

**TENDER FORM
FOR SUPPLY OF
SCIENTIFIC/LABORATORY INSTRUMENTS- EQUIPMENT, TRACTOR
& FARM EQUIPMENTS, COMPUTER & PERIPHERALS, PRACTICAL
LABORATORY KITS, CLASS-ROOM BENCHES / LAB FIXTURE,
GENOMIC SOFTWARE AND VIDEO CAMERA-ACCESSORIES
REQUIRED
AT DIFFERENT COLLEGES / UNITS / DEPARTMENTS OF
ANAND AGRICULTURAL UNIVERSITY, ANAND**

Last date for online commercial bid submission
25-01-2017 before 5:00 pm

Period for Physical Submission of Technical Bid / Tender
Between 26-01-2017 and 31-01-2017 before 5:00 pm

Date of Tender Opening (Technical Bid): **01-02-2017**



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

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

➤ **Complete Postal address :**

➤ **Telephone Number :**

➤ **Fax Number :**

➤ **E-mail address :**

➤ **Details of the Tender Fee :**

- o DD number :
- o Amount :
- o Date :

➤ **Details of EMD:**

- o DD number:
- o Amount:
- o Date:

➤ **Sales Tax No.:**

➤ **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 Unit Officer, Department of Agricultural Biotechnology, AAU, Anand invite tender from Manufacturer or Authorized Distributor/Dealer through e-procurement portal for the purchase of following Scientific/Laboratory Instruments-Equipment, Tractor & Farm Equipment, Computer & Peripherals, Practical Laboratory Kits, Class-room Benches / Lab Fixture, Genomic Software and Video Camera with accessories with given specifications, terms and conditions.

Sr. No.	Name of the Instrument / Item	Specifications	Tender Fee (in Rs.)	EMD (in Rs. Lakh)
Category-I: SCIENTIFIC/LABORATORY INSTRUMENTS - EQUIPMENT				
1.	LC-MS/MS with PDA and Accessories	High sensitive LC-MS/MS with PDA, Data-station with computer and printer, operating software, etc. with specifications (Annexure-I) and all essential accessories and spares to run the instrument. A. <u>Ultra High Performance Liquid Chromatography System (UHPLC)</u> Required Technical Specifications are as under - - 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. - Purging of pumps, manually as well as through software. - Pressure tolerance of at least 15,000 psi at 1 mL/min or better should be offered. - System should have a handling capacity for pH 2 to 12 for various solvents and buffers. - Flow rate should be 0.01 to 2.0 mL/min or better in 0.001 mL increments with accuracy $\pm 1.0\%$ and precision with 0.1% or better at 1mL/min. - Mobile phase reservoir system to accommodate four bottles each of 0.5 L. - Safety functions like leak sensor, high pressure and low pressure limits. Auto-Sample Injector with Sample Cooler - Automated operation controllable through MS/MS Software. - Automated auto-sampler purging through software. - Injection volume between 0.1 μL to 25 μL with accuracy of + 0.5%. Precision should be < 0.25% and carryover should be 0.01% or better from previous injection. - Temperature range should be 4 to 40 °C in 0.1 °C increments with accuracy of + 0.5 °C. - Minimum sample capacity should be 96 in nos (1-1.5 mL vial holder) and two 384-microtiter plates. - High speed injection system is preferable. Column Compartment - The temperature range should be 5°C to 85°C, settable in 0.1 °C increments. - Temperature accuracy should be + 0.1 °C and stability should be + 0.5 °C or better. - It should be able to handle at least 2 columns (length up to 250 mm) or 4 columns (length up to 150 mm) within the oven. - Safety functions like leak sensor, high temperature cut-off.	15,000/-	6.00

		PDA-Detector i. Wave length range 190-800 nm ii. Slit resolution 1.2 nm iii. Wavelength accuracy ± 1 nm iv. Drift 5.0×10^{-4} AU/h or less B. <u>Mass Spectrometer System</u> <i>(A state-of-the-art, high sensitivity Triple Quadrupole with suitable mechanisms for qualitative and quantitative analysis with calibration and auto tuning facility.)</i> Required Technical Specifications - 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 not be less than 15,000 amu /sec. Higher Scan Speed is preferred. 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 milliseconds. Lower Switching time is preferred. 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 $\geq 1,50,000:1$ (RMS) or better based on 1-μL injection without smoothing data. b) ESI negative: 1 pg chloramphenicol, S/N $\geq 1,50,000:1$ (RMS) or better without smoothing data based on 1-μL injection. (Documentary Proof to be provided for both the above.) 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 dual mode ESI, APCI with multimode 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 HPLC 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 400°C or more. 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 multiplier should be off-axis or any other type meeting the sensitivity and six 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.		
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		Gas Generator/Gas cylinders - Suitable filled gas cylinders as required, with test certificates, regulators, gas pipes with fittings and purifier for the system. - Gas generator should be portable and highly durable, have low noise, vibration free, drying system and auto drain valve with inbuilt compressor. - Gas generator should be able to supply all the gases required for the LC-MS/MS instrument at required purity, pressure and flow rate. C. <u>Data Station with software system</u> <i>(PC with latest configuration and licensed operating system)</i> Data Station Quoted Model: _____ Software Name for system <i>(Latest Version)</i>: _____ Required Technical Specifications - PC with latest configuration and licensed operating system (At least i7 Processor, Intel Original M/B, 2 TB HDD, 24" LED monitor, DVD R/WR, 8 GB DDR3 RAM, graphic card etc.) with laser printer. An additional 48" UHD screen with two-way cable for dual display of chromatograms. - Single software platform must be provided for a seamless control of all the modules of LC and MS. - The software must be able to perform 'Automatic Optimization of MRM' using flow injection mode. - MRM database for minimum 500 pesticides should be provided. - Also latest original company licensed software should have capabilities to perform the following functions. - Automated calibration and quantitative optimization. - 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. <u>Essential Accessories</u> <i>(Essential accessories to run the system)</i> Online UPS - Online UPS (Preferably Emerson 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. Laptop with printer - 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. - Canon image CLASS LBP6230dn Laser Printer - Netgear RN31400 with cloud setting- Ready NAS 300 Series 4-Bay, 2 x 4TB HDD (NAS supported)		
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		E. Spares (Essential spares to run the instrument) Required Technical Specifications a) Column i. RP C-18, 1.7μ, 100 mm X 2.1 mm 10 Nos. ii. RP C-18, 1.7μ, 50 mm X 2.1 mm 05 Nos. b) Auto-sampler needle: 5 Nos. c) Inline filter/Frit: 25 Nos. d) Gas filter: 2 Nos. e) Oil for vacuum pump: 5 L f) Capillary for ESI and APCI, desolvation line: 10 Nos. g) ESI O-ring: 10 Nos. h) Guard Column i. C-18 guard columns suitable for the column asked and 10 Nos. ii. C-18 guard columns 1.7 μm columns from the same supplier as the columns, should be provided. In case of replaceable cartridge-type guard columns two separate cartridge holders are also to be supplied. - 10 Nos. i) Pump seal: 05 Nos. j) 0.22μ Millipore - filter paper disc: 10 pack (1000 Nos.) k) Lint free tissues: 05 boxes l) Swab: 100 Nos. m) Tool kit: 1 set		
2.	DG Set	Water cooled Diesel generator set of 62.5 kW capacity with Heavy-duty sturdy steel base frame for placement of DG Set. Provision of Air-Intake and Air-Exhaust silencer(s) for preventing leakage of sound. SOUND REDUCTION double-walled, all steel insulated DOORS, Openable, for easy access for easy maintenance. THREE layers of Sound suppressing elements. Separate Duct for ventilating hot air coming out of engine. Weather proof structure that can also be erected in open space, totally water proof, temper proof and temperature proof. Anti-Corrosion treatment to the full structure and body for long-life under adverse weather conditions. Complete in all respect with earthing, suitable 3 phase cable with change-over switch, erection and commissioning.	1,500/-	0.25
3.	Auto Flour Sifter	A flour mounted complete stainless steel vibro flour sifter of about 100 kg/h. It should be complete in all respect with replaceable sieves of three different sizes for obtaining desired fineness of the flour / food powders; feeding and collecting system, operating panel etc.	1,500/-	0.05
4.	Screw Juicer	A power operated table mounted stainless steel tapered screw type juice extracting machine suitable for aonla/other juicy fruits with the capacity of about 50 kg/h having high juice extracting efficiency. It should have heavy duty solid taper and grooved screw housed in screen cage. There should be juice collection arrangement at bottom. Spring loaded arrangement at discharge end to control the squeezing action and recovery. The rotatory screw as well as the stationery housing of the juicer and all other part must be fabricated by SS 316 stainless steel. The machine must be complete in all respect including standard make appropriate size electric motor, drive and power transmission system, fruit feeding hopper with an arrangement for pressing fruits, two removable SS sieves (each of 16 mesh and 20 mesh), back pressure adjustment, mounting frame etc.	1,500/-	0.05

5.	Centrifugal Juicer	Centrifugal juicer should be able to carry out extraction of juices from various fruits and their pulp in continuous manner. It should have capacity of 50 kg/h and have high juice extracting efficiency. All food contact parts must be fabricated by SS 316 stainless steel. The machine must be complete in all respect including standard make appropriate size electric motor, drive and power transmission system, fruit feeding hopper, two removable SS sieves (each of 16 mesh and 20 mesh), mounting frame etc.	1,500/-	0.05
6.	Laboratory Screw Oil Expeller	Table top electrical motor operated screw type oil expeller should be able to crush different types of the edible oil seeds (such as Groundnut, Sesame, Mustard, Sunflower, Flax seed etc.) for efficient extraction of oil. Capacity: about 5 kg/h. Complete in all respect. Contact parts: SS 304. Fully automatic/ semi-automatic with adjustable chock distance. The system should be complete in all respect.	1,500/-	0.05
7.	Laboratory Oil Ghani	Laboratory model table top electrical motor operated Ghani for oil extraction from different types of the edible oil seeds (such as Groundnut, Sesame, Mustard, Sunflower, Flaxseed etc.). Capacity: about 5 kg/h. Complete in all respect. Contact parts: SS 304. Fully automatic/ semi-automatic. The system should be complete in all respect.	1,500/-	0.05
8.	Laboratory Hydraulic Oil Press Machine	Table top hydraulic oil press machine suitable for cold pressing of the edible oil seeds (such as Groundnut, Sesame, Mustard, Sunflower, Flax seed etc.). Capacity: 5 kg/hr approx. Working pressure controller: 30-50 MPa. Contact parts: SS 304.	1,500/-	0.03
9.	Skid Mounted Pasteurizer with Homogenizer	The capacity for skid mounted pasteurizer with homogenizer (A plus B) must be 100-150 Litre per hour (LPH). Skid mounted unit must consist of following units A) Milk Pasteurizer: • Plate pack (PHE) – The supporting frame for the plate heat exchanger must be self-supporting design made up with durable good quality materials. The frame, pressure and interconnecting plates may be made of S.S. clad with S.S. 304 sheet and will of multi bolt tightening design. The pasteurizer must have four sections i.e. heating, regeneration II, Regeneration I and chilling. P.H.E. plates of S.S. 304 quality with holding section as in S.S tube of SS 304 material. The milk pasteurizer must be supplied with flow diversion valve of rated capacity with the provision of pipeline to divert the unpasteurized milk to raw milk balance tank. • Balance Tank – Should be of Capacity 200 Litres. The cylindrical designed tank may be fabricated from 2 mm thick S.S. 304 quality material. The tank may be of welded construction. All the welds must be ground smooth and shall be subject to DP test and all S.S. surfaces must be polished to sanitary standards. All the corners must be well radiused. The tank must be complete with following attachment– i) 3 Nos. legs fitted with S.S. ball feet capable of vertical adjustment. ii) 1 No. S.S. milk outlet. iii) 1 No. S.S. milk Inlet. • S.S. pipes and fittings – One lot of SS pipes and fittings of 25 mm with 3-way valve, flow regulating valve to interconnect balance tank, pump and P.H.E, hot water flow, chilled water flow to PHE and which is necessary for operation of pasteurizer.	1,500/-	0.15

		- Electrical Hot Water Generator – Hot water generator suitable for 100 Liters capacity Pasteurizer. With required hot water pump and pipes and fitting must be provided. - Electrical Hot Water Generator 6 KW with Hot Water Tank Cap - 20 Litres and 1/2 HP Hot Water Pump. - Cooling unit – Must be suitable to cool milk from 350 – 40C (with refrigeration unit having 1.5 T capacity plant) provided with suitable sealed compressor, air flow condensing unit and refrigeration controls and valves, expansion valve the suitable length of copper coil 5/8" is fitted in the tank which is insulated and covered from top with wooden covers. Chilled water pump of 1/2 HP along with M.S. piping and valve strainer must be provided with tank. - Skid Mounted SS Control Panel for manual operation - The panel must consist of temperature indicator, temperature indicator cum controller, buzzer, push button starter etc. and other required indicators and controllers required to run complete plant. All the motors/pump necessary for skid mounted pasteurizer with homogenizer must be of three phase type with high energy efficient rating and standard company make. B) Homogenizer of capacity 100-150 LPH. The homogenizer must be of two stage type. With proper and necessary pressure applying valve with pressure gauge. The homogenizer is equipped with provision for inlet and outlet of SS material. The homogenizing valve piston may be equipped with necessary oiling mechanism necessary to run the homogenizer.		
10.	Laboratory Pulse Electric Field System	The unit should be able to process liquid food products using pulse electric field with a capacity of 100 litres/ hour. It should have following features: Peak Voltage: 10 kV Peak Current: 100 A Field Strength: 0 to 40 kV/cm Pulse Frequency: 0 to 1.4 kHz Processing Ability: 1 - 10 kW Models 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.	5,000/-	2.00
11.	Stephan Universal Machine	Quote single rate for total items A to G Stephan Universal Machine for cutting, mixing, thermizing for production of meat and sausages, dairy products, confectionary bowl contents with approximate batch size up to 18 litres with working temperature upto 127 ° C and working pressure upto 1.5 bar. The surface outside and inside should be ceramic blasted and machine chassis should be made of stainless steel. It should have following components: A) Variable frequency motor 7.5 kW and should include motor hood for rotation between 300 to 3000 rpm B) Gear motor 0.37 kW be directly flanged at the cover with direct drive of mixing baffle with brake motor and positioning switch. C) Bowl, Cover, Dosing and Discharge A SS bowl of approx. 30 litre volume, double jacketed and tiltable, designed for more than 2 bar steam pressure. The system be complete with all fittings, valves, switches, SS hinged cover, sight glass, adjustable dosing and discharge facilities and safety valve etc.	15,000/-	3.50

		D) Temperature Feeler: have finger feeler consisting of PT 100 mounted in the bowl and should give temperature indication via soft touch panel. E) Direct Steam Injection and Steam Cleaner: Steam relief valve or special steam nozzle should be provided for direct heating of the bowl contents. For condensate removal and pressure regulation with cyclone separator and condensate separator a steam cleaning system should be there. Steam regulation with pressure regulators and pressure indicator for direct steam and double jacket water + steam. High capacity moveable active charcoal filter for removing hydrazine and solid particles. F) Vacuum Unit The evacuation capacity of the unit should be 20 m³/h at 300 mbar and work as standalone unit. It should be fitted with manometer. There should be pneumatically operated vacuum valve and aeration valve. The control of vacuum pump should be by soft touch panel and there should be hand ball valve to control vacuum strength G) Electrical Control It should operate at 400 V, 50 Hz, three-phase AC have control cabinet stainless steel mounted at the machine chassis. Control voltage should be 24 VAC. It should have control part via soft touch keyboard with 2 lines text indication in lightened LCD display. For manual operation of main and gear motor including timer and temperature indication should be provided. The system should be provided with an emergency button. The unit should be complete in all respect with all its accessories and spare parts. Set of spare parts including o-rings, sealing rings, shaft seal, seal for cover, set of knives, blunt knives, wave cut knives and other rings, should be also provided along with the system, and includes commissioning and training.		
12.	Incubator	Chamber material: Stainless steel (304 S or superior) Timer: 0.01 – 99.99 h, or continuous Power supply: 230 V, 50 Hz Flask holding capacity: Minimum to maximum should be in range of: 125 mL Erlenmeyer flasks: 20 to 60 250 mL Erlenmeyer flasks: 25 to 50 500 mL Erlenmeyer flasks: 10 to 25 1 L Erlenmeyer flasks : 8 to 15 Temperature range: Min 20 °C below ambient to 60 °C Accuracy: ±0.1°C or better Uniformity: ±0.5°C at 37°C or better Audible and visual alarms: Yes Temperature uniformity: ±0.25 °C at 37 °C Available program modes - Constant speed and temperature - Programmable multi-steps - RS-232 communication port Balanced drive mechanism: Triple-eccentric with permanently lubricated ball bearings 2 Stackable (S): Yes up to 3 units Gassing manifold: No Humidity monitor: Yes Internal convenience light: Yes Memory: Non-volatile with automatic power failure restart Motor type: Solid state, DC brushless motor Orbit: 2.5 cm (1 in) or equivalent Photosynthetic lighting: No Refrigerated: Yes	1,500/-	0.50

		Slide out platform: Yes Space saving glide up doors: Yes Speed range: 25 – 400 rpm with 2.5 cm orbit Multi-step programming: Yes UV germicidal lamp: Yes Platform: Universal Flask clamps: -50 for 125 mL Erlenmeyer flasks -50 for 250 mL Erlenmeyer flasks -10 for 500 mL Erlenmeyer flasks -10 for 1 L Erlenmeyer flasks Power supply: 230 V, 50 Hz, It should be supplied with compatible stabilizer/servo for smooth operation Service and Support Training: Hands on training onsite after successful installation. The system to be supported with onsite operational training and in-house application training. Onsite warranty: Comprehensive 3 years Complete documentation (DQ/IQ/PQ etc.) and all cables/ chords, accessories for a working configuration		
13.	Spectrophotometer	The UV visible spectrophotometer should have following specifications: - Source: Tungsten-Halogen lamp Deuterium lamp Built in light source auto position adjustment Monochromator: Czerny-Turner Detectors: 2 silicon photodiodes Optical design: Double beam Czerny-Turner monochromator UV-Vis Wavelength resolution: 0.1 nm (190-1100 nm) Wavelength Range: 190–1100 nm Wavelength Display: 0.1 nm increment Wavelength setting: 0.2 nm increment (1 nm increments when setting scanning range) Wavelength Accuracy: ± 0.05 nm Spectral Bandwidth: < 3 nm Wavelength Repeatability: ± 0.1 nm Photometric Accuracy: ± 0.005 Abs at 1.0 Abs Photometric Range: Absorbance: -4 to 4 Abs Transmission: 0 to 400% Photometric Repeatability: ± 0.002 Abs at 1.0 Abs Baseline flatness: 200 to 1100 nm Baseline corrected: ± 0.003 Abs Spectral bandwidth: 1 nm (190-100 nm) Display: Touch Screen User Interface Sample holder: 1 cm Single Cell Holder as well 50 μL microcells holder. The cell holders as well as the modules can be interchanged quickly and securely Measuring modes: Equipped with a variety of measurement modes and numerous functions as standard in a stand-alone instrument such as: Photometric Mode, Spectrum Mode, Quantitation Mode, Kinetics Mode, Time-Scan Mode, Multi-Component Quantitation Mode, Biomethod Mode (provided as standard) Accessories: USB cable, and power cord, USB memory, Softwares, Work Station PC, 19" TFT-LED Monitor with laser Printer, 1 KVA Online UPS, PC Compatibility-External Control possible via USB, Set of quartz cuvette for sample analysis – compatible with the holders;	1,500/-	0.15

		Power Requirement: 100 to 120 V; 200 to 240 V; 50/60 Hz; automatic changeover ports. Onsite warranty: Comprehensive 3 years Complete documentation (DQ/IQ/PQ etc.) and all cables/ chords, accessories for a working configuration.		
14.	Microwave Synthesizer	The microwave system should be suitable for evaporation, extraction, distillation, dehydration, digestion and should have following specifications - • Cavity: 30 lit • Power: Output 2450 MHz • Magnetron: Magnetron Protected from reflected microwave energy • Operation display: Fluorescent • Stages- 85 watt to 850 watt • Temperature- IR sensor or Dip type controller • Exhaust- Powerful Exhaust system for open reaction • Time- 99.59 min • Reaction- 5ml to 5000ml • Stirrer- One magnetic stirrer with controller	1,500/-	0.05
15.	Rotary Vacuum Evaporator with Chiller and Vacuum Pump	The system should be imported consisting of rotary vacuum evaporator, chiller and high capacity vacuum pressure pump. A) Rotary vacuum evaporator should have following features • Rotation Speed: 20 to 280 rpm • Evaporation Flask Size: 50 ml to 3 Litre • Glass Joint: 24/ 40 (evaporating) with push-off mechanism to loosen tight fitted glassware • Vacuum Seal: PTFE/ Acid proof • Maintain constant bath temperature to 90°C with digital water bath • The system should include all other required accessories. The unit should be complete in all respect. Onsite warranty: Comprehensive 3 years The heating bath should be universal for water/oil heating with vertical glassware, highly efficient condenser unit with 1500 cm² area and motorized lift with “safety-stop” function. The system should have rugged design with timer function and safety features for dry run protection, temperature circuits etc. B) Chiller should have following features: • Temperature Range: -20 to 100 °C • Bath Volume: 10 litres • Heater Capacity: 2000 watts • Cooling Capacity: @ 20 °C 300 watts • Pump Flow Rate: max 12 Litres / min • Pump Pressure: 300 mbar High capacity vacuum pressure pump with gauges, regulators, and valves. It should have following features: • Free-air capacities up to 1.8 cfm (51 L/min) • Max pressure 60 psi • Max vacuum 24” Hg	1,500/-	0.30

16.	Nitrogen Evaporation System	The evaporation system should be imported one with an automated high speed, low volume sample concentrator should have following features: • Up to 50 samples can be evaporated • Should be able to evaporate acidic samples • It should consume minimum gas • Separate controlling of each manifold • Proven compliance with EPA methods • No of racks: Twelve • Sample volume from 1.0 ml to 30 ml • Controlled water bath adjustable from ambient to 90 °C with temperature accuracy ± 1 °C. • Built-in nitrogen regulator • Hood space and tube balancing should be included • Swap rack facility to change between different tube sizes • Timer range: 1 to 99 minutes • It should be provide even temperature of throughout water bath and gas flow over a set time period • The system should include all other required accessories. The unit should be complete in all respect. Onsite warranty: Comprehensive 3 years	1,500/-	0.30																											
17.	Microwave Conveyor Dryer	• It should be Microwave assisted conveyor drying system suitable for spices, vegetables etc. with infrared and UV sterilization zone having suitable drive motor/s with conveyor system, precise contrls for resistance time, microwave power, pulsating timer, product temperature & indications of MW output, current meter, MW On/Off switch, emergency shut down, product temperature etc. with suitable servo controlled voltage stabilizer (Rating: 25 kVA, Input: 340-480 V AC, 3 Phase, 50 Hz, 4 wire + earth; Output: 400 V AC, +/- 1%, 4 wire + earth suitable unbalanced input voltage and load protection for over & under voltage, short circuit and single phasing preventer etc.) • Microwave power: 9 KW (Approx.) • Electrical Power: 3 Phase • Conveyor belt: Solid PTFE coated fiberglass about 600 mm wide and 46 meter length • Construction materials of cavity: SS	1,500/-	0.15																											
18.	Atmospheric Pressure Plasma System	Plasma generator (DBD / RF / Corona/ any other suitable mode) with a power source for activation of near atmospheric temperature plasma applicable for surface treatment / cleaning / disinfection through nozzle / rotational nozzle / any other plasma contact to the material of interest. <table><tr><th>Sr.No.</th><th>Parameter</th><th>Specification</th></tr><tr><td>1</td><td>Gas</td><td>Argon / Helium / Atmospheric gas/ Others</td></tr><tr><td>2</td><td>Gas Flow Rate</td><td>10 -30 LPM</td></tr><tr><td>3</td><td>Operational Frequency</td><td>25-150 Khz</td></tr><tr><td>4</td><td>Power</td><td>AC / DC – (To be specified)</td></tr><tr><td>5</td><td>Voltage</td><td>2kV to 10kV</td></tr><tr><td>6</td><td>Plasma Temperature</td><td>Less than 50 Degree Celsius</td></tr><tr><td>7</td><td>Treatment Distance</td><td>Preferably above 10mm</td></tr><tr><td>8</td><td>Treatment Width</td><td>Preferably above 20mm</td></tr></table>	Sr.No.	Parameter	Specification	1	Gas	Argon / Helium / Atmospheric gas/ Others	2	Gas Flow Rate	10 -30 LPM	3	Operational Frequency	25-150 Khz	4	Power	AC / DC – (To be specified)	5	Voltage	2kV to 10kV	6	Plasma Temperature	Less than 50 Degree Celsius	7	Treatment Distance	Preferably above 10mm	8	Treatment Width	Preferably above 20mm	1,500/-	0.15
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19.	Confectionary Line – 1 Set	Quote single rate for total items A to J Confectionary line suitable for manufacture of candy and toffee should consist of following items: A) Batch stirrer of 25 litre capacity for homogeneous mixing of raw material in bulk. The stirrer should be held on a strong frame with the help of chain. It should be able to move up or down back manually through chain. The stirrer should be able to rotate at about 2800 rpm and the motor rating of the stirrer should be about 0.75 kW B) Universal cooker with vacuum The universal cooker of about 45 kg batch size should be suitable for production of hard boiled candy, toffee and caramel varieties. Batch cooker should have two pans, one upper stainless steel pan with steam jacket for cooking and lower tilting pan of stainless steel for moisture removal through vacuum pump. It should have stirred with speed variation with 70 to 100 rpm with motor of 1.5 hp and a vacuum pump with 5 hp rating. C) 2 Way tilting circulating cooling plate It should consist of eight integrated cooling staggered chambers for cooling. The plate should be of around 2100 mm x 1000 mm x 700 mm. The second face of the tilting cooling plate can be utilized for speedy cooling effect by tilting the plate alternatively by 180°. D) Batch roller of 60 kg should have forward- reverse rotating stainless steel taper rolls. The rotating rolls move the mass toward small end of rolls gradually and forms thin rope as per requirement. Electric heater should be attached to the batch roller to keep the mass warm. It should have a motor with 0.75 hp with a gear box ratio of 1:40. E) Rope sizer should consist of semi round grooved and knurled rope wheel sets. One set should be vertical and other should be horizontal. The exact size of rope for Toffee / Candy size, the thin Toffee / Candy rope should pass through decreasing rope wheel set and forms exact size of rope required. The rope wheel set can be adjusted by means of graduated lever which is provided to get various size of rope according to varieties of toffees and candies. F) Tablet forming machine with about 300 kg/ h should consist of one set of sizing wheels & tablet forming die. It should be suitable for forming seamless sweets with high depth and thickness. The motor rating for the machine should be 3hp. G) 3-Stage Cooling conveyor should consist of a blower fitted over the galvanized wire mesh of 4", 8" & 12" width. It should have a capacity of around 300 kg/h. The conveyor should move with a speed of 1400 rpm with help of a motor rating of 3 hp H) Double side twist candy wrapping machine should be able to use all commercial packaging materials. The sugar boiled sweets are charged into the S.S hopper from where they are released on to the rotary format by an automatically controlled vibrator. The packaging material flows from the feed station, cut to appropriate length & the sweet is lifted along with folded wrapper in to the twisting turret. The sweets are held in position by the rubber gripper and the twisting operation is performed mechanically by twisting fingers on both sides & then it is further collected from delivery chute. It should be able to wrap 300-325 wrap/min with help of 3 phase 1.5 hp motor. I) Blade Grinding Machine should be able to grind blades for candy and toffee wrapping machines paper cutting blades. J) Pulling Machine used for providing better textures to toffee mass from cooling. It makes toffee mass smooth and soft. The capacity of the machine should be around 25-50 kg/ batch and should work on a motor of 2 hp.	1,500/-	0.40
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		A comprehensive instruction manual detailing installation and commissioning procedures as well as suggested operational procedures should be provided. The system should be complete in all respect with all accessories, fittings, mountings, spares, installation, commissioning and training.		
20.	Seed Roaster	Electrically operated seed roaster machine for roasting different types of seeds (such as Pumpkin seeds, Flaxseed, Sesame seed etc.). There should be uniform roasting on every seed. 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/ semi-automatic and should get temperature: up to 200°C. All contact parts should be of SS 304. The system should be complete in all respect.	1,500/-	0.05
21.	Continuous Type Blancher	A continuous type blancher with a capacity upto 100 kg/ h made of SS 304 capable of blanching fruits and vegetables etc. It should have following features: • Rectangular hot water tank of SS 304 with insulation and straight line conveyor in which fruits are submerged for softening of skin. • Conveyor belt of SS 304 with tracking arrangement and with variable frequency drive for changing of retention time as per requirement. • Water sealed top covers to prevent heat loss. • System for control of water level and overflow arrangement. • Stainless steel control panel complete with all necessary electrical fittings temperature sensor with indicator and controller & variable frequency drive etc. • Motor – with Bonfiglioli or equivalent make Gearbox • Over all Dimension: 2000 mm L x 700 mm W x 1250 mm H. • Feed and Discharge Height – 850 mm • Long closed steam coil of SS 304 having a coil diameter of 1.5" and approx. 4 meter long, inside tank for heating water can be easily connected to boiler • Steam requirement approximately- 50 – 70 Kg/ Hr. • Electrical power: 1 HP / 3 Ph / 420 V / 50 Hz. • It should be complete in all respect with installation, commissioning and training.	1,500/-	0.10
22.	Farinograph	The instrument should consist of an oscillating dynamometer with highly accurate torque transfer. The resistance of the dough against a constant mechanical shear under identical test conditions is recorded as a torque / time diagram from the moment of dough development. It should be able to measure flour quality and processing characteristics - reliably and reproducibly. The water absorption of flours and determine the rheological properties of the dough. It should comply international standards including ICC, ISO, AACC standard no. 54-21, etc. Fully electronic measurement, computer-controlled operation, on-line displays with variable speed should be possible. It should have following features: • Electronic Torque Rheometer • Dynamometer, with electronic torque measuring system • Total measuring range: 0-10 Nm • Speed: 2 - 200 min⁻¹ • Speed Deviation: 0% • Mixer: Calibrated with removable sigma blades with a mixture bowl having capacity of 300 g	1,500/-	0.50

		- Liquid temperature control system within the temperature range 20- 40°C through circulation thermostat should be provided with the system. - Connection: Via USB port, to a PC/ Laptop, including appropriate licensed softwares. The system should be complete in all respect with all accessories, advanced PC and printer system, 1.5 tonne branded split AC, 10 KVA UPS etc. Kits and consumables: 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. Training: 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 refresh them with training for all the applications at AAU site.		
23.	Aseptic Filling Machine	Quote single rate for Aseptic filling machine totaling for all the items A to D. A) Storage Tank – 500Lit Cylindrical having top and bottom cone type ends with inlet and outlet 38 mm SMS. Manhole on top cover. Inspection glass at top and bottom. Spray ball rotating type. Tank mounted on pipe legs. Sample cock & Thermo well connection. M.O.C S.S 304 , Capacity :- 500 Lit B) TUBE IN TUBE PREHEATER Cap – 500 LPH Heat exchangers are suitable for heating single strength pulp from 30°C to 70°C at a flow rate of 500 kg/hr. Low pressure steam at 1.7 kg/cm² pressure should be used for heating pulp. All product contact parts are and utility side should be made from S.S 304 material. Interconnecting pipes and fitting: Pipe and fittings for interconnections between the heat exchangers should be also included. S.S Frame: 1 no S.S 304 fabricated frame for mounting the heat exchanger modules. Utility Requirements: 25 kg/hr of dry saturated steam at 1.7 bar pressure. C) TUBE IN TUBE PASTEURIZER – 500 LPH The system is designed for heating fruit Pulp from 35°C to 95°C for capacities 500 LPH. The heating of pulp should be done with hot water in a corrugated Tube Heat Exchangers. The system should include multiple heat exchangers for heating the pulp, Instruments for utility and product side, stainless steel control panel with PID temperature Controllers, steam regulating valve etc. Closed loop hot water system with Separate heat exchanger for generating hot water should be also included. The hot water system will have all accessories like hot water pump, steam and condensate valves and trap, expansion vessel. A stainless steel centrifugal pump should be also provided for doing plant CIP. All product contact parts and pipes and fittings and utility side of heat Exchanger should be in SS 304. Following should be part of the tube-in tube pasteurizer system. - Balance tank:- One - Feed Pump: - One No. - Heat Exchanger - CIP Pump: - One No. - Hot water System - Instrument control panel	15,000/-	3.00

		7. Flow Diversion Valve: One no 8. Valves and instruments 9. Interconnecting pipes and fittings. <u>Utility Requirement</u> a) Steam Quantity / Pressure: Dry saturated steam at 3 to 3.5 kg/cm² 500 kg/hr pulp, Juice: 90 kg/hr steam b) Electric Power: 3 phase, 415 volts 500 kg/h pulp: Approx. 10HP c) Instrument Air: Dry air at ambient conditions, 3 kg/cm² at the instrument panel with necessary filters. d) Treated water: 2 bar pressure during CIP 500 kg/hr pulp, Juice: 3000 LPH e) Soft Water: 200 Lit for hot water initial filling and make up. Product recycling system is considered if desired temp not achieved D) DOUBLE-HEAD ASEPTIC FILLER FOR 210-220 KG. FLEXIBLE BAG/DRUM FILLING CAPACITY: Upto max. 5,000 Kg/h. of product at inlet corresponding to max. 24 bags/hour of 210 kg. about; FILLING ACCURACY: $\pm 0, 5 \%$ (referred to 208 litre bag); TYPE OF BAG: 208 litres (55 U.S. gallons) pre-sterilized flexible bag, corresponding to 210-220 kg. according to the specific weight of each product; aseptic bag having 1" spout diameter, one ring, suitable for filling under steam pressure at 95-96 °C; PRODUCT TO FILL: Fruit and Vegetable puree, puree concentrate of same products; Tomato paste; PRODUCT INLET TEMPERATURE: 30 to max. 35 °C with pH value 3,2 to 4,3; FILLING OPERATION The bag filling is carried out by means of two set of weighing cells on platform, assembled under the inlet/outlet free rollers Conveyor; each platform scale is positioned on vertical axis of the Filling Head; The net weight is obtained by re-setting the tare from the gross weight of the empty bag/drum; During filling the bags are in vertical position, placed inside the rigid container (drum); during filling operation the Filling Head is moving from the top to the bottom by three pendulum-step in sequence; MAIN FEATURES: The machine is entirely made of AISI 304/316 stainless steel sanitary execution, easy to dismount and to inspect in all its parts. All piping in contact with the product are made in AISI 316 stainless steel and mirror-polished. Each Filling Head is composed of a chamber kept under pressure by steam at 95-98 °C and a set of servo-mechanisms fitted outside the sterile chamber for the operation of bags filling and capping devices. Residual substances accumulated inside the sterile chamber are constantly sucked by means of the vacuum generated by a small liquid-ring type vacuum pump. One Stainless Steel AISI 304 Frame supporting the filling heads, housing also the Electric Control Board and all the service Accessories. N° 1 Free Rollers Inlet/Outlet Drum Conveyor placed over the two filling stations, having AISI 304 stainless steel frame with galvanized idle rollers and adjustable feet; Whole dimensions: Width: 700 mm. Length: 3.000 mm. approx. N° 1 Control Board made of stainless steel AISI 304 housing the electronic equipment for the cycle control and adjustment, the motors control and protections. Including also: PLC (Programmable Logic Controller) to handle all process phases, i.e. C.I.P. Washing, Sterilization and Production cycles of aseptic filler; controlling pressure and temperature parameters to grant the sterile		
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		condition of aseptic filler, the inner movement of aseptic filler head and weight dosing cycle by weighing cells; Touch-Screen Panel with liquid-crystal display for set-up, reading and control of the cycle operating parameters (pressures, temperatures, weighing, ...) by the display shows also the flow diagram of the product, of washing water and vapor; the alarm conditions as well as all most important running conditions; the alarm menu informs the Operator on about the kind of alarm message, helping him to discover any possible fault and showing the part of the installation needing to be adjusted or replaced, as well; Electric and Pneumatic cable connection from Electric Board and Pneumatic Panel to the relevant users. Predisposition: The aseptic filler should be predisposed for cleaning and sterilization by mechanical connection to the piping of existing C.I.P. (Cleaning in place) plant. Whole dimensions (mm): Width: 850, Length: 3,000, Height. 2,300 Consumption: Installed electric power: 3.0 kW Steam consumption: 120 kg/h at 10 bar Water consumption: 0.4 m³/h Compressed air consumption: 100 NI/min. at 6 bar FILLED BAG/DRUM LABELS PRINTER - Printer should print the self-sticking labels to be manually applied onto the drum should include – N°1 Electronic printer "ZEBRA" Brand (USA) with digital weight repeater for printing of follow data: Progressive number, Packaging date, Packaging time, Filling head code, Product code, Gross weight, Tare weight, Net weight etc. Printing of auto-adhesive label A5 size (154 length by 97 height mm.) by hot-transfer with ink-bend FREE ROLLERS OUTLET CONVEYOR OF WEIGHED FULL DRUMS placed in line with the previous Roller Conveyor on the same horizontal axe to evacuate the full drum after filling allowing the Operator to apply manually the labels on the drum, going to the palletizing system of drum; having AISI 304 stainless steel frame with galvanized idle rollers and adjustable feet, Whole dimensions: Width: 700 mm. Length: 1.500 mm. No 1 SET OF SUGGESTED SPARE PARTS FOR ABOVE ITEMS The bidder should warrant the system for 3 years against any manufacturing defect and offer comprehensive AMC for 3 years. Price quoted should be inclusive of all charges for complete operational system, clearances, testing installation and commissioning charges. AMC of system for 3 years, taxes and others charges should be quoted separately.		
24.	Biscuit Making Line	Semi-automatic pilot scale biscuit production line suitable for small scale production of different types (short dough / hard dough / cracker), sizes and shapes. The line should essentially consists of flour shifting, sugar processing, ribbon blending, dough mixing, sugar/fat/oil dosing, dough feeding, sheeting/shaping, cutting, conveyor type multizone baking, spraying, cooling, stacking, packaging, etc. Approximate capacity: 500 – 1000 kg/day. The system should be complete in all respect for independent operation/production.	1,500/-	0.40
25.	High Pressure Processing System	High pressure processing equipment for processing of liquid and semisolid food products with following specifications: - Working pressure up to 900 MPa - Working volume up to 2.5 Litre - Facility for temperature control in the range -20 to 120 °C with an accuracy of ±2 °C. - Complete automated system with data acquisition system	15,000/-	5.00

		• Software for real time display and control of process parameters using PLC. • Temperature sensors inside the vessel for measuring temperature of process fluid as well as inside the specimen sample • Controlled pressurization and depressurization • Heating System / Cooling system type - Circulated fluid • Vessel - compound barrel • Closure Handling - Fully hydraulically actuated remote operation. • Time to pressure - 200s to 2000s • Pressure Measurement - Strain Gauge Transducer • Pressure Indicator/Controller - Digital with electronic control • 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 alongwith training at our laboratory.		
26.	Endotracheal Tubes for Large Animals of Various Sizes	• Nonsterile • Radiopaque • Autoclavable • Replaceable cuff and inflation line • 12 mm and up are supplied with a funnel type adapter only • Medical grade silicone	1,500/-	0.01
27.	Field Cone Penetrometer with Logger	Measurement unit: Cone index (PSI or kPa) Resolution : 1 (2.5 cm), 5 PSI (35 kPa) Accuracy : +/- 0.5 " (1.25 cm), + 15 PSI (+ 103 kPa) Ranga: 0 – 18 " (0 – 45 cm) Maximum inserting Speed : 72" / min (182 cm/min) Maximum applied load : 210 lbs Power : m2AA alkaline batteries approximately 12 months life With Logger Capacity : 772 profiles without GPS, 579 profiles with GPS/DGPS Display : 16 characters, 2 line LCD Weight : 2.75 lbs (1.25 kg)	1,500/-	0.06
28.	23 Kw On Grid System (Three Phase) Solar Power Generation System	23 Kw Solar Panel, 25 Kw Solar Hybrid Smart Inverter with Inbuilt Controller, Suitable D.B. with Suitable Protection, Mounting structure for solar Panel, Cables and Accessories with Fitting Charge. Rate quoted should be inclusive all applicable taxes, transportation, other miscellaneous charges and installation charges.	1,500/-	0.51
29.	RO Plant	Design, Supply, Installation and Commissioning of RO Plant 250 Litres per hour <u>Raw water Pump:</u> Make Kirloskar or equivalent Type Mono block Model Star Discharge 1.0 cum/hr Head 2.5 kg/cm². Motor 0.37 kw 1 Φ Suction / Delivery 25 mm Quantity 01 No. (1w)	1,500/-	0.06

Pressure sand filter:

Type	Down flow
Model	FC 50
Diameter	250 mm
Height	1350 mm
MOC	FRP
Capacity	1.0 m ³ /hr
Filtering media	40 kg 16/32
Valve	20 NB TM MPV F
Quantity	01 No.

Activated carbon filter:

Type	Down flow
Model	FC 50
Diameter	250 mm
Height	1350 mm
MOC	FRP
Capacity	1.0 m ³ /hr
Carbon	20 kg
Valve	20 NB TM MPV F
Quantity	01 No.

Micron cartridge filter:

Model	10" Blue L
Specifications	5 micron, 10" long
Capacity	1.0 m ³ /hr
MOC of housing	ABS
MOC of cartridge	PP Spun
Quantity	01 No.

Anti-scalent dosing pumps:

Make	Initiative
Type	Electro magnetic
Model	E dose
Capacity	1.5 LPH @ 3.5 kg/cm ²
Dosing tank	50 Ltr Sintex
Dosing chemical	Anti-scalent
Quantity	01 No.

High Pressure Pump:

Make	CNP / Equivalent
Type	Vertical multistage
Model	MVI 114
Discharge	1.0 cum/hr
Head	11 kg/cm ² .
Motor	1.1 kw 3 Φ
Suction	25 mm
Delivery	25 mm
Quantity	01 No. (1w)

Reverse Osmosis System:

Capacity	250 LPH
Module type	Spiral wound
Membrane specification	TFC Polyamide
Make of membrane	GE/Equivalent
No of membrane	1 no
No of housing	1 no.
Quantity	01 set.

Electrical control panel:

Model	ASTRO CONTROLLER
Type	RO 13 with Conductivity display

		Make Aster Quantity 01 No. <u>Ultra violet purifier:</u> Model UCS Capacity 500 LPH Make Sukrut Quantity 01 No. <u>Instruments</u> : Pressure gauge (0 - 7 kg/cm² range – WIKA/Equivalent): 1 no. Pressure gauges (0 - 21 kg/cm² range – WIKA/Equivalent): 2 nos. Pressure switches (low & high – Aster/Equivalent): 2 nos. Conductivity meter (Panel in built Aster/Equivalent): 1 no. Rate of flow indicators (0 – 500 lph – Aster/Equivalent): 1 no. UV sterilizer (Capacity- 500 LPH- Sucrut or Equivalent): 1 no. Note: 1. Machine installation and services is directly through the parent company. 2. RO Plant Manufacturer should be certified with IMA. 3. RO Plant Manufacturer should be certified with NABL. 4. The system should have microprocessor based control panel for ease to operation. 5. Complete machine should be skid mounted with fully covered from front side for safety precaution and aesthetic look.		
30.	LISST instrument for in situ measurement of suspended sediments in stream flows	Capabilities to measure Particle size distribution, Particle volume concentration, Volume scattering function, Optical transmission, Depth, Temperature. Sediment size distribution and scattering angles - • 32 log-spaced size classes • 1.25 – 250 or 2.5 – 500 µm size range (equivalent to scattering at 0.08-15° or 0.04-7.5° in water, respectively) Sediment concentration - ✓ Range: 1 – 800 mg/l for standard 50 mm optical path (actual range depends on grain size) ✓ Resolution: < 1 mg/l	1,500/-	0.06
31.	DISTO laser distance meter with set of solar power system	Required technical specifications of the system are as follow: <u>Measuring range:</u> 0.05 m up to 60 m <u>Type:</u> accuracy ± 1.5 mm (± 0.06in) <u>Illuminated:</u> 3-line display	1,500/-	0.01
32.	Induction Kadai	Induction <i>mava kadai</i> having capacity of 5 kg mava/batch (about 25 liters milk handling capacity) working on the principle of induction heating system and rotating stainless steel vessel fabricated from AISI 304 grade S.S. The volumetric capacity of the rotating S. S. vessel should be of minimum 50 liters volumetric capacity equipped with adequate capacity electric motor and drive arrangement. Induction power rating of the <i>kadai</i> should be of about 15 kW. The equipment should consist of necessary mountings and accessories, scraping mechanism, control panel to regulate the power, speed and measurement of energy.	1,500/-	0.03
33.	Proover	It should be designed to use as intermediate or first proover for the bread dough pieces. It should be an overhead type (as indicated in drawing) possessing following specifications:	1,500/-	0.15

		• Having about 100 dough holding pockets made up of non-sticky and non-absorbing materials. • Resting time for dough pieces in the cabinet is about 5 minutes and must be adjusted with the help of conveyance speed of pockets. • Fitted with ultraviolet lamp for bacteria and mildew prevention. • Capable to adjust with rounder and moulder. • Dough contact parts should be made of food grade stainless steel. • Compliant with the prevailing hygienic standards and safety devices. • The system should be complete with motor, LCD display controller / Panel box, and all other necessary spares and accessories like bearing, fasteners etc. of reputed companies having ISI / ISO standards etc. • The rate should include all the charges like transportation, packing and forwarding, taxes etc. with complete installation, demonstration at our laboratory.		
34.	Natural Gas Fire Steam Boiler	Non IBR Natural Gas fire (Automatic) Steam Boiler 200 Kg steam capacity design for safe operation Shell & Tube type Economizer equipped with control panel and all safety mountings, High combustion efficiency and operational efficiency, instant, easy conversion to different fuels. Steam boiler should also equip cyclon separator, blow down valve, NRV for feed water, steam pressure gauge, imported burner, pressure switch, spring loaded safety valve, steam temperature controller cum indicator, dust & vermine proof control panel, over load relay, hooter alarm for abnormal operational conditions. Gas inlet pressure : 20- 100 milibar. Gas flow rate : 25 nm³/hr . The rate should include pipe fitting with commissioning. Give the rate for 15 mm diameter stem line erection & commissioning per meter.	1,500/-	0.10
35.	Pulverizer	25 to 50 kg capacity pulverizer convenient for making powder from different dry fruits and vegetables i.e. sapota, banana, aonla, tomato, potato, guava and dry fruits. Diameter : 12" All the contact parts should be of Stainless Steel	1,500/-	0.03
36.	Thermal Cycler	The machine should have following features - • Options for Interchangeable blocks with excellent thermal precision and optimization • Broad and accurate temperature gradient • Reliable and easy to use • Low noise level • Should accept almost all standard PCR plastics Ease-of-use: Ease-of-use is the key feature of the protocol should be displayed graphically with touch screen, and the programming is simple with intuitive menus, with high efficiency output. Technical specifications: • Block configurations: 96 well x 0.1-0.2 ml • Gradient range: Max 30°C • Max ramp rate: 3 -6°C/s • Thermal uniformity: +/- 0.4-0.5°C upto 95°C • Thermal accuracy: +/- 0.2-0.3°C • Thermal range: 0-100°C	1,500/-	0.15

		• Size : Width 20-25 cm, depth 45-50 cm, height 22-25 cm • Weight: 10-12 kg • Power requirements: 100-240 V input power, 50-60 Hz, 600-800 W • Communications Ethernet, USB memory port • Heated lid Manually adjustable. Over-tightening protection system. • User interface Semi-graphical • The machine should be supplied with standard warranty period provided by the company. However, cost of extended warranty may be quoted separately in technical bid. • Certifications CE		
37.	Fluorescent Microscope	<u>Technical specifications:</u> Upright model with Transmitted Light Bright and LED Fluorescence for Dark field & Phase contrast. <u>Microscope Stand:</u> • International standard certification with special skin-friendly coating material, rugged and sturdy stand with low positioned co-axial coarse and fine focus knobs. • Built-in stabilized power supply for 10-12V/40-50w illuminator with mains connection to 110-240V, 50/60Hz. <u>Binocular tube:</u> • Inclined Binocular Tube, Trinocular tube as an option for camera upgrade. Interpupillary adjustment from 55 to 75 mm Side nt opf designed Binocular tube with swiveling for comfortable two position height observations. <u>Eyepiece:</u> • Wide field 10x with a field of view 20 mm or more with focussable front lens with provision to insert graticules including rubber eyecups. <u>Nosepiece:</u> • Back tilted Quintuple revolving nosepiece with precision click stops to accommodate 5 objectives. The nosepiece should have a slot for insertion of analyser for Pol study upgradation. • Objective indicators for fast identification of magnification in use. <u>Objectives:</u> • Infinity corrected optical system including objectives. • Plan Achromatic objectives for Bright field, Dark field and fluorescence with magnifications 5X/0.12, 10X/0.25, 40x/0.65 and 100x/1.25 oil . 40x and 100x objectives should have spring loaded front lenses. The microscope should have optional 50x/1.0 oil, 50x/0.80 dry; 63x/0.95 dry objective corrected for use with slides without cover glass specimens like microbiology applications. • Optional Phase contrast objectives should be available for phase applications. All the objectives should be of Anti-fungal treated. <u>Condenser:</u> • Abbey system condenser with 0.9/1.25 NA with optional low power 2.5x objective lens upgrade. Optional Universal turret Condenser 0.9/1.25NA with turret for Bright field, dark field and Phase contrast (3 positions). <u>Stage:</u> • Dual layered mechanical stage with hardcore anodized surface with 210x145mm with XY movement of 75x30mm with low positioned co-axial X Y movement knobs with friction adjustment mechanism.	1,500/-	0.30

Category-II: TRACTOR & FARM EQUIPMENT

38.	Fodder Chopper cum Trolley Loader	Tractor operated fodder chopper cum trolley loader to be used for chopping hard and soft stem fodder crops along with other crop like wheat, paddy, cotton, castor etc. The machine should be tractor PTO operated and has counter rotating serrated discs for harvesting the fodder and a flywheel equipped with serrated knives for chopping and conveying the cut fodder and a chute for guiding the chopped fodder into trailer attached behind the tractor. The weight of the machine should be supported by a support tyre. <u>Required specifications are as follows:</u> No. of Cutting Rows: 1 or 2 Cutting width: 1200 to 1400 mm No. of Cutting Disc: 2 to 3 No. of Shredding Knife: 10 -14 Input RPM: 540 and 1000 Chute Type: Long Chute which can able to throw chopped fodder into trolley. Crop Guide: 2 nos. (one on each side of row) Depth Wheel: Provided with height adjustment Blade Material: Boron steel Power Drive to Fly wheel: Positive drive through Telescopic Cardan Shaft with universal joint and shear bolt safety device Drive Shaft: Telescopic Cardan shaft with universal joints and shear bolt safety device.	1,500/-	0.05
39.	Disc Harrow	Type: Tractor operated Offset type Disc harrow Number of Gangs: Two (One gang with notch type disc) Number of disc : Six in each gang Disc diameter : 60 cm Disc thickness : 3 mm Width of harrowing : 150 cm	1,500/-	0.02
40.	Mini tractor operated rotavator	A rotavator having working width-0.9-1.1 m, L type / C type blade useful for different soil and applications with adjustable depth skid, safety guards and PTO attachment	1,500/-	0.02
41.	Tractor with Implement	Specifications for Tractor are as mentioned below: Engine - Horse Power Type HP: 40-50 HP Number of Cylinders: 4 Rated Engine Speed (rpm): 2000-2400 Air cleaner: 3 Stage Oil bath type with Pre-Cleaner/Cyclonic Pre-Cleaner with oil bath and paper filter twin combination Cooling system: Water Cooled Transmission - Type: Constant Mesh/Sliding type Number of Speeds: 8F+2R Speed Forward kmph: 2.5 to 32 Speed Reverse kmph: 4.05 to 11.9 Clutch Type: Heavy Duty Diaphragm type - 250-300 mm (Dual clutch optional) PTO: 6 Splines, 540 rpm Brakes - Service Brakes: Dry Disk Brakes (standard) / Oil Immersed Brakes (optional), Parking Brakes Head Leaver excluded- Tongle link Locking Mechanism	1,500/-	0.21

		Steering: Mechanical Re-Circulating ball and nut type/Hydrostatic Type (optional) Hydraulics - Type: CAT II inbuilt external check chain Loading Capacity (kg): 1600-2000 Diesel Tank Capacity (ltr): 45-50 Maximum Length (mm): 3500-3600 Height up to exhaust pipe (mm): 2100-2300 Wheel Base (mm): 1900-2000 Operating Weight (kg): 2000-2500 Tyres Front: 6.0 - 16 Back: 14.9 – 28 Implement (Disc Harrow): Specification of Disc Harrow Power source : 40-50 HP Hitch Type: Cat. I & Cat. II Fits Land Pride Quick Hitch Cultivation width: 50" - 60" Height: 34"- 40" Disc blade sizes: 16"-20" No. of disc blades: 16 Disc blade types: Notched or smooth Gang tube: 3" x 11/2" -3.5" x 2 1/2" Gang axle: 1-1.5" Square high carbon steel Transportation Wheel		
42.	Rotavator	Type: Tractor PTO operated Rotavator Power source: Tractor of 35 HP and above Hitch Type: Three point, CAT-I/CAT-II Working width (mm): 1500-2200 Type of blade: C shape with 25 mm overlap of blades or L/ J shape as per demand Thickness of blade (mm): 7-8 (min.) No. of Blades: Minimum of 36 (Depending on sizes) Distance between consecutive flanges (mm): 200-242 (depending upon type and shape of blade) Total number of flanges: 6-10 Number of blades per flange: 6 (max.) Diameter of rotor shaft (mm): 85-90 Rotor diameter (including flange and blade mounted on flange, mm) : 440-460 Revolution of rotor shaft (rpm) : 180-240 (Single speed/ Multi Speed Variants) Side Drive : Gear drive/Chain drive variants Depth control mechanism : Arc shape skid on both side of rotavator	1,500/-	0.05
43.	Power Sprayer	Power source : 35-40 HP Tank capacity: 400 ltr Working pressure: Ideally 90-110 psi Maximum pressure: 350-400 psi Rpm: PTO rpm 540 Pump discharge rate: 30-36 lpm @ 950 rpm Boom type: HTT40 / HTT50 Boom length in ft: 40 -50 No. of nozzles: 25 -31 Spacing in inch: 18-22 Swath: 12.2 mtr/40 ft, 15.24 mtr/50 ft Total weight: 140-170 kg L x W x H (in mm): 2250 x 1050 x 2250	1,500/-	0.03

44.	Maize Planter	Power source: 40-50 HP Tractor or above Hitch Type: Three point, CAT-I/CAT-II Mounting mechanism: Through 3 point linkage with tractor Power drive from tractor to machine: Tractor PTO at 540 rpm No. of rows: 3-5 Row to row distance: 30-75 cm, adjustable Furrow openers: Double disc with provision for adjustment of depth Metering mechanism: A vacuum seed metering mechanism arranged in combination with a seed hopper for uniformly dispensing seeds to the ground	1,500/-	0.03
45.	Castor Thresher (Mini)	Mini Castor Thresher (1.75 feet) with capacity in the range of 16-18 q./ hr., with double shaft, heavy duty gear box and two set of screens for Castor. The Thresher should also be capable of winnowing / separating threshed seeds, partially threshed seeds and un-threshed castor pods. The Thresher should comply safety standards as per ISO: 9020. If the thresher has been tested by any Government of Gujarat/ India approved Testing Centre, a copy of testing report must be attached. Literature/ leaflet with complete Technical specifications and photo must be submitted. If the rates are approved, the supplier party has to demonstrate the Thresher working in filed conditions.	1,500/-	0.06
46.	Multi-purpose Thresher	Multi-purpose thresher suitable for threshing Wheat, Cumin, Chickpea, Safflower etc. should be equipped with – 1. Heavy double shaft bearings 2. Auto-feeder 3. Double fly wheel 4. Minimum size: 2.5 Ft.	1,500/-	0.10
Category-III: COMPUTER & PERIPHERALS				
47.	Laptop	Intel Core i5-3230M Processor (2.60GHz 1600MHz 3MB) Windows 7 Professional 64 12.5" HD LED 1366x768 4.0GB PC3-12800 DDR3 SDRAM 1600 MHz	1,500/-	0.05
48.	PC	4th Generation Intel® Core™ i5 Processor Windows 8 Single Language 64 Bit 4GB Memory 1TB Hard Drive		0.05
49.	Portable Computer Printer	- Memory 64 MB, - Print Resolution Up to 1,200 x 6,000 dpi (Horizontal x Vertical) , - Paper Input (Standard Tray) Up to 100 sheets , - Paper Output Up to 50 sheets , - Power Consumption - Copying Mode: Approx. 16W Ready Mode: Approx. 2.5W.		0.01
50.	Power Back Up Systems	- Watts: 660 Watts / 1100 VA - Output Voltage : 230V - Output Power Capacity : 660 Watts / 1100 VA - Max Configurable Power : 660 Watts / 1100 VA - Nominal Output Voltage : 230V		0.01
51.	Portable Storage Devices	Seagate Backup Plus Slim 1TB Portable External Hard Drive		0.01

Category VI: PRACTICAL LABORATORY KITS

52.	Electronics Practical Laboratory Kit (Plug-in) – 2 Nos.	One kit should consist of following parts / components A to R as mentioned below. (Quote single price for items A to R) A. <u>OPERATIONAL AMPLIFIER LAB KIT NVIS 6578</u> It should meet following technical specifications – It should be compact portable platform to perform more than 12 Experiments, should have in-built power supply, Bread Board, In-built Function Generator, Compact and slim design, Easy to carry and must be supplied with soft copy of learning material. <u>Detail specifications are as under –</u> Mains power supply: 90 - 270V $\pm 10\%$, 50Hz (SMPS) Fixed DC power supply: +12V, Regulated, -12V, Regulated +5V, Regulated, -5V, Regulated Variable DC power supply: +1.5V to +10V Regulated using LM317: -1.5V to -10V Regulated using : LM337 Function Generator Sine Wave; Frequency : 1KHz to 100KHz; Frequency Control : 100KV, 10 turn Potentiometer; Amplitude : 0V to 5Vpp; Amplitude Control : 100KV, Single turn Potentiometer; Triangular Wave; Frequency : 1KHz to 100KHz; Frequency Control : 100KV, 10 turn Potentiometer; Amplitude : 0V to 5Vpp; Amplitude Control : 100KV, Single turn Potentiometer Square Wave; Frequency : 1KHz to 100KHz Frequency Control : 100KV, 10 turn Potentiometer Amplitude : 5Vpp, fixed Bread Board Dimension(mm) : 175 x 61 x 10; Distribution strips : 2; Distribution holes : 200; Terminal holes : 640 Op-amp : IC uA741 (2 Nos.) All pins terminated on 2 mm; Banana Sockets; Supply Voltage: $\pm 22V$ max.; Differential Input Voltage : $\pm 30V$ max.; Input Voltage : $\pm 15V$ max.; Slew Rate : 0.5 V/μs (VCC = $\pm 15V$) Resistor Bank SMD Resistance 1KV 1% 1/4W (5 Nos.) SMD Resistance 10KV 1% 1/4W (5 Nos.) SMD Resistance 100KV 1% 1/4W (5 Nos.) Diode : Diode 1N 4007 Capacitor Bank : Electrolyte Cap. 1mf/63V Disc cap. 1nf/63V Disc cap. 10nf/63V Disc cap. 100nf/63V Variable Resistance bank 1KV Single turn Potentiometer (2 Nos.) 10KV Single turn Potentiometer (2 Nos.) 100KV Single turn Potentiometer (2 Nos.) 1MV Single turn Potentiometer (2 Nos.) Fuse : 500mA, slow blow Dimensions (mm) : W 350 x D 280 x H 55 B. <u>Control System Kit NVIS 3000A</u> It should be equipped with Features with DATA Acquisition system, Analog Input (ADC) channels, 1 Analog Output (DAC) channels, 1 PWM Output, 22 Digital Input and Output channels, 10-bit ADC resolution, Data logging facility USB interface, Two unity gain given to strengthen the weak signal from any Sensor, Removable screw terminals for easy signal connectivity,	1,500/-	0.06
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		Exhaustive course material & references and should have following features - Open Loop Control System; Close Loop Control System; On board Temperature Sensor and heater; Feedback concept; P, PI & PID Control System using software; External DC Motor with encoder; On board LED lamp and Light Sensor; On board Buzzer for Alarm; On board Infrared Sensor; On board Relay interface; On board LED bar display; On board Servo Motor control; DC Motor speed control; Light intensity control V/F, F/V & V/I conversion; Breadboard for circuit design <u>Further required specifications are as under -</u> DAQ Frequency Counter : 0 to 6 MHz (Square Wave); DAQ PC Interface : USB 2.0; Weight : 1.5 kg (Approximately); Mains Supply : 230V +/- 10%, 50/60Hz; Power Consumption : 4VA (Approximately); Included Accessories : Nvis 630 (Data : 1 no. Acquisition System); Patch cords : 12 nos.; SMPS Power Supply : 1 no.; Optional: Laptop; Operating Voltage : +5V, - 5V, +12V, -12V; Servo Motor : +5VDC; DC Motor : +12VDC; Temperature Sensor : 10mV/ C; Light Sensor : Photo Conductive Cell (LDR); Light Source : 2 LED's; V/F : Input 0-5V Output 0-5 KHz (Approximately); F/V : Input 0-5 KHz; Output 0-5V (Approximately); V/I : 4 to 20mA; Clock Generator : 0-43.50 KHz; SPST Relay : +5V; DPDT Relay : +5V; De-Bounce Switch : Monostable (5V output); PWM : 1 no.; Buzzer : +5V Switches : IR Switch, DIP switch; Test Points : 25 DAQ Analog Inputs : 4 Inputs with 10 bit resolution DAQ Analog Output : 1 Output 10 bit resolutions DAQ Digital Inputs : 11 TTL Inputs DAQ Digital Outputs : 11 TTL Outputs DAQ Unity gain amplifier : 2 (0V to 10V) C. <u>Flip-Flop Training Kit NVIS 6555</u> It should have following features - Exclusive and compact design; Adaptable illustration of Flip-Flops; +5V SMPS Adaptor provided with the trainer 4 power supply; Designed, considering all the safety standards Online product tutorial; Low cost <u>Additional required specifications are as under –</u> Input : +5V DC Logic levels - +5V : HIGH(Logic 1), 0V : LOW (Logic 0) Dimensions (mm) : W 240 x D 345 x H 110 Weight : 1kg (approximate) D. <u>Logic Gates Training Kit NVIS 6551</u> It should have following features / specifications - Exclusive and compact design; Straight forward representation of all logic gates; +5V SMPS Adaptor provided with the trainer for power supply; Designed by considering all the safety standards; Online product tutorial; Low cost product including illustration of all logic gates <u>Additional required specifications are as under –</u> Input : +5V DC Logic levels +5V : HIGH (Logic 1) 0V : LOW (Logic 0) Dimensions (mm) : W 240 x D 345 x H 110 Weight : 1 Kg.		
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		<u>E. Transistor Characteristics Training Kit NVIS 6502</u> It should have following features - In-built Ammeter and Voltmeter; On board Fixed and Variable DC Power Supplies; Digital display for displaying Voltage and Current; Three important characteristics of a Transistor can be performed on this board: Input characteristic, Output characteristic, Constant current transfer characteristic <u>Additional required specifications are as under –</u> Fixed DC Power Supply : +5V, -5V, +12V, -12V Variable DC Supply : $\pm 1.5V$ to $\pm 11V$ Transistor : BC547, BC557 Ammeter - Range : 1μA to 200mA Display : 3½ digit Voltmeter- Range : 1mV to 200V Display : 3½ digit Mains : 230V AC $\pm 10\%$ Dimension (mm) : W 450 x D 280 x H 113 Weight : 2kg (approximate) <u>F. Universal Gates Training Kit NVIS 6552</u> Kit should have following features / specifications - Exclusive and compact design; Straight forward representation of Universal Gates; +5V SMPS adaptor provided with the trainer for power supply; Designed by considering all the safety standards; Online product tutorial; Low cost trainer including illustration of logic gates design using universal gates <u>Additional required specifications are as under –</u> Input : +5V DC Logic levels +5V : HIGH (Logic 1) 0V : LOW (Logic 0) Dimensions (mm) : D 345 × W 240 × H 110 Weight : 1kg (approximate) <u>G. Clipper and Clamper Training Kit NVIS 6511</u> It should have following features specifications - Built-in 1KHz Sine Wave Generator; Good quality, reliable sockets and test points are provided; Strongly supported by systematic operating instructions; A low cost training system including many experiments <u>Additional required specifications are as under –</u> Mains Supply : 230 V $\pm 10\%$, 50 Hz Sine Wave Generator : 1 KHz, 15V Vpp (approx.) DC Power Supply : 0 - 5 V (vary through (2No.) rotary switch for specific voltage level); Weight : 1.7 Kgs. (approx.) Dimensions (mm.) : W 260 × D 355 × H 125 <u>H. Power and Differential Amplifier Kit NVIS 6522</u> It should have following features - In-built DC Power Supply; In-built Sinewave Generator; Easy Illustration of different types of amplifier; Online product tutorial <u>Additional required specifications are as under –</u> Mains supply : 230V $\pm 10\%$, 50Hz DC power supply: Fixed : +12V, -12V, +5V, -5V Frequency: Variable : 10kHz to 100kHz Amplitude Variable : 0 to 5Vpp Fuse: Slow Blow : 500mA Dimensions (mm) : W 345 x D 240 x H 110 Weight : 2kg (approximate)		
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I. Kit for Electricity Lab Practicals NV 6000

It should have following features / specification -

Stand alone operation; Durable, Easy to use kit; Include all the Basic Electrical fundamentals; Solderless connections; Complete set of coils and cores to understand the Basics of Electro-magnetic induction and Transformers with a component box to perform all the experiments; CBT covering all the experiments; Online product tutorial

Additional required specifications are as under –

DC Power Supply : 5V, 200mA

AC Power Supply : 6V, 1A

Relay : 5V

Galvanometer : 30 - 0 - 30

Galvanometer Resistance : 80W

Light Bulbs : 6V

Potentiometers : 25W, 1W, 10kW, 1W

Switch : 1 Pole, 2 Way Toggle type

Core Types : E, I, U

Fuse : 1A

Power Supply : 230V $\pm 10\%$, 50Hz

Dimension (mm) : W 345 x D 245 x H 105

Coils

No. of Turns	Wire Dimension (mm)	Maximum Current (Amp)	Inductance (Approximate)
200 Turn	0.818	1.46	590 mH
400 Turn	0.573	0.728	2.3 mH
800 Turn	0.404	0.363	9.2 mH
1600 Turn	0.251	0.144	34.2 mH
3200 Turn	0.170	0.072	134 mH

Training System Should Include:

1. Components box with -
 - a. Resistors
 - b. Capacitors
 - c. Transistors
 - d. Diode
 - e. Potentiometer
2. E, I, U cores
3. Set of coils
4. Magnetic compass
5. Bar magnets
6. Screw driver
7. Multimeter
8. Connection patch cords

J. Adders and Subtractors Experiment Kit NVIS 6554

It should have following features -

Adaptable illustration of Binary Adders and Subtractors; +5V SMPS Adaptor provided with the trainer for power supply; Designed by considering all the safety standards; Experimentation with Adders and Subtractors; PLUG and PLAY design; Should be capable of performing multiple experiments simultaneously.

Additional required specifications are as under –

Input : +5V DC

Logic levels: +5V : HIGH (Logic 1)

0V : LOW (Logic 0)

Dimensions (mm) : W 240 x D 345 x H 110

Weight : Approx. 1 Kg.

		K. <u>Arithmetic and Logic Training Kit NV 6563</u> It should have following features - Stand alone system; Easy switching between arithmetic and logic mode operations; 16 arithmetic operations; 16 logic operations; Easy illustration of ALU operation; LEDs for visual indication of input and output logic states; e-Manual <u>Additional required specifications are as under –</u> DC power supply : +5 V Logic levels +5 V : High (logic 1) 0 V : Low (logic 0) LED Indication : LED will be 'on' for logic high state and will be 'off' for logic low state Dimension (mm) : W 240 x D 345 x H 110 L. <u>GSM Remote Control Module NVIS 650</u> It should have following features / specifications - Remotely operated; SMS Control to Start / Stop and get current status through; message alert; Very easy to install and to operate; 5 Users can be registered to Nvis 650; Password protection; Mains status alert through SMS; Pump ON/OFF LED indication; Delete and updation of user registration; Automatically sends SMS when input activated; It can be operated in GSM / Manual mode; Also suitable for Single phase / Three phase pumps; Quad-band GSM for worldwide use <u>Additional required specifications are as under –</u> GMS Band : 900/1800MHz Relay rating : 110 / 230V, 5A Operating Voltage (AC) : 110 / 230V Power Consumption : 720 mW Approx. Operating Temperature : 0° to +50° Celsius Dimensions (mm) : W 140 X H 120 X D 55 M. <u>LDR Characteristics Kit NV 6536</u> It should have following features / specifications - Unique and Compact design; Stand alone operation; Simple representation of LDR; Characteristics Microcontroller based LCD Displayed-Manual <u>Additional required specifications are as under –</u> Mains supply : 90 - 275 V, 50 / 60 Hz DC power supply : +12 V, -12 V, +5 V Voltmeter (2Nos.) : 0 -12 V Weight : 1.21 Kg. (approx.) Dimensions (mm.) : W 240 × D 345 × H 110 N. <u>Transient Analysis of RLC Circuits NVIS 6515M</u> It should have following features / specifications – Easy experimental illustration of Transient Analysis of RLC circuit; Built-in Signal Generator; Low cost; Online product tutorial <u>Additional required specifications are as under –</u> Mains Supply : 230V ±10%, 50Hz Dimensions (mm) : D 250 x W 150 x H 80 Weight : 700g (approximate)		
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		O. <u>Transient Analysis of RC/RL Circuits NVIS 6514</u> It should have following features / specifications – Easy experimental illustration of Transient Analysis of RC and RL circuits; Built-in +5V DC Power Supply; Built-in Signal Generator; Low cost ; Online product tutorial <u>Additional required specifications are as under –</u> DC Power Supply : +5V Mains Supply : 230V $\pm$10%, 50Hz Dimensions (mm) : D 250 x W 150 x H 80 Weight : 700g (approximate) P. <u>Sensor Module (NVIS) MC 15</u> It should have following features / specifications – Differential Input Pressure Transducer; Temperature Sensor interface; High Power Resistance for increasing the temperature; Precise Signal Conditioning; Self contained and easy to operate; Sensitive, Linear, Stable and Accurate; PC based programming; Expansion connectors for plug in with Microcontroller unit and prototyping area; Every pin is marked in order to make work easier; Input/Output & test points provided on board; Exhaustive Learning Material with required additional Display Module to run this KIT. <u>Features of Display Module:</u> 16 x 2 Characters LCD interface 4 Seven segment display interface 4 LED bar graph interface 4 PC based Programming 4 Expansion connectors for plug in with Microcontroller Unit and prototyping area 4 Every pin is marked in order to make the work easier 4 Input/Output & test points provided on board 4 Ready Experiments 4 Exhaustive course & reference material 4 Learning Material CD <u>Additional required specifications are as under –</u> Temperature Sensor : LM35 0 - 100°C Pressure Transducer : 0 to 100 psi, Differential Input Pressure Gauge : 0 to 100 psi Pressure Vessel : 0 to 100 psi Safety Valve : 0 to 100 psi Foot Pump : 0 to 150 psi Power Supply : From Microcontroller development platform NV50XX series Interface : 20 Pin FRC Cable Test point : 2 nos (Gold plated) Dimension (mm) : W 255 x D 155 x H 80 Weight : 280 gms (approx.) Learning Material : CD (Theory, procedure, reference) Additional Accessories : Patch cord : 2 nos., Foot Pump : 1 no., Pressure Vessel : 1 no. Learning material CD : 1no. <u>Technical Specifications of Display Module:</u> Display : 16 x 2 LCD Contrast control : 0 - 5 V (Variable) Backlight control : 0 - 5 V (Variable) Seven segment display : 4 Nos. Led bar graph : 1 No. Power supply : From Microcontroller development board with Programmer Interface : 20 pin FRC cable		
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		Test points : 32 Nos.; Dimensions (mm) : W 250 x D 15 x H 80 Weight : 380 g (approx); Accessories - 20 pin FRC cable, Learning material CD Q. <u>Universal IC Tester (NVIS) NB 9352</u> It should have following features / specifications - Test a wide range of Digital IC's such as 74 Series, 40/45 Series of CMOS IC's, It should test Microprocessor 8085, 8086, Z80 to test Peripherals like 8255, 8279, 8253, 8259, 8251, 8155, 6264, 62256, 8288, 8284; Auto search facility of IC's; Test by: Truth table/sequence table comparison; tests a wide range of Analog Ic's such as ADC, DAC, Opamp, 555, Transistor Arrays, Analog Switches, Waveform Generator, Line Drivers, Voltages Regulators, PLL's, VCO, PWM Generator, Sample & Hold, Voltages References, Opt couplers, Comparators, Voltages Followers and Others; Seven segment display of common cathode & common anode type ZIF: Two Nos. of 40 pin DIP ZIF sockets for Digital & Analog IC's; Keys: 50 cherry keys Key pad with numerical & functional keys; Display: 16x2 Backlit LCD Display; Supply Input Voltage: 230V AC <u>With Following Accessories:</u> Digital Ic's; T.T.L. 74xxx Series; Cmos (40/45 Xx Series); Cpu; Peripheral; Memory; Real Time Clock; Phase Frequency Detector; Decoder/Encoder; Supervisory Circuitry; Seven Segment Display Oscillator / Divider; Linear Ic's; Analog to Digital Converter, Digital to Analog Converter, Comparator, Op-Amp, Voltage Follower, Line Drivers & Receiver, Transistor Array, Analog Switch, Waveform Generator, Timer, Pll, Vco, Sample and Hold, Pwm Generator, Dpm Ic, Opto-Coupler, Cross Point Switch, Latch Driver, Voltage Regulator, Voltage Reference, Dot/Bar Display Driver, Opamp And Comparator, Over Voltage Crowbar Sensing Circuit, Led Flasher, Frequency to Voltage Converter R. <u>Active Filters Experiment Kit NVIS 6504</u> It should have following features / specifications – Low cost trainer demonstrating all the basic concepts of Active Filters; Exclusive presentation and easy illustration of each part of the Filter Circuit; Designed considering all the Safety Standards; Operating manual; Inbuilt-Function Generator; Inbuilt-Power supply; Selectable frequency range of Function Generator <u>Additional required specifications are as under –</u> Function generator Frequency range of Function Generator: Selectable 1Hz to 10Hz, 10Hz to 100Hz, 100Hz to 1kHz, 1KHz to 10 kHz, 10kHz to 100kHz Amplitude controlled output Active Filter Accurate frequency response Variable Cutoff Frequencies Adjustable Gain of output Manual creation of Band Pass Filter using High Pass and Low Pass Filter Power Supply : 230V ±10%, 50Hz Fuse : 350Ma Note: This kit with above mentioned components A to R should be supplied with 2 years of warranty		
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53.	Lab Pro, Resistance Capacitor Diode Practical kit - 2 Nos.	One kit should consist of following parts / components A to G as mentioned below. (Quote single price for items A to G) A. <u>De-Morgan's Theorem NVIS 6553</u> It should have following features / specifications – Exclusive and compact design; Easy explanation of both the De-Morgan's theorem statements; +5V SMPS Adaptor provided with the trainer for power supply; Designed by considering all the safety standards; With an extensive manual; low cost; Online product tutorial <u>Additional required specifications are as under –</u> Input : +5V DC Logic levels +5V : HIGH(Logic 1) 0V : LOW (Logic 0) Dimensions (mm) : W 240 x D 345 x H 110 Weight : 1kg (approximate) Verifying $(A+B)' = A' \cdot B'$ Verifying $(A \cdot B)' = A' + B'$ B. <u>Active Filters Experimentations (with Diodes) NVIS 6504</u> It should have following features / specifications – A low cost trainer demonstrating all the basic concepts of Active Filters with Exclusive presentation and easy illustration of each part of the Filter Circuit; Designed considering all the Safety Standards; Provided with briefly described operating manual; Provided with inbuilt Function Generator; Provided with inbuilt Power supply; Selectable frequency range of Function Generator <u>Additional required specifications are as under –</u> Function generator Frequency range of Function Generator :Selectable Amplitude controlled output Active Filter 1Hz to 10Hz; 10Hz to 100Hz; 100Hz to 1kHz; 1KHz to 10 kHz; 10kHz to 100kHz Amplitude controlled output Active Filter: Accurate frequency response: Variable Cutoff Frequencies; : Adjustable Gain of output; : Manual creation of Band Pass Filter using High Pass and Low Pass Filter Power Supply : 230V $\pm 10\%$, 50Hz Fuse : 350mA Basic fundamentals of filter design and their working. C. <u>Experiments with Diodes NVIS06501</u> It should have following features/specifications – A complete system to study the diode characteristics; Forward and reverse characteristics experiment should be performed on this trainer kit; Silicon Zener and Light Emitting Diode (LED) are provided with this system; Inbuilt Ammeter and Voltmeter are provided; Digital display for displaying voltage and current; Different test points are provided; Online product tutorial <u>Additional required specifications are as under –</u> On Board DC power supply : +12V DC Ammeter Range : 1μA to 200mA Display : 3½ digit Voltmeter Range : 1mV to 200V Display : 3½ digit Mains power : 230V AC $\pm 10\%$ Dimension (mm) : W 365 x D 260 x H 120	1,500/-	0.08
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		Study of V-I characteristics of Silicon Diode Study of V-I characteristics of Zener Diode Study of V-I characteristics of Light Emitting Diode (LED) D. <u>Zener Diode Voltage Regulator Experiment Kit NVIS 6503</u> It should have following features / specifications – Real time appearance of components; Test points are provided in different sections of power supply; Designed by considering all the safety standards; Low cost trainer including many experiments; Online product tutorial <u>Additional required specifications are as under –</u> Transformer Rating : 9V center tapped (300mA) approximate Half wave Rectifier output : +4V DC approximate Center-Trapped Rectifier : +8V DC approximate Bridge Rectifier Output : +8V DC approximate Filter : LC Type Load : Resistive 220W, 0.5W Mains Supply : 230V $\pm 10\%$, 50Hz Dimensions (mm) : W 250 x D 150 x H 80 Study of Half-wave Rectifier Study of Full-wave Center-tapped Rectifier Study of Full-wave Bridge Rectifier Calculation of Ripple Factor and Efficiency of various Rectifiers E. <u>Experiments with Rectifiers</u> It should have following features / specifications – Real time appearance of components; Test points should be provided in different sections of power supply; Designed by considering all the safety standards; Low cost trainer including many experiments; Online product tutorial <u>Additional required specifications are as under –</u> Transformer Rating : 9V center tapped (300mA) approximate Half wave Rectifier output : +4V DC approximate Center-Trapped Rectifier : +8V DC approximate Bridge Rectifier Output : +8V DC approximate Filter : LC Type Load : Resistive 220W, 0.5W Mains Supply : 230V $\pm 10\%$, 50Hz Dimensions (mm) : W 250 x D 150 x H 80 Study of Half-wave Rectifier Study of Full-wave Center-tapped Rectifier Study of Full-wave Bridge Rectifier Calculation of Ripple Factor and Efficiency of various Rectifiers F. <u>STUDY OF RESISTANCE, DIODE AND TRANSISTOR</u> It should have following features / specifications – Auto identification of sensors; High speed data transfer; Programmable delay in data acquisition; Programmable sampling frequency; Graphical Analysis Automatic & manual mode of data acquisition <u>Additional required specifications are as under –</u> Circuit Board 1Lead (100cm) 8setData Logger with Current Booster 1Power Unit 1Diode Module 1Zener Diode 3.9V Module 1Zener Diode 5.1V Module 1LED Module 1Resistor Module 100Ω 1Resistor Module 10Ω, 10W 1Resistor Module 1kΩ 1Resistor Module 10kΩ 1Transistor Module 1Voltage Sensor $\pm 1V$ 1Voltage		
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		Sensor $\pm 10V$ 1Current Sensor $\pm 1mA$ 1Current Sensor $\pm 10mA$ 1Current Sensor $\pm 100mA$ 1Current Sensor $\pm 1A$ Software 1 Ohm's law. V-I characteristics of Incandescent Lamp. Study of Rectifier Diode & applications. V-I characteristics of a Light Emitting Diode. Study of Zener Diode & applications. Study of NPN transistor characteristics G. Lab (PRO) Study Kit / Analog System Lab Kit PRO It should have following features/specifications – Three general-purpose OP-Amps, Three analog multipliers, Two D/A converters, A wide-in put non-synchronous buck type DC/DC controller low-dropout regulator, Two transistor sockets, A general-purpose area which can be used as a proto-board <u>Required accessories -</u> Negative feedback in amplifiers Building instrumentation amplifier Understanding transient response, frequency response, DC transfer characteristics Hysteresis in switching circuits; Integrators & differentiators; Filters & frequency response, tuning filters; Function generator design, voltage controlled oscillator; Phase lock loop functionality; Automatic gain / volume control; Characteristics of DCDC converter; Design and study low dropout regulator; Study the characteristics of negative feedback amplifiers and design of an instrumentation amplifier Study the characteristics of regenerative feedback system with extension to design an actable and mono stable multi vibrator Study the characteristics of integrators and differentiator circuits Design of Analog Filters; Design of a self-tuned filter; Design a function generator and convert it to Voltage-Controlled; Oscillator/FM Generator Design of a Phase Lock Loop (PLL); Automatic Gain Control (AGC); Automatic Volume Control (AVC); DC-DC Converter; Design a Low Dropout (LDO) regulator. Study the parameters of an LDO integrated circuit Study the parameters of a DC-DC Converter using on-board Evaluation module Design of a Digitally Controlled Gain Stage Amplifier Design of a Digitally Programmable Square and Triangular wave generator/oscillator Note: This kit with above mentioned components A to G should be supplied with 2 years of warranty		
Category V: CLASS-ROOM BENCHES / LAB FIXTURE				
54.	Class Room Benches - 25 Sets	Providing and fixing Godrej make ENLIGHTEN model Modular Classroom Twin Seating Arrangement having collapsible bench and auto tipping seat. Desk Height 730mm-1030mm, Desk Depth – 400/450, Seat Height – 450mm, Seat Depth – 420mm, Back Rest – 450mm W, Beck Rest H – 430mm. Legs made of MS ERW tube section (157138) of size 75x25x2 mm thick oval tube with 5 min thk HR brackets as per IS:2062 and 2mm thk CRCA brackets as per IS- 513welded on to the tubes. Assembly is powder coated with epoxy polyester. Leg height varies from 705 to 1005 in pitch of 50 as per layout. Modular System to be anchored by anchor bolts on to base of 8mm thk plate for proper resting of Leg. Shoe made of ultramid -Nylon are provided at the bottom for covering the base plate. There should be Side clads Two side clads made of 1.8 mm thk plate with 0.8mm thkpvc lipping and on the outside covered with welded metal structure	1,500/-	0.15

		made of 2 mm thk CRCA as per IS-513 powder coated with Epoxy polyester. Worktop: Worktop are made of 25 mm thick Pre - Laminated Board of EI -P2 Grade conforming to IS: 12823:1990. All the edge of work surface are provided with machine pressed 2mm thick pvc edge band glued with hot melt glue. Seat has self-closing mechanism which will operate by means of deadweight. Seat understructure to be made from combination of welded fabricated structure of 5mm Thk HR as per IS:2062 and 8mm thk ply as per IS:303 with moulded PU foam of density 55 kg/cu.mtr on top which in turn is covered with stitched upholstery made of leatherite as per INT/ DSN/ MSS/ UPH / 038 or foam back fabric as per INT/IDSN/MSS/UPH/013. Seat assembly is covered on bottom side of seat cover made of pp. Seat Back: Seat back is made from combination of 8mm thk ply as per IS:303 with moulded foam on top which in turn is covered with stitched upholstery made leatherite as per INT/DSN/MSS/UPH/038 or foam back fabric as per INT/DSN/MSS/UPH/013. Seat Support Frame: Seat support frame is made from combination of MS ERW tube section (IS 7138) of size 80x40x2.5 mm thick rectangular tube and MS ERW tube section (IS 7138) of size 48x19 .1x2 mm thick oval tube welded together. Assembly is powder coated with Epoxy polyester. CAP made of ultramidare provided from front to cover the oval tubes. Modesty: Modesty is made of 25mm thick pre -laminated twin board of EI -P2 Grade conforming to IS:12823:1990. All the edge of modesty are provided with machine pressed 2 mm Thick pvc edge band glue with hot melt glue. The Modular System should be in Rear/Middle/Front Type. Desk Height 730mm-1030mm, Desk Depth – 400/450, Seat Height – 450mm, Seat Depth – 420mm, Back Rest – 450mm W, Back Rest H – 430mm. The fixing of the chairs will be in the kotastone flooring with required chemicals for rigid fixing and strong stability.		
55.	Laboratory Modular Fixture with Granite Top	Providing and fixing laboratory working fixtures of 600 mm L x 550 mm W x 850 mm H with a top of jet black granite of desired length x 850 mm W x 17± 1 mm thickness, duly polished and moulded, levelled on 6 mm ply. Work bench should be knock-down type modular under bench steel cabinet having sturdy frame, panels, legs, one drawer (460 mm W x 530 mm L x 100 mm H), two shutters having 450 mm H with lock and shelves fabricated using GMP of the scientific laboratory equipment from the cold rolled steel sheet (Tata or equivalent make) of prime grade having minimum 20 gauge thickness or CRC pipe of 30 mm x 30 mm x 16 gauge thickness. The module should be strong enough to bear load of 1000 kg/ m2 and be provided with strong brackets and stiffeners. All metal be epoxy powder coated with minimum 50 micron and finished with desired colours shades as per ASTM/BS/DIN/IS. All the hardware be BIS grade of reputed make including drawer pulls of double extension telescopic slide channels, auto closing spring loaded hinges with cathode electrode deposition for better corrosion resistance, Godrej make locks, shelf support clips, stainless steel handles etc. The drawer & cabinet should be strong enough to carry about 50 kg load of different articles. Quote rate per sq. ft. of metal top.	1,500/-	0.15

56.	Genomic Software The software quoted should have following features /enable following analysis - 1. Genomics • <i>De novo</i> assembly of Sanger, 454, Illumina Genome Analyzer, and SOLiD data • <i>De novo</i> assembly of mixed datasets (e.g. 454 and Illumina Genome Analyser) • Contig report that records various statistics and graphs for contigs • Read mapping of Sanger, 454, Illumina Genome Analyzer, Helicos, and SOLiD sequencing data • Read mapping of mixed datasets (e.g. 454 and Illumina Genome Analyser) • Read mapping of genomes of any size • Quality-based Variant Detection • Structural Variation like insertions, deletions, and inter chromosomal variations • NGS data primary analysis (quality control, trimming for low quality regions and adapters, demultiplexing of barcoded data), • de novo assembly, scaffolding and finishing of genomes of any size from multiple input data types (e.g. Illumina and PacBio data), • read mapping of NGS data, or hybrid mapping of Sanger and NGS sequencing data, color space mapping, local realignment, • Genome wide variant detection using advanced quality-based, ploidy aware algorithms and algorithms optimized for low frequency variants. Furthermore supported are detection Insertion and Deletions as well as of structural variation, • advanced filtering and annotation of variants based on information in public, commercial and custom variant databases, trio analysis, • advanced filtering and annotation of variants in the context of other sample included into an experiment, and a • Workflow Editor to easily build & share complex and automated analysis workflows. 2. Transcriptomics • Calculation of gene expression measures (RPKM) from mRNA sequence data and generation of gene expression profiles (RNA-Seq analysis) • RNA-seq outputs and can use unique and total gene/exon reads as well as median coverage as measures of expression • Small RNA analysis -Adapter trimming, Counting of tags, Annotation using miRBase and other resources, Visualization of miRNA variants and Expression analysis • Statistical tests for comparing expression • Discovery of novel transcripts/exons • SNP and DIP detection can be performed directly on RNA-seq output contig tables • Support for paired data and transcript-level expression, small RNA analysis, statistical analysis of differential gene expression from RNA-Seq and Microarray data. 3. Epigenomics • Chromatin immunoprecipitation sequencing (ChIP-seq) analysis • Peak finding • Peak refinement 4. General NGS features • Support for multiplex sequencing by file name • Support for multiplex sequencing by sample-specific tag • Integration with High Performance Computing solutions 5. RNA structure analysis • Secondary structure prediction • Graphical view and editing of secondary structure • Tabular view of structures and energy contributions 6. DNA sequence analysis • In built facility for all type of DNA sequence analysis	1,500/-	0.11
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	7. Pattern search • Motif search for basic patterns • Motif search using regular expressions • Motif search with ProSite patterns • Pattern discovery (unknown patterns) 8. Database searches • Web-based sequence search 9. Project and data management • Full integration of data input, data management, calculation results, and data export 10. License: • e-license with link for download or paper license with media • Perpetual 11. The quoted price should be inclusive of Blast2GO license for 1 year. 12. Support: Online support should be provided in case of troubleshooting 13. Software ought to offer classical analysis features like BLAST tools, Sequence Alignments and Phylogenetic tree tools, Assembly of Sanger data, Primer Design for PCR and real time PCR, Molecular cloning, and Secondary RNA and Protein Structure Predictions and tools commonly needed for sequence analysis and editing. 14. The applications should run on all major operating systems, including Windows and Linux OS.																											
Category-VII: CAMERA & ACCESSORIES																												
57.	Video Camera	Make: SONY, Model: PXW-FS7 required technical specifications of camera are as follow: <table><tr><td>Imaging Device (Type)</td><td>Super35 type Single-chip Exmor CMOS</td></tr><tr><td>Effective Picture Elements</td><td>17:9 4096 (H) x 2160 (V) 16:9 3840 (H) x 2160 (V)</td></tr><tr><td>Built-in Optical Filters</td><td>Clear, 1/4ND, 1/16ND, 1/64ND</td></tr><tr><td>Sensitivity (2000 lx, 89.9% reflectance)</td><td>Video Gamma: T14 (3840 x 2160/23.98P mode 3200K)</td></tr><tr><td>ISO Sensitivity</td><td>ISO 2000(S-Log3 Gamma D55 Light source)</td></tr><tr><td>Minimum Illumination</td><td>0.7 lx (+18dB,23.98P, Shutter OFF, ND Clear, F1.4)</td></tr><tr><td>S/N Ratio</td><td>57 dB (Y) (typical)</td></tr><tr><td>Shutter Speed</td><td>1/3 sec to 1/9,000 sec</td></tr><tr><td>Slow & Quick Motion Function</td><td><u>XAVC-I</u> mode 3840 x 2160: 1 to 60 frames (59.94P, 50P, 29.97P, 23.98P, 25P); <u>XAVC-I</u> mode 1920 x 1080: 1 to 180 frames (59.94P, 29.97P, 23.98P) 1 to 150 frames (50P,25P); <u>XAVC-L</u> mode 3840 x 2160 : 1 to 60 frames (59.94P, 50P, 29.97P, 23.98P, 25P); <u>XAVC-L</u> mode 1920 x 1080: 1 to 120 frames (59.94P, 50P, 29.97P, 23.98P, 25P)</td></tr><tr><td>White Balance</td><td>Preset, Memory A, Memory B (1500K-50000K) / ATW</td></tr><tr><td>Gain</td><td>-3, 0, 3, 6, 9, 12, 18 dB, AGC</td></tr><tr><td>Gamma Curve</td><td>STD, HG, User, S-log3</td></tr></table>	Imaging Device (Type)	Super35 type Single-chip Exmor CMOS	Effective Picture Elements	17:9 4096 (H) x 2160 (V) 16:9 3840 (H) x 2160 (V)	Built-in Optical Filters	Clear, 1/4ND, 1/16ND, 1/64ND	Sensitivity (2000 lx, 89.9% reflectance)	Video Gamma: T14 (3840 x 2160/23.98P mode 3200K)	ISO Sensitivity	ISO 2000(S-Log3 Gamma D55 Light source)	Minimum Illumination	0.7 lx (+18dB,23.98P, Shutter OFF, ND Clear, F1.4)	S/N Ratio	57 dB (Y) (typical)	Shutter Speed	1/3 sec to 1/9,000 sec	Slow & Quick Motion Function	<u>XAVC-I</u> mode 3840 x 2160: 1 to 60 frames (59.94P, 50P, 29.97P, 23.98P, 25P); <u>XAVC-I</u> mode 1920 x 1080: 1 to 180 frames (59.94P, 29.97P, 23.98P) 1 to 150 frames (50P,25P); <u>XAVC-L</u> mode 3840 x 2160 : 1 to 60 frames (59.94P, 50P, 29.97P, 23.98P, 25P); <u>XAVC-L</u> mode 1920 x 1080: 1 to 120 frames (59.94P, 50P, 29.97P, 23.98P, 25P)	White Balance	Preset, Memory A, Memory B (1500K-50000K) / ATW	Gain	-3, 0, 3, 6, 9, 12, 18 dB, AGC	Gamma Curve	STD, HG, User, S-log3	1,500/-	0.20
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Gamma Curve	STD, HG, User, S-log3																											

		<table><tr><td>Audio Input</td><td>XLR-type 3-pin (female) (x2), line/mic/mic +48 V selectable Mic Reference: -40, -50, -60dBu</td></tr><tr><td>SDI Output</td><td>BNC(x2), switchable with 3G-SDI/HD-SDI SMTPE292M/424M/425M</td></tr><tr><td>USB</td><td>USB device, mini-B (x1)</td></tr><tr><td>Headphone Output</td><td>Stereo mini jack (x1) -16dBu 16Ω</td></tr><tr><td>Speaker Output</td><td>Monaural</td></tr><tr><td>DC Input</td><td>DC jack</td></tr><tr><td>Remote</td><td>Stereo mini-minijack (Φ2.5 mm)</td></tr><tr><td>HDMI Output</td><td>Type A (x1)</td></tr><tr><td>Option</td><td>4-pin, Type A for W-LAN (x1)</td></tr><tr><td>Filter Diameter</td><td>95 mm</td></tr><tr><td>Focal Length</td><td>28mm to 135mm</td></tr><tr><td>Focus</td><td>Internal</td></tr><tr><td>Iris</td><td>Nine blades (circular perture) F/4 to F/22 (click or click-less)</td></tr><tr><td>Lens Mount</td><td>Sony E-Mount</td></tr><tr><td>Zoom Ratio</td><td>4.8x</td></tr><tr><td>Built-in LCD Monitor</td><td>8.8cm (3.5 type) Approx. 1.56M dots</td></tr><tr><td>Built-in Microphone</td><td>Omni-directional monoral electret condenser microphone.</td></tr><tr><td>MediaType</td><td>XQD Card slot(x2) SD Card slot(x1) for saving configuration data</td></tr></table>	Audio Input	XLR-type 3-pin (female) (x2), line/mic/mic +48 V selectable Mic Reference: -40, -50, -60dBu	SDI Output	BNC(x2), switchable with 3G-SDI/HD-SDI SMTPE292M/424M/425M	USB	USB device, mini-B (x1)	Headphone Output	Stereo mini jack (x1) -16dBu 16Ω	Speaker Output	Monaural	DC Input	DC jack	Remote	Stereo mini-minijack (Φ2.5 mm)	HDMI Output	Type A (x1)	Option	4-pin, Type A for W-LAN (x1)	Filter Diameter	95 mm	Focal Length	28mm to 135mm	Focus	Internal	Iris	Nine blades (circular perture) F/4 to F/22 (click or click-less)	Lens Mount	Sony E-Mount	Zoom Ratio	4.8x	Built-in LCD Monitor	8.8cm (3.5 type) Approx. 1.56M dots	Built-in Microphone	Omni-directional monoral electret condenser microphone.	MediaType	XQD Card slot(x2) SD Card slot(x1) for saving configuration data		
Audio Input	XLR-type 3-pin (female) (x2), line/mic/mic +48 V selectable Mic Reference: -40, -50, -60dBu																																							
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MediaType	XQD Card slot(x2) SD Card slot(x1) for saving configuration data																																							
57.1	Sony G Master Lense	Model: SEL2470GM FE 24-70 mm F2.8 GM																																						
57.2	Nikon F lenses to Sony E mount camera adapter	Compatible to Sony PXW FS7 camera																																						
57.3	Canon EF lenses to Sony E mount camera adapter	Compatible to Sony PXW FS7 camera																																						
57.4	Memory card: 64 Gb	Make: SONY, XQD G series card, QD-G64																																						
57.5	Memory card: 128 Gb	Make: SONY, XQD G series card, QD-G128																																						
57.6	LED Battery video light	Make: SONY Model HVL-LBPC Compatible to Sony PXW FS7 camera																																						
57.7	Remote commander	Make: SONY Model RM-1BP Compatible to Sony PXW FS7 camera																																						
58	Machine Vision & Image Processing System	Quote single price for items A to E. A. CMOS Camera Camera supplied with the system should have minimum resolution of 1280 x 1024 and with following specifications - - Connectors - RJ-45 8P8C Receptacle (Female), 10/100/1000 Mbps Ethernet - Hirose 7mm 6 Pin Receptacle HR10A-7R-6PB (Male)	1,500/-	0.15																																				

		• Sensor Resolution: 1280(h) x 1024(v) pixels • Sensor Size: 8.69 mm • Sensor Model: e2v EV76C560ACT-EQV • Lens Mount: C-Mount • Maximum Frame Rate: 60 full frames/second • Data Interface: Ethernet Gig-E Vision • This camera has a rolling shutter and Power over Ethernet (PoE) support. B. PoE Adapter, 4-Port Server Grade It should have following features / specifications - • 4 ports with independent PoE+ on/off control • x4 Gen2 PCI Express interface delivers 2GB/s • Intel® I350 server-grade Gigabit Ethernet controller • Connectors - o RJ-45 8P8C Receptacle (Female), 10/100/1000 Mbps Ethernet - o All support PoE plus, with independent control • Electrical - o Bus Interface : Gen2 PCI Express x4 - o Controller : Intel I350-AM4 - o Maximum Frame Size : 9.5KB - o Link Aggregation (Teaming) - o Input Power : 1.2 A @ 3.3 V and 9.6 A @ 12 V - o Output Power: 25.5 W max per port • Mechanical - o Dimensions : 167.7 mm (W) x 111.2 mm (H) • Environmental - o Operating Temp. : 0 - 55 deg. C with air flow • Standards - o Conformance: IEEE 802.3at-2009, IEEE 1588, FCC part 15, CE if marked C. 1/2" 6 mm Lens It should have following features / specifications - • 6 mm wide-angle lens • Locking focus and aperture adjustments • Compatible with 1/4, 1/3 and 1/2 size sensors • Lens Type: General • Focal Length: 6 mm • Resolution: 0.0050 mm, 100 lp/mm • Minimum Working Distance: 200 mm • F#: 1.4 - 16.0 • Lens Mount: C-Mount • Image Circle: 8.00 mm (1/2") • Length: 29.5 mm • Filter Thread: M25.5 x .5 D. 1" x 4" White LED Backlight It should have following features / specifications - • 1" x 4" white backlight • 12 LEDs per square inch • Includes cable with quick disconnect • Connectors: Eurofast M12 4-pin Plug (Male) • Type: Backlight • Wavelength: White • Window: White Diffuser		
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		• Optional diffusers: White semi-opaque, shower glass, thin film, or linear polarizer. • Window Width: 102 mm (4.0") • Window Height: 25 mm (1.0") • Power: 180 mA max @ 24 VDC • Strobe: +5 to +24 VDC enables light • Cable Length: 4.0 m (13.1 ft) E. 1.25" White HB LED Spot Light It should have following features / specifications - • White high-brightness LED • Includes controller and cable • Connectors: Eurofast M12 5-pin Plug (Male) • Type: Spot • Wavelength: White • Window: Shower Glass Diffuser, Window options include thin film diffuser, white diffuser, linear polarizer, or clear cover. • Window Width: 33 mm (1.3") • Window Height: 33 mm (1.3") • Optics: 12 degree lenses, Optional 30 degree, 50 degree, wide angle, and line generating lenses. • Power: 500 mA @ 24 VDC • Strobe: NPN (GND to enable) or PNP (24 VDC to enable) • Cable Length: 4.0 m (13.1 ft)		
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: 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 from 05-01-2017 upto 25-01-2017, 05:00 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>](http://www.nprocure.com) only on or before 25-01-2017 5:00 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 December, 2017.**
- v. In case of foreign manufactured equipment / goods the C.I.F., Ahmedabad 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 charges like agency commission, clearing, transportation, insurance etc.
- vi. 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.
- vii. No change, addition, alteration in the tender rates on omission / misunderstanding / mistake or any other reasons would be permitted.
- viii. 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.
- ix. The total cost must be inclusive of all intended accessories.
- x. **The hard copy of the technical bid should be addressed to "The Unit Officer, Dept. of Agricultural Biotechnology, Anand Agricultural University, Anand – 388 110".**
- xi. **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.**
- xii. **The hard copy of the technical bid should reach this office during the period of physical bid submission i.e. between 26-01-2017 and 31-01-2017 upto 05:00 P.M. in sealed cover superscripted "Technical Bid for _____" by Registered Post / Speed post only. The technical bid/documents sent through courier or any other means will not be accepted.**
- xiii. **Tender Fee (Non-Refundable):** Tender fee should be submitted item-wise as per the amount mentioned against respective items. However, 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, issued by any Nationalized Bank or by banks mentioned in GR of Finance Department, GR No.: EMD/10/2015/508/DMO, Dated 27-04-2016.
- xiv. **Earnest Money Deposit (EMD):** EMD amount 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/10/2015/508/DMO, Dated 27-04-2016 in the favour of "Anand Agricultural University Fund Account"
- xv. **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".

- xvi. 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.
- xvii. **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.**
- xviii. Valid Manufacturer's / Distributorship's / Dealership's certificate from the principle for the year 2016-17 must be submitted along with quotation.
- xix. 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.
- xx. A copy of the supporting document like, Tin No., PAN No., etc. of the vendor should be enclosed with the quotation / tender.
- xxi. **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.**
- xxii. 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.
- xxiii. 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.
- xxiv. The vendor should invariably sign the quotation, general terms and conditions and must be submitted in original.
- xxv. 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.
- xxvi. As far as possible the technical literature should be furnished along with the quotation.
- xxvii. 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.
- xxviii. All quotations and correspondences should be addressed by designation only and not by name.
- xxix. The supply should be made within the stipulated time as mentioned in the purchase order followed by installation.
- xxx. 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.
- xxxi. No advance or part payment against the ordered goods will be made till the full order placed is satisfactorily executed.
- xxxii. List of users of your product and their opinion may also be sent along with their phone number/(s).
- xxxiii. **Warranty:** The standard warranty should be provided for respective items. However, items where warranty period is mentioned in the specifications shall be considered as standard warranty period.
- xxxiv. **Training:** Training for two persons must be provided free of cost by the vendor for each instrument quoted.

- xxxv. **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.
- xxxvi. 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/10/2015/508/DMO, Dated 27-04-2016
- xxxvii. 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.
- xxxviii. Quotations/ tenders without Earnest Money Deposit (except from parties exempted for the purpose) for specific item will not be considered.
- xxxix. Losses/damage of the instrument in transits, if any, shall be at the risk of the vendor / supplier
- xl. 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.
- xli. The technical bid will be opened on **01-02-2017** at 10:30 A.M. for scrutiny followed by commercial bid opening either on the same date or any other next date of completion of technical scrutiny.
- xl. 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.
- xl. For all legal matter court jurisdiction shall be "Anand", Gujarat.

Sd/-
Unit Officer
Department of Agricultural Biotechnology
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	Firm / Company Registration attested copy	Mandatory
5	Authorization Letter from OEM	Mandatory
6	Technical specification point-wise compliance statement	Mandatory
7	Copy Permanent Account Number of the bidder firm.	Mandatory
8	Copy of TAN of the bidder firm.	Mandatory
9	Last two (2) financial year's Income Tax returns of the bidder firm.	Mandatory
10	An affidavit / declaration on non-judicial stamp paper of Rs.100/- duly attested by Notary Public	Mandatory
11	Product quality certificate issued by QCI / BIS etc.	Preferable
12	User List / Opinion of users for respective items	Preferable
13	Product catalogue / literature etc.	Preferable

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 verification 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 Proforma" (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 name 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 or 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 compliant with specification mentioned in the bid document.
14. My/Our Company has not filed any Writ Petition, Court matter and there is no court matter filed 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)

**Annexure-I: Component wise compliance statement to be submitted with
Technical Bid of Laboratory LC-MS/MS (Mandatory)**

(Please provide all the relevant document of the technical specifications and technical compliance statement.)

- A. Ultra High Performance Liquid Chromatography System (UHPLC)**
(High pressure quaternary gradient pumping system, PDA, auto sampler, column oven should be offered.)

Quoted Model: _____

	Required Technical Specifications	Complying? (Yes/No)	Remarks
<i>Pump with quaternary gradient</i>			
i.	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.		
ii.	Purging of pumps, manually as well as through software.		
iii.	Pressure tolerance of at least 15,000 psi at 1 mL/min or better should be offered.		
iv.	System should have a handling capacity for pH 2 to 12 for various solvents and buffers.		
v.	Flow rate should be 0.01 to 2.0 mL/min or better in 0.001 mL increments with accuracy $\pm 1.0\%$ and precision with 0.1% or better at 1mL/min.		
vi.	Mobile phase reservoir system to accommodate four bottles each of 0.5 L.		
vii.	Safety functions like leak sensor, high pressure and low pressure limits.		
<i>Auto-Sample Injector with Sample Cooler</i>			
i.	Automated operation controllable through MS/MS Software.		
ii.	Automated auto-sampler purging through software.		
iii.	Injection volume between 0.1 μ L to 25 μ L with accuracy of $\pm 0.5\%$. Precision should be $< 0.25\%$ and carryover should be 0.01% or better from previous injection.		
iv.	Temperature range should be 4 to 40 °C in 0.1 °C increments with accuracy of ± 0.5 °C.		
v.	Minimum sample capacity should be 96 in nos (1-1.5 mL vial holder) and two 384-microtiter plates.		
vi.	High speed injection system is preferable.		

	Required Technical Specifications	Complying? (Yes/No)	Remarks
Column Compartment			
i.	The temperature range should be 5°C to 85°C, settable in 0.1 °C increments.		
ii.	Temperature accuracy should be ± 0.1 °C and stability should be ± 0.5 °C or better.		
iii.	It should be able to handle at least 2 columns (length up to 250 mm) or 4 columns (length up to 150 mm) within the oven.		
iv.	Safety functions like leak sensor, high temperature cut-off.		
PDA-Detector			
i.	Wave length range 190-800 nm		
ii.	Slit resolution 1.2 nm		
iii.	Wavelength accuracy ± 1 nm		
iv.	Drift 5.0×10^{-4} AU/h or less		

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: _____

	Required Technical Specifications	Complying? (Yes/No)	Remarks
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 not be less than 15,000 amu /sec. Higher Scan Speed is preferred.		
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 $\leq$ 25 millisecond. Lower Switching time is preferred.		
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) <u>ESI Positive</u>: 1 pg reserpine, S/N $\geq$ 1,50,000:1 (RMS) or better based on 1-μL injection without smoothing data. b) <u>ESI negative</u>: 1 pg chloramphenicol, S/N $\geq$ 1,50,000:1 (RMS) or better without smoothing data based on 1-μL injection. (Documentary Proof to be provided for both the above.)		
viii.	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 dual mode ESI, APCI with multimode 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 HPLC 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 400°C or more.		
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 multiplier should be off-axis or any other type meeting the sensitivity and six 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, regulators, gas pipes with fittings and purifier for the system.		
ii.	Gas generator should be portable and highly durable, have low noise, vibration free, drying system and auto drain valve with inbuilt compressor.		
iii.	Gas generator should be able to supply all the gases required for the LC-MS/MS instrument at required purity, pressure and flow rate.		

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	Complying? (Yes/No)	Remarks
i.	PC with latest configuration and licensed operating system (At least I7 Processor, Intel Original M/B, 2 TB HDD, 24" LED monitor, DVD R/WR, 8 GB DDR3 RAM, graphic card etc.) with laser printer. An additional 48" UHD screen with two-way cable for dual display of chromatograms.		
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 should be provided.		
v.	Also latest original company licensed software should have capabilities to perform the following functions. a. Automated calibration and quantitative optimization.		
	b. Perform alternating positive/negative scans in one run.		
	c. 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	Complying? (Yes/No)	Remarks
<i>Online UPS</i>			
i.	Online UPS (Preferably Emerson 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.		
<i>Laptop with printer</i>			
i.	Dell / Lenovo make Laptop with 5 th /6 th Generation I7 Processor, 8 GB RAM, 2 GB Graphics Card, 1 TB HDD, OS: Win 10 License, 15.6" LED Screen, etc.		
ii.	Canon image CLASS LBP6230dn Laser Printer		
iii.	Netgear RN31400 with cloud setting- Ready NAS 300 Series 4-Bay, 2 x 4TB HDD (NAS supported)		

E. Spares
(Essential spares to run the instrument)

	Required Technical Specifications		Complying? (Yes/No)	Remarks
a)	Column		-	-
	i. RP C-18, 1.7 μ , 100 mm X 2.1 mm	10 Nos.		
	ii. RP C-18, 1.7 μ , 50 mm X 2.1 mm	05 Nos.		
b)	Auto-sampler needle	5 Nos.		
c)	Inline filter/Frit	25 Nos.		
d)	Gas filter	2 Nos.		
e)	Oil for vacuum pump	5 L		
f)	Capillary for ESI and APCI, desolvation line	10 Nos.		
g)	ESI O-ring	10 Nos.		
h)	Guard Column			
	i. C-18 guard columns suitable for the column asked and	10 Nos.		
	ii. C-18 guard columns 1.7 μ m columns from the same supplier as the columns, should be provided. In case of replaceable cartridge-type guard columns two separate cartridge holders are also to be supplied.	10 Nos.		
i)	Pump seal	05 Nos.		
j)	0.22 μ Millipore-filter paper disc	10 pack (1000 Nos.)		
k)	Lint free tissues	05 boxes		
l)	Swab	100 Nos.		
m)	Tool kit	1 set		

: TERMS AND CONDITIONS :

(Additional terms & conditions on above regular terms & conditions mentioned in pgs. 42-44, exclusively applicable for Item at Sr. No. 1 i.e. LC-MS/MS)

- (1) The bidder should be a manufacturer who must have manufactured, tested and supplied in India, the equipment similar to the type specified. Bids of bidders quoting as authorized representative of a manufacturer, meeting with the above requirements in full, can also be considered, provided:
 - (a) The manufacturer furnishes a legally enforceable authorization in the prescribed form, assuming full warranty for the goods offered; and
 - (b) The bidder, as authorized representative, has supplied, installed and satisfactorily commissioned and provided after sales service for similar equipment in India during the last 10 years.
- (2) **It is mandatory to quote the latest model of LC-MS/MS for pesticide residue analysis.** Quote should not be for refurbished instrument. The vendor must have installed three or more units in India of the same model quoted in tender. Vendor must also furnish the purchase details of the said model.
- (3) Rates should be inclusive of all and quoted FOR Pesticide Residue Laboratory, AINP on Pesticide Residues, Anand Agricultural University, Anand - 388110. Expenses towards transportation to the laboratory and custom clearance are responsibility of the vendor. However, required documents will be provided.
- (4) **Five-year comprehensive warranty after successful installation is mandatory.** Minimum three-visit of service engineer is required per annum. No expenditure (either for repairs and replacement of consumable and/or non-consumable parts and/or custom clearance) will be borne by Anand Agricultural University during comprehensive warranty period, however required documents will be provided. All the **supplied items** should be covered under comprehensive warranty period. Break down period should not exceed more than 15 days in any case.
- (5) The Supplier shall warrant that the Goods supplied under this Contract are new, unused, of the most recent or current models and those they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier shall further warrant that all Goods supplied under this Contract shall have no defect, arising from design, materials or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in conditions prevailing in the country of consignee destination. The Purchaser / consignee shall promptly notify the Supplier in writing of any claims arising under this warranty. "Upon receipt of such notice, the Supplier shall within one week repair or replace the defective goods or parts thereof, free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected / replaced material shall be extended to a further period of five years.
- (6) The period for correction of defects in the warranty period is one week days. If the Supplier, having been notified, fails to remedy the defect(s) within one week the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract. In any case if break

down period exceeds one month, compensation of Rs. 5000/- per day will be claimed.

- (7) Training:
 - i) Minimum four onsite application training after successful installation as and when required during first year.
 - ii) Training for three persons at your advanced training center.
- (8) Validity of the quotation should be 90 days from the last date of receipt of the quotation.
- (9) On approval of the tender, additional security deposit for three-year CMC (15% of the quote value) should be deposited by crossed DD/Bank Guaranty/Pay order from any Nationalized bank or IDBI/ICICI/Axis/HDFC Bank payable to "**Anand Agricultural University Fund Account**".
- (10) Clearly mention delivery period.
- (11) Supplier should provide the list of items which are covered under consumables. The items not listed in the consumables would be considered as spare parts for the purpose of warranty obligation including replacement/repairs.
- (12) Quote the rates in INR for CMC for 1st, 2nd and 3rd year after five years of installation.
- (13) **On approval of the tender supplier should make the agreement on the stamp paper of the value 4.25% of the security deposit, that aforesaid "Terms and Conditions" are agreeable to them. This should be signed and stamped in the presence of two witness and purchaser.**

(Please see Clause 1 (a) of Terms and Conditions)

MANUFACTURERS' AUTHORIZATION FORM

No.

dated

To

Dear Sir:

RFT No. _____

We _____ who are established and reputable manufacturers of _____ having factories at _____ (address of factory) do hereby authorize M/s _____ (Name and address of Agent) to submit a bid, and sign the contract with you for the above goods manufactured by us against the above RFT.

No company or firm or individual other than M/s _____ are authorized to bid and conclude the contract for the above goods manufactured by us against this specific RFT.

We hereby extend our full warranty and CMC and also supply of spares during the period as per the Terms and Conditions of Contract for the goods and services offered for supply by the above firm against this RFT.

Yours faithfully,

(Name)

(Name of manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer. It should be included by the Bidder in its bid.

RATES OF COMPREHENSIVE MAINTANANCE CONTRACT FOR LC-MS/MS

Particulars	Price (In Indian Rupees)
First Year CMC (6 th year after installation)	
Second Year CMC (7 th year after installation)	
Third Year CMC (8 th year after installation)	

CHECK LIST

Sr. No.	Activity	Yes/No	Page No. in the Tender
1.	Dully filled Tender Form along with the Technical Compliance statement (All the pages should be signed & initialed)		
2.	Manufacturers' Authorization form		
3.	Crossed DD for Tender fee of Rs. 15,000/- (rupees fifteen thousand only)		
4.	Earnest money deposit (EMD) of Rs. 6,00,000/- (rupees six lakhs only) as crossed DD / Bank Guarantee / Pay order		
5.	Brochure/technical literature of the system quoted		
6.	List of users in Gujarat/India with contact details		
7.	List of items which are covered under consumables		
8.	Rates of additional Comprehensive Maintenance Contract (After 5 th year of installation)		
9.	EMD as per the list of approved banks (circular attached)		