of Leaf Area Meter are – **Resolution** : 1 mm^2 or 0.1 mm^2 (user-selectable) **Scanning Area** : **1 mm^2 Resolution :** 1 mm X 1 mm **0.1 mm^2 Resolution :** 0.300 mm L X 0.33 mm W **Accuracy** : **Sample Area** **Resolution** | **10 cm^2** | **3 cm^2** | **1 cm^2** | **0.3 cm^2** 1 mm^2 | ± 2% | ± 3% | ± 6% | ± 10% 0.1 mm^2 | ± 1% | ± 1.5% | ± 3% | ± 5% **Display Capacity** : **1 mm^2 Resolution :** 999,999.99 cm^2 **0.1 mm^2 Resolution :** 99,999.999 cm^2 **Display** : Full 8 – digit LED (light emitting diode) **Sample Dimension** : **Width :** 25.4 cm maximum; 1.5 to 3 mm minimum **Thickness :** Up to 2 cm, expandable to 2.5 cm **Length :** Unlimited **Conveyer belt speed** : 8.0 cm/s at 60Hz, 6.7 cm/s at 50Hz **Transference belt** : Rugged clear vinyl **Light source** : 15 watt fluorescent tube	**0.15**
Kapila Gau Sanshodhan Kendra, Minawada			
20.	**Tractor – 45 HP** Tender Fee: Rs. 1,500.00	Technical specifications of required tractor are as mentioned hereunder – HP – 45 No. of Cylinder – 4 Displacement, CC – 2979 Air Cleaner – dry Type 6” Maximum Torque, Nm – 178.66 Transmission type – cool constant mesh No. of gear – 12F + 3R Type of brake – dip in oil Type of Main Clutch – Single Clutch; Dry Fiction Plate (Optionable Dual Clutch – CRPTO) Maximum PTO HP – 41.1 + 5% Reverse Speed. Kmph – 2.05/5.8/11.2 PTO Rpm @ Engine, rpm – 540 @ 1810 Lift Capacity in kg – 1500 Steering Type – Power Fuel tank Capacity – 60 litre Wheel Base in mm – 1925 Weight of Standard Tractor - 2020 Front wheel – 6*16 Rear wheel – 13.6*28 (Option: 14.9*28)	**0.18**

College of Food Processing Technology & Bio-Energy, AAU, Anand			
21.	**Tractor with trolley and tanker** Tender Fee: Rs. 1,500.00	Tractor with trolley and tanker, single rate should be quoted for item A+B+C Required technical specifications are as under – **A) Tractor** – Specifications of the tractor are as cited below: **Engine** a. Horse power : 45 hp b. Number of cylinders : 04 c. Rated Engine Speed (rpm) : 1800 - 2200 d. Air cleaner : Dry type 6" with Pre cleaner e. Cooling systems : Water Cooled f. Displacement : 2800 – 3200 cc g. Maximum torque : 170 – 180 Nm **Transmission** a. Type : Full Constant Mesh Type b. Speed : 12 Forward + 3 reverse (12F + 3R) c. Speed Reverse (kmph): 2.05 to 11.20 d. Ground Speed (kmph): 1.45 to 30.61 e. Clutch Type : Heavy Duty Dry Friction Plate type (Dual clutch - CRPTO) f. PTO, rpm : 540@1510 g. Maximum PTO hp : 40-42 ± 5% **Brakes** a. Brake Type : Oil Immersed Brakes b. Steering : Power Steering **Hydraulics** a. Lift Capacity at Hitch (kg) : 1400-1600 b. Diesel Tank Capacity (liter) : 55-65 c. Wheel Base (mm) : 1900-2000 d. Standard tractor weight (kg) : 2000-2200 **Tyres** a. Front : 6.0 x 16.0 b. Rear : 13.6 x 28.0 **Accessories** a. Fender cushion seats, tractor body cover, mobile charging box b. Rubber pads, music system (12 V input MP3 player with USB, AUX Input, Micro SD with IR remote assembled in 12 mm PVC laminate pasted MDF ply board box with mounting clamps and belt), fan, siren. c. Grease gun kit of 500 cc bulk capacity/400gms grease cartridge - sufficient to hold required amount grease and Lightweight & compact body air compressor which can be carried with the tractor everywhere. d. LED beam flood light with 2 work lamps - Square shape, 12V, 55W, sufficient power for working in the dark and 2 rooftop lights- 5 W each, red and white lenses & wiring harness with 250 series connector as Work Lamp Kit, revolving light. e. 500cc (500ml) bulk capacity oil can. f. 6 Gauge, 4.5mm MS rod structure indicator guard, clutch lock, pen type pressure gauge, foot mats.	**0.42**

		B) Tractor operated trolley - specifications of the trolley are as cited below: Type : Hydraulic, Capacity 5-6 ton, LWH(mm): 3800 x 1800 x 711, Chassis size(mm) : 150 x 75 heavy duty, support C3" x 11/2", 18 (Nos) bottom plate, 7 mm Falka pipe system 66 mm x 33 mm, chadar (Falka) 14 Guage, 3" x 21.5" box, pole C3" x 21/2", Tyre tube MRF or CEAT 9.0 x 16.0 (16 ply), MS Axel(mm): 75 x 75 Square Bar, Bearings 322123, Weight approx 1400 kg, painted with Asian blue colour. **C) Tractor operated tanker - specifications of the tanker are as cited below:** Capacity: 5000 litres, LxW(mm): 3800 x 1800, Chassis size(mm) : 150 x 75 heavy duty, 5 mm round sheet, circular shape, top feeding inlet of 2.5' diameter with lid, bottom outlet valve of 2'' dia, Bearings 322123, Tyre tube CEAT or MRF 9.0 x 16.0 (16 ply) (2 nos.), painted with Asian blue colour. **All three items (tractor, trolley and tanker) quoted rate must be with RTO passing, insurance and with three years warranty.**	
22.	**Filling and packaging system** Tender Fee: Rs. 1,500.00	It should consist of following and quote a single rate for A + B **A) Four Head Volumetric Filling Machine- 01 No.** Automatic volumetric liquid bottle filling machine suitable for filling of different fruit juices and beverages ranging from 100 ml to 1000 ml. It should work on volumetric principle with diving nozzles. The unit should be compact, versatile and enclosed in stainless steel elegantly matt finish body, with S.S. slat conveyor, reciprocating nozzle with self-centering devices and S.S. syringe. The capacity of the machine should be around 20 bottles per minute. The speed of the machine and conveyor can be synchronized with variable A/C frequency drive. The machine should have a filling accuracy of ± 1% in single dose. There should be appropriate drain tray around the machine platform, pneumatic bottle stopping arrangement, and no bottle no filling system. A set of 500 bottles each for different sizes (200 ml, 500 ml and 1000 ml) along with caps should be provided for demonstration and testing of the machine. **B) Single head Screw Capping Machine -01 No.** Automatic screw capping machine, self-supported on stainless steel leg with adjustable height system. The machine should be precision built on sturdy welded MS frame completely enclose in stainless steel sheet and doors should be provided to facilitate the servicing of machine. It should be suitable for bottle diameter ranging from 25 to 90 mm. All moving parts should be guarded/enclosed and speed variation can be provided with suitable AC drive. It should have star wheel rotation Geneva system and vibratory cap feeder system. It should have capacity of 1000 to 1500 bottles per hour. The system should be complete in all respect with all accessories, fittings, piping, etc. and inclusive of installation, testing and commissioning with training.	**0.25**

23.	**Patty Making Machine** Tender Fee: Rs. 1,500.00	Automatic patty making machine should automatically fulfill the procedures such as the filling of the paste/ dough, minced meat etc. and form the product into desired shape to produce patty, potato cake, pumpkin pie etc. It should have following specification Belt width: about up to 130 mm Power requirement: 0.5 kW Output capacity: above 500 pcs/h Tank/ product filling capacity: about 30 litre Weight error in the product: ≤ 1%	**0.15**
24.	**Grain roasting and puffing system** Tender Fee: Rs. 1,500.00	Electrically operated seed roasting and puffing machine for roasting different types of seeds (such as Pumpkin seeds, Flaxseed, Sesame seed etc.) and cereal grains including rice, corn, wheat, barley, beans etc. There should be uniform roasting or puffing of the product. Capacity should be about 5 kg/h. The machine should be equipped with digital controller for drum rotation and a digital timer and an analog temperature controller. Machine should be fully automatic and should get temperature: up to 250°C. All contact parts should be of SS 304. The system should be complete in all respect with SS collection box, appropriate temperature sensor and control etc. The price should include all inclusive of taxes, installation and commissioning, training etc.	**0.21**
25.	**High Pressure Processing System** Tender Fee: Rs. 15,000.00	High pressure processing equipment for processing of liquid and semisolid food products with following specifications: 1. Working volume up to 2.0 Litre 2. Working pressure up to 900 MPa 3. Facility for temperature control in the range -20 to 120 °C with an accuracy of ±2 °C. 4. Complete automated system with data acquisition system 5. Software for real time display and control of process parameters using PLC. 6. Temperature sensors inside the vessel for measuring temperature of process fluid as well as inside the specimen sample 7. Controlled pressurization and depressurization 8. Heating System / Cooling system type - Circulated fluid 9. Vessel - compound barrel 10. Closure Handling - Fully hydraulically actuated remote operation. 11. Time to pressure - 200s to 2000s 12. Pressure Measurement - Strain Gauge Transducer 13. Pressure Indicator/Controller - Digital with electronic control 14. Temperature measurement - 'T' Type thermocouple System quoted should be complete in all respect with test certificates, operation manuals, maintenance instructions, general assembly drawings, spares parts along with training at our laboratory. The system should have a comprehensive warranty of 3 years. It should be provided with 15.6-inch Laptop of reputed brand (I5-7200U/8GB RAM/2TB HDD/licensed Windows 10 Home and licensed MS Office 10, 2GB Dedicated Graphics), and having all in one, multifunctional printer. **Warranty:** The quoted instrument should have a warranty of at least 3 years from the date of installation. <u>Documentation:</u> All Claims made by the vendor with regards to the above specifications should be supported by specification sheets / brochures / data available on company website. No claims with regards to laboratory data will be accepted.	**6.50**

26.	**Laboratory Pulse Electric Field System** Tender Fee: Rs. 15,000.00	The unit should be able to process liquid food products using pulse electric field with a capacity of 100 liters/ hour. It should have following features: Peak Voltage: 20 KV Peak Current: 50 A Av. Output Power: 10 KW Field Strength: 0 to 40 kV/cm Pulse Frequency: 0 to 1.4 kHz Processing Ability: 1 - 10 kW Models Pulse Width: 0-10 µs Cooling: Air Cooled Power Supply: 400 VAC, 3 Phase, 50 Hz PEF system should be based on hard switch topology and not transformer to ensure constant field strength independent of conductivity of the product. System should be able to create shorter pulses to obtain higher frequencies and provide longer treatment times without arcing. The system should include pumps and treatment chambers and other accessories. The unit should be provided with relevant software's, PLC control and other controls etc. The unit should be complete in all respect. It should be provided with 15.6-inch Laptop of reputed brand (I5-7200U/8GB RAM/2TB HDD/licensed Windows 10 Home and licensed MS Office 10, 2GB Dedicated Graphics), and having all in one, multifunctional printer. **Warranty:** The quoted instrument should have a warranty of at least 3 years from the date of installation. Documentation: All Claims made by the vendor with regards to the above specifications should be supported by specification sheets / brochures / data available on company website. No claims with regards to laboratory data will be accepted.	**3.60**
27.	**Rheometer** Tender Fee: Rs. 2,500.00	A modular rheometer for the characterization of various food dispersions, low-viscosity liquids to highly elastic solids, for various traditional rheological tests. It should have following features – **Operation Mode:** stress control, shear rate control and direct strain controlled oscillation at demand strain amplitude. A pure Sinusoidal Waveform at all times must be ensured irrespective of the Strain imposed. **Bearing:** Air Bearing system to ensure lowest radial drag & highest axial stiffness. **Motor Torque:** The torque motor must be of the drag-cup type brushless DC motor and the entire air bearing and motor assembly must have inertia of less than or equal to 20 micro N.m.s2 to allow rapid transient change of strain, speed and measurement at high frequency with minimal correction for instrument inertia. There should be a standard test available in the system to calculate the motor inertia without applying any corrections & should be demonstrated during the tender process. **Torque range** (Viscometry): 10nNm to 200mNm **Torque range** (Oscillation)**:** 2 nNm to 200 mNm **Torque resolution:** 0.5 nNm **Frequency range:** 10µrads-1 to 628rads-1 (1µHz to 100Hz) **Position resolution:** <10nrad	**0.90**

		It should have Angular Velocity range from 10nrads-1 to 300rads-1 **Normal force range**: 0.005 to 50 N (or more) **Normal force resolution**: 0.5 mN It should have automatic gap setting over full vertical lift range. **Thermal Unit:** The rheometer should be supplied with a temperature control unit using Peltier temperature control system. It should control temperature range from -5°C to +200°C continuously with resolution of 0.01°C. The temperature control system should have a hood with preferably Peltier devices to facilitate complete enclosure of the sample environment and gradient free sample temperature settings. The TCU should be able to accommodate plate-plate, cone & plate systems & other geometry of plates as given below **Accessories** The following geometries of the upper plate should be offered for plate-plate measurement system: Plate 20 mm Dia: 1 No. Plate 50 mm Dia: 1 No Plate 20 mm Dia: 1 No. with roughed surface finish along with similar Lower Plate finish. The following geometries of the upper cones should be offered for cone-plate measurement system: Cone 1°/50mm: 1 no. **Rheology software:** **Raw instrument variables:** The Normal Force / Thrust data must be available at 5kHz data rate to allow for Rheological analysis The rheology software should be able to perform measurements for All raw data measured by the instrument like harmonic distortion, phase angle etc. should be available in the software Viscosity: as a function of time, temperature and shear rate and yield stress measurements. Oscillation measurement: with respect to time, temperature, requency and amplitude Transient Measurements: like Creep/Creep recovery measurement and stress relaxation measurements Large Amplitude Oscillatory Measurement like Time Temperature superposition for generating master curve analysis Software for measurement of Normal Force & Velocity Profiles for Tack & Squeeze experiments should be available in the software. Appropriate air compressor, necessary tool kit with the main instrument to operate the quoted rheometer, Desktop PC having core i-7 processor, 4 GB RAM and 1 TB harddisk, 19” LCD Monitor with licensed version of windows along with suitable color laser jet printer**.** The system should be complete with all accessories for measurement of solid, liquid and paste type of food products. **Warranty:** The quoted instrument should have a warranty of at least 3 years from the date of installation. Documentation: All Claims made by the vendor with regards to the above specifications should be supported by specification sheets / brochures / data available on company website. No claims with regards to laboratory data will be accepted.	

28.	**Ultrasonic washer** Tender Fee: Rs. 1,500.00	The quote rate should include total cost of A+B+C. It should consist of following three major systems **A) Ultrasonic cleaner** It should be able to clean fruits and vegetables and should have following features Capacity: 90 litre or above Frequency: 33 K Hz ± 3 KHz Digital Timer: 0 – 90 minutes Digital Temperature Controller: up to 60 °C Material of construction S.S 304 The micro controller base digital timer with MOSFET, automatic frequency tuning for maximum output and low transducer losses, modular generator for easier servicing and rugged and easy to clean stainless steel housing of SS 304. Float Switch protection: Ultrasonic Cleaner will start when tank solution will fill up to the marking level. This is for protection of crystals. IQ – OQ – PQ Document and Installation with Aluminium Test **B) Circulating water bath** It should have following features • S immersion circulator bath with working temperature range of 5°C to 150°C. • Digital display for temperature and pump speed in the form of rpm. • Double walled SS bath with 10 L and above. • Flat cover and built in cooling coil for temperature control beyond ambient temperature. • Device should have separate working PT 100 and safety PT 1000 temperature sensor. • Pressure and suction pump with adjustable speed for flow rate control. • Flow rate should be 18 L/min or more **C) Ozonation system** The system should be able to generate ozone to treat fresh fruits and vegetables. Other specifications include: Feed Gas : Pure Dry Oxygen MOC of Ozone Cell : SS 316 Process: Corona discharge It should be complete with all accessories including oxygen gas sensor, oxygen cylinder, polyurethane oxygen tubing, inbuilt flow meters, controllers, indicators etc. The individual systems mentioned as above should be complete in itself including all its accessories. A branded laptop with official windows 10 system and core i3 processor, laser printer with scanner, should be provided with it.	**0.24**
29.	**Ultrasonic juice processing system (Homogenizer)** Tender Fee: Rs. 1,500.00	The system should be able to process fruit juice in continuous manner. It should be made up of stainless steel with vessel temperature sensor, convertor, sonotrode for generation of ultrasonic vibration with various ranges and power, with process inlet and outlet valve with agitation system controlled with VFD ranging from 40 to 400 rpm. The system should be able to with stand a maximum pressure of 5 bar. The system should be available with suitable flow control devices to maintain the flow within the system. The system should have a processing capacity of 100 litre per hour and a vessel size of at least 10 litres.	**0.60**

30.	**Turbo Vap (Nitrogen Evaporator)** Tender Fee: Rs. 1,500.00	**Turbovap, blow down dry type, Microprocessor based Nitrogen Evaporator block heating type instrument with Nitrogen gas generator, oil free air compressor, air dryer, gas purifier, air filters, complete in all respect with all accessories, gauges, regulators, tanks, manifold, racks, switches, valves etc….** **Nitrogen Concentrator Blow down Evaporator (Dry type) block heating** • Evaporation Medium : Nitrogen & dry Heat • Sample Volume : 1 ml to 30 ml • Should be able to evaporate acidic samples • Min no of samples : 50 • **Controlled: Fully Microprocessor based** • **Certifications : ISO 9001 : 2015 & CE Certified** **Product Specifications:** • High Quality Pressure Gauge. • SS 316 tank & Nozzle Manifold for durability and maintenance free • Dry Block Heating , No Water required • Specially Designed Aluminium block for fast & uniform heating • Auto Cut off with precision sensor for Time, temperature & gas flow • 5 Nitrogen Control valves with ON/OFF Switches • 50 nitrogen –dispending nozzle in five horizontal rows • Microprocessor-controlled vortex motion increases surface area for faster evaporation. • Time Range: 15 sec to 10 hours • Time Set-up / down arrow keys (15 sec increments) • Temperature range: Ambient to 100 ºC (thermal cut out for safety) • Temperature set-up / down arrow keys (1 °C increment) • Gas regulator range : 0 to 100 PSI (approx..) • Pressure gauge range : 0 to 100 PSI • Easy ON/OFF switches to turn Nitrogen Flow on or off to the nozzle above the sample vials • Aluminium Block Rack **compatible with** working volumes **1 ml to 30ml Test Tube of 50 samples** • **Nitrogen gas generator and oil free air compressor should have High Capacity and should be used Purging for 50 sample with Receiver Tank Purity (99.9%)(N_2 Gases for Purging depends upon requirements) which should consists of** • N_2 Purifier to remove O2 and all other unwanted impurities to produces Nitrogen upto HP grade. • Automatic Heatless Air dryer time based operation • Surge receiver with pressure regulator & valve inbuilt Nitrogen, Air gas with regulator, Gauge and toggle valve (inbuilt) SS tank • Air Filters for moisture, dust and oil, mist removal (set of 2 filters) • Compact Size • *Auto Pressure Cut Off Switch with Solenoid Valve, pressure gauge* **Method of Purification :** PSA (pressure swing adsorption) & Depressurizations **Valves:** Automatic pressure setting Automatic purging and drain of moisture **Gas outlet :** ¼**" or** ½" BSP male Built in reservoir : storage tank provided **Micron Filters :** micron filters provided **Safety valve & gauges:** safety valve, pressure gauges, electronic timer and solenoid valve provided.	**0.30**

		Capacity :-**150 LPM at 100 Psig** Pressure **(6m^3/hour)** with Oil Free air Compressor for above generator **Warranty:** The quoted instrument should have a warranty of at least 3 years from the date of installation. The system should include all other required accessories. The unit should be complete in all respect.	
31.	**Form Fill Seal (FFS) packaging machine** Tender Fee: Rs. 1,500.00	PLC based **four head** linear weigher type vertical form, fill & seal machine to pack various food products like namkeens, extruded snacks, and other granular materials along with nitrogen flushing and material feeding elevator. The system should be suitable for all types of packaging films. It should have following specifications. **Technical Specifications -** No of Heads : Four Range of package : 50 g to 500 g Range of production capacity : 12 to 20 packages per minute Type of sealing : Central Type of pouches/sachets : Pillow type Pouch size : Width (100 mm to 180 mm) and length (100 mm to 275 mm) Accuracy : ± 1%- 2% Material contact parts : SS304 Seal Patterns : V serrated edge **<u>Accessories</u>** Material Take up **elevator conveyor** Hopper to inlet the material Nitrogen Flushing Facility in machine along with Nitrogen cylinder and regulator. Pneumatic coding device: to print manufacturing date, best before date, batch no. & MRP. The system should be complete with all respect with a set of essential spares, change parts like collar, etc. at least three chutes, pneumatic coding device, cutting blades and inclusive of installation, testing and commissioning with training.	**0.27**
32.	**Water Activity Meter** Tender Fee: Rs. 1,500.00	Temperature control: 15 to 50°C Measurement time: 5 min Accuracy: ± 0.015 aw Resolution: ± 0.001 aw Range: 0.030 to 1.0 aw It should include vials of each standard and sample cup and cleaning kit. Software for recording and analysis of data should be also available and can be connected with computer with RS232 port. The unit should be complete in all respect with necessary accessories, consumables and software.	**0.18**
33.	**Texture Analyzer with Accessories** Tender Fee: Rs. 1,500.00	Instrument for the determination of complete texture, profile, rheology/ stress-strain behaviour, measurement of hardness, softness, stickiness, brittleness, cutting force, shearing and other properties of variety of agricultural and food products. In addition to texture parameters, the instrument should also be able to measure extensional properties of different doughs under conditions close to baking expansion to provide information such as tenacity, extensibility, inflation, baking strength etc. with real time digital/ graphical display. Instrument should be computer controlled through compatible Windows based latest software.	**0.75**

		1. It should be possible to use software for vital measurements such as area, gradient, mean, time difference, ratio, travel, count positive peak, count negative peak, dispersion, average drop of volumic mass, force maxima and force minima etc. It should also be possible to do routine calculations automatically using advanced software features like macros or similar. 2. For understanding extensional properties of dough the software should measure maximum pressure to burst, distance to burst point, deformation energy, pressure ratios, volume change, strain hardening index etc. 3. Texture analysing system with frame capacity of 100 kg load and with multiple load cells (5kg, 50 kg and 100 kg) to cover force range upto 100 kg. It should be possible to use all the load cells on the single instrument. 4. The instrument should have the facility to attach a thermal cabinet for conducting tests at below zero, ambient and elevated temperatures by using heating or cooling systems. 5. The supplier will be required to install the equipment and accessories completely in place and also demonstrate the instrument and the software vis-à-vis the tender specifications. Training will also be required to be given to the users on the operation and applications at the time of installation. 6. In addition to the probes for the parameters mentioned above the attachments such as acoustic envelope detector and dough inflation system should also be supplied. 7. It should be able to measure – (i) tenacity (ii) extensibility and (iii) elasticity of the dough. 8. The system should maintain temperatures of up to 60°C. The system should be complete in all respect with latest branded PC based workstation, and laser printer, 1.5 tonne branded split AC, 15 KVA UPS, etc. <u>Kits and consumables :</u> One complete set of kits/ consumables in addition to those normally required for installation/commissioning. Onsite warranty: Instruments should be covered under three years comprehensive warranty from the date of commissioning. <u>Training :</u> The supplier should provide comprehensive training for two persons on the operation of the instrument at supplier's facility whose total training cost be borne by the supplier and then.The system should be compatible with our existing texture analyser TAHDi from Stable Micro systems	
34.	**Renovation of training hall with ducting type Air Conditioning** Tender Fee: Rs. 1,500.00	**Renovation of training hall with the supply, fitting, testing, re-commissioning of ducting type centralized air-conditioning system set complete in all respect,** with indoor & outdoor units with individual corded controller as per the following capacities of the IDU and ODU. The outdoor ambient temperature range to be considered shall be 40 deg centigrade. Any derating of the compressor has to be considered if any. (Make:- Carrier-Midea, Daikin, Mitsubishi , O-general). It should be complete with following:	**0.22**

		a) Indoor Unit with compact cooling coil, expansion valve and multispeed fan motor, The blower shall be dynamically balanced and designed for silent operation, the filters shall be synthetic washable media type arranged for convenient cleaning and replacement, drain pump. **b)** Outdoor Units Modular type outdoor units complete with Rotory or Scroll compressors, condenser coils, fans, microprocessor controller, etc. **c)** Ductable Units: of following capacities **8.5 TR 2 Nos.** **5.5 TR 1 Nos** Installation, testing and commissioning of air cooled DUCTABLE System with indoor and outdoor units including the electrical cabling and control cabling, the transport and lifting as per site conditions. **d) Refrigerant Piping and Insulation for Ductable System-** Supply, installation, testing & commissioning of set of refrigerant pipes, with refrigerant gas for the DX system pipes fitting, control cables. The pipes are to be supported from G.I. angels/ flats supports. Entire set of piping to be insulated with Armaflex nitrile rubber (tubular section) (30 running feet / each Machine) approximately **350 running feet**. **e) Drain Piping and Pipe Insulation** Supply, installation, testing & commissioning of drain piping shall be made out of rigid CPVC pipes. The piping shall be supported by clamping on proper support. The piping shall be insulated with 9mmthick insulation. MAKE : SUPREME / DUTRON /PRINCE with following pipe diameter: **1½" 100 running feet (approx.)** **1" 50 running feet (approx.)** **f) Supply, fabrication and installation of MS fabricated stand for** VRF, frame work for copper piping complete with epoxy painting, vibration isolation pads, supports, hangers, brackets etc. as approved with 2 coats of primer + poxy (for outdoor installation) primer + black paint (for indoor installation) **3 Nos**. **g) Supplying & erecting GI sheet metal complete with all accessories** viz. Anchor fastener, black painted, MS angle / rod support, expandable polyethylene gasket galvanized hardware , double canvass connection with 6 inch long zip. Ducting with various gauges mentioned as below used as per IS 655. Make : Jindal / Tata / Essar **24 Gauge 1500 Sq ft** **22 Gauge 900 Sq ft** **h) Duct Insulation** 1. Acoustic insulation with 25mm thick rigid glasswool, Perforated Sheet, (actual measurement as per duct surface area) Make : Kflex, Twiga, UPtwiga **600 sq ft** 2. Thermal Insulation of duct with 13mm thick Class "O" Nitrile Insulation, Make:- Kflex, Aflex, Armacell **2300 sq ft** **i) Dampers** 1. Supply, installation, testing of supply air diffuser with volume controlled dampers Make: Dynamic, radical, system air, caryaire **15 Sq Ft** 2. Supply, installation, testing of return air linear grills with volume controlled dampers Make: Dynamic, Radical, System air, Caryaire **30 Sq Ft** **j)** Fire Retardant Canvass Connection **3 Nos.** **k)** Fresh Air Cowl with Bird Screen **2Nos.**	

		l) S.I.T.C. of control cable (Make: Finolex / Polycab/ RR/ Havells) from IDU TO ODU **150 running ft** The job should be complete inclusive of above required materials and labour. **For any query, the site at College of FPTBE can be visited**	
35.	**Modernization of Classrooms** Tender Fee: Rs. 1,500.00	The existing classrooms of the College of FPT&BE is to be modernized with the supply and fitting of required design and size of a set of benches, for accommodating 60 students in the classroom, (two students on one bench) as per the layout provided. The set will consist of integrated system of two seats and foldable table. They have to be arrayed in the manner such so as to have passages in between each set. Each set will consist of the following dimensions:- **(a) Front Row** Overall Size :- W500mm, D405mm, H750mm, Tablet size :- W430mm, D315mm,12mm thick, Front mould size : Height 467mm, Width 478mm, 12mm thick,:- Mounted on 64mm x 64mm x 3mm aluminium glide fitted with MS cold rolled close annealed leg made of 60mm x 60mm x 2mm MS tube and MS sheet 3mm thick covered with nylon cap. Front of desk & back of chair made of 12mm thick hot pressed ply. Foldable seat made of 12mm thick hot pressed ply. Tablet made of 12mm thick post form on MDF board.-sliding & foldable in specially designed nylon mould accessories fitted on top aluminium glide of 30mmx70mm. All steel components should be powder coated while aluminium glides should be anodized. **(b) Middle Row** Overall Size :- Width 500mm, Depth 800mm, Height 750mm, Tablet size :- Width430mm, Depth 315mm, 12mm thick, Seat size :- Width 477mm, Depth 377mm, 12mm thick, Back mould size : Height 467mm, Width 478mm, 12mm thick, Mounted on 64mmx64mmx3mm aluminium glide fitted with MS cold rolled close annealed leg made of 60mmx60mmx2mm MS tube and MS sheet3mm thick covered with nylon cap. Front of desk & back of chair made of 12mm thick hot pressed ply. Foldable seat made of 12mm thick hot pressed ply. Tablet made of 12mm thick post form on MDF board sliding & foldable in specially designed nylon mould accessories fitted on top aluminium glide of30mmx70mm.All steel components should be powder coated while aluminium glides should be anodized. **(c) Back Row** Overall Size :- Width 500mm, Depth 507mm, Seat Size : Width 477mm, Depth 377mm,12mm thick, Height 460mm. Back mould size : Height 467mm, Width 478mm, 12mm thick, Mounted on 64mmx64mmx3mm aluminium glide fitted with MS cold rolled close annealed leg made of 60mmx60mmx2mm MS tube and MS sheet 3mm thick covered with nylon cap. Front of desk & back of chair made of 12mm thick hot pressed ply. Foldable seat made of 12mm thick hot pressed ply. Tablet made of 12mm thick post form on MDF board-sliding & foldable in specially designed nylon mould accessories fitted on top aluminium glide of 30mmx70mm. All steel components should be powder coated while aluminium glides should be anodized.	**0.30**

The single rate should be quoted for complete design, layout, supply, fitting and testing as per the site requirements and commissioning the modified classroom complete in all respect.

Figure 1 :-Indicative Drawing of the Class Room Bench

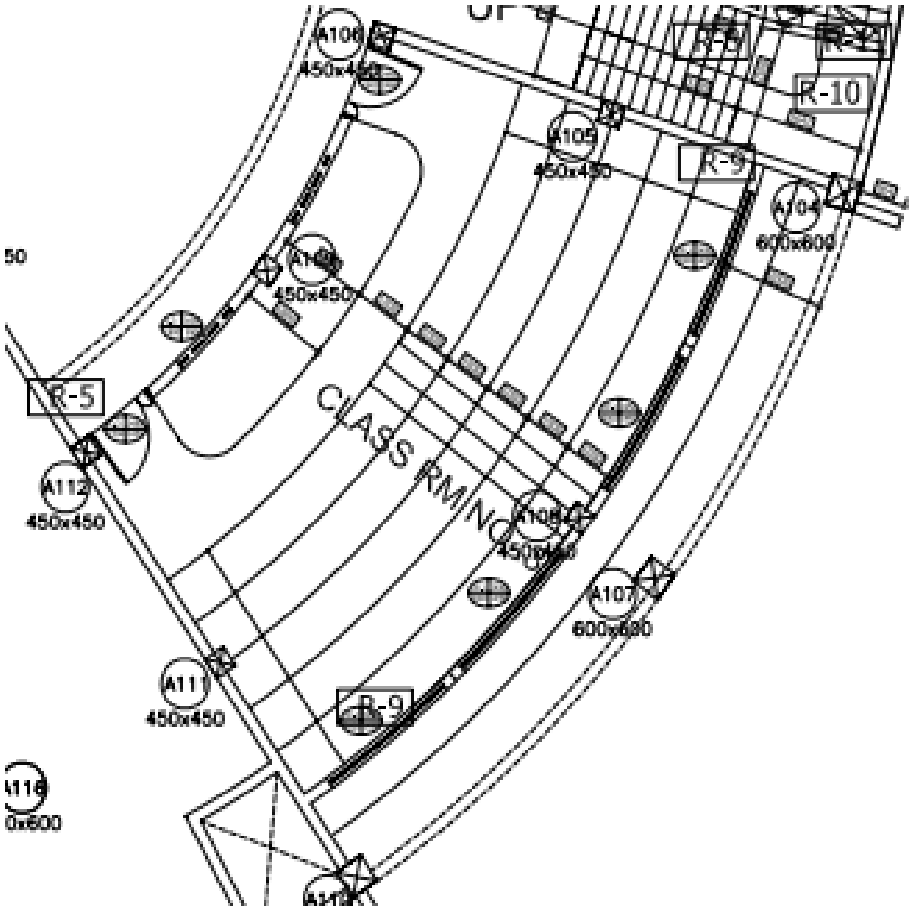


Figure 2 :-Layout of the Class Room

For any query, the site at College of FPTBE can be visited.

36.	**Instrumentation Engineering Tutor Set** Tender Fee: Rs. 1,500.00	Instrumentation Engineering Tutor Set consisting of items from of A to F. The total rate should include total cost of A to F. **A. Transducers, Instrumentation & Control Trainer (1 No.)** o The Training system should comprise a rugged, portable hardware module that features a PCB mounted in a steel case. All electrical and pneumatic, power supplies are to be housed in a case. The PCB features must be a system layout screen-printed mimic diagram of different sections. o A comprehensive series of transducers, input and output devices together with signal conditioning and instrumentation circuits should be provided. o Built in DC power supply: ± 5V & ± 12V regulated power supply to perform experiment o Air compressor: In built air compressor compatible with kit along with ON/OFF facility o Input Transducer Specifications: o Temperature sensors: Thermistor (NTC type), RTD (Pt 100 type) and Thermocouple (J or K type) measuring range of 100 °C and higher. o Position sensor: a) Slide potentiometer with mechanical travel of at least 6 cm and resistance range of 10KΩ Resistance Tolerance±20%, b)Wire wound and precision rotary potentiometers with Mechanical rotation of at least 270 degrees with measurable resistance range of 10±1 KΩ, c) Carbon track potentiometer of resistance range of 90KΩ to 120KΩ, Mechanical rotation greater than or equal to 300 degree. o Light sensors: Photoconductive cell with cell resistance≥2 kΩ or better, photovoltaic Cell, phototransistor o Servo mechanism unit comprising DC motor, tachogenerator, slotted and reflective opto-sensors for incremental and absolute position sensing o Linear Variable Differential Transformer – minimum 12mm +/- 1 mm of mechanical travel, output voltage in balance condition should be less than 10mV o Inductive Proximity Sensor- sensing range at least 2mm o Strain Gauge- sensing range minimum weight least 5 gram or be less than. o Techo-generator- sensing range minimum 10 RPS or better. o Hall Effect sensor output type Differential and o/p voltage 1.75V to 2.25 at 5V. o Airflow sensor Thermal Mass flow Sensor Optimal Resistance values RH 0 °C=45Ω±1% o Air Pressure sensor with minimum sensitivity of 200 μV/kPa o Humidity Sensor- Measuring range: 10 to 90% R.H. Frequency range: 1 to 1000 KHz o Ultrasonic Receiver with peak resonance above audible range (matching with Tx) o Output Device Specifications: o Relay with NO & NC contact, Heater- 33Ω ±5% 10 W o Solenoid Valve with coil operating on 12 V supply o Buzzer with audible range o 12 V DC motor with shaft speed of minimum 300 RPM o Counter/ timer with display, Voltmeter with suitable range for experiments o Ultrasonic Transmitter with peak resonance above audible range (matching with Rx) o Filament Lamp with minimum 1W capacity with rated voltage of 12V o Signal conditioning Circuits: o Amplifiers: Current, Differential, Summing and Instrumentation amplifier with gain adjustment	**0.18**

- o Inverters, Buffers and Comparators, Sample and Hold circuit
- o Converters: I to V, V to I, V to F, F to V, Low pass filter, Full wave rectifier, Power Amplifier, Oscillator with 39 KHz or above range
- o Integrator and Differentiator with switchable time constant, Circuitry to provide PID control
- o This Trainer should contain a linearly mounted system of a D.C. motor, tachogenerator, reflective & slotted opto-sensors and a 3-bit Gray Coded disk. to detect the absolute and incremental position. The unit should have the built-in power supplies:+5V, -5V @ 1A precision supply. & +12V, -12V @ 1A regulated supply.Standard Accessories: Detailed Instruction, Circuit diagram, experimental manual, connecting probes and other mandatory accessories to complete experimental set up requirement of the unit.
- o Shall include measurement unit with 3 5/6 digit multimeter, datalogger, + and temperature meter that offers true RMS reading and Bluetooth (Android) connectivity for remote measurement. It should have operational ranges include: DC voltage (60mV – 1000V),AC voltage (60mV – 750V),DC current (60uA – 20A),AC current (600uA to 20A),resistance (600 ohm to 60 Mohm),capacitance (40nF to 4000uF),frequency (9.999Hz to 9.999MHz),percentage duty cycle, temperature (-100degC to +400degC),diode test, continuity (buzzer),transistor test (hFE)
- o Metallic screen board with strong antimagnetic and anti-interferential function
- o Auto power off and alarm when stopped used after 15 minutes.
- o Full function protection anti-high voltage circuit design
- o Shift Rate 180 times per minute
- o Shift Rate on application 120 times per minute
- o Capacitance ±(2.5%+3dig)

B. INTERNET OF THINGS (IOT) TRAINER (1 No.)

Internet of things trainer should consist of Main Board (MB) and Communication Multiplexing Board (CB) including following technical specifications :-	
Sensors & Peripherals	Using I2C:- Light & Infrared (TSL2561), Altimeter (MPL3115), Magnetometer (MAG3110), 3-AxisAccelerometer (MMA8491), Gyroscope (FXAS21002C), RTC (DS1337), Non contact IR Temperature(MLX90614),Gesture (APDS9960) .GPIO based I/F: - Temp and Humidity (DHT11), PIR (HC-SR501),Ultrasound (HC-SR04), LDR, IR.Mic (Audio In), Speakers (Audio Out), PS2 Keyboard, UART to USB (Virtual COM port) ckt block usingCP2102, GPIO based TXT LCD, Buzzer, CSI based Camera etc.
Communication	Devices supported on optional communication board (2nd enclosure)
Using Communication Multiplexer (CB) Board	GPIO Controlled 1:8 UART MUX Ckt. with manually settable interfaced using 20 pin FRC to MB UART based application modules (optionally): 1. Bluetooth(ESD1102V), 2. ZigBee(XBEE XB24-Z&WIT), 3. Wi-Fi(RN171),4. GSM(SIM900), 5. GPS(L80), 6. IR Transceiver, 7. Camera (Optional)
SBC Ports	Ethernet RJ45, USB (OTG & Host), HDMI, SD/MMC socket, Audio 3.5mm jack
DISPLAY	HDMI based 5" TFT colour LCD. (Optonally) compatible Monitors / TV.
APPL BOARDS	B supports 26 pin FRC for optional interfaces like ST/DC,ADDAIII etc.
POWER SUPPLY	External: - 5V/2.5ASMPS with RCAplug, 5V to SBC provided using micro USB socket. On-Board power supplies:- 3.3V, 3.1V - 4V settable, 1.25V to 2.5V variable

Mech. Dim.	Size:- 215(L)x165(W)x75(H) (in mm). Weight:- 900gm (1.5 kg with Manuals)
Accessories	HDMI Cable, HDMI to VGA convertor, USB Cable – micro to A type or standard cable
Single board computer	Raspberry Pi 3 Model B+

C. GENERAL PURPOSE INSTRUMENTATION TRAINER KITS

1. Multimeter –A : 3 1/2 display, Mechanical protection, Weight: About 320gm (with battery), About 440gm (with package and test leads), Size: About 200*80*35mm;, Package size: about 205*135*50mm., Accessory: 9V battery, manual., Application: factory test, field work ***(5 Nos.)***

Voltage DC	200mV/2V/20V/200V/ 1000V
Voltage AC	2V/20V/200V/700V
Current DC	20uA/2mA/200mA/10A
Current AC	20mA/200mA/10A
Resistance	200Ω/2kΩ//20MΩ/200MΩ
Capacitance	2n/200n/2u/200uF
Temperature	-20℃-1000℃

2. Mulitmeter –B : 3 1/2 LCD Display, pocket-size design, Stream line design, Size:140*70*30mm, Weight: about 150g(with battery), Accessory: 9V battery, instruction manual, Application: family, laboratory, factory etc ***(10 Nos.)***
3. L.V.D.T Demonstrator ***(1 No.)***: Built in 4 KHz variable amplitude excitation source. A digital indicator to observe D.C. output from the rectifier circuit, ±20 mm L.V.D.T in steel body.
4. Strain gauge Demonstrator ***(1 No.)***: Digital indicator to display the output of instrumentation amplifier, ten turn potentiometer to balance the bridge at zero strain, gauge factor of the strain gauge 2.12 ±1%, 31/2 digital indication in terms of mV from the strain bridge & amplifier circuit
5. Analog Digital trainer ***(1 No.)***: A large size breadboard with 2400 Tie points, AC supplies: 9V,15V,18V,30V at 50 Hz @ 0.3 Amp., Signal generator 1Hz to 100 Khz with 0 to 12 volts peak to peak for sine wave & +5 Volts TTL level for square wave.
6. Thermocouple trainer ***(1 No.)***

   Control System : ON OFF Type.
   Transducer : Thermocouple Probe.
   Type : J Type.
   Measurement Range : 0 to 2000C.
   Accuracy : +10C.
   Process Provided : Heating Kettle.
   The kit should have built in digital indicator, Instrumentation Amplifier & CJC (Cold Junction compensation) circuit.
7. Experimental kit with computer interface with technical specifications: ***(1 No.)***

- 4 channel Oscilloscope, 1Msps, +/-16V input range
- Sine/Triangular Wave Generator, 5Hz to 5kHz
- Programmable voltage sources, +/5V and +/-3.3V
- Frequency Counter and time measurements.
- Supports I2C standard sensors
- 12bit analog resolution.
- Open Hardware and Free Software.
- Software in Python programming language.

		• Get started with the User Manual and Videos • Tested on Raspberry Pi (deb file) • Accessories: Pieces of wires, with pin and with crocodile clip. • Condenser microphone with leads. • Inductor Coil (2) : 44SWG wire on 1cm dia bobbin. Around 3000 Turns (some may have more turns). These coils can be used for studying inductance, electromagnetic induction etc. • Piezo Electric Discs (2) : Resonant frequency is around 3500 Hz. Can be energized by WG output or SQR1. Discs are enclosed in a plastic shell that forms a cavity, that enhances the amplitude of sound produced. • DC Motor : Should be powered by a DC voltage less than 3 volts. • Permanent Magnets : (a) 10mm dia & length (b) 5 mm dia & 10 mm length (c) Button size magnets(2) • 5mm LEDS : RED, BLUE, GREEN, WHITE 8. Curie Neurons KIT ***(1 No.)*** Microcontroller: Arduino 101,and should support ARDUINO IDE Power Supply: 6*AA Batteries or 6.5-12V DC power adapter Dimension: 220mm * 165mm * 65 mm/ 86.6 * 65 * 25.6 inches Weight: 300g the kit should have Genuino 101 (DFR0436) x1 IO Expansion shield V7.1 (DFR0265) x1 USB Cable A-B for Arduino (FIT0056) x1 Digital Push Button (Red) (DFR0029-R) x1 Digital Push Button (white) (DFR0029-W) x1 Digital Push Button (Blue) (DFR0029-B) x1 Jumper Wires 9" F/F (10 Pack)(FIT0030) x1 9V to Barrel Jack Adapter (FIT0131) x1 I2C 16x2 Arduino LCD Display Module (DFR0063) x1 MicroSD card module for Arduino (DFR0229) x1 Acrylic UNO Base (DWG0003) x1 SD/MicroSD Memory Card (8 GB Class10 SDHC) FIT0393 x1 SD USB adapter x1 USB BLE-Link Bluetooth Dongle x1 Velcro wrist band x1 RGB Test card (one card for each color) x1 Curie Neurons Pro activation card x1 Gravity Digital Sensor Cable for Arduino x3 Gravity 4-pin I2C Cable for TCS34725 RGB sensor x1 Ardu camera :2 megapixels image sensor with M12 mount or CS mount lens holder with changeable lens options , IR sensitive with proper lens combination ,I2C interface for the sensor configuration , SPI interface for camera commands and data stream All IO ports are 5V/3.3V tolerant ,Well mated with standard Arduino boards Provide open source code library for Arduino, STM32, Chipkit, Raspberry Pi, Beagle Bone Black **D. Click Boards and Compilers** i. Air Quality 5 Click Board ***(1 no.)*** ii. Pollution Click Board ***(1 no.)*** iii. UV4 Click Board ***(1 no.)*** iv. MICRO C PRO compiler for PIC Board ***(1 no.)*** USB dongle consisting of • More than 500 library functions., In circuit debugging on hardware itself • should have built in tools like Active Comment Editor, ASCII chart, EEPROM Editor, Export Code To HTML Tool, GLCD Bitmap Editor, Interrupt Assistant, LCD Custom Character, • Seven Segment Editor, UDP Terminal, USART Terminal • Control-space based code Assistant for the programmers.	

		• No one needs to memorize function names. Focus on your code, and let the syntax write itself correctly. • Write function calls with one click of your keyboard. • Code assistant also suggests correct names of constants, URLs, Active comments and variables. • It should have communication Graphic, Button, Keypad, EEPROM, Sound, ADC RS485, • Manchester code, PS2, One Wire Port Expander library, UART library, I2C, SPI Ethernet library, PWM, Compact Flash, Touch Panel etc. It should have live update service v. **MICRO C PRO compiler for 8051 Board (1 no.)** USB dongle consisting of supports More than 250 library functions. • It should have built in tools Active Comment Editor, ASCII chart, EEPROM Editor, Export Code To HTML Tool, GLCD BLCD Custom Character, Seven Segment Editor, UDP Terminal, USART Terminal • Control-space based code Assistant for the programmers. • No one needs to memorize function names. Focus on your code, and let the syntax write itself correctly. • Write function calls with one click of your keyboard. • Code assistant also suggests correct names of constants, URLs, Active comments and variables. • Project explorer window to see the examples, path file, Project details etc. • It should have facility to see function calls which in the functions tree window. • It should have communication Graphic, Button, RS485, Manchester code, PS2, One Wire Port Expander library, UART library, I2C, SPI Ethernet library etc • It should have live update service. **E. Visual Computing Development Board (1 No.)** GPU : 256 Core Pascal @ 1300 MHz CPU : ARM Cortex-A57 (Quad-core) @ 2 GHz+ Camera : 12 lanes MIPI CSI-2| 2.5Gb/Sec per lane | 1400 megapixels / sec, USB 3.0 + USB 2.0 MISC I/O : UART, SPI, I2C, I2S, GPIOs Graphics Card RAM Size: 58.3 GB Memory Speed: 60 MHz Screen Resolution: 4 K Pixels **F. Microprocessors and Microcontrollers Peripherals** (i) Microprocessor 8085 with LCD (1 No.) High performance 8085A CPU @ 3 MHz.16 K powerful monitor FIRMWARE. Including all standard commands, codes, functions and utility subroutines.32 K user RAM 62256. Three 28 pin sockets provided for memory expansion up to a maximum of 16 K. Should be supplied with 40 character X 2 lines LCD display. Provision to connect 16 X 2 LCD, 20 X 4 LCD on the same kit Having two modes of operation : Local / Remote, Inbuilt assembler & dis-assembler RAM sockets are provided with battery backup, Program Uploading and downloading facility. Versatile Keyboard/Display controller using 8279.46 parallel I/O lines, 22 from 8155 and 24 from 8255.PC interface : Through RS-232 as well as on- board USB Interface. Built-in audio cassette interface, Programmable timer .Powerful 8085 interrupt capabilities. Highly reliable multi-function keypad. All address, data and control and hardware interrupt lines are brought out on a 50 pin FRC connector for system interfacing and Expansion, Instead of the 56 pin STD connector .Three 16 bit Timer/Counter channels are available on-board, using 8253.These channels are available on a 10 pin FRC connector .Cables & connectors for above Kit. Attractive wooden enclosure and operational manuals.	

		Switch mode power supply (ii) Microprocessor 8086 (1 No.) 8086 CPU operating at 8 MHz in maximum mode ,Socket provision for co-processor.,8284A clock generator.&8288A bus controller. Display : 40 Character X 2 Line LCD,PC Interface : On board RS-232 & On board USB. & with Keyboard Interface. Powerful monitor firmware in two 27256 EPROMs(64 KB)organized as 16 bit words ,Monitor EPROMs expandable to128 KB using two 27512EPROMs, 64 KB Static RAM in two 62256 RAM's organized as 16 bit words with battery back-up for data retention.3.6 V NI-Cad battery back-up circuit for static RAMs. On-board 8254 timer/counter chip. Out of 3 channels of timer/counter to the user through a 7 pin relimate connector. 48 TTL I/O lines using two 8255 PPI chips and all signals terminated on two 26 pin FRC connectors. The PIO Cards can be interfaced through one 26 pin FRC connector. Printer interface provided through another 26 pin FRC connector.RS-232C compatible serial port using 8251 and all serial signals terminated on 9 pin D-type male connector. On-board 8259 PIC. Out of 8 interrupts, 3 are available on50 pin FRC bus. All 8086 bus signals terminated on 50 and 20 pin FRC connectors. Facility for upload & download the program to & from PC .In built Line Assembler. Two modes of operation :a) Keyboard mode : b) Serial Mode · ,Attractive lightweight wooden enclosure. (iii) Study cards (1 Each) a. 8257 Study Card b. 8155 Study Card c. 8259 Study Card. d. 8279 Study Card e. 8212 Study Card (iii) PIO CARDS (1 Each) a. ADC 01 & ADC 08 PIO CARD b. DAC -01 PIO CARD c. SERDISP PIO CARD d. HEXPAD PIO CARD e. TEMPERATURE CONTROLLER PIO CARD f. RELAY, OPTO-ISOLATOR PIO CARD All this study cards and PIO Cards should be Compatible with Microprocessor and Microcontroller kits and All the study cards wide 8257, 8155,8259,8279,8212 should be supplied in a attractive wooden cabinet ***The individual systems mentioned as above should be complete in itself including all its accessories.*** ***A branded 15.6-inch Laptop (I5-7200U/8GB/2TB/Licensed Windows 10 Home/2GB Dedicated Graphics card), should be provided with it.***	
37.	**Aluminium Grill** Tender Fee: Rs. 1,500.00	Providing and fixing 38x38x9 mm size Aluminium Grill with Aluminium section frame 63.5 mm x 38.10 mm x1.5 mm thick in the corridor of the Departmental buildings of College of FPT &BE .Rate per Sq. Ft. should be quoted **Approximate Quantity :-4200 Sq. Ft.** **For any query, the site at College of FPTBE can be visited.**	**0.18**

38.	**Refurbishing of the PHET lab for ripening chamber** Tender Fee: Rs. 1,500.00	The existing PUF paneled structure of PHET lab is to be refurbished and installed at new site. The size of structure is 15.0x15.0x3.0 meter. For installing the structure, it should be mounted on concrete floor with required foundation available with original M.S. structure exactly as per the design and drawing. The original M.S. columns and other structure parts are to be erected with strong foundations and flooring as mentioned in drawing. The whole work included excavation for foundations, floors, refilling, compacting, dressing & P.C.C. flooring etc. complete in all respect including the relocation & re commissioning of the ripening chamber of PHET lab as per original structure. The insulated walls are made of 0.35mm thick Pre coated steel sheet Sandwich panels with PUF (Polyurethane foam). The total thickness of panel is 40mm.The insulated Roof cladding has been done with sandwich panels. Total thickness of roof panel is 30 mm. The door and window frames are made up of MS Folded section. All the PUF panels are to be refitted back as per original fitting. All doors and windows should also be fitted back as per drawing **(Annexure-I)**. *Note: Care should be taken during dismantling and shifting that no panels or other fittings are damaged. Any parts will have to be replaced at your cost*. **For any query, the site at College of FPTBE can be visited.**	**0.24**
Department of Plant Pathology, BACA, AAU, Anand			
39.	**Trichoderma Packaging Machine** Tender Fee: Rs. 1,500.00	Required technical specifications of the packaging system are as follow: **1. FILLING SYSTEM** SERVO AUGER FILLER SEALING SYSTEM VERTICAL MECHANICAL SEALER HORIZONTAL: PNEUMATIC SEALER CONTROLLING SYSTEM: PL C BASED FORMING SYSTEM: CHUTE BASE PL C: DELTA MAKE PNEUMATIC: GENETICS SERVO: PANASONIC MAKE CONTACT PARTS: STAINLESS STEEL BASE: MS CORNERING MATERIAL: STAINLESS STEEL HOPPER CAPACITY: 35KG MOTOR: 1 HP SUPPLY: THREE PHASE SPEED: 10-12 POUCH PER MIN **2. SCREW FEEDER** HOPPER CAPACITY: 150M TO 200 KG MOTOR : 1HP SINGLE PHASE SCREW HEIGHT: 9 FEET APPROX SERVO AUGER FILLER + SCREW FEEDER	**0.18**
Department of Agricultural Meteorology, BACA, AAU, Anand			
40.	**Infrared Thermometer** Tender Fee: Rs. 1,500.00	Required technical specifications of the infrared thermometer are as under - Type: Thermal imaging Detector: UFPA micro bolometer Operating range: 8 – 14 µ Temperature range: -20ºC to 250 ºC FOV: 38º x 20º Resolution: 320 x 240 pixels Setting: Emissivity, Relative humidity and ambient temperature, Laser pointer (inbuilt) Rechargeable internal battery USB support, Mass storage function	**0.15**

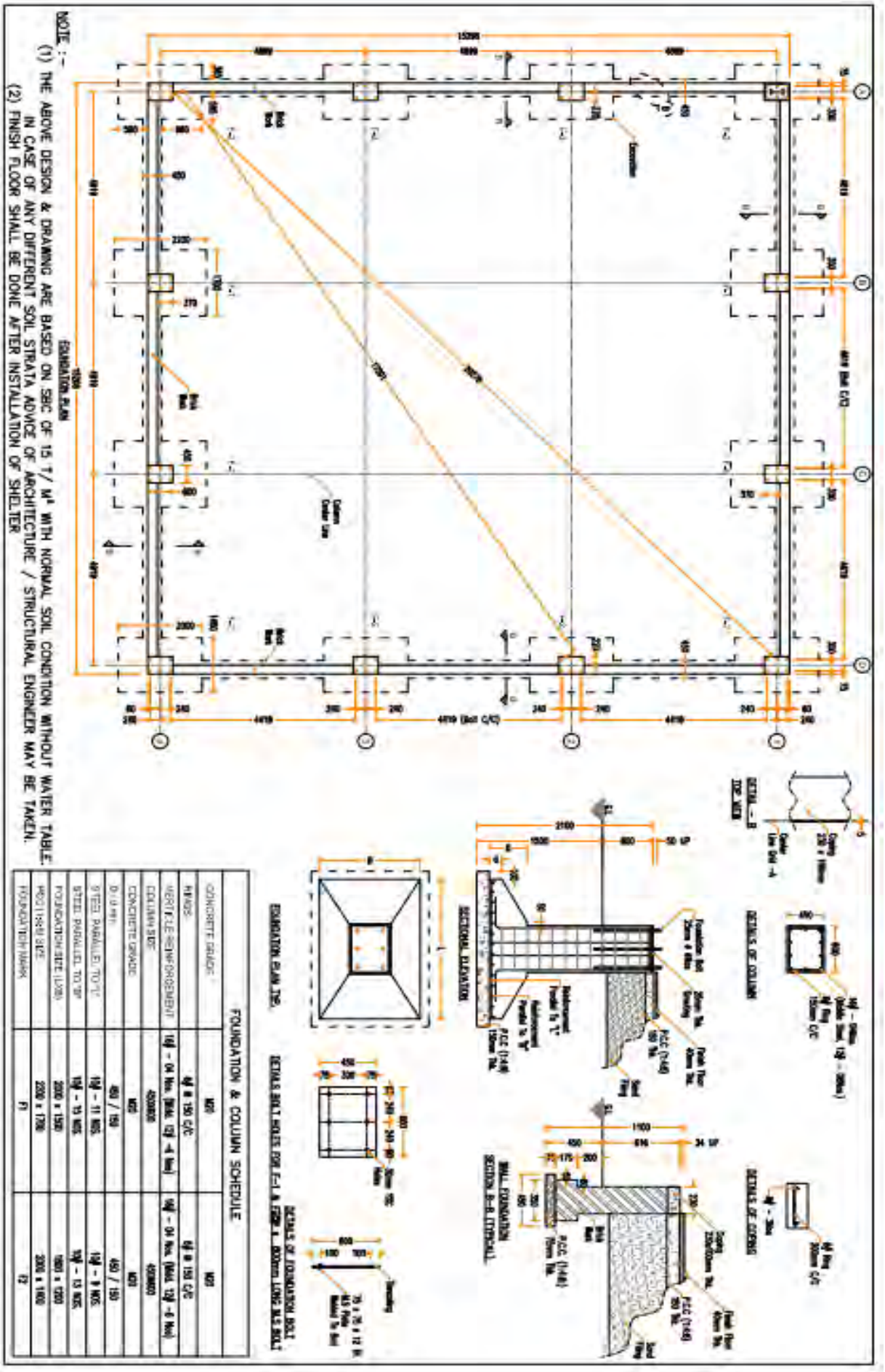
College of Agricultural Engineering and Technology, AAU, Godhra			
41.	**Soil Moisture & Temperature recorder, along with Automatic Weather Station** Tender Fee: Rs. 1,500.00	Soil Moisture Sensor: Type: Granular Matrix Gypsum Block Range: 0-200 Centibar Output: Change of Resistance Soil Temperature Sensor Range:--10 to 110° C. Accuracy: ±0.5 ° C. Resolution: 0.1 ° C. Output: Analog (10mV/° C) Data logger Specification: Display: 16 characters X 2 Character alphanumeric display. Measured Parameter: Date, Time, Soil moisture (7 Points), Soil Temperature (1 point) & battery voltage, real time clock Number of Channel : 8 Logging Interval: 1 Min to 24 hr interval Data Storage: Sufficient to storing 1 year data at 1 hour logging interval Battery charging: thought solar panel Weather proof enclosures, Operating temperature: -40 to 75 oc, Operating Humidity: 0 – 95 % non condensing Data retrieval: through data shuttle to computer Along with Mounting Mast and Solar Panel, and software Automatic Weather Station: Display: 16 characters × 2 lines alphanumeric display. Measured Parameters: Data, Time, Sensors specific data (Temperature, Wind speed, Wind Direction, Rainfall, Solar Radiation, Pyranometers, Evaporation, Barometric pressure, etc.), & Batterry voltage, Number of Channels: 16 Battery Charging: Through Solar Panel/220V AC mains Data Storage: 1 year data at selectable 1 hour logging interval, along with accessories and softwares.	**0.10**
42.	**Green Seeker Portable NDVI Analyzer** Tender Fee: Rs. 1,500.00	o Sensor battery o Wrist strap o AC charger o USB-to-microUSB cable o Carrying pouch o Quick Reference Card o Fertilizer Estimation Chart Emission Wavelength: Red 660 nm, ~25 nm FWHM Near infrared 780 nm, ~25 nm FWHM Field of view: 10" at 24”, 20" at 48” Height range: 24" - 48"	**0.01**
43.	**Advanced GPS with Handheld Data Collector** Tender Fee: Rs. 1,500.00	A compact, lightweight and a professional grade data collector. The receiver should be slim, highly rugged and very powerful (1.2 GHz quad core processor, 16GB memory and 5.3" display) and having tri-constellations GNSS accurate positioning (GPS + Galileo+ Glonass or GPS + Galileo + Beidou) as well as post processing. Internal antenna: 72 channels Accuracy Specifications o Real-time SBAS: < 1.5 m typical o Post-processed: < 80 cm typical	**0.06**

		Processor o Qualcomm Snapdragon 410 o Quad-core o Clock frequency: 1.2 GHz Physical Characteristics Size 164x82x14.6 mm (6.45x3.22x0.57 inches) User Interface Keyboard o 2 volume keys, on/off/reset key, 2 programmable keys, standard Android touch panel buttons, Display o Size: 5.3" capacitive multi touch o Resolution: 1280x720 pixels o Brightness: 450 Cd/m² o Gorilla Glass damage-resistant o Auto rotate Memory o 2 GB SDRAM o Storage: 16 GB (non volatile). 8 GB for Wi-Fi only version ² o MicroSDHC memory card (up to 64 GB, Power Characteristics o Battery Li-Ion, 4800mAh (3100mAh for Wi-Fi only version) o Battery life: > 15 hrs @ 20 ºC with GPS on 3 o Charging time: 4 hours o Removable battery Along with all the standard accessories	
44.	**Plant Canopy Analyzer** Tender Fee: Rs. 1,500.00	Sensor Input - 1 PAR Sensor, 10 Line Quantum Sensors Measured Parameter – Site Ref., Date, Time, Incoming PAR, Diffuse PAR, LAI, LCD (16 X 2) to display the instrument status. Memory range more than 4000 data sets (extendable to more at extra cost) Rechargeable SMF batteries with battery charger. Software for data retrieval from data logger to computer (USB Port) Operating Temperature: -20 to 70 °C. Operating Humidity: 0 to 95 % non-condensing. Measures Direct and transmitted PAR in plant canopies. Direct display of Leaf Area Index (LAI). Usable in all weather conditions. Portable and battery powered. Calculate LAI under steady and changing light when used with external PAR sensor. Designed to be hand-held. Auto-logging – define intervals from 1 sec to 24 H our as per customer's requirement.	**0.06**
Animal Genetics & Breeding Department, CVS & AH, AAU, Anand			
45.	**EDI Based Water Purification System (Type I and Type II water)** Tender Fee: Rs. 1,500.00	Water Purification System to convert tape water into type I and II water. It should have the following purification technologies, Pretreatment Module, Reverse Osmosis, Electrodeionisation (EDI) module, Dual Wavelength UV lamp, Dual column Ultra Purification Cartridge, Inline Ultrafiler to filter out endotoxin, proteins and nucleases, and should have recirculation facility to maintain purity of water. Integrated reverse osmosis, ultra pure water set, sterilizing filters, ultra filters and capacity. System should have dispense rate min 2 lit./ min, choice of two dispense options – Type II water from cylindrical storage tank of 30 ltr. Capacity and Type I water from automatic volume dispenser with capacity of 0.1 to 25 ltr.	**0.21**

		Type I water 1. Resistivity at 25ºC, 18 MΩ cm 2. Conductivity: 0.055 µS/cm 3. TOC with UV: < 5 ppb 4. Becterial Contenet : < 0.1 CFU/ml 5. Endotoxines : < 0.01 EU/ml 6. Rnase:0.01 ng / ml 7. Dnase:< 4 pg / µl Type II water 1. Water production minimum : 5 ltr./hour 2. Resistivity at 25ºC, 10 MΩ cm 3. Conductivity: < 0.1 µS/cm 4. Flow rate : 15 L/hr 5. TOC: 30 ppb 6. Bacteria: < 1cfu/ml System should be supplied with storage tank and with other complete accessories Quote seprately for two years warranty period and three years warranty period.	
Veterinary Public Health, CV& AH, AAU, Anand			
46.	**Biosafety Cabin (Class III Biohazard Safety Cabinet for level 4 laboratory)** Tender Fee: Rs. 1,500.00	The biosafety cabin should have following components as specified hereunder - Transfer Chamber: It should have a Pass-through box to avoid cross contamination entry into the cabinet; should allow sampling and other work items to be passed to and from the room. Unit should act as an air lock device preventing ambient air from entering, or clean air from exiting the cabinet. HEPA Filter: Media: Ultra clean glass fiber paper – imported, Type: Mini-Pleated construction, Casing: Aluminum with Powder Coated, Retention: 0.3 micron, Efficiency: 99.997% to 99.999%, Pressure drop: 16 mm WG, Grade: H13 & 14 rating Size of the HEPA: Main Supply Air of the unit; Size: 48” x 18” x 75mm – 1 No Size of the HEPA: Exhaust - 1 at below the table; Size 48” x 18” x 75mm – 1 No Size of the ULPA: Exhaust - 2 at before the duct; Size 48” x 18” x 90mm – 1 No Fresh Air PRE-Filter: Size: 800 x 150 x 75 mm – 2 Nos., Media: Non-woven - synthetic polyester, Casing: IS 304 Grade SS frame, Retention: 10 micron, Efficiency: 90%, Pressure drop: 6 mm WG Exhaust Air Blower – 1: 1000 CFM displacing capacity having a static of 40 mm WG and made of mild steel with PU coated finish and directly driven by a 1/3 HP, Single phase, 1440-RPM motor. (This will be mounted at below the table) Exhaust Air Blower – 2: 1200 CFM displacing capacity having a static of 40 mm WG and made of mild steel with PU coated finish and directly driven by a 1/3 HP, Single phase, 1440-RPM motor. The exhaust motor & blower unit will be mounted inside the hood and connected to the cabinet through an exhaust duct made of 200 mm dia rigid PVC pipe.	**0.25**

		Standard accessories: Differential Pressure Gauge, 1 No - 5/15A Additional power point, Gas inlet nozzle, floor leveling screws, wire chord and Spare pair of Gloves of 6" / 8" sizes of any one. Microprocessor Controller: The Microprocessor controller (12 Volt logic controllers) is functioning with LCD display of indicating the Inflow air velocity air indication, Hour counting for usage of UV Lamp & HEPA Filter and Alarm for safe mode door opening height. The Microprocessor controller will also switch "OFF" the UV Lamp after a preset timing. ON/OFF Controls: Soft touch switch controller for Blower, Illumination & UV Lamp Special Requirement: Mitsubishi MSY-GE24VA Inverter Cooling Split AC (2 Ton, White) or Equivalent AC to this level of specifications and UPS for smooth working of instruments Warranty: full warranty up to 2 years. Product should be minimum ISO/ CE or equivalent certified. Cost Should be inclusive of complete running system with all required accessories, standard installation, ducting and training (wet demo).	
International Agri Business Management Institute, AAU, Anand			
47.	**Office Chair, Table & Iron Storage Cabinet** Tender Fee: Rs. 1,500.00 (For items nos. 47, 47.1 & 47.2)	The specifications required for **office chair** are as under, **Qty.: 10** Dimensions: H 44.1-47.3 x W 20.9 x D 19.8; Seating Height : 15.5 – 18.7 (All dimensions are in inches) Primary Material: Fabric Room Type: Office Furniture Height : 45.0 inches Width : 21.0 inches Depth : 20.0 inches Seating Height : 15.5 – 18.7 inches	**0.05**
47.1	**Table – 3 Nos.**	The specifications required for **office table** is as under, **Qty.: 3** Office type wooden 'L' shaped standard with locker	
47.2	**Iron Storage Cabinet – 1 No.**	The specifications required for **Iron Storage Cabinet** are as under, **Qty.:1** Item weight : 70 Kg. Product Dimensions: 48.8 x 91.4 x 198.1 cm^3 Primary Material : Steel Capacity : Standard	
48.	**Photocopier Machine Colour** Tender Fee: Rs. 1,500.00	The photocopier machine should have following features / technical specifications – Type of printing : Colour Print Technology : Laser Wi-Fi capability Networking Facility Minimum speed per minute in A4 size colour (PPM) : 19 Original Feed type : ADF It should have duplexing facility Minimum speed per minute in A4 size Mono (PPM) : 19 Platen / Flatbed size : A3 Number of main tray : 2 Paper Size (Original / Image): A3 / A3 Hard disk capacity : 320 GB It should have scanning feature / facility Cartridge Technology: With separate drum and toner It must offer on site OEM warranty of at-least 1 year.	**0.05**

Annexure – I: Drawing of PHET Lab for ripening chamber



: Terms &Conditions:

i. E-tendering procedure of two bid system i.e. financial and technical should be followed for quoting the rates / bidding for items.

ii. This tender document / form may be procured / downloaded from (n)Code Solutions website **www.nprocure.com** as well as from university 's website **www.aau.in/tenders** from **04-08-2018 upto 24-08-2018, 04:00 P.M.**

iii. The financial bid / quotation rates / bidding rates for these instruments / equipment consumable item(s) has/have to be uploaded / submitted electronically through <www.nprocure.com> only **on or before 24-08-2018 6:00 P.M.** Vendors should not mention quoted price anywhere in technical bid.

iv. **The price quoted should be inclusive of all kinds of taxes, transportation, installation and commissioning at respective locations of the university and should be valid upto 31st March, 2019.**

v. The Anand Agricultural University (AAU), Anand is registered with DSIR and as per the provisions made in Integrated Goods and Services Tax Act, 2017 vide notification no. **47/2017** and amended thereafter, **AAU is eligible for GST leviable at the rate of 5%** on the goods supplied to AAU. Vendors participating in this tender are requested to make note of it while bidding online. It mandatory to mention HSN (Harmonized System of Nomenclature) code of respective item in technical bid.

vi. In case of foreign manufactured equipment / goods the **CIP, Anand (Carriage and Insurance Paid To Anand)** rates be quoted in foreign currency which will be paid by Demand Draft of respective foreign currency. The rate quoted should be inclusive of other local charges like agency commission, clearing charges, transportation from port, insurance etc.

vii. The University is authorized for exemption in Custom Duty / Excise Duty and accordingly the custom duty exemption certificate, if applicable, will be provided by the University to successful bidder.

viii. If the rates are quoted in foreign currency, for conversion in INR exchange rate available on RBI's website on the date of opening of commercial bid of the tender shall be considered for comparison.

ix. No change, addition, alteration in the tender rates on omission / misunderstanding / mistake or any other reasons would be permitted.

x. The total cost must be inclusive of all intended accessories.

xi. **The hard copy of the technical bid should be addressed to "The Unit Officer, Dept. of Agricultural Biotechnology, Anand Agricultural University, Anand – 388 110".**

xii. **Technical bids for each item should be dispatched in separate envelopes alongwith all necessary documents and DD for Tender Fee and separate EMD for each item.**

xiii. **The hard copy of the technical bid should reach this office latest by 28-08-2018 upto 04:00 P.M. in sealed cover superscripted "Technical Bid for _____" by Registered Post / Speed post only. The technical bid / documents handed over in person or sent through courier or any other mode will not be accepted.**

xiv. **Tender Fee (Non-Refundable):** Tender fee should be submitted item wise as specified in tender document (Column No. 2). Vendor quoting for multiple items of the tender may submit single DD of cumulative amount, but not exceeding Rs. 15,000/- and should be paid in the form of Demand Draft (DD) only, in the favour of "Anand Agricultural University Fund Account" payable at Anand.

xv. **Earnest Money Deposit (EMD):** EMD amount should be paid item-wise separately as mentioned in the tender document. It may be paid in form of either DD or Pay Order or Bank Guarantee issued from any Nationalized Bank or banks mentioned in GR of Finance Department, GR No.: EMD/10/2018/18/DMO, Dated 16-04-2018 in the favour of "Anand Agricultural University Fund Account".

Note: *The vendor / bidder quoting for multiple items of the tender ought to submit EMD amount separately for each item. Single DD / Pay Order / Bank Guarantee of cumulative amount will not be accepted.*

xvi. **DD of Tender Fee and DD/Pay Order/Bank Guarantee of EMD have to be scanned and uploaded online**. The original documents of Tender Fee & EMD have to be submitted along-with the technical bid to "The Unit Officer, Dept. of Agricultural Biotechnology, Anand Agricultural University, Anand – 388 110".

xvii. Earnest Money Deposit (EMD) will be refunded to unsuccessful bidders after the deal is finalized. However, the same will be refunded to the successful bidder only after submitting required security deposit for respective items. If EMD is paid in form of Bang Guarantee, it will be refunded after six months only.

xviii. **Bidder should give specification compliance statement point wise showing / highlighting items part no., serial no. as quoted in their quotation for comprehensive technical comparison. Proof of compliance should be mentioned point wise in the catalogue. Failing in compliance and proof of compliance may cause cancellation of the bid without any further notice.**

xix. Valid Manufacturer's / Distributorship's / Dealership's certificate from the principle for the year 2018-19 must be submitted along with quotation. Authority given for participating in this particular tender shall not be considered.

xx. Bidder should have a turnover of atleast 50% of the cost of the item for which vendor is bidding during any one of the last two years. The necessary documents related to turnover during last two years be submitted alongwith the technical bid.

xxi. A copy of the supporting document like, Tin No., PAN No., etc. of the vendor should be enclosed with the quotation / tender.

xxii. **Product quality certification issued by Quality Council of India (QCI), BIS or any other government approved body should be submitted alongwith the technical bid as preference for procurement may be given to such firm / company for respective items.**

xxiii. For imported goods, product quality certificate issued by BIS under FMCS should be submitted. If certification is not provided by BIS then certification issued from internationally acclaimed agency shall be considered.

xxiv. Those quotations will not be considered for financial bid opening which does not conform to given specifications for respective instrument / item and terms and conditions.

xxv. The vendor should invariably sign the quotation, general terms and conditions and must be submitted in original.

xxvi. Necessary items like UPS, Air Conditioner, Computer etc. of suitable capacity, if essentially required, for proper operation of the scientific instrument/equipment must be supplied by the vendor at no additional cost.

xxvii. As far as possible the technical literature should be furnished along with the quotation.

xxviii. If any query to the quotation is raised, a written reply must reach this department within specified period through letter / email or as suggested, else the quotation shall be treated as cancelled.

xxix. All quotations and correspondences should be addressed by designation only and not by name.

xxx. The supply should be made within the stipulated time as mentioned in the purchase order followed by installation.

xxxi. The equipment should be installed by the service engineer of the vendor at our site free of cost and the working should be demonstrated including training.

xxxii. No advance or part payment against the ordered goods will be made till the full order placed is satisfactorily executed.

xxxiii. List of users of your product and their opinion should also be sent along with their phone number/(s).

xxxiv. **Warranty:** The standard warranty should be provided for respective items. However, for items where warranty period is mentioned in the specifications shall be considered as standard warranty period.

xxxv. **Training:** Training shall be provided free of cost by the vendor for each instrument quoted, if so desired by the indenter.

xxxvi. **Security Deposit:** The successful bidder has to deposit 5% of invoice value in the University fund account prior to issue of purchase order by the University/Concerned department/College. This money will remain deposited in University as security deposit till standard warranty period is over or till complete supply of goods in case of consumable items.

xxxvii. The security deposit in favour of "Anand Agricultural University Fund Account" may be submitted in form of either DD or Pay Order or Bank Guarantee issued by Nationalized Bank or Banks mentioned in GR of Finance Department, GR No.: EMD/10/2018/18/DMO, Dated 16-04-2018

xxxviii. Rights are reserved with the undersigned to vary number of units, accept the quotation fully or partially and shall not be bound to give reasons for rejecting the whole or part of the quotation.

xxxix. Quotations/ tenders without Earnest Money Deposit (except from parties exempted for the purpose) for specific item will not be considered.

xl. Losses/damage of the instrument in transits, if any, shall be at the risk of the vendor / supplier

xli. If the demurrage charges occur due to delay in sending the document/air cargo receipt, the amount of the demurrage will be borne by the vendor / supplier.

xlii. All provisions as mentioned in the Gujarat State Purchase Policy – 2016, if admissible shall be made available to the vendors.

xliii. The technical bid may be opened on **29-08-2018** (tentative) at 10:00 Hrs. for scrutiny followed by commercial bid opening either on the same date or any other next date of completion of technical scrutiny.

xliv. In the event of the dispute regarding any matter related to acceptance or rejection of tender or consideration of tender for purchase order, decision of Director of Research or Dean Faculty of PG students of Anand Agricultural University, Anand – 388 110, Gujarat or person /persons authorized by him shall remain final.

xlv. For all legal matter court jurisdiction shall be "Anand", Gujarat.

Sd/-
The Chairman - E-Tendering Committee
Anand Agricultural University
Anand 388 110

Note: To be returned with the quotation duly sealed and signed by the vendor as acknowledgement of acceptance of the terms and conditions otherwise the quotation will be considered as disqualified.

Signature of Vendor
(Rubber Stamp, Address & Phone No.)

Place:
Date:

C H E C K L I S T

(Documents to be submitted physically in Technical Bid)

Sr. No.	Check List Documents	Remarks
1	Tender Fee in form of Demand Draft as applicable (Non-Refundable)	Mandatory
2	EMD amount in form of either Demand Draft / Pay Order / Bank Guarantee Item-wise as applicable (Refundable)	Mandatory
3	Signed & Stamped Tender Document	Mandatory
4	Copy of GST Registration	Mandatory
5	Firm / Company Registration attested copy	Mandatory
6	Authorization Letter from OEM	Mandatory
7	Technical specification point-wise compliance statement	Mandatory
8	Copy Permanent Account Number of the bidder firm.	Mandatory
9	Copy of TAN of the bidder firm.	Mandatory
10	Last two (2) financial year's Income Tax returns of the bidder firm.	Mandatory
11	An affidavit / declaration on non-judicial stamp paper of Rs.100/- duly attested by Notary Public	Mandatory
12	Product quality certificate issued by QCI / BIS etc. or certification issued from internationally acclaimed agency	Mandatory
13	User List / Opinion of users for respective items	Mandatory
14	Product catalogue / literature etc.	Mandatory

(TO BE SUBMITTED PHYSICALLY)

AFFIDAVIT

(To be submitted IN ORIGINAL on Non-Judicial Stamp Paper of Rs. 100/- duly attested by First Class Magistrate/ Notary public)

I/We, _____, age _____ years residing at _____ in capacity of _____ M/s _____ hereby solemnly affirm that

1. All General Instructions, General Terms and Conditions, as well as Special Terms & Conditions laid down on all the pages of the Tender Form, have been read carefully and understood properly by me which are completely acceptable to me and I agree to abide by the same.

2. I/We have submitted following Certificates / Documents for T.E. as requires as per General Terms & Conditions as well as Special Terms & Conditions of the tender.

Sr. No.	Name of the Document
1	
2	
onwards	

3. All the Certificates / Permissions / Documents / Permits / Affidavit are valid and current as on date and have not been withdrawn / cancelled by the issuing authority.

4. It is clearly and distinctly understood by me that the tender is liable to be rejected if on scrutiny at any time, any of the required Certificates / Permissions / Documents / Permits / Affidavits is / are found to be invalid / wrong/ incorrect / misleading / fabricated / expired or having any defect.

5. I/We further undertake to produce on demand the original Certificates / Permissions / Documents / Permits for verificati0on at any stage during the processing of the tender as well as at any time asked to produce.

6. I/We also understand that failure to produce the documents in “Prescribed Performa” (wherever applicable) as well as failure to give requisite information in the prescribed Proforma may result in to rejection of the tender.

7. My/Our firm has not been banned / debarred / black listed at least for three years (excluding the current financial year) by any Government Department / State Government / Government of India / Board / Corporation / Government Financial Institution in context to purchase procedure through tender.

8. I/We confirm that I/We have meticulously filled in, checked and verified the enclosed documents / certificates / permissions / permits / affidavits / information etc. from every aspect and the same are enclosed in order (i.e. in chronology) in which they are supposed to be enclosed Page numbers are given on each submitted document. Important information in each document is “highlighted” with the help of “marker pen” as required.

9. The above certificates/ documents are enclosed separately and not on the Proforma printed from tender document.

10. I/We say and submit that the Permanent Account Number (PAN) given by the Income Tax Department is _____, which is issued on the name of _____ [Kindly mention here either name of the Proprietor (in case of Proprietor Firm) or mane of the tendering firm, whichever is applicable]

11. I/We understand that giving wrong information on oath amounts to forgery and perjury, and I / We am/are aware of the consequences thereof. In case any information provided by us are found to be false of incorrect, you have right to reject our bid at any stage including forfeiture of our EMD/PBG/cancel the award of contract. In this event, this office reserves the right to take legal action on me/us.

12. I/We have physically signed & stamped all the above documents along with copy of tender documents (page no._____ to _____)

13. I/We hereby confirm that all our quoted items meet or exceed the requirement and are absolutely compliment with specification mentioned in the bid document.

14. My/Our Company has not filled any Writ Petition, Court matter and there is no court matter filled by State Government and its Board Corporation, is pending against our company.

15. I/We hereby commit that we have paid all outstanding amounts of dues / taxes / cess / charges / fees with interest and penalty.

16. In case of breach of any tender terms and conditions or deviation from bid specification other than already specified as mentioned above, the decision of Tender Committee for disqualification will be accepted by us.

Whatever stated above is true and correct to the best of my knowledge and belief.

Date: **Stamp & Sign of the tenderer**

Place: **(Signature and Seal of the Notary)**