

F-13014/6/2020-FOOD TESTING LAB

Government of India
Ministry of Food Processing Industries

Panchsheel Bhawan,
August Kranti Marg New Delhi-110049

Dated: 12.01.2026

Subject: Cost Norms for Food Testing Laboratory Equipment & its accessories -reg.

The Ministry had constituted a Committee under the Chairmanship of Director, NIFTEM, Kundli for fixing cost norms for food testing laboratory equipment under Food Safety and Quality Assurance Infrastructure (FSQAI) component of Pradhan Mantri Kisan Sampada Yojana (PMKSY) vide OM dated 17.11.2025.

2. Based on the review of the previous cost norms, inputs received from the Committee members, exchange rate appreciations over the years, inflationary trends, technological advancements, and market analysis of key equipment manufacturers, the Committee has proposed updated cost norms for the food testing equipment required for establishing a food testing laboratory.
3. The Ministry, based on the above recommendations of the Committee and subsequent internal review, has finalized the revised cost norms for food testing laboratory equipment, for setting up of new food testing laboratories with the requisite equipment and facilities. These cost norms will serve as the basis for determining the eligible project cost under the Food Safety & Quality Assurance Infrastructure (FSAQI) component of PMKSY. The cost norms is just a guiding illustrations regarding required equipment and its accessories, calibration/CRM needs, and essential infrastructure support to ensure compliance with national and international testing standards.
4. The costs mentioned are basic costs excluding taxes.
5. The cost of any other facilities/ components proposed to be created under the project and not covered under the cost norms may be considered by Technical Committee based on the quotations submitted along with the proposal and subject to the approval of the Project Approval Committee (PAC).
6. If the capacity and quantity of components differ from those provided in cost norms, *pro-rata* cost may be considered by Technical Committee based on quotations submitted along with the proposal and inputs of members of technical committee subject to approval of the PAC.
7. The cost norms determined for equipment for food testing laboratory are given in the table below.

This is issued with the approval of Competent Authority.

Encl: as above


(Vivek Kumar Singh)
Deputy Secretary

Cost Norms for Food Testing Lab Equipment & its accessories

Sr. No.	Particulars (indigenous/ Imported)	Guiding Illustration	Cost ceiling (Rs. Lakh)
1.	Atomic Absorption Spectrometer with Flame, Graphite Furnace and Vapour Hydride generator System (imported)	<p>Fully Computer Controlled, Double beam Atomic Absorption Spectrometer (AAS) with Flame & Graphite Furnace and Hydride Generator facility with the following specifications</p> <p>Optics: A true double beam spectrometer with high light throughput, fully sealed and vibration free optical system with special light proof cover & reflecting optics.</p> <p>Wavelength range: 185- 900 nm</p> <p>Monochromator: Czerny Turner/Littrow/Ebert type with diffraction gratings of 1800 lines/mm with minimum focal length of more than 250 mm and automatic wavelength correction.</p> <p>Slit/Bandwidth: Software selectable & Adjustable slit in steps from 0.2nm to 1.0 nm or wider</p> <p>Detection Limit: Cu<50ppb(Flame), Cd<1ppb (Graphite Furnace), As<0.5ppb in continuous hydride mode to be demonstrated during installation with NIST traceable standards</p> <p>Detector: Wide range Photo Multiplier Tube/Solid state detector</p> <p>Sensitivity: Greater than 0.7 absorbance for 5 ppm Cu standard solution with the precision of: 0.5% RSD for 5 second integration time</p> <p>Repeatability: Cu < 0.7% (Air /Acetylene Flame) Cu < 2.0% (Graphite Furnace) to be demonstrated during installation</p> <p>Background Correction: The system shall have simultaneous real-time background correction with Deuterium Arc up to 2.5 or suitable Absorbance for Flame atomization & Hydride mode and Zeeman background correction for Graphite Furnace without loss of real measurement time and sensitivity</p> <p>1000 ppm AAS grade CRM for individual elements (100ml each) with National/International traceability.</p> <p>Features of Flame system analysis:</p> <p>Air-Acetylene and N₂O-Acetylene flame system shall be provided with auto detection of burner facility.</p> <ul style="list-style-type: none"> •Sensitivity: High sensitivity absorbance of minimum 0.7 Abs for standard 5ppm Cu or better. •Gas control: Instrument shall have fully automatic gas control system to maintain gas flows and shall adjust the gas flow during interchange between Air Acetylene and Nitrous Oxide <p>The MOC for Atomization Chamber shall have excellent corrosion resistance properties.</p> <ul style="list-style-type: none"> •Safety Systems: Safety interlocks for Burner Identification, Flame Sensor, Gas leak Sensor, Low Pressure Gas Sensor, Drain 	Rs. 80.00 Lakh



Trap Sensor, Power Loss Protection, Flash Back Arrestor or suitable features/technology to address required safety

- Burner: 10cm Air Acetylene and 5cm Nitrous Oxide Titanium or better Alloy burner shall be offered. Burner shall be capable of moving in horizontal, vertical & height through software.
- Nebulizer: High efficiency and sensitivity nebulizer system with resistant to acids like 5% Hydrofluoric Acid, Hydrochloric Acid and Nitric Acid

Features of Graphite Furnace:

The flame Atomizer and graphite furnace with suitable system hardware design so as to facilitate fully automatic interchange between the flame mode and furnace mode or vice versa using software without any human intervention for hardware change including flame & graphite Autosampler, burner, Atomizer alignment etc.

- During operation of graphite furnace, the tube temperature shall be uniform to reduce chemical interference and residue interference
- The PC controlled heating program shall be offered for multitude heating method choices. Also the system shall have good optical temperature control to ensure monitoring of heating and enhancing life of the graphite tube or suitable features/technology to address required safety.
- The furnace shall be activated for heating only when the cooling water flow is sufficient to cool down the furnace body or suitable features/technology to address required safety
- Graphite Tube Fracture Protection: Power supply used for heating shall automatically cut off and an alarm shall be activated if a graphite tube fracture is detected.
- Temperature Range: Up to 2600°C or higher
- Heating Program: Up to 9 steps with choice of ramp, and full power heating
- Safety systems: Water Flow Sensor, Ove or suitable features/technology to address required safety
- Temperature Sensor, and Broken Graphite Tube Protection or suitable features/technology to address required safety
- Camera for graphite furnace should be provided.

Hydride Vapour Generator:

Software controlled continuous flow Hydride generator with electric/flame heated quartz absorption tube capable of working with flame and graphite furnace should be offered with the equipment

Auto sampler:

The System must be with offered dedicated flame and graphite Auto sampler of minimum 100 each positions for flame & Graphite Furnace

Interface systems:

External PC control system as standard with Windows Professional Platform with latest version operating system and external LaserJet colour printer. The configuration of the PC shall be as follows

- a) Latest generation Intel Pentium i5/i7, with min 8GB RAM, 1 TB SSD



		<p>b) Interfaces: RS 232 , 4 USB port, Ethernet connectivity c) Keyboard & mouse d) 21.5" monitor e) OS: Original license copy of latest Windows OS compatible with the AAS software</p> <p>Accessories: Instrument should be supplied with accessories like, oil free noise free scroll Air compressor, Recirculation chiller, Argon, Acetylene and Nitrous Oxide Gas Cylinder (Two each) with dual stage & dual gauge SS 316 regulators and purification panels for each gas, 15ft SS316 Fume Hood assembly, Gas paneling distance Appx 50 ft , Suitable UPS (30KV, online) with at least 60 minutes back up with 60 meter cable ,in out MCH and electrical switches required for installation (Battery should be covered under warranty),Cylinder cage with lock option & proper shedding to install 12 or more cylinders in ground floor.</p> <p>Consumables: Nebulizer tubing – 3 set Nebulizer – 1 set Graphite auto sampler vials – 500 Nos each for flame and graphite Graphite tubes – 10 Nos. Tubes for sampling, pump, Sod. Borohydride – 3 Nos. Nebulizer burner head O-ring kit – Nos. Ferrules – 3 sets, Auto sampler inlet/outlet valve – 1 set</p>	
2.	Autoclave (indigenous)	<p>Chamber</p> <ul style="list-style-type: none"> • Vertical loading type chamber with service basket and complying to the strictest international directives and standards equipped with • Steam collection bottles to remove most of the steam during operation • Ware inlet and outlet valve • Drain valve for cleaning or changing with fresh water • Constructed with appropriate stainless steel with superior corrosion resistance to water and steam • High temperature and pressure resistant silicon gasket • Built-in analog pressure gauge • Manual pressure release valve • Wheels/casters for easy transport. <p>Chamber size/ Capacity</p> <ul style="list-style-type: none"> • Approx. 80-120 lit <p>Gauges</p> <ul style="list-style-type: none"> • Should have a water level gauge • Analog gauges for measuring inner and outer steam pressure. • Should have an inner temperature indicator. <p>Display</p> <ul style="list-style-type: none"> • Fully Automatic PID Control ± 0.1 °C • LED display for temperature and remaining time <p>Operating Temperature and accuracy</p> <ul style="list-style-type: none"> • Maximum 123°C • Temperature Accuracy: ± 0.5 °C at 121 °C • Must have Temperature calibration function 	Rs.2.80 Lakh



		<p>Operating pressure and gauge</p> <ul style="list-style-type: none"> • 15 -20 psi <p>Timer</p> <ul style="list-style-type: none"> • Automatic START/STOP timer <p>Safety warnings and alarms</p> <ul style="list-style-type: none"> • A cycle cannot start if the door is open or not properly locked • The door cannot unlock until chamber pressure reaches room pressure • Over-Temperature Cut-Off with audio visual alarm • Low Temperature Warning: If the temp. stays below 121°C for more than 5 seconds • Low Heat Warning: If the temp. does not reach the sterilization temperature during the set periods • Over-Pressure Cut-Off with audio visual alarm • Over Current Cut-off with audio visual alarm. • Low Water Level heater cut-off and ALARMS 	
3.	Biological Oxygen Demand Incubator (BOD)	<ul style="list-style-type: none"> • Temperature Range: 5°C to 60° C • Sensitivity. $\pm 0.5^\circ\text{C}$. • Be provided with PID temperature controller and data recorder and computer • To be fitted with alarm system • Capacity : 250 L • Material of construction: <ul style="list-style-type: none"> ✓ Double walled construction with complete inner chamber made of Corrosion resistant stainless steel (AISI 430) ✓ Outer chamber should powder coated point Insulation to maintain desired temperature Inner glass door ✓ Inner chamber should be fabricated with ribs for adjusting shelves to convenient height and shelves to be supplied ✓ Shelves should be made of polished stainless-steel sheet as per chamber 	Rs. 2.50 Lakh
4.	Biosafety level cabinet (imported)	<p>Type C HEPA filters should be 99.99% efficient at 0.3micron for the supply and exhaust air flow and should be tested for microbiological safety (NSF-49 certified of EN 1822) Certificate must be attached.</p> <ul style="list-style-type: none"> • The work surface must be made of Stainless Steel only 3 • During operation approximately Airflow Pattern: 70% recirculation / 30% exhaust • Real time filter monitoring system in percentage only on actual and not on hourly or hourly meter basis. The system should be able to compensate automatically in full (no manual compensation allowed) for the filter load and maintains constant, stable airflow despite building supply voltage fluctuations. • A fully configurable microprocessor control with audible and visual alarms for unsafe conditions during the sash opening or closing. The cabinet should be fitted with illumination facility and one electrical receptacles. • Internal dimensions (W x D x H): 1800 x 495 x 780 mm External dimensions(W x D x H): 1900 x 798 x 1550 mm 	Rs. 14.00 Lakh

		(Note: The cost may vary depending upon the working platform dimensions. Working platform dimension need to be defined as per lab requirement)	
5.	Bomb calorimeter	<p>Automatic PC controlled Bomb Calorimeter for rapid determination of gross calorific value of crushed/powdered samples. The equipment should be compact & bench top model instrument. The value of gross CV should be reportable in Kcal/Kg, properly interfaced printer, balance, PC. The equipment should be easy to operate.</p> <ul style="list-style-type: none"> • Automatic Features includes: (when operated through software & PC) • Automatic feeding of Calorific values of ignition wire & cotton thread • Automatic Firing in the Bomb. • Automatic Detection of maximum rise of Temperature • Automatic calculation of Water equivalent / • Calorific values • Automatic saving of water equivalent / calorific values in each experiment • Automatic delivery of result data's in report format. • Automatic graph plotting between times vs. temperature. • Calorimeter software should maintain the history of the ignitions performed with each bomb. • Bomb & bucket should be removable type only to do more number of samples per hour as well as long safe life of bomb and bucket. • Temperature Measuring Resolution: 0.0001 deg C • Body of the basic unit should be made of durable, light metal/alloy with suitable finish. • Thick-walled acid resistant and made of high strength with proper insulation arrangement and capable of withstanding high pressure and fit for safety burning samples liberating up to 10,000 Kcal/kg for one gram sample. • Method-Isoperibol/ Continuous compensated • Sample weight-0.5 gm – 1.5 gm • Balance-Built-in/interfaced, Top loading electronic balance with LCD display and auto calibration facilities. • Required weight range: -0.1 gm – 100 gm (Max.) • Resolution: -0.0001gm (Minimum), Accuracy: - + 0.0001 gm (Minimum) • Range-500 KCal/Kg to 10,000 KCal/Kg or more for 1 gm of sample. • Measurement Precision-0.2 % RSD or better. • Corrections-Operator selected option for correcting for Acid, Nitrogen, and Fuse wire, Sulphur, Moisture, Ash and Hydrogen. <p>Working temperature: - up to 35deg C or more. If required OEM make only water handling system should supply with main system to work on this temperature or above.</p> <ul style="list-style-type: none"> • Processing Capacity (Operator Time) - 8 Minutes to 10 Minutes per test in Isoperibol/compensated method. 	<p>Indigenous: Rs 4.50 Lakh</p> <p>Imported Rs.18.00 Lakh</p>

		<ul style="list-style-type: none"> • Gas filling arrangement- Automatic Suitable gas filling arrangements with regulator and gauges for line/vessel pressure and all necessary attachments. • All the software to run the instrument with PC is included in main package. • Printer-Either built-in or suitably interfaced with the basic unit and real time print out facilities. • Bomb has approval with PED, ASTM E144 (Pressure equipment Directive) and CE. • Additional software if any required to be included. • Sample Crucible: Metal crucibles with Ni-Cr Alloy. Minimum for 5000 test sample crucible will supply with main instrument. • Power requirement: 230 VAC +/- 10 %, 50/60 HZ As per Indian condition. <p>Other features</p> <ul style="list-style-type: none"> • Temperature Resolution: ± 0.001 Deg C • Memory Storage: 100 data • Battery backup for stirrer and Microprocessor unit • (UPS) • RS 232C interface to connect with Computer • Soft touch Key pad • Auto Firing • Detection of maximum rise of Temperature • LCD display with backlit 16 x 2 characters • compatible with USB / Serial port of PC • Accessory: Semi Auto Gas Filling Device 	
6.	Bursting Strength tester (imported)	<p>Required features:</p> <ul style="list-style-type: none"> • Single Push button Operation • Microprocessor based display for accurate test results Peak Hold facility for keeping maximum value of test result in memory • Highly accurate test results under multidirectional Force • Strong Gripping clamps • Grooved structure of Test Specimen Holder to avoid slippage and intact holding of specimen under test No slippage in case specimen is tightened uniformly <p>Bursting Strength tester for determination of strength of different packaging materials used in food using operating wheel Bright LED display Feather touch controls Memory to hold up to 9 test reading Calibration lock & key feature</p> <p>Technical Specification: Test Range: 1 Kg/cm² to 38 Kg/cm² Capacity : 40 kg/cm² Display : LED (Digital) Accuracy: $\pm 1\%$ within 10% to 90% of entire range as per IS:1828 Least Count/Resolution : 0.1 Kg/cm² Power: 220V, Single phase, 50 Hz Test fluid : Glycol or Glycerine about 98% purified(lab grade) Motor : 1/4 HP Single Phase, 1440 rpm</p>	Rs. 4.50 Lakh

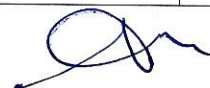


		<p>Capacity: 0- 100kg/cm² Adjustable Clamping Diameter Pressurization: High pressure: 70+20ml/min: Low pressure: 95 + 10 ml/min Depressurization :High pressure: 340 +20 ml/min, Low pressure: 190 + 10ml/min Accessories: Rubber Diaphragm – 2nos. Standard test Foil Set (Consists of 4 foils)-1 set Wrench for opening / changing diaphragm-1 no. Glycerine (100ml) - 1 bottle Other: Compliance with Related Standards: ASTM D 3786-01, ASTM D 3786 – 80A, ISO 1060 PART-1 1987</p>	
7.	Centrifuge (Indigenous)	<ul style="list-style-type: none"> • RPM range: 100-20000 or better • Model: Bench-top portable • Speed indication: Digital display. • Bath to maintain temperature of up to 60°C. • Base Unit: ✓ Table top centrifuge with maintenance free brushless motor and have low access height CFC free refrigerant ✓ LCD Digital Display of time, speed and Temperature and run conditions ✓ Compatible with all fixed angle and swinging bucket rotors ✓ Automatic rotor recognition facility ✓ Automatic imbalance detection and cut-off ✓ Should be programmable with easy preset programs for fast temperature for pre-cooling and short spin ✓ Should have motorized lid lock system • Temperature Range: 0 °C to 30 °C • Speed :Maximum speed: 20000 RPM (with no load) • Rotors: ✓ Fixed Angle Rotor for 50 ml bottles, 15 ml Falcon tube, 1.5- 2.0 mL tubes and adaptors for 0.2- and 0.5-mL tubes ✓ Rotor for 2.0 mL Eppendorf tubes (12 places or better) with RPM 20000 ✓ Deep-well micro plates rotor Two 96 well plates for swing out type with RPM 3500 ✓ Swing out rotor: • Accessories: ✓ Bottles, falcon tubes, adapters etc ✓ One set of Other items (rotors/adapters) required for improving the applicability/system performance should to be quoted as optional • Power Requirement: 220 v to 240 v -50 Hz If a voltage stabilizer is required, it should be supplied along with the unit • Voltage stabilizer: Suitable voltage stabilizer to be provided ✓ Certificates Performance and Safety Standards: Should have necessary certification for safety and quality standards from national/ international bodies ✓ Optimum safety according to national and international regulations (IEC 1010) 	Rs. 2.00 Lakh
8.	CHNS analyzer (imported)	<ul style="list-style-type: none"> • Operation Mode- CHN, CHNS & O • Measuring Range: 0.01% to 100% • Detection limits: 1µgm 	Rs. 50.00 Lakh

- Calibration: Matrix-free,
- Multiple point Calibration, long-term stability
- Sample size-0 to 250 mg.
- Sample type- solid. Powder, paste & Liquid
- Gases: Carrier Gases-Helium or Argon, Combustion/Oxidation Gas: Oxygen
- Furnace: High temperature Two Zone Furnace or Double furnace with separate Combustion/Oxidation Zone & Reduction Zone. Maximum Furnace Temperature- Up to 1100°C & Maximum Digestion/ Flash Temperature: 1800°C
- Analysis Time- Up to 8 minutes in CHNS & up to 4 minutes in O mode
- Accuracy And Precision:
- Precision: 0.3% Standard Deviation for C, H, N, S & O
- Accuracy: 0.3% in all CHN, CHNS & oxygen Mode
- Separation: Gas Chromatography technique based on Retention time on GC Column, Or Programmable temperature desorption column, or with the help of a Dedicated Infrared detector & Thermal Conductivity Detector for individual elements
- Detection: Thermal Conductivity Detector or Non-Dispersive Infra-Red Detector for CHNS & O
- Auto sampler: Minimum 60 position Zero Blank Auto sampler, Electrical/Pneumatically actuated; Should be capable of accommodating the large sample size or weight with commonly available 10x10mm and 5x9mm tin cups for solids, viscous and liquid samples or through other Folding materials, disks, cones, etc, compatible with carousel cavities. The auto sampler package must be complete & include a pneumatic control unit and silent air compressor if needed.
- Ash Removal Assembly: Should have the possibility to use an ash finger to handle high inorganic/ halogen or fluorine contents.
- Software: Latest Windows-based operating software controlling the instrument operations, recording data, performing calculations, diagnostic recording like leak testing and condition monitoring, and managing calibration procedures. Pré-set default methods (instrument, integration, calculation and reporting parameters) available for an easy instrument start-up and running. Maintenance Control Program, Automated Leak Check, Automated and programmable wake-up, start-up, shut-off.
- Microbalance: (Mettler/Saratorious make) Six-digit Microbalance, 0.001mg resolution & Sensitivity. Automated transfer of the weight from the balance to the software.
- PC & Printer: Latest i5 or higher PC with Colour Inkjet Printer
- **ACCESSORIES:**
- Sample Sealing/Preparation Devices for Solids and Liquids. Samples must be provided. The liquid analysis kit shall include a suitable micropipette and other accessories
- High Purity Helium Gas Cylinder with Regulator, - One Number



		<ul style="list-style-type: none"> • High Purity Oxygen Gas Cylinder with Regulator - One Number • Gas Purification Panel for cleaning the gases from impurity. • Suitable Online UPS for the back-up of the entire system with 30 Minutes of Battery Backup • Consumables: 2000 Consumables for CHNS and 1000 consumables for Oxygen. This should include Quartz REACTORS, Oxidants, Catalyst, and Tin Capsules • Power Supply- 230V, 50/60 Hz/ 1. KW 	
9.	CO2 Incubator	<ul style="list-style-type: none"> • Capacity:>170 L • Temperature management of at least 4°C above ambient to 50°C with control increment of 0.1°C. • Temperature accuracy:+ 0.4°Cat 37°C • Temperature stability: + 0.1°Cat 37 °C • Temperature uniformity: + 0.3°Cat 37 °C • CO2 gas range: 0.1 – 20% with control increment of 0.1%, accuracy: + 0.3% at the specified Relative Humidity (RH) at 37°C, stability:+ 0.1% at 37 °C and gas uniformity:+ 0.1% at 37 °C across the chamber. • CO2 recovery rate: 5- 6 min after door opening and closing event to attain 5% CO2. • Should have High-Temperature Disinfection [HTD] of at least 140 °C or above for 2 hours. Entire HTD cycle shouldn't take more than 14 hrs. • The system should have BMS relays built in and option to incorporate onto Data monitoring and documentations modules. • The door hinges, associated cable and other accessories should be robust and stringently tested. • Should have a large backlit display for control of temperature and alarms. • Should have separate single inner glass door for monitoring of samples without disturbing conditions of the chamber. • Should have six-sided direct heating elements to ensure even distribution of heat throughout the entire incubator chamber. • Should come with a removable humidity tray for easy cleaning and refilling of distilled water. • Should be “fan less” design to reduce chance of contamination, reduce noise level, minimum air turbulence and bigger usable capacity. Eliminates need for chamber HEPA filter, reducing recurrent cost & providing further protection against contamination. • Should have state-of-the-art Dual Channel Infra-Red (IR); NDIR type CO2 sensor with auto-calibration feature to ensure accuracy of sensor automatically and should withstand at least 180degC during high temperature disinfection. • The incubator should come with at least3 perforated stainless-steel shelves. • Should have 02 Nos. Access ports at the back of the chamber to allow for external probes, etc., for third party monitoring of chamber conditions. • Machine should be European CE/USFDA certified. Certificate to be attached. 	Rs.10.00 Lakh

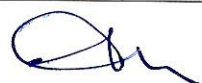


		<ul style="list-style-type: none"> Machine should be supplied along with CO2 gas cylinder (1 no) ,2 stage CO2 regulator (1 no) & suitable 2KVA servo stabilizer (1 no) for smooth functioning. 	
10.	Cold Storage Facility (For a food testing lab)	<p>Size : 8 X 8 X 8 FT (LXWXH) Temp: Minimum 4 deg C Evaporator finish: Pre painted Evap Fan size and quantity:12 inch X 2 No. Compressor Type: Hermatic Compressor Make :Branded Insulation Material :PUF Panel Finish :PP/PP Insulation Thickness :60 MM Refrigeration Machine Power :2 HP Compressor Model :Branded Refrigerant gas specification :R-22 Piping insulation :As actual Electrical power supply :220 V / 50 HZ / 01 PH</p>	Rs. 5.00 Lakh
11.	Colorimeter (Imported)	<p>Geometry</p> <ul style="list-style-type: none"> d/8° Reflectance d/0° for regular transmittance <p>Spectral Range</p> <ul style="list-style-type: none"> 400-700nm <p>Reporting Interval</p> <ul style="list-style-type: none"> 10 nm <p>Light Source</p> <ul style="list-style-type: none"> Pulsed Xenon lamp <p>Sphere Diameter</p> <ul style="list-style-type: none"> 152 mm approx <p>Specular Component</p> <ul style="list-style-type: none"> Included <p>Spectrophotometer Detector</p> <ul style="list-style-type: none"> Two 256 element diode arrays with a high resolution, concave holographic grating/ Dual 40 element photodiode array <p>Lamp Life</p> <ul style="list-style-type: none"> ≥ 1 million flashes <p>Illuminant</p> <ul style="list-style-type: none"> A,C,D50,D65,F2,F6,F7 ,F8,F10,F11,F12 <p>Color Differences:</p> <ul style="list-style-type: none"> $\Delta L^*a^*b^*$, ΔLab, ΔL^*C^*h, ΔY_{xy}, ΔXYZ, ΔE, ΔE^*, ΔE^*2000, ΔH^*, ΔC^*, ΔE_{cmc} <p>Colrimeter data</p> <ul style="list-style-type: none"> CIE $L^*a^*b^*$, Hunter Lab, CIE L^*C^*h, , CIE XYZ, <p>Reflectance</p> <ul style="list-style-type: none"> CIE 15:2004, ISO 7724/1, ASTM E1164, DIN 5033,Teil 7 and JIS Z 8722 Condition C <p>Transmittance</p> <ul style="list-style-type: none"> CIE 15:2004,ASTM E1164, DIN 5033, Teil 7 and JIS Z 8722 Condition E, G Haze conformance per ASTM D1003 Section <p>Standards Traceability</p> <ul style="list-style-type: none"> Instrument standard assignment in accordance with National Institute of Standards and Technology (NIST) following practices described in CIE Publication 44 and ASTM E259 	Rs. 17.00 Lakh

		<p>Observer</p> <ul style="list-style-type: none"> • 2° and 10° <p>Colorimetric Repeatability</p> <ul style="list-style-type: none"> • $\leq 0.04 \Delta E^*$ CIE L*a*b* on white tile <p>Inter-instrument Agreement:</p> <ul style="list-style-type: none"> • $\Delta E^* < 0.15$ CIE L*a*b* (Avg) on BCRA II Tile Set OR • $\Delta E^* < 0.25$ CIE L*a*b* (Max) on BCRA II Tile Set <p>Indices</p> <ul style="list-style-type: none"> • Haze, Metamerism, Opacity, WI Tint, Whiteness Index ASTM, Yellowness Index, YI (ASTM) <p>Standard Accessories</p> <ul style="list-style-type: none"> • Calibrated instrument white tile • Certificate of traceability • Black calibration tile • Transmittance plate • Green diagnostic tile • sample Measurement accessories for powder, paste, Granuels, Liquid & transparent sample measurement. • sample cup/ petri dish (2 Number) • LAV and SAV apertures for measurement • RS-232C cable / USB Serial Converter cable • USB-to-Serial adapter • Power cord • PC External Software • User Manual • Original window-based software with license for Acquisition, data handling (quantitative/qualitative) and reporting. • IQOQ for the instrument and software must be included. 	
12.	Conductivity meter	<ul style="list-style-type: none"> • Conductivity Testing Range 0.000-1.999uS/cm, 19.99uS/cm, 199.9uS/cm, 1999uS/cm, 19.99mS/cm, 200.0mS/cm • Conductivity Testing accuracy 1 to 1.5% F.S • Temperature Testing Range -0-100°C • Temperature Testing accuracy m 1°C • Coefficient of Temperature compensation- 0-3.9%/ • Calibration point - 1 point, input figure • Electrode constant-0.1, 1.0, 10, Adjustable continuously • Temperature compensation range-0-50°C manual or automatic 	Rs.1.40 Lakh
13.	Constant Temperature Water Circulating System (Indian)	<ul style="list-style-type: none"> • Temperature range from ambient+5°C above to 100c • PID microprocessor controller (touchpad type) achieves accurate temperature control • Memory to store three temperature setting and single button to activate required set temperature. • Electronic programmable timer for setting start and stop automatically . (max. to 99hr59min) • Built in over temperature protection device alarms visual and audible and heating stops • Built in high temperature limit in main controller does not allow temperature over setting parameter level • Built in low liquid level protection alarms visually and audibly and heating stops. 	Rs 2.00 Lakh

		<ul style="list-style-type: none"> • Temperature unit display readout: Celsius / Fahrenheit • Lock function protects setting value from unintentional changes • Drain valve to conveniently empty the bath • Seamless stainless • Steel bath (now eldsor rust) for easy cleaning and ergonomic appearance 	
14.	Cryo-bath (indigenous)	<ul style="list-style-type: none"> • Temperature range: 3 ± 1 deg C or lower to ambient temp. • Temperature accuracy: ± 1 deg C • 35 ± 2 litre inside chamber: Double walled construction with inner S.S. argon welded one piece pot to avoid leakages, 2" Thick Insulation to ensure stable temperature with reduced energy consumption. • Digital display and temp control • CFC Free hermitically sealed Emerson Copeland make compressor for better cooling with R 134 A (Eco friendly) refrigerant with time delay to safe guard compressor. • With water circulating pump 15 ltr. /min capacity, single phase, 230 Volts • Top mounted removable lid • Inside S.S. 316 mirror finish & outer S.S. 304 with a matt finish. • Mounted base wheel to easy movement <p>The temperature to be controlled by microcontroller base PID Controller with an accuracy of 1 °C. The unit is provided with a circulating pump to ensure uniform temperature.</p>	Rs. 4.00 Lakh
15.	Deep Freezers (-20°C and 30°C)	<p>Deep freezers are used to store samples, reagents & kits, reference materials at low temperature i.e., around -20 ° C to -30°C.</p> <ul style="list-style-type: none"> • Type/Capacity :Vertical />200 L • Position of Door : Front • Frost Free : Yes • Type of Cooling: Direct • Castor : Heavy Duty Lockable • Shelves/ Drawers :Sealed 4-6 pullout drawers / shelves of different sizes that can be adjusted for storage flexibility • Material of Chamber Exterior along with door: Stainless steel, preferably 304 grades • Temperature Range: - 10 °C to - 30 °C • Temperature Uniformity in Degree Celsius : • ± 3 °C or less • Temperature Stability of System in Degree Celsius: 3 °C • Control: Fully programmable microprocessor controlled with membrane keypad and eye level control panel • Display: Easy to read, LED control panel and alarm status with integrated diagnostics • Acoustic Safety alarms: Should be equipped with for High/low temperature, door ajar and malfunction alarms, sudden power failure, system failure and battery low 	Rs 5.00 Lakh

		<ul style="list-style-type: none"> • Temperature History: Data logger for temperature and temperature history which can be downloaded via a USB port Yes Should Have Battery Back Up for The Display and Security Lock for The Display: Yes Refrigerants: CFC-Free, HCFC-Free non inflammable refrigerants • Voltage Stabilizer: Should be provided 	
16.	Digital Abbe Refractometer (Indigenous)	<p>Measurement range:</p> <ul style="list-style-type: none"> • Refractive index nD: 1.3000-1.7000 • Dissolved Solids Brix: 0-95% • Resolution of Refractive index nD: - 0.0002 • Resolution of Dissolved Sol ids Brix: a0.01% • Temperature control range: 5.0 to 75.0 °C • Resolution of Temperature : 0.1°C • Accuracy Measurement of Refract index (nD) -0.0002 • Accuracy Measurement of Brix-0.01% • Digital display : LCD screen • Measurement prism: Optical glass • Light source: LED (Approximating to wavelength of D-Line) • Wavelength: 589 nm • Scale: Refractive Index/ °Brix • Repeatability: When measuring a standard sucrose solution of up to 50% 	Rs. 2.50 Lakh
17.	DSC (Differential scanning calorimeter)	<p>Type of measurement: Thermal analysis of various kinds of materials such as organic and inorganic compounds etc. to find out transition temperatures, enthalpy of phase transition, glass transitions, melting points. Crystallization temperature, degree of cure, heat of fusion of reaction, reversing and non-reversing component of heat flow, oxidative stability etc.</p> <p>Instrument Parameters</p> <ul style="list-style-type: none"> ➤ Includes Mass flow controller - an integrated mass flow controller, software controlled for monitoring and controlling of two purge gases. ➤ Must have the ability to switch easily between cooling accessories; Chiller and Intra-cooler. ➤ Intuitive Touchscreen - Touch interface simplifies instrument standalone operation, significantly enhancing productivity. ○ Must have a temperature range of -90 to 750 °C ○ Temperature accuracy of ±0.05 °C or better. ○ Temperature precision less than 0.02% ○ Calorimetric accuracy and precision ± 0.2 % ○ Must have an indium response ratio of >19 mW/°C ○ Must have an indium melting time of 3.3 seconds ○ Dynamic range +/- 175 mW or better. ○ Must have required controlled heating and cooling rates are of 0.1 to 100 °C/min ○ Between sample cooling times (100 to 0 °C with intra-cooler accessory) to be under 4 minutes ○ Isothermal Kinetics, Scanning Kinetics, Specific Heat and Purity software packages to be included as standard 	Rs. 40.00 Lakh



		<ul style="list-style-type: none"> ○ Qualification, verification and calibration services must be available. ○ Comprehensive accessory kit to be included as standard. ○ Atmosphere can be static or dynamic, including nitrogen, helium, carbon dioxide, air, oxygen, argon or other inert or active gases over full temp range. ○ Fully automated autosampler with a minimum of 40 positions to be available as an future upgrade option. ○ Data can be collected without PC connections (via USB). <p>Instrument must be able to connect refrigerated intra-cooler and chiller / water circulator at a time to use both cooling units as per requirement.</p> <p>Calibration standards: Suitable metallic calibration standards at least three should be provided over the entire range.</p> <p>Power: Power 100-240 V AC, 50/60 Hz. 5Kva UPS for minimum 30 minutes back up for the instrument should be provided</p> <p>Warranty: One year</p> <p>Computer: Suitable computer should be provided.</p>	
18.	Electronic Analytical Balances	<ul style="list-style-type: none"> • Capacity: 200 g/ 210 g/ 220 g • Least count: 0.00001 g (.01mg) • Readability: 0.01mg (0.00001 gm) or 0.1 mg (0.0001 gm) Lab can choose the readability required • Repeatability (Standard deviation): ± 0.1 mg • Response time: Less than 10 sec • Stabilization (typical: Approx. 4.0 sec (0.1mg) / 15 sec (0.01mg) • Weighing pan: Circular/square/rectangular, Single Pan Top, Grid type, Eccentric load deviation 0.2/0.25 mg • Minimum overall diameter of pan: 8-10 cm • Tare facility: Yes • Calibration (internal): Fully automatic, time/ temperature controlled internal calibration, Should be capable to adjust itself • Balance levelling: Balance should indicate immediately as & when it is required to be levelled and should have the facility for horizontal plane calibration (mercury bubble adjustment), if not otherwise available. • Weight Box traceable to international standards: Must be provided range of weight 1 mg - 200 g, E2 (1 no) Accuracy class acc. to OIML R111: E2 	Rs. 2.00 Lakh
19.	Electronic colony counter	<ul style="list-style-type: none"> • 110 mm dia. Magnifying glass • Audible Confirmation of Each Count • Uniform glare free illumination • Digital readout from 0 -9999 • Auto marker pen • Automatic retaining of last value in case of power failure. 	Rs. 1.75 Lakh for an imported



20.	ELISA reader (imported)	<p>The system should be a compact bench top Microplate Spectrophotometer with Monochromator-based optical system with following specification:</p> <ul style="list-style-type: none"> • Micro-plates 24, 48, 96 - well micro plates • Speed: 30 seconds for 96 wells, • Wavelength range should be 300 nm 800 nm or better. • The system should have No filter needed for these readings. • The Microplate Spectrophotometer can be used in all studies such as routine biology tests, protein analysis, and nucleic acidity. • The light source of system has the Xenon lamp. • Wavelength Accuracy of the system has ± 2 nm. • Electrical Requirements - INPUT 100 to 240V 50/60Hz / (65W Adaptor) • System has Microplate type 6 ~ 384 well plate. • Detector- Photodiode • Application of system has Wavelength scanning, end point, Kinetic, Area scan. • Dynamic range- 0 ~ 4.0 OD or better. • OD accuracy- 0 ~ 2 OD $\pm 1\%$ or better. • OD linearity - 0 ~ 2 OD $\pm 1\%$ or better. • OD repeatability - 0 ~ 2 OD $\pm 1\%$ or better. • Shaking - Two step speed • The software should be supplied with system; Abs, UV-Abs, and modes, Endpoint, Kinetic and Spectral scanning. • System has option for micro volume reading for sample volume of 2uL or better. • It should supply along with PC with better Configuration. • System should have CE, ISO certified. • Warranty: standard. • Document & Certificate from the OEM must be included 	Rs.6.00 Lakh
21.	Automatic Fibre analyzer	<p>Features</p> <ul style="list-style-type: none"> • The system must be closed and microprocessor controlled, capable of performing all operations, extraction, rinsing & filtration of samples for analysis of crude fiber, acid detergent, Fiber, neutral detergent fiber, etc. • Should have agitate/heat Switch & temperature/timer/clock controller for process parameter input and results readout. • System should be based on either crucibles or filter bag technology • Analysis of sample: Should have possibility of analyzing ≥ 6 samples at a time • Sample size ≤ 2.5gm. • Measuring range: 0.1 to 100% • Reproducibility: $\pm 1\%$ relative at 5% - 30% fibre level • Operating manuals, service manuals, other manuals • User, technical and maintenance manuals in English language • Service and operation manuals to be provided advanced maintenance tasks documentation, if any. • Accessories to be supplied • In case of fiber bag system 1000 filter bags should be quoted along with the system 	<p>Cost : Rs. 20.00 Lakh for the imported</p> <p>Rs. 6.25 Lakh for the indigenous</p>

		<ul style="list-style-type: none"> • In case of crucible-based system, the following accessories must be essentially quoted for Cold extractor • 24 Crucibles of P2 porosity • Crucible stand for ≥ 6 crucibles • 2 crucible holders • 2 nos. each of acid tank, alkali tank, NDS tank, ADS tank • In case of filter bag system, the following accessories must be essentially quoted for Heat sealer for filter bags; marker acetone resident block. • 12 nos. of glass spacer; drip tray; complete fiber bag incineration module along with 12 nos. of quartz crucible; 	
22.	FT-IR Spectrophotometer	<ul style="list-style-type: none"> • Fourier Transform Infra Red (FTIR) Spectrometer • The Fourier Transform Infrared (FTIR) Spectrophotometer is intended for qualitative and quantitative analysis of Food & Agriculture products, Water, Packaging material and Food additives (powder, liquid, Gel & Paste of raw materials, intermediates, and finished products). It is used for: <ul style="list-style-type: none"> • Identification of functional groups and chemical structures • Verification of raw material authenticity and purity • Polymorphic and degradation studies • Compatibility and formulation analysis • Residual solvent and contaminant detection • Routine Quality Control (QC), R&D, and method development activities. • The system should be PC-based, with both data acquisition and system control managed through the same software. The software should have the capability to select matching the spectra, including functional group wavelengths, directly from the system's default data library. All necessary hardware and software components required to support these functions should be provided along with the system. • The system should have the following minimum specifications. <ul style="list-style-type: none"> • It must have a scan range of 7,800-350 cm^{-1} or more. • Spectral resolution must be 2.0 cm^{-1} or better. • Wave number accuracy: 0.5 cm^{-1} or better • System should have Reference laser Solid state laser • Signal-to-Noise Ratio: 30,000:1 (peak to peak, one minute) or better • System should have DLATGS/DTGS detector. • System must be quoted with Diamond ATR along with transmittance unit and demountable liquid cell. • Optics should be completely sealed and desiccated enclosure • The system should have facility to accommodate different FTIR accessories like ATR, Demountable liquid cell, temperature controlled ATR, Gas Cell etc. • The instrument should be connected with computer and should have continuous electronic monitoring of multiple spectrometer components. • Should be provided with compatible transparent cabinet for the comfortable placement and installation of entire FTIR instrument to be supplied. 	Rs.25.00 Lakh



		<ul style="list-style-type: none"> • The system should have facility to accommodate different FTIR accessories like ATR, Demountable liquid cell, Gas Cell, Microscope, temperature controlled ATR etc. • System must be quoted with Operation and service manual to be provided. • Software – should be Windows based system with facilities like Instrument control, Basic and advanced data manipulation routines, Spectral calculator etc. • Data Processor: A PC based data acquisition & processing system along with complete system control should be offered. The necessary software should be fully Windows based. The software should be able to control the system. • PC: Suitable PC (branded computer i5) with printer & online ups with 30 mins back up to run the instrument should be provided with the instrument. • System must be quoted along with inbuilt Polystyrene film for calibration (5 years' validity). • The system must be quoted with Genuine & OEM Spectral Libraries of min 30,000 compounds including common organic compounds etc. • The system must include OEM document (Operation qualification (OQ), Instrument qualification (IQ) Performance qualification (PQ) and software qualification 	
23.	Gas chromatograph with FID and ECD Detector, with head space & Liquid Auto sampler (Optional detectors: TCD, NPD and FPD)	<ul style="list-style-type: none"> • A compact and high-performance GC system with a touch-screen user interface with built-in diagnostics. • GC Oven maximum temperature must be a minimum of 450°C or better. Must have minimum 20 ramps facility with ramp rate of minimum 120°C/min. • One split-Splitless inlet and one On-column capillary inlets must be provided along with the dedicated electronic pneumatic controls. • One Flame ionization detector (FID) detector with dedicated electronic pneumatic controls and minimum detection limit (MDL) of 1.2pg and maximum temperature of 4500C or more. • One Electron capture detector (ECD) detector with dedicated electronic pneumatic controls and with a minimum detection limit (MDL) of 5.0fg and maximum temperature of 4000C or more. • A liquid Autosampler must be provided for at least 100 sample vials capacity or more. Must be compatible with on-columns injections. • A headspace Autosampler with an inbuilt vial shaker must be provided for at least 60 sample vials capacity or more. • Original window-based software with license for Acquisition, data handling (quantitative/qualitative) and reporting. • IQOQ for the instrument and software must be included. 	Rs. 65.00 Lakh
24.	GC-MS/MS including auto sampler, Headspace analyzer (imported)	<ul style="list-style-type: none"> • Compact GC-MS triple quadrupole system with the highest sensitivity of minimum 0.3fg instrument detection limit (IDL) using 1ul injection of 1fg OFN. The working mass range of 10-1050 amu minimum or better, with built-in Full Scan, Selected Ion Monitoring (SIM) & combination of both the modes and Multiple reaction monitoring (MRM) modes in 	Rs.140.00 Lakh

	(optional accessory XYZ robotic sampler with liquid, headspace injection, and SPME)	<p>GC-MSMS. The GC system must have a touch-screen user interface with built-in diagnostics and the backflush facility.</p> <ul style="list-style-type: none"> • Ionization modes: Electronic Ionization i.e. EI and Optional Positive and Negative Chemical Ionization (CI). • The Turbo molecular pump should be dual-stage air-cooled with a 250-litre/sec or higher capacity for fast vacuum. • NIST and Wiley mass spectral library of pesticides, flavours, fragrances, alkaloids, flavonoids, metabolites, pesticides contaminants database etc. • GC Oven maximum temperature must be a minimum of 450°C or better. Must have minimum 20 ramps facility with ramp rate of minimum 120°C/min. • One programmable temperature split-Splitless inlet and one Split/Splitless capillary inlet must be provided along with the dedicated electronic pneumatic controls. • A liquid Autosampler must be provided for at least 100 sample vials capacity or more. • A headspace Autosampler with an inbuilt vial shaker must be provided for at least 60 sample vials capacity or more. • Original window-based mass spectrometry software with license for Acquisition, data handling (quantitative/qualitative) and reporting. Full scan, SIM, and MRM, must be provided with the software. A factory bundled PC must be a part of the instrument. • IQOQ for the instrument and software must be included. 	
25.	Gel Electrophoresis System (imported)	<p>Suitable for agarose gel electrophoresis of DNA/RNA with following specification:</p> <ul style="list-style-type: none"> • Cell size (W x L x H): 18 x 40.5 x 9.4 cm • Gel tray sizes (OD) (W x L): 15 x 10 cm • Sample throughput: 1–120 • Base buffer volume: ~1 L • Buffer recirculation: No • Bromophenol blue migration: ~3.0 cm/hr (at 75 V) • Should include a buffer tank, a safety lid with cables, leveling bubble, and combs (15- well and 20-well). • Arrow on the side of the base to indicate the direction of the run and to ensure proper orientation of the gel • Color-coded, labeled electrodes and labeled base for correct positioning of the lid on the base • Tabs on the base to permit easy removal of the lid and to prevent incorrect lid positioning • Clear plastic construction for easy sample visualization • UV-transparent gel trays with fluorescent ruler • Gel-casting gates to cast gels right in the cell • Additional gel trays to be supplied- 15x15cm and 15x20 cm. • Additional combs to be supplied- 15 and 20 well (2 of each). • Gel caster compatible with all the supplied gel trays should be supplied for tape free gel casting • 18.Type of output :Constant voltage, current, or power with automatic crossover • Output terminals : 4 pair recessed banana jacks in parallel • Timer control : 1 min–99 hr 59 min, fully adjustable • should have Pause/resume function 	Rs. 3.50 Lakh



		<ul style="list-style-type: none"> • Display for parameters • Operating conditions : 0–40°C; 0–95% humidity in absence of condensation • Safety compliance : EN61010 • Conforms to CE standards for emissions and immunity class A, tested only at 230 V, EMC certification • Safety features: No-load detection; rapid resistance change detection, ground leak detection, overload/short circuit detection, overvoltage protection, over-temperature protection • Input protection : Fuse on hot and neutral 	
26.	General Purpose Centrifuge (Indigenous)	<p>Laboratory centrifuge are suitable for continue sample analysis in food samples, with following specification:</p> <ul style="list-style-type: none"> • Should have provision of Last set parameters recall • Should have provision of selection of 3 acceleration & deceleration profiles • Should have provision of Display Type: LED • Should have provision of Automatic rotor identification, ensures operator safety • Should provide Stainless steel centrifuge chamber, easy to clean • Should have provision of Brushless induction motor with variable frequency drive • Microprocessor controller with digital display • Should have provision of Emergency lid lock release • Should have provision of Motor overload protection • Should have provision of Imbalance detection & centrifugation stop with display of error • Should have provision of Safety lid interlock to prevent lid opening during centrifugation • Should provide Max. Speed: 6000rpm • Should provide Max. RCF: 5250g • Should provide Max. Capacity: 400ml • Should provide Digital timer range: 0-99min • Should provide Noise:< 60 dB <p><u>Rotors-</u></p> <ul style="list-style-type: none"> • 6-50 -Angle rotor suitable for 6 tubes of 50ml (supplied with plastic tubes) • 24-15 - Angle rotor suitable for 24 tubes of 15ml (supplied with plastic tubes) <p><u>Optional Rotors-</u></p> <ul style="list-style-type: none"> • Swing out rotor suitable for 24 tubes of 15ml (supplied with glass tubes) • Swing out rotor suitable for 8 tubes of 15ml (supplied with glass tubes) 	Rs. 1.50 Lakh
27.	Glutomatic system (Imported)	<ul style="list-style-type: none"> • Automatic gluten determination of flour, semolina and wheat flour. • Facility for determination of both dry and wet gluten. • As per ICC standard no.155 and no.158 and AACC method no.38-12 	Rs. 8.00 Lakh
28.	Grain counter (imported)	<ul style="list-style-type: none"> • Counting size 0.3 mm up to 15mm. • Microprocessor based. 	Rs 2.00 Lakh

		<ul style="list-style-type: none"> • Programmable and facility for elimination undersized elements. • Integrated printer. • RS 232 output for computer connection. 	
29.	HPTLC	<p>Integrated HPTLC system for quantification, identification, finger printing and micro-preparative separations. High Performance Thin Layer Chromatography</p> <ul style="list-style-type: none"> • <u>HPTLC SOFTWARE</u> – New generation complete system & data acquisition, single software to link, control, integrate, manage the individual instruments for application, development, scanning and image documentation. Guides the user through chromatography steps. Numerous methods library available for internet download for lifetime. Client-server system for flexibility. Powerful database tracks individual samples and ensures data integrity. Automatic System Suitability detection and check. Built-in automatic back-up and restore tool for data. Produces a comprehensive GLP compliant analysis report with instrument, analyst, date, time, place, method parameters etc. and complete details. Communicates in both directions with instruments. Random and unique report ID given to each printout. Stores infinite number of methods and downloads them to instruments, when called for. Data security achieved through access control, customizable user Management, defined access levels to success. Safe database prevents accidental alteration / deletion. Essential for GLP & optional 21 CFR Rule 11 compliance and electronic data storage security and transmission. • <u>SEMI AUTOMATIC SPOT / BAND APPLICATOR-</u> 5th Generation. Sprays sample to layer. Stand alone or System Manager Control. 4 mode applicator 1) Quantitative analysis 2) Micro-preparative chromatography (190mm band length & 500µl sample in one go) 3) Superimpose – int. std.or derivatization reagent in same method 4) in – situ clean-up (sample application at 110mm on y axis). Sample syringe – 100µl (for analytical work) 500µl (for micro-preparative work). Sample position on X & Y axis freely selectable. Automatic rate of sample dispensing. Method storage – 10 built-in or infinite through system manager. Method entry – Manual or download from System Manager. Can auto – test instruments (self-diagnosis). • <u>CHROMATOGRAM DEVELOPMENT CHAMBERS:</u> All glass, molded, one piece chamber for TLC/ HPTLC. Bottom divided into two equal halves with a sloping divider. Chamber top and bottoms (both outside the chamber and inside the two troughs) should be perfectly parallel to each other. Chamber ground finish on top for good seal and at bottom for perfect level. Heavy chamber to minimise effects of vibration. One piece joint less moulded chambers prevent leakage and tough to handle while cleaning. Stainless steel rust proof lid 	Rs.130.00 Lakh



with overhang to completely seal the chamber. Appropriate sizes for 20x20 cm, 20x10 cm and 10x10 cm plates.

- **CHROMATOGRAPHY VISUALISATION : UV CABINET** UV Cabinet, Model 4 Dual wavelength 254 nm + 366 nm with guaranteed minimum intensity, as follows : UV lamp at 17 cm distance. Short wave UV (254 nm) 1600, long wave (366 nm) 1000,. Visible light (<400nm) 0.4. Full protection to viewer's eyes and skin from UV light for safety. High tech 50 kHz power supply for flicker less, instant illumination. Auto switch off after 10 min. Thermal sensor and tilt sensor built in for user safety.
- **20 X 10 CM ONE PIECE, MOULDED DIP TANK WITH LID FOR DERIVATIZATION TLC / HPTLC PLATE HEATER:** For in-situ derivatization and layer activation.
Stain resistant ceran glass top; temp range 25 to 200°C. Uniform heating of plate. Digital display of set & actual Temp. display remains on as long as plate is hot. Upto 20 x 20 cm size plates.
- **SOLVENT FRONT MONITORING DEVICE:** An electronic device to detect & monitor solvent front position during chromatography. Notifies acoustically & visually that mobile phase has reached the preset developing distance during chromatogram development. Works with glass plates being developed in glass chambers of different sizes 20 x 20 cm, 20 x 10 cm, 10 x 10 cm. Batteries included.
- **TLC / HPTLC SCANNER WITH DATA EVALUATION :** System Manager controlled Scanner / Densitometer for automatic spectrum scanning for identity check as well as purity check; Automatic quantitative measurement by absorbance & fluorescence; All facility plate sizes acceptable; Repeatability of positioning better than 50µm in Y direction & 100µm in X direction. Scan speed 100mm/sec @ 25µm resolution; Quick scan facility; Wavelength range 190-900 nm; Wavelength accuracy better than 1nm and reproducibility better than 0.2nm. Monochromator flushing by nitrogen; Data sampling rate – 4000 / sec; Special Macro optics for TLC & Micro optics for HPTLC. Apochromatic suprasil – fluorite lens system. Spectrum scan speed 100 nm / sec; Max 999 spectra / plate; Visible pilot slit image / scan compartment illumination with UV to check sample alignment with scan beam; D2, Hg, W lamps built-in. Self diagnostic + Service dialog + Universal filter for fluorescence also built-in; scan slit size variable; bandwidth selectable 5 or 20 nm. 16 bit, 2 channel interface, 100mg per double conversion.
Data evaluation 32 bit software (latest version), Excellent S/N ratio. High reproducibility; Controlled by System Manager, Automatic / Manual data integration, Auto baseline correction. Spot check facility. 3D display with data storage and auto calculation of each peak at its λ_{max} . Sub-component evaluation. Calibration - single level, multilevel, linear / non-linear. limit test support. Track profile subtraction. Statistics

		<p>CV / CI. Reproducibility check facility. Auto calculation of data from wts and dil. factors , Computer generated random no. for each report (GLP compliance). Lamp use tracking. 2 level digital user manual. Service Dialog + self Diagnostics + Tutorial all built – in. Meets GLP. Optional IQ-OQ and 21 CFR Rule 11 certification.</p> <ul style="list-style-type: none"> • ESSENTIAL SOFTWARE FOR SCANNER <ol style="list-style-type: none"> a) Spectrum Scanning option b) Scanner Quantification c) Scanner Multi Wavelength <p>Computer system, UPS, Nitrogen cylinder with regulator suitable for above HPTLC System TLC plates for HPTLC System.</p>	
30.	<p>High Performance Liquid Chromatography with DAD/PDA, FLD and RID (Optional detectors: ELSD and UV-Visual Detector) (Imported)</p>	<p>Quaternary gradient pump</p> <ol style="list-style-type: none"> 1. Should be capable of operating with 4 Solvents at a time during gradient operation 2. Settable Flow range: 0.1 – 10 mL/min, 3. Flow accuracy: $\pm 1\%$ 4. Flow Precision: RSD < 0.1 % or better 5. Pumping System: Software controlled 6. Maximum Pressure: 8700 Psi or better. 7. Degasser: Integrated or separate if not integrated. 8. Leak sensor :Present, this <ul style="list-style-type: none"> • Injector: <ol style="list-style-type: none"> 1. Rheodyne injector with injection volume 10μliterto 2 ml of sample. • Autosampler with sample cooler <ol style="list-style-type: none"> 1. Must have a capacity to hold 100 samples or more in approx. 1ml to 2ml vial 2. With auto dilution, auto addition, premixing and needle rinsing programs. 3. Injection Volume Range: 0.1μL to 100 μL. 4. Max. Operating pressure: Same as pump. Should not be less than pump. 5. Auto sampler carryover: < 0.05 % RSD or better 6. Sample Delivery Precision: < 0.5% RSD or better 7. Cycle time < 30 second 8. Sampler Thermostat: 4 to 35 degrees or better 9. Auto-sampler with injection volume of 1ml to 2ml of sample and minimum capacity 50 vials. • Column Oven: set temperature range of ambient to 85 degree c. <ol style="list-style-type: none"> 1. Must hold 3 long 30cm columns 2. Temperature range : 10°C below ambient to 65°C 3. Temperature accuracy : $\pm 0.5\text{ }^{\circ}\text{C}$ 4. Temperature precision : $\pm 0.1\text{ }^{\circ}\text{C}$ 5. Electronic heating/Peltier heating/forced air heating. • Detectors: All: • DAD/PDA Detector <ol style="list-style-type: none"> 1. Wavelength range should be 190 – 800 nm or more. 	Rs.60.00 Lakh

		<ol style="list-style-type: none"> 2. Detection type should be with 512 element photodiode array or better. 3. Light source - Deuterium and tungsten lamps. 4. Data rate should be up to 80 Hz (points/sec) or better 5. Wavelength accuracy = ± 1 nm. 6. Flow cell- Standard: $<14 \mu\text{L}$ volume, 10 mm cell path length 7. Noise :$< 10 \times 10^{-6}\text{AU}$ 8. Drift: $< 1.0 \times 10^{-3} \text{ AU/Hr}$ 9. Flow cell volume :$< 15\mu\text{L}$ 10. 7 Wavelength capturing capability in one run. <ul style="list-style-type: none"> • FLD Detector <ol style="list-style-type: none"> 1. Light source: Xenon lamp Longer Life 2. Excitation Wavelength range: 200 nm to 650 nm or better 3. Emission Wavelength Range: 210nm to 650 nm or better 4. Spectral bandwidth: 20 nm 5. Wavelength accuracy: ± 3 nm or better 6. Wavelength repeatability: ± 0.2 nm or better 7. Signal to Noise ratio for Water Raman peak should be > 1000. 8. Flow cell volume: $< 15\mu\text{L}$ 9. Data rate : 70Hz or better • RID Detector <ol style="list-style-type: none"> 1. RI Range: 1.00 to 1.75 RIU 2. Measurement range : $\pm 6 \times 10^{-4}$ RIU 3. Noise level should be $\pm 2 \times 10^{-9}$ RIU 4. Drift: 2×10^{-7} RIU/h 5. Compatible with flow rates up to 5 mL/min 6. Flow cell volume: $< 15\mu\text{L}$ 7. Temperature control 5°C above ambient 55°C or better 8. Data collection rate: 60Hz or better • Chromatography software: <ol style="list-style-type: none"> 1. Calculation, control acquire and process data. 2. Software to be capable of handling 2or more HPLC handling control system. 3. GMP/GLP compliance. 4. IQ, OQ, PQ, validated 5. Conformance to USFDA part 11CPR. 6. Suitable computer and printer 	
31.	Howard Counting Chamber	<p>Mold</p> <p>Application: It is use in determining mold counts (mold fibres and spores) in tomato products and for mold counting in food quality control applications for other fruit- based preparations and mold mycelia in butter and cream.</p> <ul style="list-style-type: none"> • Counting chamber: Constructed entirely of glass. Centre of glass should contain a $15 \times 20\text{mm}$ rectangle that is flanked by 0.1 mm shoulders on each side to support cover glass Rectangle and Cover glass should have optically plane surfaces Facilities for calibration of microscope • Eyepiece micrometer: Ruled into squares (grid), each of which is equal to $1/6$ of the diameter of the eyepiece diaphragm opening 	Rs 3.50 Lakh



		<ul style="list-style-type: none"> • Cover slips: Thin 28mm x 33mm x 0.5mm 2 Nos and Thick 28mm x 33mm x 1.0mm 2 Nos Certificates Performance and safety standards(specific to the device type); Local and/or international: Should be compliant with the requirements of FDA/CE/BIS 	
32.	Incubator Shaker	<ul style="list-style-type: none"> • Temperature Range: 1.5°C above ambient to 70°C, 2. 5°C to 70°C. • Temperature Control: Temperature is controlled through, microprocessor based programmable electronic PID temperature controller cum indicator, which controls the temperature of the orbital shaker with a sensitivity of +/- 0.5°C or less. • Forced Air Circulation System: The uniformity of temperature is maintained throughout the chamber of the orbital shaker with an efficient air circulation system, powered by perfect motor. • Shaking System: The efficient and diligent shaking system is powered by Crompton / perfect motor • Shaking Speed: The Shaking speed of variable speed orbital shaker is 250RPM. • Speed Control: The shaming speed is effectively controller by a variable speed controller fitted with digital RPM meter. • Shaking Platform: The shaking platform is designed to accommodate 25 flaks of 250ml to 500ml.- supplied with one platform. • Platform Size: The size of the platform: 450mm x 600mm. Supplied complete with calibration certificate traceable to ISO: 17025: 2017. • Flask clamp size-1000mlx16 	Rs. 1.80 Lakh
33.	Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES)	<p>System must be High Throughput Simultaneous polychromator based dual view ICP-OES Spectrometer. Dual view (Axial & radial) along with rapid/fast switching.</p> <p>Peristaltic Pump: 4 or more channels. Pump speed with 70 rpm or better</p> <p>RF Generator: Should have software-controlled RF generator with frequency of 27/40/34MHz. The RF must be variable &adjustable from 1000 to 1500 watts or wider along with 20 W or low increment step</p> <p>Plasma MFC/EFC with ≤ 1 L/min increments : Four Nos. True variable & software-controlled gas flow controllers (MFC or EFC) with ≤ 1 L/min or lower increment step for precise control of Plasma, Nebulizer, Aux & makeup /additional gas for gas .</p> <p>Plasma View System: Dual View (Axial and radial) with fast/rapid switching along with polychromator. Radial viewing height automatic adjustment should be upto 18mm or more.</p>	Rs. 75.00 Lakh



Optics: Must have Echelle-based polychromator. Resolution: 7pm @ 200/202 nm or better. Radial viewing height automatic adjustment should be upto 18mm or more.

Detector: CID or CCD with Integration/readout time must be ≤1sec. Wavelength range: of 167–780nm or suitable range to cover elements as per ICPOES technology. Peltier device with cooling at -40Deg C or Below for reducing or optimizing Dark current /Photometric Noise.

Standard Accessories:

- 200 Vial or more position Autosampler with enclosures & duct to remove toxic fumes. 1200 vial for Autosampler should be included.
- Hydride generating accessories kit along with Separate & dedicated spray chamber & tubing set (Reductant & Waste - pk/12 each) should be offered for low ppb As, Se, Sn & Hg.
- Complete HF/Inert kit with PFA Spray Chamber, PFA Nebulizer, Inert torch, Tubing Set Pk/12 (Sample and Drain) - 01 Sets

Complete Semi volatile organic kit with separate Spray Chamber, PFA Nebulizer, Inert torch, Tubing Set Pk/12 (Sample and Drain) -01 Sets & oxygen Mass flow controller.

Standard Items:

- Exhaust hood for ICP-OES & Autosampler
- 20KVA online UPS with 60 min backup along with 02 MCB (in & Out), 40 Meter high quality copper cable for installation.
- Six (04) Argon cylinders with four stage SS 316 Manifold & Regulators.
- All tubing's to cover 25-30 meter from cylinders to ICPOES equipment.
- OEM chillier for instrument
- Gas panel & exhaust Hood of SS316 (for ICPOES and Autosampler)
- Compatible i5 PC, 16GB RAM, 1TB HDD, Laser color Printer, MS office & 21 inch TFT.
- Separate Bench for ICPOES & PC
- OEM supplied scroll noise & oil free Air compressor (if required)
- In case of continuous Nitrogen purging required 24x7, vendor must include Nitrogen Generator.
- Multi element standards 100 & 1000ppm (100ml)
- Single element standards S&P (125ml & 1000ppm). Hg & As (125 ml & 10/100ppm).
- 1000 ppm standards Sb, V, Sn & Se etc
- Internal standard two element : 125ml each
- Wavelength calibration solution 500ml : Qty -02 Nos
- Calibration blank solution ASTM Type 1 Water (500ml) : Qty -01 No
- Supra pure grade Acids for ICPOES trace analysis: Nitric acid -2.5 L, HCL -2.5L, 1L HF & 500 L H₂O₂.
- Chemicals & solvents for sample analysis i.e. Hg, As & Se (200 aspiration for each hydride element each)

Consumables (Must be quoted with OEM P/N):



		<p>a) Standard Peristaltic Pump Tubing set for sample intake Pk/12 (03Set each)</p> <p>b) Standard Peristaltic Pump Tubing set for rinse /Drainage: Pk/12 (03 Set each)</p> <p>c) Standard Peristaltic Pump Tubing set for Internal standard. Pk/12 (03 Set each)</p> <p>d) PFA /HF compatible Peristaltic Pump Tubing set for sample intake Pk/12 (02 Set each)</p> <p>e) Organic solvent compatible Pump Tubing set for rinse /Drainage: Pk/12 (02 Set each)</p> <p>f) Standard spray chamber (01Nos)</p> <p>g) Standard Nebulizer -02Set.</p> <p>h) Standard Torch& injector: (03Set)</p> <p>i) Standard Spray chamber drain tubing (02 each)</p> <p>j) Autosampler tubing set Pk/12 (02 set)</p> <p>k) Nebulizer capillary tubing -01 Meter (03Set)</p> <p>l) PFA tubing for gas supplies to nebulizer- 1 Meter- (03Set)</p> <p>m) Drain tubing for spray chamber waste -02Sets</p> <p>n) Hydride kit peristaltic pump tubing for reductant & Waste - pk/12 (2sets each)</p> <p>o) Autosampler probe : 01 Sets</p> <p>p) Autosampler vessel pk/1000 (15ml and 50ml Each)</p>	
34.	Ion selective electrode/Specific ion analyzer (imported)	<p>Equipment for the measurement of pH and ionic concentration with the following specification is required.</p> <ol style="list-style-type: none"> 1. The equipment should be a microprocessor based pH Ion meter with graphic display along with suitable sensors. 2. The equipment should have a graphic LCD screen, a sensor input to connect pH or Ion Selective Electrode & a socket to connect a Pt1000 or NTC temperature sensor. 3. The equipment should have the facility to determine the content of ions using suitable ion-selective electrodes. The determinations are to be performed by establishing calibration curves and by carrying out standard additions. 4. The instrument should have the facility to connect an electronic burette directly for standard addition purpose. 5. The equipment should have the facility to automate the standard additions using suitable dosing device. It should have the possibility of using at least 15 different concentrations of standards for calibration. 6. The equipment should have the facility to perform pH measurement and the calibration with upto 9 different pH buffers. 7. The equipment should have the facility to connect and control a magnetic stirrer or a rod stirrer. 8. The equipment should have the facility to simultaneously display pH and temperature. 9. The equipment should have a drift indicator with graphic display plot of measured value with time for pH, mV, Temperature and concentration. 10. The pH Ion meter provided should have the following Measurement Range: pH Range : From 0.1 to + 14.000 	Rs.12.00 Lakh



		<p>Potential : From -2200mV to + 2200 mV Temp Range: - 4.0 °C to +50.0 °C Concentration: 10⁻³⁷ to 10⁺³⁷</p> <p>11. And the following Resolution: pH: 0.001 mV: 0.1 mV Temperature: 0.1 °C</p> <p>12. The equipment should have the memory for storing minimum 100 measured values.</p> <p>13. The equipment should have automatic monitoring of validation, service and calibration intervals.</p> <p>14. It should have an interface to connect PC or Printer.</p> <p>15. Instrument should be supplied with Ion Selective Electrodes (Fluoride, Cyanide, Ammonia, Nitrate, Nitrite) along with Ag/AgCl reference electrode with necessary cables and accessories. Suitable electrode to measure pH also should be provided.</p> <ul style="list-style-type: none"> • Printer: for data handling and processing. • Case: chemically resistant to most aqueous solution. • Power requirements: 240 V-± 10%, 50-60Hz. 	
35.	Karl Fisher Automatic Titrator	<ol style="list-style-type: none"> 1. The instrument should be standalone type with touch screen interface for operation. 2. The instrument should be capable of performing moisture analysis by volumetric Karl Fischer Titration. 3. The instrument should have the capability to determine moisture in the range from 100 ppm to 100%. 4. The instrument should have Live Titration Curve Display. 5. The instrument should have a built in magnetic stirrer. 6. The instrument should have facility for to store at least 100 methods. 7. The instrument should have the facility to generate pdf reports with date and time stamp and store it in the USB memory stick connected to the instrument. 8. The instrument should have motor driven piston burette, with a high burette resolution of 1/20,000 of burette volume or better. The burette should comply with DIN EN ISO 8655-6 standard. 9. The instrument should have the possibility of connecting burettes of volume 5, 10, 20 and 50 ml allowing maximum flexibility if required. 10 mL burette should be quoted along with the instrument. 10. The instrument should be provided along with a solvent pump used for addition of methanol and removal of titrated solvent without opening the titration vessel. 11. The instrument should be provided along with the double pin platinum electrode and other accessories like closed titration vessel, tubings, etc., required for Karl Fischer Volumetric titration. 12. Suitable oven sampler for extraction of moisture from samples which are not soluble and reactive should be 	<p>Rs 8.00 Lakh (Imported)</p> <p>Rs.6.00 Lakh (Indian)</p>

		<p>available if required. The oven sampler should have the following specifications.</p> <ol style="list-style-type: none"> Should have a temperature range from ambient to 250 deg C, with live temperature display. Digital gas flow monitoring with built in air pump. Should have the facility to customize the oven as per the vials used. Drying flasks as well as comprehensive accessories comprising of sample vials, septa, etc. <p>13. Live data entries like sample weight, stop criteria should be possible, when the titration is in progress.</p> <p>14. The instrument should have the facility to lock date and time using password.</p> <p>15. The instrument should have ethernet facility to send the data to PC/LIMS.</p> <p>16. The instrument should have the facility to send and receive remote signals from other instruments</p> <p>17. The instrument should have the following technical specifications</p> <ol style="list-style-type: none"> Polarization current:1 to 100 μA or better Potential measuring range:0 to 3500 mV or better Potential measuring resolution:0.1 mV <p>18. All the required accessories for the moisture analysis should be included along with the instrument.</p>	
36.	Automatic protein analyzer (Imported)	<ul style="list-style-type: none"> Fully automatic kjheldal digestion, distillation, Titration and calculation system for analysis of Nitrogen and protein. Minimum 12 digestion units with IR/Electrical heating facility. Programmable with suitable software. Provided with max minimum safety feature. Self adjusting cooling water control to save water. Interchangeable burette. Automatic tube drainage. Data transfer facility to PC through machine 	Rs 9.00 Lakh for Imported
37.	Laboratory Stirrer	<ul style="list-style-type: none"> Maximum speed up to 4000R.P.M. The height and of the stirrer can be adjusted according to the requirement. Variable speed motorwith1/20H.P.Regulatoris fitted withS.S. Stirrer rod to give smooth and noiseless operation. 	Rs 1.10 Lakh
38.	Laminar air flow (Indigenous)	<ul style="list-style-type: none"> HepaFilter-99.999% efficiency for particles>0.3pm Pre-Filter -85 %efficiency for particles >0.5 qm Particle Count- Better than US Fed Std 209 B Class 10 and VD 12083 Class3 Cabinet Laminated-High Quality Wooden Board, Laminated High Quality Wooden Board/PCRC Sheet Powder Coated/Stainless Steel -SS 304 Work Table- AISI 304 Stainless Steel • Air flow Speed Control-Speed Controller(Three Step Speed Controller) 	Rs.2.50 Lakh



		<ul style="list-style-type: none"> • Blower-High efficient centrifugal type with life time lubricated bearings • Light- High intensity, low wattage >800lux • Noise level- <55 dBA • Standard Accessories-Air/gas cock and .mains power socket(16A) • Power Supply- 220-230 V,50Hz. 	
39.	LC-MS-MS (imported)	<p>Latest Triple/Tandem Quadruple LC-MS/MS Bench-Top System for high sensitivity trace level qualitative and quantitative analysis with complete software control for multi- residue analysis to meet global food safety regulations like EU/USFDA/Japan with the following specifications:</p> <p>Mass Stability:</p> <ul style="list-style-type: none"> • Da over 24 hours or better <p>Dynamic range</p> <ul style="list-style-type: none"> • Should be 5 orders of magnitude or better <p>Mass Range</p> <ul style="list-style-type: none"> • Minimum 50-1500 amu or better <p>MRM dwell time</p> <ul style="list-style-type: none"> • 1 msec <p>Desolvation Temperature</p> <ul style="list-style-type: none"> • The Desolvation temperature will be user selectable from ambient to 400 deg Celsius or better for both ESI and APCI mode and it should be user selectable. <p>Collision Cell</p> <ul style="list-style-type: none"> • MS-MS capability must be available via collision induced dissociation (CID) and the design should be specified and be such as to eliminate cross talk <p>Polarity switching time</p> <ul style="list-style-type: none"> • 50 msec, in MRM or better <p>Mass Fragmentation</p> <ul style="list-style-type: none"> • The system should be able to perform MS/MS or any advance scan and fragmentation mode <p>Resolution</p> <ul style="list-style-type: none"> • System should be able to achieve Less than or equal to 0.7 amu <p>Mass analyzer - Quadruple Analyzer</p> <ul style="list-style-type: none"> • The instrument should be configured with a quadruple mass filter for the efficient transmission of ions in MS mode and selection of precursor ions for MS-MS analysis <p>Ionization Source ESI & APCI dedicated source</p> <ul style="list-style-type: none"> • System should have ionization source capable of (ESI & APCI) with individual source for easy handling of wide range matrix. • Each probe will be coded for automatic identification by the software/firmware of the host system. • The source will have orthogonal/dual orthogonal/ equivalent spraying for improved robustness. • The source housing will be fully vented to eliminate contamination of lab air. 	Rs.200.00 Lakh



- The source housing will be fully interlocked
- ESI/APCI source Flow rate range**
- The source will have flow rate compatibility in ESI &APCI mode upto to 2000 $\mu\text{L}/\text{min}$; without flow splitting.
 - There should be a system inbuilt divert the flow to waste/MS through software before/during/after the analysis in order to reduce source fouling/contamination.
- ESI positive Ion Sensitivity**
Lower detection and highest sensitivity
- MRM ESI positive ion sensitivity – 1 $\text{pg}/\mu\text{L}$ of Reserpine on column S/N should be $\geq 3,00,000$ or better, in MRM mode of Reserpine at the transition m/z 609- m/z 195.
- AND
- The instrument detection limit (IDL) should be less than 4.0 fg for Reserpine in ESI Positive mode.
 - The sensitivity specifications should be available on the specification sheet and no supporting document/proof/lab data will be accepted
- ESI negative Ion Sensitivity**
- MRM ESI negative ion sensitivity – 1 $\text{pg}/\mu\text{L}$ of Chloramphenicol on column S/N should be $\geq 3,00,000:1$, in MRM mode at the transition m/z 321 - m/z 152
- AND
- The instrument detection limit (IDL) should be less than 4.0 fg for Chloramphenicol in ESI negative mode.
- Technical Evaluation**
- The instrument must be capable of analyzing Anionic polar pesticides with direct injection (without derivatization) i.e. Glyphosate, Glufosinate, AMPA, Ethephon, Fosetyl Al, Phosphoric acids, chlorate & Perchlorate in single run at 5-10 ppb depending on the various food matrices
 - Analysis of banned Vet drug residues and regulated antibiotics as per the RPA (Reference Point of Action), RC, MRL in various food animal origins.
- Scan speed**
- Should have the scan speed of 12000 amu per sec or better
- Source Interface**
- Interface should maintain cleanliness of ion optics and capable of handling large batches of complex samples.
 - Capable of handling large batches of complex sample matrix like Animal feeds, Fish and fishery products, poultry and poultry products, Honey, Milk and Milk products, Agriculture products (Fruits & Vegetables) etc. over a long period of time without performance degradation.
 - Cleaning of source should be done without venting the system and facility to vacuum interlock.



- Interface capable of ambient temperature operation and without complex apertures to maintain structural integrity of thermally labile and fragile molecules.

Integrated Fluidic Device (to minimize space and tubing)

- An infusion syringe pump with variable flow range must be integral to the instrument **or equivalent** and must be controllable from the instrument software.

Vacuum System

- Robust high efficiency vacuum system with minimum maintenance and utility with low noise level.
- Vacuum read backs must be digitally monitored and controlled through software to ensure fail-safe operation in the event of power failure.
- All accessories required for the proper functioning of the vacuum system should be supplied.

Gas Requirement

- All gases must be controlled by the software.
- If required additional gas cylinders should quote Argon/Helium/Nitrogen etc. gas in qty -2
- Gas pipeline installation as per IS including purification panel, gas regulator, gas manifold etc.

Operating modes

Mass spectrometer should have the following scan options:

- Full scan
- Selected Ion monitoring/ recording (SIM/SIR)
- Product ion scan
- Precursor ion scan
- Neutral loss scan
- Multiple Reaction Monitoring (MRM)
- MS and MS/MS in a single injection with matrix background monitoring or equivalent.
- Simultaneous full scan and MRM or better

Detector

- PMT/EMT/CEM or other highly sensitive detectors having the highest sensitivity system should be quoted.
- A high sensitivity, high throughput detector with zero dead time, low noise and high accuracy at low level detections.
- An off-axis dynolite photomultiplier/Electron Multiplier detector
- Detector must operate in both positive and negative ion modes.
- Capable of switching polarity rapidly.
- Should have a better long life.

Nitrogen Generator

- Should be supplied with the system along with the imported trouble free inbuilt compressor and appropriate capacity reservoir which should be sufficient enough to deliver the gases required to run the system.

Ultra Performance Liquid Chromatography System

- The complete UPLC and the MS should be controlled by the single software

- PUMP: Quaternary gradient pump. Operating flow range should be 0.010-2.0 ml/min or better with 1µl increments
 - Vacuum degassing (four channel)
 - Maximum operating pressure: 15000 psi or better
 - Flow Rate Precision- RSD $\pm \leq 0.07$ % RSD
 - Flow Rate Accuracy ± 1 %
 - Capability of isocratic and gradient flow system
 - Vacuum Degasser with sufficient number of channels
- Autosampler with sample cooler**
- Autosampler should be available with a capacity of minimum 90 vials or more of vials with capacity ~1 ml vial or better capacity
 - Accurate and precise injection volume from 1 µl to 40ul or more.
 - Temperature controlled auto-sampler compartment (4-40°C).
 - Carryover- Less than 0.004%
- Column Oven**
- 10°C below room temperature to 85°C, capability to accommodate a minimum of 1 or more columns of ≥ 15 cm.
 - Temperature Precision: ± 0.1 °C Temp. Accuracy: ± 0.5 °C
- Spares and accessories**
- LC-MS/MS start-up kit should be supplied as standard.
 - All required traceable standards for Mass calibration and tuning, UPLC calibration should be provided
 - Standard Tool kit should be provided for Instrument maintenance
- System Controller and Operating system**
- Software must be Multitasking type. It must acquire and process the data simultaneously
 - Application manager/software must be compatible with data of full scan, SIM/SIR or MRM
 - Data Acquisition, Peak Integration, Calibration, Quantification and QC calculations must be fully automated.
 - The Quantification method editor must be viewable in page view or spreadsheet.
 - Application manager/ software must allow to monitor the molecular ion and up to 02 (two) Confirmatory ions or better.
 - Must be capable of performing the following functions and should be upgradable-
 - Workstation must be able to control the MS, acquire, store, process and reproduce the data by the same computer.
 - Workstation must be able to control LC, Detector and auto sampler.
 - It must be able to regulate the gas pressure and flow during the data acquisition and append to the relevant data file.
 - Software must have automated calibration and Quantitative optimization.
 - Automated MS to MS/MS switching during a single run.
 - Perform alternating positive/negative scans in one run
 - Automated Quantitation and reporting of acquired samples.
 - Data may be processed as it is being acquired



		<ul style="list-style-type: none"> • Quoted model shall have the installation specifications as per the tender specifications. Method of calculation of various parameters shall also be specified. <p>NIST Library should be quoted with system and should be compatible with quoted software.</p> <p>PC with Printer</p> <ul style="list-style-type: none"> • Minimum Intel core i7/ Xenon processor, 24" or better LED Monitor, 16TB HDD, DVD Read/Write, 32 GB RAM, 4 USB Port or higher configuration for use with the above system to be provided OR Factory configured PC. • Reputed compact and branded Laser jet printer should be provided <p>Power Supply</p> <ul style="list-style-type: none"> • The system should have online UPS (minimum 20 10 KVA) with isolation transformer of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment <p>Additional items</p> <ul style="list-style-type: none"> • Operation kit comprising all required items for start-up/regular operation of instrument. • Operation and maintenance manual for each unit in both hard copy and soft copy. • Food safety compliance. • Complete methods database of more than 1000 compounds (Mycotoxins, Veterinary drugs, Pesticides, antibiotics) with MRMs of instrument method details and SOPs, related software's and user manuals to be provided. <p>List of column with Specification</p> <ul style="list-style-type: none"> • Columns : C18 (2.1×100 mm) <2.0 μm with suitable Guard column -01 nos or equivalent • Columns : C18 (2.1×150 mm) <2.0 μm with suitable Guard column -01 nos or equivalent • Phenyl 2.6u (100 x 2.1mm) with suitable Guard column or equivalent -01 nos • C18 (2) 100 Å (3.0×150 mm) 3 μm with suitable Guard column or equivalent -01 nos 	
40.	Lovibond Tintometer (imported)	<ul style="list-style-type: none"> • Path Length: 1/2", 1", 5" [Upgrade includes 5 1/2"] • Mode: Transmittance • Range: 0.1-20 Red, 0.1-70 Yellow • Resolution: 0.1 AOCS-Tintometer Red units, • 1.0 AOCS- Tintometer Yellow units • Optical system: 5 glass-filled nylon racks containing a graduated range of AOCS Tintometer Color standards • Viewing system: Fully adjustable, prismatic with integral blue filter for height standardization • Light source: 2x12 Volts, 20 Watt tungsten halogen lamp • Illuminant approximates to the day light • Power pack: 1 2 Volt ac, auto ranging supply • CE approved • Instrument housing: Fabricated sheet steel with a tough, textured paint finish 	Rs. 5.00 Lakh

41.	Micro centrifuge (indigenous)	<p>• Dimensions: Width 330mm, depth 100 mm, height 480mm</p> <p>Max Speed. 7,2 00rpm Max RCF. 2,350g Power.....110V,50/60Hz,I30mA or 220 V, 50/60Hz, 65mA Rotors. 6x1.5/2.0ml angle rotor, 2x8 well 0.2ml strip rotor, Six adapters fit 0.5ml tubes, Six adapters fit 0.2ml tubes Dimensions. (W)142*(D)150*(H)102mm Weight. 650g Color.light gray Ambient operating temperature One year warranty</p>	Rs 2.50 Lakh
42.	Microwave Digester	<p>Microwave Digestion system with at least 40 or more nos. high pressure vessel rotor for quick digestion of various samples without loss of heavy metals from sample solution. Allowing pressurized reaction with user selection of continuous or pulsed microwave reaction. The system is fully comply to the following methods: US EPA, ASTM, USP</p> <p>MAGNETRON: The microwave system should have dual Magnetron system with good diffuser for homogenous microwave power distribution in the cavity. Microwave frequency should be 2450MHz and installed power should be 1800W minimum with dual magnetrons.</p> <p>Cavity: The cavity should be made of stainless-steel housing with Corrosion resistance. Also all hardware should have 5 layer/multilayer protective coating the resistance from acid.</p> <p>Reaction Sensors: IR or Contactless TEMP sensor should be offered in the main quote for monitoring & controlling each vessel temp also It should be displayed on the software. The software should automatically reduce the microwave power in case of over temperature avoiding sample loss</p> <p>Rotors and vessels:</p> <ol style="list-style-type: none"> 1. Quote Minimum 40 or more position rotor. 2. Minimum vessel's specifications should be as below: <ol style="list-style-type: none"> 2.1 Maximum Temperature capacity of vessel - 250 degree C or more 2.2 Maximum Pressure capacity of vessel - 30 bar or more 2.3 Volume of Vessel- 55 ml or more 2.4 Vessel Material- PTFE-TFM/ or better material to resist high temperature 2.5 Vessels – 40 nos. 2.6 Every vessel must have Active pressure control mechanism/ spring to safely release the pressure in case of overpressure. The spring material should not be temperature dependent. 2.7 Sample weight per vessel : min 1.0 gm or more 2.8 Instrument should offered with microwave assisted rotor for drying of samples min 3 liters capacity 2.9 Power: 230V = 50 Hz <p>Controller User Interface</p> <ol style="list-style-type: none"> 1. It should be Touch-screen TFT display VGA resolution with colors. Inbuilt on board 5 GB or more data recording feature. Icon-driven software allowing the user the edit, saving, and run a virtually several number of methods. 	Rs.25.00 Lakh



		<p>2. The software must control all parameter online and display: temperature, time and power directly on the terminal.</p> <p>3. Also software should not be located on the system for safety reasons.</p> <p>HARDWARE AND SFETY- should have following features,</p> <ol style="list-style-type: none"> 1. Stainless steel housing with multi-layer PTFE coating. 2. Protected against acids and solvents with polymer coating on both inner and outer surfaces 3. Self-resealing pressure responsive door mounted on sprigs, to ensure maximum safety even in case of overpressure release. 4. Door should be completely made of stainless steel. 5. An automatic door locking system to ensures to keep the door closed until the set temperature is reached. User can modify the set temperature according to the lab needs. 6. 3 or more independent door safety interlocks to prevent microwave emission in case of improper door closure or misalignment 7. Built-in exhaust system located above the microwave cavity and separated from the electronics to prevent corrosion. 8. Dual magnetron system with rotating diffuser for homogeneous microwave distribution in the cavity. 9. Exclusive magnetron protection from reflected microwave power 10. Continuous controlled microwave emission at all power levels 11. Emission and Safety Norms of national & international standard should be there 12. System must have magnetically resealing safety door with see through Glass window to visualize inside happening of cavity if see through window is not available then alternate technology such as camera must be supplied along with system. 	
43.	Moisture Analyzer (Imported)	<ul style="list-style-type: none"> • Non destructive system of measurement of moisture (%) in various food products without any sample preparation. • Should be capable of measuring temp ($^{\circ}\text{C}$ or degree F). • Calibration: upto 7 standard calibration programs to be held in memory. • Printer output: Rs-232-C • Memory: EPROM & RAM. • Accuracy (Working) 0.00 1g • Operating Temp Range :Ambient to 160°C • Accuracy (Temp Control)+1°C • Readability (Moisture) 0.01% • Repeatability(Sample) • Display up to 8 Parameter or more • Power Supply • 220V+22V(50Hz) • 220V-33V (SOHZ) 	Rs. 2.50 Lakh
44.	Muffle Furnace (Indigenous)	<ul style="list-style-type: none"> • Maximum Temp. $1400^{\circ}\text{C}/1600^{\circ}\text{C}$. 	Rs 2.00 Lakh

		<ul style="list-style-type: none"> • Temperature control unit consists of energy regulator or electronic temperature controller, fitted in front of furnace with two pilot lamps • Muffle size (inside) 150 mm*150 mm*300 mm. • Complete with thermo free/then no couple. Outer body made of thick mild sheet duly painted with heat resistant paint. 	
45.	Pensky Martin Flash point Apparatus	<ul style="list-style-type: none"> • Electrical heating, with gas test jet and electric heater with energy regulator. • Suitable for operation on 220, 50Hz single Phase, AC Supply. • Thermometer of range: (1) -5° C to +110°C (2) 90°C to 370°C • Should be provided with replacement parts -Pensky- Martens Oil Cup & Pensky-Martens Lid shutter with Gas Test Jet 	Rs. 8.50 Lakh for Imported: Rs. 1.50 Lakh for Indigenous
46.	Polarimeter (Imported)	<p>Automatic digital Polarimeter to meet the regulatory requirements as per USP/EP/IP/ having the following specification:</p> <ul style="list-style-type: none"> • Light source LED with Life Span of 1,00,000 Hrs • Modulator: Faraday cell. • Measurement wavelength: 589 nm • Measurement angular range: +/- 89. 9 Deg Arc Optical rotations. • Measurement scale: Degree Arc, optical rotation. • Response speed.60/sec. • Measurement accuracy: +0.003 Arc Optical rotations. for Entire measuring Range • Measurement Repeatability: 0.002 Arc Optical rotations. • Resolution: 0.001Arc Optical rotations. • Optical Rotation. Specific Optical Rotation, Concentration, International Sugar Scales, • Temp measurement range: 10-45 deg C, minimum display temperature: 0.1deg C. • Calibration: Built in Automatic calibration facility • Fully 21 CFR Part 11 compliance, User Management, Password protection, Audit Trails, Electronic Signature, Display Hide, Customizable Privileges. <p>Note: System must have the provision for wavelength upgradation.</p>	Rs.20.00 Lakh
47.	Rancimat (imported)	<p>Instrument for automatic determination of the oxidative stability of edible fats and oilswith the following specifications are required.</p> <ul style="list-style-type: none"> • Control of all instrument functions should be from PC. • The instrument should be able to perform the oxidation stability and the estimation of shelf life of vegetable, animal oils and fats. • The instrument should also be used for examination of the effectiveness of antioxidants. • The instrument should have robust conductivity cell with electrical connections integrated in cover. 	Rs.38.00 Lakh



		<ul style="list-style-type: none"> • The software provided should have high data security by storage of all data: determination, method and instrument data. • Facility to Re-evaluation and recalculation of all measuring data should be available. • Database functions such as filtering and sorting should be available with the software. • Clear user interface layout should be provided. • GLP and validation functions should be built in. • The instrument should have compact dimensions and low weight for portability and saving expensive lab space. Space saving designs would be given preference. • Independent start of each channel should be possible. • The software provided should have the client server functionality and user administration with freely configurable access rights, if required. • The instrument provided should contain all the required accessories for operation. • Technical Specifications: <ol style="list-style-type: none"> a) Heating: 2 individually heated, aluminum heating blocks b) Max. number of samples: 8 (4 in each block) c) Temperature range: 50...220 °C, can be set in steps of 1 °C d) Temperature correction: -9.9...+9.9 °C, can be set in steps of 0.1 °C e) Max. deviation of set temperature: < 0.3 °C f) Reproducibility of set temperature: < 0.2 °C g) Stability of temperature (max. temperature fluctuation): < 0.1 °C h) Temperature difference between different measuring positions : < 0.3 °C i) Heating time from 20 °C to 120 °C approx. 45 min j) Heating time from 20 °C to 220 °C approx. 60 min k) Gas supply : built-in membrane pump l) Range of air flow: 7...25 L/h m) Conductivity measurement: 0 to 400 µS/cm n) Interface: USB o) Software: Suitable PC software for operation with a PC should be provided along with the machine. Only PC based instruments will be considered. 	
48.	Real Time PCR System	<ol style="list-style-type: none"> 1. Real time PCR with block of 96 x 0.1/0.2 ml tubes to run typical 0.1/0.2 ml tubes and strips which are of universal format 2. The base thermal cycler is to be used for standard gradient PCR and instrument should able to run user defined 4-6 annealing temperatures in the same run. Should have Thermal gradient (Range 30 -100 o C) 3. Detection of 4-6 different fluorescent reporters in the same tube and ability of the model should be supported by International publication for the number of multiplexing capabilities. Quote the supporting research papers 4. Six or more excitation and corresponding emission channels wherein each filter should correspond to one dye for smooth differentiation of even dyes. 	Rs.20.00 Lakh

5. System should be capable of detecting maximum dyes allowing system flexibility to select consumables
6. Maximum Ramping speed: 50 C per sec or more. Should have Dynamic Ramping feature
7. Peltier Cooling & Heating for uniform temp control
8. Should have Reduced-mass honeycomb sample block-fast ramping and settling produce the shortest time to target temperature.
9. Excitation –Emission range: 450 – 730 nm or more to utilize most of the available dyes. Calibration: Auto-calibration or factory calibrated system which should not be depending on any internal reference dye.
10. Monitoring real-time traces preferably through a stand alone feature (using LCD/LED touch screen) without attached computer. Any latest technology can be used.
11. LED excitation source with Photodiode detector or PMT or CCD/CMOS Camera.
12. Should be open system capable of running various chemistries using Taq Man, Molecular Beacon, SYBR green etc all can be performed.
13. Block Temperature range 5–100° C with accuracy of $\pm 0.2^{\circ}\text{C}$ and uniformity of $\pm 0.4^{\circ}\text{C}$ within 10 sec of arrival at 90°C
14. Ensure Uniformity of well temperature for uniform accuracy in all tubes
15. Minimum sample volume: 10-50 μl to reduce consumption of reagents.
16. Should detect ≤ 10 f mol of fluoresce in to support more accurate results
17. Should have multiple scan modes with a speedy scan option for reading all wells in minimum time. A better technology faster uniform scan.
18. The instrument should be pre-calibrated for at least seven dyes including the following during installation at the customer site: FAMTM/SYBR[®] Green I, VIC[®]/JOETM, NEDTM/TAMRATM/ and ROXTM. The user should be able to use any of these dyes in an experiment without needing to recalibrate the instrument. Addition of new dyes should be possible without hardware change.
19. The required Valid, Licenced software for all applications available in the offered model should be loaded in the system/ attached computer along with permission to copy in multiple computers for free analysis and a copy in Compact Disc (CD) and permission for free upgradation as and when the manufacturer does.
20. The analysis must include the following facilities:
21. Automatic allelic discrimination by end point fluorescence or threshold cycle.
22. Gene expression analysis by relative quantity (ΔCt) or normalized expression ($\Delta\Delta\text{Ct}$).
23. Fold change calculation and distinction of up regulated and down regulated expression
24. Gene / pathogen copy number analysis

		<p>25. Analysis by calibration with control value / standardization with housekeeping genes</p> <p>26. End point analysis for upto 5 fluorophores</p> <p>27. Should have mode for Melt curve analysis</p> <p>28. The RT-PCR accompanied with dedicated software CD with license/ support for Primer-probe designing software.</p> <p>29. Comparison of upto 5000 Ct values from different data files should be possible</p> <p>30. Software should have express load feature which allows entry of data after experiment</p> <p>31. User friendly and with Touch screen /remote data analysis and data sharing capability will be an added advantage.</p> <p>32. The instrument must be suitable for Indian power supply conditions (230V), complete with all essentials like power cord, accessories, one set of plastic consumables like strips, tubes etc</p> <p>33. Strictly Standard Models should only be quoted and custom made products will not be considered.</p> <p>34. Model should be CE Marked.</p> <p>35. The system should have UPS (minimum 1 KVA) of suitable rating with 60 minutes back up for the supplied equipment voltage regulation, spike protection.</p> <p>36. CRM standards for calibration should be provided with the instrument</p> <p>37. Suitable PC for latest software handling & a printer for document print must be provided.</p>	
49.	Refrigerated centrifuge	<ul style="list-style-type: none"> • Maximum Speed of RCF $\geq 30,000 \times g$ / ≥ 15000 rpm, with a brushless motor Temperature range should be from 10 to 40°C, should be able to maintain 40°C at maximum speed • Instrument should have an in-built condensate drain to prevent water accumulation • It should be possible to perform a fast pre-cooling of the instrument using a dedicated Fast Temp function • It should be possible to program fast cooling with preset date and time • It should be possible to store 50 programs with 5 quick access program keys Speed setting should be possible in both rpm and rcf. • Should possess a separate short spin key for brief spin. • It should be possible to program compressor shut off after 8 hrs of non-usage of the centrifuge. • Should have the flexibility to accommodate rotors for different formats of tubes starting from 0.2 ml PCR tubes up to spin column tubes. • Instrument should have automatic rotor recognition facility to automatically recognize and set maximum speeds upon rotor change. • Rotor lids should have a Quick Lock-system for secure lid closing and opening • It should be possible to perform gentle acceleration and deceleration using dedicated key • Noise levels should be < 54 db(A) 	Rs 6.00 Lakh



		<ul style="list-style-type: none"> • It should be possible to operate the centrifuge at set rpm, for short spin protocols • Instrument should be CE Certified and also have a IVD Conformity • Minimum Rotors required: <ul style="list-style-type: none"> > Aerosol tight Fixed angle rotor 30x1.5/2.0 ml (rpm: 12,000) > Fixed angle rotor to accommodate 6 x 15/50 ml conical tubes (rpm: $\geq 7,000$). • Warranty: 12 months 	
50.	Rotary Vacuum Evaporator (imported)	<ul style="list-style-type: none"> • Heating bath dimensions: 230x130mm • Volume of heating bath: 4 lit.- 6lit Approx. • Rotation speed :30 to 270rpm • Bath heater capacity: 1200 Watts • Rotation speed display :Yes • Heating bath controller: PID with display for set & actual temp. • Lift: Motorised • Bath temperature range : Ambient + 5 to 180°C • Manual lift (When power fails) • Temperature accuracy: 2°C • Independent safety cutouts :@ 190°C • Heating bath material: SS304 • With Condenser support, Flask ejector, Threaded connectors for utilities • Min / Max flask size: 50 ml / 3000ml • Foot print: 220cm² 	Rs.4.00 Lakh
51.	Serological water bath	<ul style="list-style-type: none"> • Temperature range from ambient temperature to 100°C. • Thermostatic control with accuracy of plus minus 0.5°C. • Double walled inside stainless steel and outside mild steel sheet painted in epoxy powder coating. • Bath consists two pilot lamp, temp. control knob and ON/OFF switch to work on 220/230 volts A. C. supplied with or without stirring arrangement without racks and thermometer. • Lid of water bath is made of stainless steel 304 Qlty. • PID Controller having 4 ramp & 4 soak profile • Capacity 141 to321. 	Rs 1.50 Lakh
52.	Soxhlet extraction unit	<ul style="list-style-type: none"> • Microprocessor based digital temp controller. • Independent loading of sample with individual mechanical controls. • Auto over temperature protection, auto sensor break protection, auto error indication etc. • Six place automatic solvent extraction system with auto-time temperature programming facility and auto phase change over with PC compatibility feature. 	Rs 12.00 Lakh for imported Rs 5.00 Lakh indigenous
53.	SPE (Solid Phase Extractor) (imported)	<ul style="list-style-type: none"> • Columns of 3, 6, and 12 ml sizes. • Cartridges for use with a syringe. • SPE discs for hydrophobic extraction from relatively large water samples. • Sample drying devices for removal of water from samples in organic solvent. 	Rs.12.00 Lakh
54.	Spectro Fluorometers	<ul style="list-style-type: none"> ➤ Measurement's mode & Applications: Fluorescence, phosphorescence, chemiluminescence, and bioluminescence 	Rs.22.00 Lakh



(imported)	<ul style="list-style-type: none"> ➤ Excitation, emission, constant wavelength synchronous, and constant energy synchronous spectral scanning; excitation/emission scans, synchronous and kinetic scans, Chopper or suitable mechanism should be offered to block the beam when measuring luminescence & phosphorescence. Single or multiple wavelength kinetics alongwith Below Typical performance ➤ Xenon steady state or Pulse Xenon lamp 120W/50kW /75kw or more power ➤ Monochromator: Czerny-Turner/ modified Rowland or equivalent monochromator ➤ Grating Excitation & Emission : 1100 lines/mm or better ➤ Detectors: High performance PMT. The spectrometer should be equipped with a reference photodiode or PMT to monitor excitation lamp intensity fluctuations or reference signals. ➤ Spectral bandwidth : 1.5 to 20 nm or better (variable and computer controlled i.e. ➤ 1.5, 2.5, 5, 10, 20 nm) ➤ Wavelength range: Excitation range: (200 to 850) & Emission range: (200 to 850) ➤ Wavelength accuracy: ± 1 nm ➤ Wavelength Resolution : ± 1.5 nm or better ➤ Wavelength Repeatability: ± 1 or better ➤ Typical Signal to noise ratio/Sensitivity : $>3000:1$ RMS sensitivity @ 350 nm excitation, excitation and emission slits 10 nm, 1 s Signal Averaging time (Raman band of water) or better ➤ Resolution : 1.5 nm or better ➤ Wavelength scan speed : > 24000 nm/min, or better ➤ Filters Excitation: Software selectable filters including 2 bandpass filters , 2 cutoff filters ➤ Filters Emission: Software selectable filters including 1 bandpass filter , 3 cutoff filters. ➤ Software should be User friendly, original licensed Windows based operating software in the form of CD ROM, it should have built in features like have facility for scan application, kinetics, μs life time measurements, concentration. <p>Upgradations: System must be upgradable with fiber optics probe & Stop Flow accessories & Cryostat (-40 Deg C) e.</p> <p>Technical literature and compliance statement must be enclosed.</p> <p>Accessories:</p> <ul style="list-style-type: none"> ➤ cuvette 3ml & 1ml (02 Pair each), 3 KVA online UPS with 01 Hr back ➤ Solid sample holder kit, including edge-mounting sample holder kits for flat samples and powder cell and single crystal holder) ➤ Single Cell Peltier Accessories (0-100 Deg C) with Temperature Probe, Controlling software and Stirring option. ➤ Suitable configured/recommended PC & Laser B/W printer 	
55.	<p>Temperature-humidity chamber (indigenous)</p> <p>The Temperature & Humidity chamber is provided as below specifications:</p> <ul style="list-style-type: none"> • Temp. Range : 10°C to +70°C • Temperature Accuracy : ± 0.50 C 	Rs.6.00 Lakh



		<ul style="list-style-type: none"> • Temperature Uniformity : $\pm 20^{\circ}\text{C}$ • Heating Rate : Normal. • Cooling Rate : Normal. • Humidity Range : 20% to 95% RH • Humidity Fluctuations less than : $\pm 1\%$, Uniformity: $\pm 5\%$ RH • Minimum work space Dimensions (W x D x H): 55 x 55 x 100 (cms) • Capacity: 300 Ltrs • Electrical Supply: Single Phase 230 VAC & 50 Hz cycle. • Construction: Interior volume ≥ 260 liters Interior material type 304, 2B finish, stainless steel Exterior material Cold-rolled steel, powder coated Outer door gasket four-sided, vinyl compression Easy to move (wheel base) • Double door, inner door of glass with frame & silicon gasket sealing, outer door metallic with PUF insulation. • The unit will be made of double walled leak proof metal door with lock, with a provision of opening door from inside • Forced air circulation for uniform temperature. • Lockable & movable PU wheels for easy movement. • Electrical approvals: IEC, CE • Drain system in the floor : Insulated floor shall be provided with center drain exiting to drain out the condensed water or any spill over liquids/solvents • Provided with a data logger 	
56.	TGA (Thermo gravimetric analyzer)	<p>Thermogravimetric analysis (TGA) Instrument for measuring the mass of a sample as a function of time or temperature.</p> <ul style="list-style-type: none"> ➤ Instrument should have modular design with interchangeable furnaces. Preferred. ➤ Easy changeable Sensor without Service interaction – Sensor can be easily removed, replaced, and cleaned by customer – no service is needed. ➤ Includes mass flow controller - an integrated mass flow controller for monitoring and controlling of two sample purge flow rates must be included as standard. ➤ The balance gas flow must be controlled through mass flow controller and set flow as per requirement. ➤ Touchscreen – Instrument should have integrated Touchscreen which allow standalone operation as well as through PC interface ➤ Instrument should have Control on both sample and balance purge. ➤ Suitable software needs to be quoted along with the Instrument including basic and advanced applications like TGA kinetics. ➤ Instrument should be future upgradable to TGA-IR and TGA-IR-GCMS hyphenation. ➤ Balance to be of top-loading/hanging type design to allow ease of sample loading and operation. ➤ The furnace must be made of a material which is corrosion resistant. ➤ The instrument should be designed so that the furnace and balance are isolated. 	Rs.40.00 Lakh

		<ul style="list-style-type: none"> ➤ Must be able to heat at up to 300°C/min controlled and 450 °C /min ballistic. ➤ The temperature range needs to cover 15°C to 1050°C. ➤ Temperature Accuracy & Precision <0.6 °C. ➤ Sample to program temperature correlation and repeatability should not be more than 0.02°C. ➤ The balance should be protected from the reactive sample purge gas as well as materials evolved by the sample. ➤ Balance measurement ranges up to 1500mg. ➤ Balance Accuracy and precision to be better than 0.006%. ➤ Balance Resolution 0.1 µg. ➤ Balance Drift dynamic< 30 ug. ➤ Crucible Alumina-9, Platinum-1. ➤ The following cooling times are necessary: 1000 to 30°C in under 20 mins. ➤ Suitable PC, printer, Gas Cylinder (Nitrogen & Oxygen) & respective regulators need to quote along with required gas pine line. ➤ 5 KVA UPS needs to quote. ➤ Warranty: - one year. 	
57.	Turbo vap. concentrator	<ul style="list-style-type: none"> • Technology : Gas vortex purging technology • No. of Samples : 24 samples • Gas control: Control of gas can be turned on to each of five independent manifolds when working with fifty samples. • Timer range : 1 min to 99 min – 0.1 h to 9.9 h • Tube Capacity : 24 test tubes • Volume Range : 40 and 60 ml I chem vials • Water Bath Capacity and Temperature : • Capacity 6.5 ltrs Ambient to 99°C- Temperature (thermal cutout for safety) • Gas supply requirement : Minimum 60 psi Maximum inlet pressure and 100 psi. • Exhaust : venting exhaust with hose pipe • Electrical Supply : 220-240 V / 110V, 60 Hzs • Certifications :ISO 9001 : 2008 & CE Certified • Warranty : The instrument have standard warranty of minimum ONE year • Sample Capacity : 24 Nos. Gas Line: 3 Nos. Gas stations : 3 Nos. with LED indication, gas can be turn on each of independent manifolds when working with samples • Heater : Internal heaters, adjustable from ambient to 99°C • Water Bath Temperature range: Ambient to 99°C (thermal cutout for safety) • Error Indication : LED indication with Buzzer • Power Requirements 230 V AC at 50 Hz) 	<p>Rs 8.00 Lakh for Imported</p> <p>Rs. 4.00 Lakh for indigenous</p>
58.	UV /Vis Spectrophotometer	<ul style="list-style-type: none"> • Microprocessor controlled double beam Spectrophotometer with scanning, kinetic and multi wavelength facility Self check, • Spectral bandwidth: I rim (190 to 900nm) • Diagnostic and auto wavelength calibration facility. • Lightsource.-Deuterium D2 and Tungsten(W), halogen lamp • Detection mode: Absorbance / % Transmittance • Band width: less than 2nm 	<p>Rs 8.00 Lakh for imported</p> <p>Rs 3.00 Lakh for indigenous</p>



		<ul style="list-style-type: none"> • Absorbance range: -3.000 to 3.000 • Strap light: less than 0.1% at 340rim. • Large LCD Display • Multi position cell Holder • Wavelength accuracy : 1nm minimum • Wavelength scanning speed: Approx. 5000 nm/minor better. • Multi position cell holders. • Data handling system software. • Automatic baseline correction. • Quantitative and kinetic analysis. • Peak pick, point pick. • Expansion of spectra. • First and second derivative. • Averaging of scans. • GLP/GMP compliance • List of cell: UV & Visible optical path length of 1cm and 2.5 cm. • Microcells. • Calibration accessories • Filters (Holmium) and four absorption standards with NIST Traceability. 	
59.	Vacuum oven with vacuum pump (imported)	<p>Type of Machine : Front Loading, High temperature cuboidal Vacuum drying oven SS 316L Frame Structure.</p> <p>1 Frame Structure : Teflon/Nylon caster wheel for easy movement & with locking system.</p> <p>2 Vacuum Chamber Material: SS 316L, Double wall hinged door with Glass, inspection window for process monitoring inside chamber.</p> <p>3 Suitable sealing to achieve required vacuum.</p> <p>4 Minimum 3Shelves (Removable type and adjustable height) with load bearing capacity of minimum 10 kg. ; Provision for cooling the chamber flange. Suitable insulation to achieve maximum skin temperature of 50 °C (at peak temperature); 3 no of Trays made-up of SS 316 L fitting inside;</p> <p>5 Temperature Control</p> <ul style="list-style-type: none"> • Accuracy: +/- 2°C at 100°C, programmable digital PID Temperature controller (Eurotherm 2404 or equivalent) coupled with suitable thermocouple. • Two 'K'-type thermocouples (main & auxiliary) Ambient to 50 mm Hg (Adjustable) <p>6 Vacuum Range : Digital high vacuum pirani gauge, Dry Vacuum Pump suitable to achieve required</p> <p>7 Vacuum Pump : Provision of in-built non-return valve, Flexible hose to inter-connect pump and oven, Moisture trap system shall be provided; Pump shall be located at a distance of approx., 6m from the vacuum oven.</p> <p>8 Sensors/mechanism for controlling/monitoring PLC & HMI centralized control for easy operation.</p>	Rs 3.00 Lakh



		<p>9 PLC shall be reputed make like Siemens/ Allen Bradley/ GE etc.</p> <p>10 HMI panel of 12 inch.</p> <p>11 Provision for control & setting of Temperature & Vacuum level.</p> <p>12 Alarm/ indicator in case of any fault.</p> <p>13 Provision for Emergency Switch for emergency shutdown of the system.</p> <p>14 In-Put Power 230V, single phase / 415V (+/-2.5%), 3 phase, 50 Hz (+/2.5%) power supply for the equipment.</p>	
60.	Viscometer	<ul style="list-style-type: none"> • Measurement range: suitable for viscosity range 1 to 60, 00, 000 cps or better. (Proper adapter with circulation jacket and embedded temperature probe for low viscosity should be quoted wherever it is required) • Should have temperature probe to monitor sample temperature • Temperature range of the probe; 0°C to 100 °C or better. • Temperature accuracy of the probe + 0.1 °C or better. • Resolution : with low viscosity adaptor : 0.01 • Repeatability: + 0.2 % or better • Speed: .01 to 250 RPM or better • Display should include selected speed, torque monitor, spindle no, reading, sample temperature and shear rate / shear stress. • Small sample adapter along with necessary spindles for whole range with minimum sample volume of 8 - 20 ml should be quoted. It should be fitted with suitable water jacket and should have embedded temperature probe in sample chamber. • All spindle sets should have Ez-lock or magnetic coupling for single hand operation. • Rotor velocity: Low, medium, high and very high • Operation modes: Manual and automatic; • Should be quoted with high viscosity attachments • Should be quoted with suitable water bath with following features: <ul style="list-style-type: none"> • Temperature Range; 0 to 100 °C or better. • Temperature accuracy; + 0.1 °C or better. • Temperature stability; + 0.1 °C or better • Reservoir capacity: More than 5 litres. • Standard viscosity fluids of 5, 50, 500, 1,00,000 cps with NIST traceability, • USB cable and Data logger Software should be supplied. • System should comply with national/international requirements. • Inbuilt safety provisions are required to prevent any unintended damages to the parts of the equipment • Software With P.C.and Printer: <ul style="list-style-type: none"> • Suitable software 21 CFR PART II compliance • Documents and Trainings • IQ and OQ documents 	Rs. 8.00 Lakh
61.	Chem documentation imaging system	<p>i) Smart Tray Technology TM Automatic recognition of Application-specific tray and adjustment of imaging parameters and software options Autofocus Pre-calibrated focus for any zoom setting or sample height Auto-exposure</p>	Rs. 12.00 Lakh



		<p>Tow user-defined modes rapid or optimal auto-exposure) for all blot and gel imaging application</p> <p>ii) Image flat fielding Dynamic: pre-calibrated and optimized for each application. vi) Hardware touch-screen functionality multi-touch capability (2 points) 12.1 display</p> <p>iii) Maximum image area (W x H) 21 x 16.8 cm)</p> <p>iv) Detector Cooled CCD. 6 megapixels ix) Dynamic range >4 orders of magnitude</p> <p>v) illumination sources Trans-UV, 302pm. excitation Epi-white Trans-white (requires white Sample Tray)</p> <p>vi) Trans-blue, 450-490nm excitation (requires Blue Sample Tray)</p> <p>vii) Sample Tray)</p> <p>viii)Epi-blue, 460-490 nm excitation</p> <p>ix) Epi-green, 520-545 nm excitation</p> <p>x) Epi-red, 625-650 nm excitation</p> <p>xi) Epi-far red, 650-675nm excitation Epi-near IR, 755-777 nm excitation xi) Filter and application 590/ 110 nm standard filter to perfrom protein and DNA gel and blot imaging xii) Chemiluminescence filter 518-546 nm filter for blue-excitabile fluorophores and stains</p> <p>xii) 577-613 nm filter for gree-excitabile fluorophores and stains</p> <p>xiii)675-725 nm filter for far red-excitabile fluorophores and stains</p> <p>xiv)813-860 nm for near IR excitabile flouorophores and stains.</p> <p>xv) Data output 16 bit or 8-bit: SCN, TIFF JPEG files</p> <p>xvi)operating voltage 100-250 V xv) Operating temperature 10-28oC</p> <p>xvii) Operating humidity 10-85% relative humidity (non-condensing)</p>	
62.	Stomacher	<p>i) Time set: 30, 180, 600s or work continuously)</p> <p>ii) Rap speed 3-12/second</p> <p>iii) Valid capacity: 80-400ml</p> <p>iv) Material of case stainless steel</p> <p>v) Power 165 W</p> <p>vi) Electronic motor rate 500-1500 r.p.m.</p> <p>vii) Display: LCD</p> <p>viii) Polybag size: 17 x 30cm</p> <p>ix) Machine Net Weight 23 kg</p> <p>x) Power Supply :220v/ 50HZD</p> <p>xi) Dimension 250 x 460 x 310mm</p>	Rs 3.50 Lakh
63.	Liquid chromatography with Inductively coupled plasma mass spectrometer	<p>General:</p> <ul style="list-style-type: none"> Automated, quadrupole inductively coupled plasma mass spectrometer (HPLC- ICP-MS) system based on a quadrupole mass filter. Should be capable of measuring major, minor, trace and ultra-trace levels (ppb to ppm). <p>Sample Introduction System:</p>	Rs.150.00 Lakh

(HPLC- ICP- MS) system

- Standard single piece quartz torch with wide diameter; min 2.5 mm or suitable for matrix decomposition and sample ionization.
 - Spray Chamber: Temperature controlled Spray-chamber with capability for faster temperature equilibration and extended temperature range (-5 °C to 20 °C or suitable range and accuracy) .
 - Nebulizers: Micro Mist/ Glass concentric nebulizer
 - One separate/dedicated set of HF resistant kit -PFA spray chamber, PFA nebulizer, inert torch with Injector, Sample/drain tubing sets (pk/12) should be provided with one set of platinum cone (sampler , skimmer & hyper skimmer)
- Internal Standard kit required specifically for on line internal standard addition.

Ion Source:

- RF generator of power of 500-1500 W output or better and minimum frequency of 27 MHz/34 MHz or more

Extraction Interface:

- Suitable Nickel sampler cone with suitable diameter orifice and nickel skimmer cones with suitable diameter orifice with three additional sets of nickel sampler and skimmer cones.
- Sample and skimmer cones should be easily mountable and dismountable.
- The system should not require changing any hardware in the interface/cones to determine trace level concentration of elements in high matrix samples at the same time.
- Ion optics or quadrupole optics should have excellent focusing with off-axis system with 90DEG/ off-axis system/or suitable technology for Deflection to analyzer and detector to eliminate photons and neutrals.

Background noise must be less than <1 cps at 4.5 or 220 or 9 amu.

Cooling System

- **Re-circulating coolant chiller should be provided for continuous cooling of RF generator, RF load coil and ICP interface.**

Vacuum System:

Should have rotary pump and turbo molecular pump with split flow for extremely high vacuum throughput. Defaults to closed position when plasma is off or in the event of a power failure, maintaining vacuum in the analyzer housing or facility as per system hardware requirement.

Mass Analyzer System

- 2.7 MHz or more to provide superior ion transmission, resolution and abundance sensitivity.
- Mass Range: The entire mass range in-between 260 amu or suitable range to covers all elements as per all national and international regulatory compliance.
- Mass Stability: 0.1 amu/6-8 hrs or better.
- Scan Speed: >3700amu/sec (from 7Li to 238U, with 15 intervening masses) .



Gas Flow Control System:

- The gas flow control system should be of microprocessor-based precision electronic mass flow controller or electronic flow controller for all the gas channels (minimum 4 nos.) such as plasma, Auxiliary, Nebulizer, and Dilution/Makeup gas channels.
- Dedicated Gas Lines & MFC for Collision and Reaction Gas for contamination free & fast analysis.
- Vendor must provide dedicated reaction gas & MFC for collision & reaction gas to comply all national and international regulations i.e. Hydrogen/ Oxygen etc
- The gas flow control system should have computer-controlled safety interlocks and automatic gas flow controls for startup and shutdown operation.

Detector System:

- 10 or more true linear dynamic range i.e ≤ 0.5 cps to ≥ 109 cps or better
- Minimum dwell time & integration time 10ms in both pulse count and analog mode.

Interference Removal System:

- In addition to Standard Mode, the system must be having a Cell before the mass analyzer which is capable of removing polyatomic interferences on various analytes by using Reaction or Collision mode.
- System should be able to run in standard, Collision, and reaction mode simultaneously.

ICPMS Auto Sampler & LC for Speciation

- Auto sampler for handling about 200 sample vials of about appx ,Enclosure with Exhaust duct to remove toxic .
- LC speciation kit with suitable Pump (600 bar or more) ,Autosampler (100vial & 600 Bar) ,Tool kit ,500 vials septa ,basic consumables. Seamless integration with single ICPMS software. Columns & standards for Hg. Chemicals/Solvents for 200 sample run of each parameter.

Instrument Control and Data Acquisition & Processing

- Suitable interface should be provided for operation and data acquisition
- The vendor should provide a branded PC of latest suitable configuration with color laser printer.

Performance Specifications:

Sensitivity @ 2.5% oxide ratio.

- Li (7) or Be (9): 45 or better
- In ¹¹⁵ or Y ⁸⁹: 155 or better
 - ²⁰⁵Tl or ²³⁸U or Bi: 75 or better

Detection Limit (ppt)

- Li (7) or Be (9): <1
- In ¹¹⁵ or Y ⁸⁹: 155 : <1
- ²⁰⁵Tl or ²³⁸U or Bi: 75 : <1

➤ Best Oxide ratio performance: CeO/Ce: ≤ 2.5 %

➤ Isotope Ratio Precision: < 0.4 % or suitable.

Abundance sensitivity (LM & HM) U/Cs: 10^{-7} or 0.05ppm

System control and data acquisition:

- The system should perform auto optimization of plasma parameters like plasma power, plasma gas flow, etc.

Acquisition mode

- For qualitative and quantitatively analysis. measurements using integral software.

Operating Software:

- Analysis mode: Shall allow for semi quantitative analysis, external calibration and internal standard addition methods for fully quantitative analysis.
- Report Generation: Output results formatted in mixed concentration units e.g. ppt, ppb, ppm, etc.
- Quality control and software: Software for automated QA/QC during unattended operation, exportability of data to other standard packages should be available. Matrix specific databases to provide preferred isotope selection should be available.
- All software supplied must be with genuine license

Local supplies

- Branded 20KVA true online UPS with Isolation based, connector, Mainframe UPS Stand to provide 60mints backup. In out MCB and 80 meter high power cable .
- Auxiliary, Coolant and Nebulizer Gas: Argon Filled Gas Cylinder (High Purity). Qty-6 (with Manifold)
- Collision Gas : Helium Filled Gas Cylinder (High Purity) in 47 Ltrs. Qty-02
- Reaction Gas as per system requirement :Filled Gas Cylinder (High Purity) in 47 Ltrs. Qty-01
- Gas paneling tubing must be quoted to cover 70-80 feet distance from Cylinder to Equipment Lab.
- Gas Purification Panel with appropriate plumbing
- NIST certified multi element (21 elements or more, 100ppm & 1000ppm: 250mleach ; 200 ml internal standard mix ,200 ml Hg, As, Tin, V, Mo, S, P standard 10/100/or 1000ppm & 200 ml Gold stock solution 100/1000ppm

Tunning solution :01 Liter.

Additional Consumables (To be supplied apart of main equipment supplies

- Ni sampler, Ni skimmer, and hyper skimmers cone (if applicable) – 03 sets
- Pt sampler, Pt skimmer, and hyper skimmers cone (if applicable) – 02 sets
- Standard nebulizer: 02 Set
- Standard Spray chamber – 01 Set
- Standard torch & Injector – 03 Set
- Standard peristaltic pump tubing for drain (pk/12) –04 Nos.
- Standard Peristaltic pump tubing for samples (pk/12) – 04 Nos.
- Peristaltic pump tubing for ISTD (pk/12) – 04 Nos
- Tubing autosampler (pk/12) – 03 Nos
- PVC waste tubing for Autosampler: 5 meter



		<ul style="list-style-type: none"> • PFA/Inert sample and rinse tubing (pk/12) – 03 sets • Oil /mist filter -02 set • Graphite gasket for Sampling cone- 3 Nos. • Tubing for spray chamber drain (6 Mtr) • Pump oil (1L) – 05 sets • Skimmer base for Ni & Pt cones– 01 Set Each • RF coil – 02 sets • Pt shield : 02 Sets • Torch Bonnet -03 Nos. • Cone cleaning solvent/suprapure chemical – 3L • Swab (cotton-tipped both ends) – 500 Nos. • Autosampler vessels (15-17) – 2000 Nos. • 50ml vessels – 1000 Nos. <p>Instrument Qualification</p> <ul style="list-style-type: none"> • The system must include OEM document (Operation qualification (OQ), Instrument qualification (IQ) and Performance qualification (PQ). <p>Warranty: A standard warranty will be provided to cover all component.</p>	
64.	<p>Liquid chromatography with High Resolution Mass Spectrometry (LC-HRMS)</p>	<p>LC-QToF (HRMS) System: Accurate Mass High-Resolution Mass Spectrometry Workstation for Small / Large Molecule Studies of food samples for Authenticity and quality testing with a Quadrupole Time of Flight / Alternate Technology High-Resolution Mass Spectrometer Workstation for Exact Mass and True Isotopic Measurements with the Following Capabilities and Features (but not limited to):</p> <ol style="list-style-type: none"> 1. The system should be capable of detecting, identifying, and quantifying markers of authenticity in various food samples like honey and its potential foreign sugar adulterants including beet sugar syrup, high fructose corn syrup, invert sugar syrup, starch based syrups etc. 2. The markers of foreign sugars may include, but not limited to, Oligosaccharides (OS) with degrees of polymerization 3-10 (DP 3–10), Polysaccharides (PS) with degrees of polymerization 11-19 (DP 11–19), 2-Acetylfuran-3-glucopyranoside (2-AFGP), Difructose anhydrides (DFA), Mannose etc. 3. Should be capable of analysing both cationic and anionic compounds in a single run without compromising sensitivity, resolution, reproducibility and accuracy. 4. Equipment should have in-built High-resolution spectral library/database. 5. The system should have a software(s) for Quantitative & Statistical analysis (Chemometrics, PCA, etc.) and related tools for comprehensive evaluation of acquired data as well as Retrospective data analysis. 6. The applicant should have technical expertise and an installation base in Food Authenticity analysis using LC-HRMS at the national (India)/ global level. <p>Technical Specifications : A) Ionisation Source:</p>	Rs. 350.00 Lakh



A dedicated source with ESI and APCI sources for the analysis of polar and non-polar compounds should be quoted.

1. A dedicated source with ESI and APCI sources for the analysis of polar and non-polar compounds should be quoted.
2. The system should easily switch between ESI and APCI without breaking the vacuum.
3. ESI and APCI Source should handle flow rates up to 2 ml/min or better without splitting.
4. The system should have an isolation valve to allow source and sampling maintenance without venting the system.
5. Mass Analyzer: The Mass Analyzer should be equipped with the quadrupole analyzer and collision cell followed by an equivalent high-resolution mass analyzer / Time of flight mass analyzer system with the below-mentioned capabilities:
6. High-Mass Quadrupole Mass Filter: The system should have a quadrupole mass filter equipped with a stable design, RF generator, and high-resolution mass capability.
7. High-transmission CID collision cell: CID collision cell should be fast and efficient, enabling information-rich fragmentation.
8. Orthogonal time of flight Mass Analyzer/Equivalent High-resolution mass analyzer: TOF analyzer / Equivalent High-resolution mass analyzer with orthogonal mounted ion source and ion reflectron with increased mass resolution & accuracy. It should have positive and negative ion modes.
9. Sensitivity: For a full scan, MS sensitivity for 1 pg on column injection of reserpine should produce a signal-to-noise ratio >700: 1 or higher. MS/MS sensitivity for 1 pg on column injection of reserpine should produce a signal-to-noise ratio > 1700: 1 or higher.

B) TOF Mass Analyzer:

1. The Q-TOF / Equivalent HRMS mass range should be **10000** m/z or better.
2. Mass accuracy in MS/MS mode should be <2 ppm for Glu-Fib or better.
3. The spectral acquisition rate for MS should be 25 spectra/sec or more and **50MS/MS Spectra/sec** or more for MS/MS mode
4. The quoted system should be capable of providing a resolution up to 40,000 FWHM or better @m/z ~ **2,800**, and the linear dynamic range should be at least four orders of magnitude.
5. Relative isotopic abundance calculation must be automatic by the software.
6. Desolvation Temperature should be **400Deg C** or more.
7. The software should be capable of data acquisition, whereby high and low collision energy data are acquired to provide fragmentation data for all detectable molecular ions in a single run. The instrument should have variable collision energy between low and high energy in the collision cell.



8. Analysis: The workstation should be capable of doing quantitative acquisitions with a linear dynamic range of at least four orders of magnitude

C) UHPLC System

1. Quaternary / Binary operating pump(s) with an operating pressure of minimum 15000 psi or better. Automatic purging of pumps controlled by software.
2. Autosampler must be quoted with capacity of 90 or more vials. 500 extra vials must be quoted along with system.
3. System should come with a column oven of temperature range 30-80 deg C.
4. System should come with sample cooler of a temperature range of 4-40 °C.

D) Computer Software and Hardware:

The workstation should be supplied with:

1. Suitable computer workstations for Processing and acquisition, and all interfacing hardware and software for instrument control, data acquisition, data storage and data processing.
2. Software suite(s) for data acquisition and control of Mass spectrometry.
3. The MS control software must be able to control both the MS and quoted Liquid Chromatography devices.
4. A multitasking suite of analytical applications and instrument management software operating in a Microsoft Windows environment, featuring a graphical user interface with single window for multiple commands should be quoted and must include:
 - a) Mass Spectrometer Control acquisition and processing Software
 - b) Spectrum Review and Processing
 - c) Chromatogram Review and Processing Component Identification: Software to automatically process complex chromatographic datasets composed of many components that may be incompletely separated from one another.

E) Pre-Requisite for Running the Workstation:

1. The equipment must be supplied with branded Nitrogen Gas generators suitable for supplying the N₂ gas required by the HRMS. Any additional cylinders (3 Per warranty year), regulators, and moisture/hydrocarbon traps must be quoted separately.
2. Appropriate 15 KV A online UPS with stabilizer with at least 1 hour backup.
3. Printer should also be quoted with the system.
4. If the PCs and Monitor(s), etc., are integral parts of the equipment, it must be mentioned clearly in the quotation. Or must be quoted separately.
5. Any associated syringe infusion device must be part of quoted system.

		<p>6. System should be supplied complete with software for applications related to small and large molecules, NIST Library / Chemspider Connectivity. Perpetual license must be quoted wherever applicable. Any license which is not perpetual must be quoted for minimum 3 years.</p> <p>7. A High-end processing workstation with a Xeon Processor, 4 X 16Gb RAM, 12 Tb hard disk or better with minimum 27 inch monitor should be quoted.</p> <p>8. C18 columns 2 nos. sub 2 micron chemistry with guard columns must be quoted.</p> <p>9. A Comprehensive Warranty, including third-party items like ups with batteries and PM Kits, should be provided for 3 years.</p>	
65.	EA/LC-IRMS	<p>1. ISOTOPE RATIO MASS SPECTROMETER</p> <p>1.1 IRMS should feature an accelerating voltage of 5,000 volts or above.</p> <p>1.2 IRMS should feature absolute sensitivity of 1200 molecules/ion (CO₂) in continuous flow mode.</p> <p>1.3 Collector array: The IRMS should be supplied with universal triple collector array along with collector(s) for Hydrogen measurement to support measurement of CO₂, N₂, SO₂, CO and H₂ isotopic ratios.</p> <p>1.4 Amplifier: The system should be supplied with an amplifier of 50 volts or above to support large dynamic range.</p> <p>1.5 The IRMS should feature a highly stable electromagnet for separation of masses.</p> <p>1.6 The filament must be inert to oxygen.</p> <p>1.7 Source must be self-aligning and have a plug-in design and should be easily replaceable by user.</p> <p>1.8 Below internal precision 1σ (‰) must be guaranteed in continuous flow mode:</p> <p>1.9 δ¹³C (CO₂): ≤ 0.06</p> <p>1.10 δ¹⁸O (CO₂): ≤ 0.06</p> <p>1.11 δ¹⁵N (N₂): ≤ 0.06</p> <p>1.12 δ³⁴S (SO₂): ≤ 0.1</p> <p>1.13 Below linearities must be guaranteed in continuous flow mode:</p> <p>1.14 δ¹³C (CO₂): ≤ 0.02</p> <p>1.15 δ¹⁸O (CO₂): ≤ 0.04</p> <p>1.16 δ¹⁵N (N₂): ≤ 0.02</p> <p>1.17 δ³⁴S (SO₂): ≤ 0.04</p> <p>1.18 For hydrogen measurements H₃+correction should be ≤ 8 ppm/nA.</p> <p>1.19 IRMS software must allow multipoint isotopic calibration.</p> <p>1.20 IRMS software must allow processing of 3rd party IRMS for unified integration algorithm.</p>	Rs.400.00 Lakh



2. CONTINUOUS FLOW INTERFACE

- 2.1 The interface should allow completely automatic inlet switching between inlets, viz. EA and LC.
- 2.2 The interface must allow possibility to connect upto 5 monitoring gases or more.
- 2.3 The interface of Elemental Analyzer to IRMS must have automatic sample dilution, automated addition of reference gases.

3. ELEMENTAL ANALYSER

- 3.1 The system must have two separate furnaces for Combustion and Reduction, so that it is possible to carry out isotopic analysis of bulk material for C, N and S by combustion.
- 3.2 The furnaces should be able to achieve a temperature of 1100°C or higher.
- 3.3 The Autosampler for continuous analysis of 120 samples or more, having Zero blank facility to ensure complete removal of atmospheric gases.
- 3.4 Analysis of Sulphur must be performed at higher column temperature than Carbon and Nitrogen.
- 3.5 Below precisions must be guaranteed for all three isotopes in a single run. The external precision (1σ) should be
 $\delta^{13}\text{C}$ (CO_2) 0.10 ‰, sample size 50 μg C
 $\delta^{15}\text{N}$ (N_2) 0.15 ‰, sample size 50 μg N
 $\delta^{34}\text{S}$ (SO_2) 0.20 ‰, sample size 50 μg S
This must be supported by documentation and demonstrated during installation.
- 3.6 All necessary software and hardware should be supplied as a standard part of the EA. EA should be capable of operating as a standalone unit for CNS elemental analysis.

4. HPLC and INTERFACE

- 4.1 Automated HPLC-IRMS system for isotopic analysis of $^{13}\text{C}/^{12}\text{C}$ in compounds that are chromatographically resolved in HPLC column.
- 4.2 Hardware options must include isocratic pump, 132 place or higher auto sampler/column oven/column for IRMS sample analysis.
- 4.3 Suitable interface to convert the sugars eluted from LC into CO_2 . The interface should ensure moisture free delivery of CO_2 to the IRMS.
- 4.4 Acquisition of samples on LC-IRMS must be through single software only.
- 4.5 Below external precision must be guaranteed:
 $\delta^{13}\text{C}$ (CO_2) 0.2 ‰ or better

5. OTHER ACCESSORIES

- 5.1 Reputed brand microbalance with readability of 0.001 mg must be supplied along with the instrument.

		<p>5.2 All the calibration standards required to calibrate the IRMS, along with all the peripherals, should be quoted.</p> <p>5.3 Gas cylinders for CO2 (Qty 2), Nitrogen (Qty 2), SO2 (Qty 2), Oxygen (Qty 2) and Helium (Qty 2) along with associated parts (regulators, purifiers panels, tubings and plumbing etc.) should also be provided.</p> <p>5.4 Computer: Core i5 quad core, 16GB DDR4 RAM, 1TB HDD, Win 10 Pro, 27" LED Monitor, with laser jet printer.</p> <p>5.5 15 KVA UPS is required for uninterrupted power supply for at least two hours backup for mass spectrometers and associated peripherals.</p> <p>5.6 Consumables for 5000 CNS analysis on EA-IRMS and 2500 Analysis on LC-IRMS must be offered.</p> <p>6. OTHER TERMS AND CONDITIONS</p> <p>6.1 Vendor should provide complete user list (including email id and phone numbers) and performance certificate of their IRMS systems.</p> <p>6.2 Vendor must have minimum 5 IRMS installations in India in last 10 years.</p> <p>6.3 Vendor must have local service organisation based in India. Detailed list of same must be provided along with technical bid.</p> <p>6.4 Up gradation of all software installed along with the complete system, should be provided free of cost, as and when it is released, during the warranty.</p> <p>6.5 Vendor should be able to supply all the spares / consumable required for repair for at least 10 years after installation.</p> <p>6.6 The EA-LC-IRMS must be offered with 1 year warranty.</p>	
66.	Nuclear Magnetic Resonance (imported)	<p>Specifications for 400 MHz NMR-based platform, for 1H-NMR screening of food in full automation.</p> <p>Latest model of dedicated 400MHz NMR-based platform, for high performance Honey Screening, Origin and authenticity purposes combined with dedicated modules for profiling of various Honey samples with following technical specifications:</p> <ul style="list-style-type: none"> • Magnet System - Actively shielded superconducting 400MHz magnet system (operating field at 9.4 Tesla). Long helium hold times (> 280 days) and nitrogen hold time (minimum 14 days); helium level meter with alarm function for low helium level Vibration dampers and Advanced External Disturbance Suppression. • Shim system (auto) / Lock Channel -High performance magnetic field optimization system. Smart magnet field control system with digital quadrature lock receiver. • Radio Frequency Generation and Data Acquisition - Two frequency channel configuration, Digital receiver control unit with high dynamic range. Linear amplifiers for 1H and X- 	Rs. 1000.00 Lakh




- broadband (typically 13C), 2H transmitter for magnet field optimization.
- Temperature Control - Smart temperature control system with pre-cooling unit for high temperature stability.
 - Gradient Accessory -For experiment and magnetic field optimization.
 - NMR Sample Changer - Sample changer with barcode reader, minimum 50 positions, fully equipped with spinners.
 - NMR Probe - 5mm 1 H optimized double resonance broad banded probe designed for 1 H observation and 1 H observation with X nuclei decoupling. Automatic Tuning and Matching and Z-gradient coil.
 - Software and Workstation - NMR Host computer with Win11 and above OS and compatible with the instrument. Instrument control software and automation software, NMR manuals library for novice users.
 - Workstation and barcode - Additional Win10 and above OS and compatible with the instrument workstation and barcode printer for 7-inch MR Tubes along with software to manage samples and associated data.
 - Application module for profiling of Honey - Module for preparation and NMR measurement of honey samples with the method for Profiling of Honey.
 - Remote data analysis for profiling of Honey - Remote data analysis and profiling of NMR spectra of 3000 honey samples. Remote Analysis of the data should be performed according to the latest version of the Honey-Profiling method.
 - During remote analyses, the instrument should be connected to a server having global honey database of at least 25000 samples. The remote analysis report from this server should detect adulteration and verify the geographical origin of the tested honey.
 - pH titration unit for automatic pH adjustment for NMR applications - Automatic extremely precise pH adjustment of low volume aqueous/alcoholic samples. Unit contains pumps for acid/base/buffer and cleaning liquid, shaker and specially made electrode with integrated reagent supply for pH adjustment in a one-step process.
 - Three years warranty and the date of warranty period for NMR including pH unit, will start from the date of installation.
 - Accessories:
 - a) Air compressor- Oil Free Scroll Air compressor including air-filter and Dryer and One buffer Tank capacity of 90 litres and SS made.
 - b) Suitable 10 KVA online UPS with minimum 02 hours back up.
 - c) Initial supply of helium during installation.
 - d) 1000 nos of 5mm NMR tubs with consumables for 1000 honey sample analyses.
 - Optional:

		a) System should be compatible with dedicated profiling modules and remote analyses of food matrices like juice, wine etc.	
67.	Ion Chromatography System with Conductivity Detector	<p>Latest Computer controlled Ion Chromatography system for analysis of Anions like fluoride, chloride, chlorate, nitrite, nitrate, phosphate, sulphate, sulphite, etc, and Cations like sodium, potassium, lithium, ammonium, calcium, magnesium.</p> <p>The system should be able to perform both suppressed and non-suppressed conductivity applications. The flow paths should be of PEEK material and inert withstanding the entire pH range 0 - 14.</p> <p>The software should be able to identify various components like pump, column, detectors automatically. Necessary hardware with electronic chip along with software should be quoted to meet this requirement of identification. Should be able to use Organic modifiers (at least up to 50%) like acetone, acetonitrile and methanol in the eluent.</p> <p>The system should have the components with following technical specifications.</p> <ul style="list-style-type: none"> • PUMPS : (Should have adjustable flow range 0.001 to 20.00 ml/minute) One numbers high pressure pump of serial dual piston type with selectable from 0.001 to 20mL / min flow rate with a flow reproducibility of $\pm 0.1\%$. Pump should have the following specifications <ul style="list-style-type: none"> a) Serial dual pistons with two inert check valves. b) Resolution of flow rate : 0.001mL c) Pulsation : Lower than 1% d) Pressure range : 0 – 5000 PSI • Conductivity Detector (for anion and cation analysis) : <ul style="list-style-type: none"> a) One number of conductivity detector for analysis of anions and cations, Should be microprocessor based with a thermostated micro-flow cell conductivity block with an accuracy of $\leq 0.001^\circ$ C. The user should be able to set temperature of the conductivity block between 20 – 50 C. b) Conductivity measurement range: 0 – 15000 μS/ cm or more(linear in complete conductivity range). c) Electronic noise and base line noise : < 0.3nS/cm at 1μS/cm level d) Resolution: 5 pS/cm or better e) Should be able to run suppressed and non-suppressed conductivity detection. f) The conductivity detector should have capability to connect in series with electrochemical detector. • Column Housing: Column housing should be able to identify the columns and set the optimal operating conditions for column operations. The columns should have electronic chip to store data and history of column use. The column of appropriate dimension for cations and anions should be provided. • IC Columns: 	Rs. 45.00 Lakh

		<p>IC columns for analyses of anions, cations, should be quoted with respective guard columns. The columns should have electronic chip to store data and history of column use. It should also be possible to record the number of injections and the working hours. Necessary hardware with electronic chip along with software should be quoted to meet this requirement of identification.</p> <ul style="list-style-type: none"> • Injector: Dual position 6-Port injector valve with fast response time and controlled through software. • Suppressor : Appropriate suppressor as per the requirement to fulfil the above analytes should be quoted. The regeneration of the suppressor should be by external chemical regeneration mode with the possibility of controlling the regenerant flow rate. The suppressor should be 100% solvent (acetone, methanol & acetonitrile) compatible. At least 8 years warranty or more suppressors should be provided. Suppressor should be 100% solvent compatible and should withstand a flow rate of at least upto 10mL/min. • Autosampler : Auto sampler should have 35 vial position of vial capacity of 10mL sample volume minimum. Should have non-metallic flow path and should be completely controlled by software. • Data Work station : Software for data acquisition & processing system along with complete system control should be offered. The necessary software should be fully Windows based. The software should be able to control the system. • Others : <ul style="list-style-type: none"> (i) No gas should be required for the entire operation of the system. (ii) IC should be supplied with manuals (iii) Essential spares should be quoted • Installation, Testing and Commissioning:- The complete installation includes all necessary software, testing and commissioning of machine. • Warranty:- One year Standard warranty of complete machine shall be provided • Note: System should have the capability to upgrade with other detectors like UV- VIS Photo Diode Array Detector and Electrochemical detector as and when required. 	
68.	MOSH/MOAH Analyzer (LC-GC-FID with online automatic sampler)	<p>LC-GC-FID The system should be an online LC-GC-FID coupled system. HPLC should be connected to a GC via an automated valve interface. The system should quantitatively determine the sum of all individual components as per EN 16995:2017 method. The temperature of the valve unit (connecting HPLC & GC) should be varied from room temperature to 150 °C.</p> <p>Gas Chromatography system: A compact and high-performance GC system with a touch-screen user interface with built-in diagnostics.</p>	Rs. 250.00 Lakh



		<ul style="list-style-type: none"> • GC Oven maximum temperature must be a minimum of 450°C or better. Must have minimum 20 ramps facility with ramp rate of minimum 120°C/min. • One split-splitless inlet must be provided along with the dedicated electronic pneumatic controls. • One Flame ionization detector (FID) detector – 2 nos, with dedicated electronic pneumatic controls and minimum detection limit (MDL) of 1.5 pg and maximum temperature of 4500C or more. <p>HPLC system (Quaternary gradient pump with UV-Vis Detector):</p> <ul style="list-style-type: none"> • Should be capable of operating with 4 Solvents at a time during gradient operation • Settable Flow range: 0.1 – 10 mL/min, • Flow accuracy: ± 1 % • Flow Precision: RSD < 0.1 % or better • Pumping System: Software controlled • Maximum Pressure: 8700 Psi or better. • Degasser: Integrated or separate if not integrated. • Leak sensor :Present, this • Autosampler with sample cooler • Must have a capacity to hold 100 samples or more in approx. 1ml to2ml vial • With auto dilution, auto addition, premixing and needle rinsing programs. • Injection Volume Range: 0.1 uLto 100 uL. • Max. Operating pressure: Same as pump. Should not be less than pump. • Auto sampler carryover: < 0.05 % RSD or better • Columns over should be included • Columns required for MOSH/MOAH analysis should be quoted • All the CRMs required for MOSH/MOAH analysis should be quoted • PC & Printer • 15 KVA online UPS • Gas cylinder, purification panel, regulators 	
69.	<p>Inductively coupled plasma mass spectrometer (ICP-MS) system</p>	<p>General:</p> <ul style="list-style-type: none"> • Automated, quadrupole inductively coupled plasma mass spectrometer (ICP-MS) system based on a quadrupole mass filter. Should be capable of measuring major, minor, trace and ultra-trace levels (ppb to ppm). <p>Sample Introduction System:</p> <ul style="list-style-type: none"> • Standard single piece quartz torch with wide diameter; min 2.5 mm or suitable for matrix decomposition and sample ionization. • Spray Chamber: Temperature controlled Spray-chamber with capability for faster temperature equilibration and extended temperature range (-5 °C to 20 °C or suitable range and accuracy). • Nebulizers: Micro Mist/ Glass concentric nebulizer • One separate/dedicated set of HF resistant kit -PFA spray chamber, PFA nebulizer, inert torch with Injector, Sample/drain tubing sets (pk/12) should be provided with one set of platinum cone (sampler , skimmer & hyper skimmer) <p>Ion Source:</p>	Rs. 125.00 Lakh



- RF generator of power of 500-1500 W output or better and minimum frequency of 27 MHz/34 MHz or more

Extraction Interface:

- Ion optics or quadrupole optics should have excellent focusing with off-axis system with 90DEG/ off-axis system/or suitable technology for Deflection to analyzer and detector to eliminate photons and neutrals.
- Background noise must be less than <1 cps at 4.5 or 220 or 9 amu.

Cooling System:

- Re-circulating coolant chillier.

Vacuum System:

- Vacuum System to be supplied

Mass Analyzer System: 2.5 MHz or more to provide superior ion transmission, resolution and abundance sensitivity.

Mass Range:

- The entire mass range in-between 260 amu or suitable range to covers all elements as per all national and international regulatory compliance.
- Mass Stability: 0.1 amu/6-8 hrs or better.

Scan Speed: >3700amu/sec (from 7Li to 238U, with 15 intervening masses)

.Gas Flow Control System:

- The gas flow control system should be of microprocessor-based precision electronic mass flow controller or electronic flow controller for all the gas channels (minimum 4 nos.) such as plasma, Auxiliary, Nebulizer, and Makeup gas channels.

Detector System: 10 or more true linear dynamic range i.e ≤ 0.5 cps to ≥ 109 cps or better

Instrument Control and Data Acquisition & Processing: Suitable interface should be provided for operation and data acquisition. vendor should provide a branded PC of latest suitable configuration with colour laser printer.

Performance Specifications:

Sensitivity @ 2.5% oxide ratio.

- Li (7) or Be (9): 45 or better
- In ¹¹⁵ or Y ⁸⁹: 155 or better
- ²⁰⁵Tl or ²³⁸U or Bi: 75 or better

Detection Limit (ppt)

- Li (7) or Be (9): <1
- In ¹¹⁵ or Y ⁸⁹: 155 : <1
- ²⁰⁵Tl or ²³⁸U or Bi: 75 : <1

➤ Best Oxide ratio performance: CeO/Ce: ≤ 2.0 %

➤ Isotope Ratio Precision: < 0.4 % or suitable.

Abundance sensitivity (LM & HM) U/Cs: 10^{-7} or 0.05ppm

System control and data acquisition:

- The system should perform auto optimization of plasma parameters like plasma power, plasma gas flow, etc.
- All software supplied must be with genuine license

Local supplies

- Branded 15KVA true online UPS with Isolation based, connector, Mainframe UPS Stand to provide 60mints backup. In out MCB and 40-meter-high power cable.
- Auxiliary, Coolant and Nebulizer Gas: Argon Filled Gas Cylinder (High Purity). Qty-4 (with Manifold)
- Collision Gas: Helium Filled Gas Cylinder (High Purity) in 47 Ltrs. Qty-02
- Gas panelling tubing must be quoted to cover 70-80 feet distance from Cylinder to Equipment Lab.
- Gas Purification Panel with appropriate plumbing
- NIST certified multi element (21 elements or more, 100ppm & 1000ppm: 250mleach ; 200 ml internal standard mix ,200 ml Hg, As, Tin, V, Mo, S, P standard 10/100/or 1000ppm & 200 ml Gold stock solution 100/1000ppm
- Tuning solution: 01 Liter.



		<p>Additional Consumables (To be supplied apart of main equipment supplies</p> <ul style="list-style-type: none"> • Ni sampler, Ni skimmer, and hyper skimmers cone (if applicable)-01 sets <p>,Standard nebulizer: 01Set, Standard Spray chamber – 01 Set, Standard torch & Injector – 01Set, Standard peristaltic pump tubing for drain (pk/12) –01 Nos., Standard Peristaltic pump tubing for samples (pk/12) – 01 Nos, Peristaltic pump tubing for ISTD (pk/12) – 01 Nos, Tubing autosampler (pk/12) – 01 Nos, ,PVC waste tubing for Autosampler: 1 meter, PFA/Inert sample and rinse tubing (pk/12) – 01 sets, RF coil – 01 sets ,Pt shield : 01 Sets, Torch Bonnet -01 Nos., Cone cleaning solvent/suprapure chemical – 3L,Swab (cotton-tipped both ends) – 100 Nos, Autosampler vessels (10ml or suitable) – 1000 Nos.,50ml vessels-1000 Nos.</p> <p>The system must include OEM document (Operation qualification (OQ), Instrument qualification (IQ) and Performance qualification (PQ).</p>	
70.	LIMS	LIMS should be capable of sample tagging (providing bar code) at the point of sample receipt, allocation of sample to analyst, acquiring instrument data, report generation, auto archiving of data, capturing audit trails, etc) and complying to 21 CFR Part 11	Rs.10.00 Lakh
71.	CRMs for LC-MS/MS & GC-MS-MS	As per Annexure – 1 (Individual CRMs)	Rs.25.00 Lakh
72.	CRMs for LC-ICPMS	Lead (Pb), Copper (Cu), Arsenic (As), Cadmium (Cd), and Mercury (Hg), Methyl Mercury, Chromium (Cr), Nickel (Ni), Selenium (Se), Antimony (Sb), Zinc (Zn), Barium (Ba), Uranium (U), Aluminium (Al), Beryllium (Be), Calcium (Ca), Cobalt (Co), Iron (Fe), Lithium (Li), Magnesium (Mg), Manganese (Mn), Mercury (Hg), Molybdenum (Mo), Strontium (Sr), Potassium (K), Silver (Ag), Sodium (Na), Thallium (Tl), Tin (Sn), Uranium (U), Vanadium (V), Boron (B)	Rs.1.00 Lakh
73.	CRMs for Mycotoxins	Aflatoxins B1, B2, G1, and G2, M1 and M2 Ochratoxin A & B, Deoxynivalenol (DON), Fumonisin, Zearalenone, Patulin, Fumonisin, T-2 Toxin, HT-2 Toxin	Rs.3.00 Lakh
74.	CRMs for Microbiology	E. coli , Coliforms , Enterococci , Salmonella, Shigella Yeast and Mould, Enterobacteriaceae, Staphylococcus aureus, Listeria monocytogenes, Vibrio cholera, Vibrio parahaemolyticus, Clostridium perfringens, Bacillus cereus, Campylobacter jejuni, Cronobacter sakazakii, Listeria spp., Thermophilic anaerobes, Sulphite-reducing Clostridia, Mold count, Lactic Acid Bacteria, Psychrotrophic count, Thermotrophic count, Total Plate Count (TPC) / Aerobic Plate Count,	Rs.3.50 Lakh



S.NO	Name of the Analytes in Mix
1	2,4-Dichlorophenoxy Acetic Acid
2	Acephate
3	Methamidophos
4	Acetamiprid
5	Alachlor
6	Alpha naphthyl Acetic Acid
7	Ametroctradin
8	Anilophos
9	Atrazine
10	Azimsulfuron
11	Azoxystrobin
12	Benfuracarb
13	Benomyl
14	Bensulfuron Methyl
15	Cyfluthrin (sum of isomers)
16	Bifenthrin
17	Bispyribac Sodium
18	Bitertanol
19	Buprofezin
20	Butachlor
21	Captan
22	Carbaryl
23	Carbendazim
24	Furathiocarb
25	Carbofuran
26	3-hydroxy carbofuran
27	Carbosulfan
28	Carfentrazone Ethyl
29	Carpropamid
30	Cartap Hydrochloride
31	Chlorantraniliprole
32	Chlorfenapyr
33	Chlorfluazuron
34	Chlorimuron ethyl
35	Chlormequat Chloride
36	Chlorothalonil
37	Chlorpropham
38	Chlorpyrifos
39	Chlothianidin
40	Chromafenozide
41	Cinmethylen
42	Clodinafop-propargyl
43	Clomazone

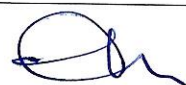
44	Cyantranilipole
45	Cyazofamid
46	Cyhalofop-butyl
47	Cymoxanil
48	Cypermethrin (sum of isomers)
49	Deltamethrin
50	Diafenthiuron
51	Dichlorvos
52	Diclofop-methyl
53	Diclosulam
54	Dicofol (sum of o,p' and p,p' isomers)"
55	Difenoconazole
56	Diiflubenzuron
57	Dimethoate
58	Dimethomorph(sum of isomers)
59	Dinocap
60	Meptyldinocap
61	Dinotefuran
62	Dithianon
63	Metiram(Dithiocarbamates)
64	Diuron
65	Dodine
66	Edifenphos
67	Emamectin Benzoate
68	Epoxyconazole
69	Ethephon
70	Ethion
71	Ethofenprox (Etofenprox)
72	Ethoxysulfuron
73	Etoxazole
74	Famoxadone
75	Fenamidone
76	Fenarimol
77	Fenazaquin
78	Fenobucarb (BPMC)
79	Fenoxaprop-p-ethyl
80	Fenpropathrin
81	Fenpyroximate
82	Fenvalerate
83	Fipronil
84	Fipronil-sulfone
85	Flonicamid
86	TNFG
87	TFNA
88	Fluazifop-P
89	Fluazifop-Butyl
90	Fluazifop-P-butyl



91	Flubendiamide
92	Fluchloralin
93	Flufenacet
94	Flusilazole
95	Fluvalinate
96	Forchlorfenuron
97	Fosetyl-Al
98	Phosphorous acid
99	Glufosinate Ammonium
100	Glyphosate
101	Halosulfuron methyl
102	Hexaconazole
103	Hexazinone
104	Hexythiazox
105	Iodosulfuron Methyl Sodium
106	Imazethapyr
107	Imidacloprid
108	Indoxacarb
109	Iprobenfos
110	Iprodione
111	Isoprothiolane
112	Isoproturon
113	Kasugamycin
114	Kresoxim Methyl
115	Lambda cyhalothrin
116	Linuron
117	Lufenuron
118	Malathion
119	Malaoxon
120	Mandipropamid
121	Mepiquat
122	Mesosulfuron Methyl
123	Metaflumizone
124	Metalaxyl
125	Metalaxyl-M
126	Methabenzthiazuron
127	Methomyl
128	Methyl Chlorophenoxy Acetic Acid (MCPA)
129	Paraoxon- methyl
130	Methyl Parathion
131	S-metolachlor
132	Metolachlor
133	Metribuzin
134	Metsulfuron Methyl
135	Milbemectin A3
136	Monocrotophos
137	Myclobutanil



138	Novaluron
139	Orthosulfamuron
140	Oxadiargyl
141	Oxadiazon
142	Demeton-S-methyl-sulfoxide
143	Oxyfluorfen
144	Paclobutrazol
145	Paraquat
146	Penconazole
147	Pencycuron
148	Pendimethalin
149	Penoxuslum
150	Permethrin (sum of isomers)
151	Phenthoate
152	Phorate
153	Phorate sulphone
154	Phorate sulphoxide
155	Phosalone
156	Picoxystrobin
157	Pinoxaden
158	Pretilachlor
159	Pirimiphos-methyl
160	Profenofos
161	Prohexadione calcium
162	Propaquizafop
163	Propargite
164	Propiconazole
165	Pyraclostrobin
166	Pyrazosulfuron ethyl
167	Pyridalyl
168	Pyriproxyfen
169	Pyriithiolac Sodium
170	Quinalphos
171	Quizalofop ethyl
172	Quizalofop-P-tefuryl
173	Spinosad (sum of Spinosyn A+D)
174	Spiromesifen
175	Sulfosulfuron
176	Tebuconazole
177	Thiacloprid
178	Thifluzamide
179	Thiodicarb
180	Thiamethoxam
181	Thiometon
182	Thiophanate-Methyl
183	Tolfenpyrad
184	Trichlorfon



185	Triacontanol
186	Triadimefon
187	Trifloxystrobin
188	Triallate
189	Triasulfuron
190	Triazophos
191	Tricyclazole
192	Tridemorph
193	Trifluralin
194	Validamycin
195	Fluopicolide
196	Tembotrione
197	Propanil
198	Fluopyram
199	Topramezone
200	Thiocyclam Hydrogen Oxalate
201	2,4-Dits esters (2,4 - D dimethylammonium salt)
202	2,4-D
203	Ametyrn
204	Fomesafen
205	Imazamox
206	Spinetoram (Spinosyn-J and Spinosyn-L)
207	Sodium Para Nitro Phenolate
208	Bentazone
209	Cyflumetofen
210	Boscalid
211	Flucetosulfuron
212	Haloxyfop-R Methyl
213	Sulfentrazone
214	Spirotetramat
215	spirotetramat-enol
216	Metrafenone
217	Fluxapyroxad
218	Tetraconazole
219	Abamectin (sum of avermectin B1a, avermectin B1b)
220	Flupyradifurone
221	Difluroacetic Acid
222	Sulfoxaflor
223	Aldicarb
224	Aldrin
225	Dieldrin
226	Cis-Chlordane
227	Trans-Chlordane
228	Heptachlor
229	Heptachlor epoxide
230	Heptachlorepoxyde-cis(Heptachlor-exo-epoxyde)
231	Heptachlorepoxyde-trans(Heptachlor-endo-epoxyde)

232	Lindane Gamma-HCH
233	Hexachlorocyclohexane (HCH), alpha-isomer
234	Hexachlorocyclohexane (HCH), beta-isomer
235	HCH-delta
236	Endosulfan alpha
237	Endosulfan beta
238	Endosulfan sulfate
239	Phosphamidon
240	Captafol
241	Formothion
242	Simazine
243	Diazinon
244	DDT-o,p
245	DDD-o,p
246	DDD-p,p
247	DDE-o,p
248	DDE-p,p
249	DDT-p,p
250	Fenitrothion
251	Fenthion
252	Ethyl parathion
253	Diclofop
254	Pymetrozine
255	Aceflourofen

