15.Table 5. Equipment Specification for proposed Food Quality Testing Laboratory.

S. No.	Name of equipment	Specifications	No. of Units
1.	Autoclave (Microprocessor control)	Automatic lid opening button replaces a food pedal. Automatic Lid closing button closes and locks lid conveniently and safely. New body design with a 80-liter chamber of larger diameter and shorter height. Safety interlock senses pressure and temperature and prevents is too high, and also during a cycle. Programmable auto-start for running a cycle up to 99 hours later. Efficient 15-liter steam condenser eliminates steam exhaust into the lab. Over-flow lamp indicates that the drain bottle is full and ready to be emptied. Built-in cooling fan for faster post-sterilization cooling and shorter completion time .Selectable rate of stream venting after sterilization. Programmable time for air removal before sterilization. Large control and display panel improves operated temperature 121^0C – 138^0C pressure 1.1 to 2.2 kg/cm^2 of stream pressure with Indicators. Sterilizer should be provided with stream generator. Spring loaded safety valves and automatic vacuum breaker for jacket. Removable plug screen for chamber drain.SS baffle for even steam distribution in the chamber. Safety lock for door: pressure lock safety device. Suitable for operating on 440 V 50Hz 3 phase /240V.	1
2	Deep Freezer	Should have the minimum capacity of 400 L, Programmable Temp. Range up to -80^0C in increment of $1^{C.}$ Should have Two compressors. Pull down Time should be around 4 hours. Power consumption: 525 watts/ 12.60Kwh per day, System Monitoring & reporting Technology Software built- In for fault diagnosis or set point variance. Polished 304L SS Interiors. Large Led display .Should have Polyurethane from Insulation. Heated air Vent to prevent Vacuum Formation. Non-Volatile memory & Auto re-start with Battery Backup. Password Protection for temp. & alarm set –points. Five Compartments with four adjustable height SS shelves .The system should have optional facility for CO2 and Lnd2	1

		backup systems. The system should have provision for soft ware to control & monitor up to 30 freezers simultaneously. Ti should be CFC free and HCFC free refrigerants with biodegradable oil compressor. The freezer should be CE and UL certified.	
3	Refrigerator	Capacity 310 to 330 Ltrs, Model Type Double door, Voltage Range at 40 degree centigrade, Capable of working on 220 volts+12% A.C 50 Hz, 4 Power Source AC,220 Volts to, 50Hz, Method of Defrosting Frost Free, Insulation Puff/ Maxi 2 / Polyurethane, Refrigerant Gas CFC free, Compressor Power saver compressor, Accessories Required Adjustable shelves, Chiller Tray, Temperature controller, Auto lamp On/ Off Feature, Should be supplied with all standard accessories as per manufacturer catalog for the model supplied, Warranty with 3 year Comprehensive Warranty, Stabilizer should be supplied with 0.5 KVA capacities CVT without any extra cost. The CVT will also carry 3 years warranty. Colors Steel Grey with metallic finish(Metallic Color)	1

4	Laminar air flow (Horizontal)	Direction of Flow Velocity Noise level Material level Construction Working Table sheet –stain Front door sliding HEPA Filter PRE Filter Blower Assembly coupled with a Exhaust Assembly ,directly couple with aluminum impeller, Ducting by PVC pipe with raj… guard –DIA-150mm. Ultra violet lamp Illuminations Standard accessories point Gas inlet no…. floor leveling screws & wire chord Power supply	Horizontal 100FPM±20% 65db A ±5% Made of fully stainless steel (MOC) Made of perforated stainless steel finished Made of clear perspex sheet –vertical Media Glass fiber paper –importer Particle retention 0.3 micron Efficiency 99.97% Pressure drop 23mm WG Media Non woven- Synthetic polye Particle retention 10-15micron Efficiency 90% Pressure drop 6 mm WG Size 800×400×60 mm Single phase, 1440 RPM motor, directly Aluminum centrifugal centrifugal impeller By ¼ HP, Single Phase, 1440 RPM motor 3feet, 30 watt-Philips-Holland make 4 feet, 40 watt-with diffusers, pressure manometer, Additional power 220V, Single phase, 50 Hz	1
5		Zone should be made of stainless steel [(304)-Heavy gauge-14 G & 16 G] table top should be in two parts :(a) Front perorated portion 4 in size	

	Bio-safety cabinet	(b)Non perforated working zone: Table sunken type (trough type) for spilling management that can be lifted easily for cleaning below the table. Work Area should be approximately 900 or 1200×600×600mm (3-4 feet) in size with shutter opening of 489 mm. Overall Size of the cabinet should be approximately 1000 or 1300 ×825×2450mm.Air Flow should be vertical down flow with 100% exhaust. Cleanliness level should be less than 3.5 particles/ liter of 0.5 µm and larger (ISO 14644-1). Noise level should be less than 65 db. Vibration level: Less than 2.3µm. Average air flow should be 90±fpm (down flow). Standard Accessories: HEPA filters should be MINIPLEAT with 99.99% efficiency for 0.3 micron with integral metal guards. Air pressurization system should be statically and dynamically balanced, fitted with special vibration reducing system to suit low noise and vibrations. Front door should be made of polycarbonate/ toughened glass (6mm), adjustable as per lab requirement, vertical sliding (one piece with counter weight arrangement for finger tip control). Said walls be made of stainless steel [(304 grade)-Heavy gauge-14 G].Should have Fluorescent light with low energy choke less to withstand larger fluctuation in voltage, should be placed outside working zone to avoid turbulence. Should have support stand with leveling screws adjustable from 55-85mm. UV lamp should be in working zone (40 micro watts/square cm at 254 nm or better) and placed so that the operator cannot see directly i.e. eyes should be always protected. Universal Service fittings for gas and air should be provided with gas burner along with gas cylinder which can be refilled on requirement. Should have Rehabitable per filters should have efficiency of more than 80% should have Switches & Electrical sockets outlets for 15/5 amp. Should have Pressure Monitors like Magnehelic gauge are required to indicate pressure drop across HEPA filter. Should have DOP Port .Should have current leakage circuit breaker. Should have air tight duct exhaust extension. Should have Contaminated plenum in negative pressure to prevent leakage into the environment. Exhaust should be placed outside	

		at rooftop level. Exhaust blower should be capable for 100% exhaust interconnected with supply air blower: system should only start when the negative pressure is developed. Special provisions should be there if, by chance the exhaust blower is not working properly, the operation will get a buzzer. Should have Audible alarm to warm the operation if the window is raised above the recommended height of 203 mm (8 inches). Should have Air short circuiting or the bye pass agreement: Should have Adjustable zero leak proof damper at supply air intake & exhaust ducting. Should have Special provision for system which gives alarm to stop supply air in case the negative pressure goes beyond certain limit to stop contamination egress to laboratory. Should have Spillage trough below the working table of 16G heavy duty stainless steel. This trough should have drain cock. Back holes should be there on vertical walls to provide more work area on table top. Should have Exhaust Ducting at the roof top (approx. 30 feet) from the cabinet site.	
6	Microscope	**Microscope** Bright field, Dark field and Phase contrast microscope with provision for Upgrading to Fluorescence in future. Infinity corrected optics.LED illumination for the Transmitted Light. Built in Koehler illumination. Trinocular tube, Should have time delay shut off for automatic turning off the microscope, 5 fold objective nosepiece, X-Y Mechanical stage of 185×140 mm with rounded edges, Universal turret type condenser, Plan achromatic objectives 4×/0.10,10×/0.25Ph1, 40×/0.65Ph2,100×/1.25 oil, All touch points of Microscope should be coated with Ag to inhibit the growth of Bacteria, Eyepiece 10×/20 **Digital Camera** Digital Camera with 3 mega pixels standard resolution (2048×153) and 7 mega pixel standard resolution, CMOS sensor, Live Image on the PC monitor Images color or Grey scale, Exposure time 0.1m. Sec to 2 sec, 30 bit Color depth , Digital focusing Aid, Shading correction can be applied to live and capture images, fire wire interface to enable the adaptability to both PC Laptop.	

		Image Analysis Software With Compatible Computer System Using the mouse, measurements should be made by manually drawing on selected image. Type include –Linear distance, Curved length, Area, Angle, Count< Grey level. All measurements should show in real units. Width and color of draw lines can be adjusted and labeled with measurements. Grouping so that consist of multiple fragments are measured as one .Result can apply to a single image or can be accumulated over multiple images. Tracings can be stored and recalled for re –measurement by editing. Instrument should be compatible and be provided with computer, Laser printer and necessary software and UPS 1 K V A for computer.	
7	Incubator	Temperature Range – Ambient to 70^0C, Temperature Stability-Microprocessor Based PID temp< Controller, Control Panel- with mains and load indicator switch & fan switch, temperature controller, Digital Regulation -0.1^0C, Safety Function – Temperature over shoot high and low temperature alarm, Interior –Polish stainless steel of 304 grade sheet, Power-220/230 VAC supply	
8	BOD incubator (automatic)	Capacity -254L Temperature Range -10deg C to+60 deg C Exterior Dimensions -700×580×1618mm Interior Dimensions -620×386×1075mm Exterior Finish –Baked acrylic finish on galvanized steel,1 with key. Shelves -P.E .Coated steel wire, adjustable,5 Insulation -Foamed-in-place rigid polyurethane Circulation System -Forced air Circulation Compressor –Hermetic type, Single Phase, Output 300W Evaporator –Fin and Tube type, forced circulation Condenser -Wire and tube type natural air cooling system Defrosting system -Manual start automatic finish, natural vapo water	

		Heater –Cord Heater 218 W Temperature setting indication –Digital setting with key lock, digital display Temperature control –Microprocessor PID system (When comp ON-OFF control) Temperature Accuracy -±0.1^{0}C Temperature sensor –Thermistor Automatic Setting temperature alarm -When temperature deviates approx. ±2.5(audible alarm Over temperature protection device –Visual and audible alarm Programmed operation -3-step repeat from 1-99 times. Continuos 99 H. (Program memory backup function application) Temperature Controllability -±0.2 deg. At heater PID control (Temperature Ambient temperature 200C,No load)1 deg…. ON- OFF control (Temperature setting temperature 20^0 C,NO load)	
9	Centrifuge	Max. Speed: 4,200 rpm. Max. Memory with tamper proof facility. Max. Volume: 6quadruple systems each 50 ml. Temperature adjustable within 1 deg C regardless of the centrifuge speed. Timer 1-99 minutes and holds position. Motor imbalance detection: Automatic shut down of centrifuge if rotor load is out of balance with appropriate indicator. Stainless steel chamber: Easy to clean, corrosion resistant with pprovision of both drain and condensed water collection container. Totally HCFC, CFC free refrigerant fluid and insulation Drive unit: Direct and maintenance free induction drive	
10	Refrigerated centrifuge	Maximum speed :15000 rpm Maximum RCF :24000 × g Maximum capacity :4×50ml Model :Bench-top, centrifuge table of stainless steel System : Micro- processor controlled, brushless motor, control of speed, RCF, time, Acceleration & Deceleration, with storage for memory. Alarm display : Lid open, imbalance, over speed, function for	

		detecting an occurrence of electrical abnormality in motor , inverter. Speed indication : Digital display. Sped setting :room 200to 10000rpm. **RCF indication** :- Digital display from 0 to 24000×g **Safety** :- Lid locking and holding during rotor run , lid dropping protection, motor overheating protecting, chamber overheating protection; automatic lid locking; frequency-controlled drive. **Temp setting indication** :- Digital display, Input 1deg. C increments setting within a range of -20 deg. C to 40 deg C **Time setting & indication** :- Digital display with input in minutes and seconds, Max. 99 min, 59 sec. **Quality assessment** :- Manufactured and tested in accordance with recent national / international guidelines and the certificate(s) for same to be specified and enclosed along the question, without which, the question will not be considered **Rotor with buckets** :-Rotor for the above mentioned centrifuge, quoted amount should be inclusive of rotor (18×50 ml,24×100ml) with suitable sealing cap poly Propylene tubes (100Nos),to old McCartney glass bottles.	
11	Colony counter	Display 4 Digits, 9999 max. Cont, dish Size 3 digit, 999Max. count, Magnification 110mm,Accessories; Marking Pen	
12	A.Electronic balance 0.1 to 300g B.Electronic Balence0.1 to 1.5kg	Weighing capacity from 220gm-300gn with readability of 0..01g Weighing capacity from 300gm – 1000gm with readbilty of 0.1	

13	Hot plate with magnetic stirrer	Should be small and very robust with aluminum hot plate. Suitable for the operation with viscous and aggressive media. Should have one stirring point. Heating output 500 Watt. Stirring volume 1- 2000ml. Stirring power (max) 10W.Max. Temperature up to +200 ^{0}C Seed range 100-1600 rpm Material heating plate aluminum alloy. Material housing stainless steel. Operation conditions -10 ^{0}C up to +40 ^{0}C(at 80% humidity).Electrical data 230 volts / 50 watts weight (gross) approx. 2 kg. Should be supplied with magnets of different sizes.	
14	Blender/Grinder (mixer grinder)	**General specifications** Automatic shut-off, Power indicator, Non-Slip feet, Seeds:3 and pulse **Accessories** Chutney jar, spatula, Multi- Purpose jar, Wet grinding jar **Technical specifications** Power; 500 w, Voltage: 230 V , Capacity chutney jar: 0.31, Capacity wet grinding jar: 1:1, capacity multi-purpose jar; 0.91,Moorrating : 30 minutes(s) **Design specifications** Color(s): white with blue accents, Material knife: Stainless Steel	
15	Bal mill grinder	**Capacity:** (500gm to 1 kg)Body of welded Mild Steel with suitable machined flange. The machine end plates will be provided with Mils Steel shell .Shell body and end plates will be of mild steel. The mill body will have a change and discharge opening with suitable gasket to make the mill water and dust tight .Mill will be supported on heavy duty antifriction bearing mounted on structural steel frame work. The unite can be operate for both wet and dry grinding as the mill is provided with jacket for charging cooling medium or water. The mill is equipped with proximity switch fitted on the end shaft, control panel having main switch electronic pre-set counter, start stop and inching push buttons. Mil is driven by a motor through a worm reduction gear and V- Belt, pulley at constant sped (1)Size of Mill: 5 inch diameter ×12 inch length (2)Drive: Watts-1/2/220-240 Volts / Single phase/ 50 cycles/ 1425 rpm/	

		Amp-3.7 A TEFC-motor	
16	Vortex mixer	Should have circular orbit. Speed range approx 0-3000rpm. Operating modes: touch continuous .Ambient temperature range: approx 4 to 700C. Weight not more than 3 kg. should have optional head attachment for various type tubes	
17	Hot air over	Capacity (L) 300 Temperature Heating Type Forced Convection Range(^{0}C) Ambient ±10 □ 250 Accuracy ±2.00C at 1200 C (150 Liter volume) Uniformity ±1.00C at 1200 C (150 liter volume) Control Main Controller Digital PID Programmable Controller 10 SE… cycle or continuous Wait –off Timer mm:ss/hh:mm/ Continuous Selectable Sensor(Ω) Pt 100 Safety Device Temperature Hydraulic Over Protection, Temperature Safety Device Electrical Electrical Leakage breaker HEPA Filter High temp class 100 HEPA Filter.0.3 µm Particle Removal 99.97% Material Internal Stainless Steel Polished (SUS 304) External Steel with epoxy powder Coating Insulation Mineral Wool 50mm/ w Woven aluminum ba Door Gasket Temperature Resistant foamed silicon rubber Calibration Uniform temperature in all the shelves maintained. The temperature controller calibrated and the Certificate of calibration attached.	
18	Muffle Furnace	Construction : Entirely made of SS. Maximum temperature: 1200 ^{0}C Working Size: 9inch×4inch×4inch.	

		Heating element: Super Kanthal. Insulating Material : High grade thermal insulation of Ceramic / Mineral wool. Digital Display for temperature . Operation at 230 V AC . The unit should be manufactured in compliance to GLP standards DQ, IQ,OQ. Documentation to be provided with the Instrument along with Manuals. The temperature should be calibrated and calibration certificate will be attached with the manual	
19	Digital pH Meter	Range 0 to 14 scale, Electronic with digital display.	
20	Water bath	Microprocessor PID Control for 0.1^0CPrecision, with timer, Alarm.	
21	Glass distillation unit	Made of borosilicate glass RB flask fitted with insulated sealed heating. Element in spiral type coil at the bottom of the flask. Capacity of flask: 5 lits vertical spiral condenser made of borosilicate. Power supply: 220/230 VAC . Storage tank: Cap. 20 liter made of borosilicate glass. Distilled water output : 5 liters per hour.	
22	Digital Conductivity meter	Range: 200 Umho to 1000mmho (In five ranges) Resolution: 0.01 umho, Accuracy : ±0.5%±1 digit, temp.comp.0-100	
23	Fiber analysis System	• At the least Six sample should be processed simultaneously • All Accessories for bath handling should be present. • Integral extraction and filtration should be possible. • No sample transfer to avoid los of sample. • Separate unite for solvent dehydration, Lignin determination and defeating should be present • Official approval of ISO 6865, 92/89 EEC and AOAC 2002.04(feed), should be available • Hot Extraction Unit, for hot hydrolysis and extraction with built-in systems for heating and filtration, should be present. • Hot Extraction Unit should comprise the Hot Extractor, Reflector, Reagent Bottles, Hot water Spray, Beaker, Funnel, Water Suction pump, Antifoaming Agent, Tubing, Holder for 6 crucibles, Stand	

		for 6 crucibles, Sets of Crucibles, along with its Manual. • Measuring range :-0.1-100% • Repeatability :- <1%relevant at 5-30 % fiber level • Accuracy : According to official methods • Capacity per day: UP to 36 analyses (Crude Fiber method acc. To Weende)per day • Should be full fill all the needful Installation requirements	
24	Soxlet system (Fat extraction unit)	• Microprocessor based digital temperature controller, Casted aluminum Alloy Heater, 65to 805 solvent recovery, Independent loading of sample with individual mechanical control. Unique upward spring loaded movement of individual block for perfect lea proof alignment Safety. • Auto over temperature protection, auto Sensor break protection, Auto Error indication, etc. Inbuilt Air pump with Stainless steel manifold for perfect removal of solvent cloud. • Six Place Automatic solvent extraction system with auto time temperature programming facility and auto phase change over with PC compatibility feature. • Temperature range should be up to 200degre. • Fume hood should be provided with equipment.	
25	Automatic Protection & Nitrogren Analyzer	1.Fully Automatic Kjedahl digestion, distillation titration and calculation system for analysis of Nitrogen/ Protein. 2. Digestionunit (minimum 12 tubes) with IR or electric heating facility, preferably programmable. 3. Fully programmable with suitable software. 4. Titration may be potentiometer/ colorimetric titration system. 5.The system must have maximum safety feature to avoid any possible accident and should have fully covered automatic safety door. 6. Self adjusting cooling water control to save water (intelligent cooling water control adjust the flow according to temperature minimizing water consumption 7 cost.)	

		7. Variable output system generator to provide the flexibility to analyze volatile parameters other than nitrogen. Interchangeable burette for easy switching f titrate strengths. 8. Automatic tube drainage. Alkali resistant splash head and tube drain vessel for long lifetime. 9. Must have date transfer facilities to PC through machine. Instrument should be compatible and be provided with computer, laser printer and necessary software and USP 1 KVA.	
26	Lovibond Tintometer.	Suited for color grading of fresh food and food products, hall have glass filters for red, yellow, blue and neural colors, adjustable viewing system with facility for light standardization, halogen light illumination shall match daylight and any essential items.	
27	Automatic Titration	Acid/ Base titrations, No- Aqueous titrations(TAN/TBN) with combination of three electrode system. Redox Titrations, Argent metric Titrations, Complexometyric Titrations, KF Titrations, Mercaptan Sulphur with Sulphide coated Ag electrode, Titrator with suitable electrodes for the above analysis, Magnetic, Stirrer, Exchangeable Burette Unites, it should work as controlling and data acquisition unit perform different types of Titrations using various modules mentioned above. It should be possible to connect Titrator to a PC to store methods and titration data on PC if desired future, Programmable polarizer, Measuring inputs, Differential Amplifier, Keypad, Display, Burette recognition, Data Memory :10.000bytes to accommodate minimum 70 methods, Potentiometric titrations: Volume, Potential Number of endpoints, and volume in function of sample size,. Calculators: Automatic calculation of result, with displayed printout of result in various different units, Multipoint PH calibration with liner regression, GLP/ISO requirements, Exchangeable Brett Unit.	
28	Water activity meter	Suited for measuring water activity of food and food products, display-3 digit Led for aw, simultaneous. Temperature display, operate in 5-50^{0}C	

		and 0-90% relative humidity, range 0-1 aw, accuracy-± aw, sample cacity of holder-about 10ml or gram, include carrying case. sample cups(SS and disposable),standard etc.	
29	Rotary vacuum Evaporator	Reflux Condenser :- Plastic Glass assembly, Drive unit Automatic lifting of the flasks during a power failure Motorized electronic Quick-action jack graphic display for rotation speed and vapors temp Measurable Range :- 0 to 1003 Kpa RPM :-20 To 280 Flask Sizes :-50 to 4000ml with inbuilt clip for vapor High alloy stainless steel pan infra red control between bath and Reflux con Temperature Range :-30 TO 180 deg C with display of actual & set temperature Heating power :-1300W Vacuum Controller :-customized Solvent Library database Auto Distillation with Stage Probe USB Interface for data transfer to PC Time function. Vacuum Pump :- 2 Stage Chemical-Resistant PTFE diaphragm pump Flow rate of 1.8 m^3/hour Ultimate vacuum of <9 bar with silencer, 2m tubing Gas ballast Function for easy cleaning Secondary Condenser Recirculation Chiller :- Circulated cooling Refrigeration units for condemn IP standard display and keypad House and integral circulating pump Coolant reservoir(Filling port and drain value)Temperature range of(-10to 40 deg C)800 deg C AOAC,EA,STM,AACC and other standards Spares For thee years (may be quoted separately)	
30		Refractive Index (nD)Range: 1.300-1.700,	

	Refractrometer (digital)	Refractive Index (nD) Accuracy: 0.0002, Refractive Index (nD)Min. Div.: 0.0005, Brix(%) Range: 0-95, Brix(%) Min. Div.:0.25, Temperate Range: 0 dg. C -70 deg. C, Weight(kg): 3kg	
31	Polari meter, Digital	Light source :sodium (Na)/ Mercury(Hg) Lamp, Modulator : Faraday cell, Wavelength: 589 n with sidium/ 577 nm,546nm,435 nm &405 nm etc with Hg Lamp, BeamAertre:1.8 to 8nm in diameter achievable through software. Angular Range : $\pm 45^0$ but $\pm 90^0$ is preferable Response Speed: 6^0/Sec Measurement accuracy :$\pm 0.002^0$ measurement Repeatability: 0.002^0 Mini readable angl: 0.00010 Integration Tim: 1-100Secs Detector :Photomultiplier tube Read Out Mode : Optical rotation, Optical specific rotation, concentration Sugar scale, Brix Purity, optical purity. Temp. Max. Range :0-40^0 C Temperature Accuracy :0.1^0C requirement	
32	UV spectrophotometer	Wavelength range : 190.0-1100.mn, Display wavelength :0.1nm Selectable wavelength :0.1 nm step(1 nm step in spectrum mode) Light source change : Auto change with wavelength 295-364nm: 1 nm interval. Halong lamp only. Deuterium (D2 lamp only) Measurement methods : Single beam measurement- Light source :20 Watt halogen lamp(long life 2000Hrs). Deuterium lamp. Detector : Silicon photo-diode Display : LCD(320×240dto)with CFD lighting and contrast adjustment- Spectrum bandwidth : 5nm	

		wavelength accuracy : 1nm wavelength Repeatability : +0.3nm Photometric range: Absorbance :0.3-3.0 Abs Transmittance : 0.0-200% recording range: Absorbance : 3.993.99 Abs Transmittance : 399-399% photometric accuracy :+ 0.005 Abs (at 1.0 Abs)+0.003abs(at 0.5abs) Photometric Repeatability :+0.002Abs(at 1.0Abs) Drift : less than +0.001 abs/h(after 2 hr warmup) Accessories : Extra set of Cuvettes and UVI lamp. Laser printed and necessary software and Ups 1 KWA. Extra sample holder should be made available.	
33	Bomb Calorimeter	• Should have 8 no of filters wave length from 4000nm to 700nm. • Should have a 3 digit display calibrated directly in opical density. • Detector should be encased spill proof photocell. • Should provide standard accessories 1. Turret- mounted filters 2. 10 cuvettes,2 test tube stand 3. 3 standby lamp • Should have facilities for concentration, calculation, percentage transmission and optical density. Should work on 200-240Vac 50Hz power supply.	
34	Color Analyzer	For the measurement of color of food & dairy products in various forms (solid, liquid, powders, paste, gel, whole fruit etc.) with the following measurement Principal: Dual beam spectrophotometer measuring Geometry: 45/0, Wavelength Range: 400-700 nm pitch: 10nm, part diameter: 31:8mm Wavelength Resolution:<3nm photometric range: 0-150% Light Source: Pulsed Xenon Lamp , Lamp Life : >500,000 flashes, Measurement Time : <1sec standard accessories : Calibrated instrument Tiles, Certificate of traceability, Diagnostic tile, black glass Optional Accessories : Glass	

		sample Cup, Sample cup set, Software.	
35	Rapid Visco Analyzer	• Equipment required for determining starch pasting characteristics of extruded products, noodles, cooked viscous starch, grains, flour, potatoes, rice, barley, wheat, sorghum, weather damage/a amylase activity, stirring number etc. • Instrument should determine the enzyme activity which is expressed as stirring number/falling number with determining pasting/ gelatinizing properties of starch • Equipment should be able to apply variable temperature and shear rates to sample while continuously monitoring sample viscosity within the same test • The instruments should be able to perform general starch pasting test in accordance to ICC standard method • The instrument should be able to perform the stirring number test in foods in accordance to AACC standard methods • The instrument should be able to measure the wheat flour quality in accordance to AACC method • The instrument should be able to measure the quality of rice in accordance with AACC method • Temperature range –min. between 0 – 99deg C • Heating / cooling rate : min up to 14^0C/minute (variable)speed range: infinity variable 20-1000 rpm(computer control) • Viscosity range : between 100 to 12000 cP at 80 rpm • Viscosity Accuracy: +/-2.5% for S 2000 oil nom . 5000 cP • Time for one test for Starch pasting characteristics: 12 to 15 min. • Time for alpha amylase activity test max 5 min * • Display : four line vacuum Florescent. • Power Supply: 240/115VAC, 3.5 A, 50/60Hz • Computer interface : RS232. • Real data gathering and analysis facility should be available	

		Software should be capable to help design multi step shear and tamp. Profile linked analysis, graph and report functions. Instruments should be compatible and be provided with computer, Laser printer and necessary software and USP 1KVA.	
36	Food texture analyzer	• Load cell :5, 30,50,100,250,500 and 750 kg .f, • Load Accuracy :±0.55 of reading down to 1% of load cell capacity • Maximum speed: 20mm/sec at 500kg.f, • Max return speed : 0.01mm /sec, speed/drive • Accuracy: better than 0.1%, • Range Setting : 0.01 to 524mm, • Range Resulation : 0.001mm, • Operating Models: Measurement of force and Distance in Tension, Compression, Shear, Extrusion, etc. • Data Channels : Filtered force at 20 bit . Distance at 24 bit . Unfiltered force at 16 bit . Two linear analogue inputs (range±4.5v @ 16 bit) or PT 100 temperature probe inputs (Range-50^{0}C to +250^{0}C), • filtered force: oversampled at 8000sample per second and digitally filtered to 500pps at 20 bit regulation , Operating Temperature : 0 to 40^{0}C, • Operating Environment : Laboratory conditions, interface to PC through standard RS 232serial port, • Power supply : universal mains input voltage, Software , complete database of family of probes and attachments , external like temperature /humidity etc . Heavy duty platform. Platform for sample and instrument should be compatible with computer , printer and all peripherals. It should contains all problems for measuring texture properties of all food material. Instrument should be compatible and be provided with computer, Laser Printer and necessary software and UPS 1KVA.	

		Extra Sample holder should be made available .	
37	Micropipettes of variable capacity 0.5µl-10µl 10µl-100µl 1-5ml 2-10ml	Auto cleavable digital micro pipette, Advanced durability against organic solvent dispensing. Resistant to organic solvents. Fully auto cleavable, Easy-calibration function provides simple lap calibration .One – touch locking mechanism to lock the sample volume	
37 (C)	GC-MS-MS	The ion rap GC/MS system provided must include a Gas Chromatography with temperature programmable split /split less injector liquid auto sampler, computer and printer. The must spectrometer must have time programmable EI, CI and MS/MS capabilities. All components of the system under computer control . The system must include a one year Warranty, parts labor and travel. All GC,GC/MS and computer hardware to be warranted and serviced maintenance or service FID detector fid with full DEFC control, TCD with full DEFC control Max. operating temperature -450^{0}C, detectivity- 2Pg C/sec, Linear dynamic range -10^7 Flame tip type – ceramic(patented),operational quality – flame out detection auto re-ignition Instrument required UPS 10KVA Mass Spectrometer The minimum performance requirements are: must range 10 to 650 ų programmable throughout the analysis, scan rate of 5600 u/sec ,and regulation batter than unit must maintained over the entire must range Ionization Modes to include EI and offer upgrade to CI ,SIS, MS/MS and CI/MS/MS. The system must offer programmable control from 1Mode of operation to another within a single analysis, in interval of 0.01minutes. or less The must Spectrometer design must incorporate the following design features: Internal ionization for superior law mass detection	

		Inert electrodes for optimal chromatography performance Ion Gauge for user diagnostics Manifold heater for independent heating of the ion trap to 250^0C The MS must include dual filaments with filament and status under computer control GC/MS analyzer to include integral Ion gauge and be removal by the user with simple hand tools in less than two minutes after cool down. The MS must use a 70 L/Sec Turbo molecular pump. The fusions pumps are not acceptable due to the potential for contamination. GC/MS analyzer to have realigned electron multiplier, which may be replace by the user without the use of any hand tools Sensitivity EI :temperature programmable split less injections of 2PG.of Hexachlorobenzene in hexane injected in to fused silica capillary column produces a GC peak with a single noise for either m/z 284 or 286 of >10:1 with a library searchable spectrum . MS/MS MS/MS software must include time programmable acquisition segments to allow for changes between EI, CI, MS/MS and CI/MS/MS in a single analysis. Iron isolation window programmable from 1 to 14 ų Collision induced Dissociation (CID) through resonant and non –resonant excitation modes. Non- resonant excitation is required for superior library search ability. Software must include multiple reaction monitoring (MRM), capable off simultaneous monitoring up to 10% Ions and resulting progeny Ions, or quantization 4% Ions and resulting progeny Ions. GLP record of all MS/MS acquisition parameters with in the log file , and appended to the data file Software must have the ability to perform automated methods developments (ADM) for rapid determination of optimum MS/MS conditions Sensitivity : split less injection of 10pg benzophenone gives a GC peak	

		with a signal to noise >25:1 for m/z 152 when selecting m/z 182 as the parent Ion. Instruments should be compatible and be provided with computer, laser printer and necessary software and USP 1KVA for computer Accessories : Cylinders with regulators and gas stations Nitrogen – 2nos, Hidrozen-2nos,helium-2nos,Air-2nos	
38	HPLC-MS	Ion source: This ion source must be duel orthogonal source- Neutrals and comical noises removed by dual stage and ensures the clean RF lens. An isolation valve must be fitted to the source to allow the source elements to be remove and cleaned with out breaking instrument vacuum, a combined ESI –APCI source will be preferable for easy switching between the two ionization types during a signal LCMS experiment. Mass Range:10-2000 amu or better , Dynamic range:->5×10^6 Quadra pole: Triple quadruple of high standard mechanical tolerance and Min. co-efficient of thermal expansion to ensure high mass stability and high ion focusing at varying temperatures, pre aligned and pre – filters for a efficient ion focusing . Resolution: unit mass or Batter over full range. Scan Rat:> 5000 da/s with high mass Accuracy. Detector: high energy conversion dynode and high gain electron multiplier pump wit degree of digital dynamic range , operate at both positive, and negative Ion modes, capable of switch in polarity rapidly digitally (≤ 250ms),detects high energy fragmentation, wide range of linearity, scan and SIM or MRM programming, dynamic MRM alignment. Collision cell: quadrapole based high pressure collision cell with drag Correction, MRM transition (300)with in single run , allows of low Dwell time (≤MS)without sacrificing sensitivity ,and eliminating cross talk enabling multiple MRM transition within run , fast Ion clearance . Sensitivity:- ≤ Pico gram detection and high sensitivity ,high signal to noise ratio. Operation moods :-precursor, product and neutral Io scan ,	

		multiple reaction monitoring , alternating polarity , high sensitivity and high resolution MS scan MRM triggered high sensitivity scan , MS/MS product scan , SIM/ SIR. Software capabilities :-multitasking type with single point control over system capable of performing automated calibration and quantitative optimization, automated MS to MS/MS switching during single run, capable of quantization and reporting of acquired samples, combined, MRM survey scan with enhanced MS/MS scan , power to search library, latest available database, capacity to monitor status of vacuum gas, system etc. automatically. The software should perform quantitative application having the additional requirement of quality control (QC) checks to satisfied statutory or regulatory requirement must be available . Vacuum system :-a fully protected air cold vacuum system using Turbo molecular pumps and rotary pumps . Vacuum read backs and automated vent system FAST HPLC/UPLCSYSTEM Fast HPLC/UPLC system should be capable of analytical operation must be included with the MS. The fast HPLC /UPLC system must be included . 1.Binary pump with degasser High pressure binary mixing with following specifications: flow Range: 0.01 to 2ml per/min, in 0.001 ml increments. Flow precision : 0.07% RSD maximum operating pressure: 15000 Psi at 1 ml per/min. Solvent selection valve to be provided for choice of solvent pair effective system delay volume <140 µL, independent of system back – pressure (with slandered mixer) 2. Auto sampler: Auto sampler with 100 Vials sample capacity with following specifications: Total system (including pump & auto-sampler)should be capable of operation at 15000 psi. column tracking and storage device should be provided Injection Range : 0.5 to 50uL in 0.1 uL increment Accuracy:+/- 1% carryover:<0.004% 3.Column Oven:	

		Temperature range : 100C below ambient to 60^0C Temperature Stability: ± 0.05^0C Temperature Accuracy: ± 0.5^0C Single Point of Control: single point control for both UPLC and MS system PHOTO DIODE ARRAY DETECTOR The PDA Detector should have , wave length range of 190 to 500 nm or more. Weave length Accuracy of ±1 nm. Optical resolution of 1.2 nm. Base line Noise (sensitivity) of 10 x e(-5)AU. Data Acquisition rate up to 80 Hz simultaneous 2D and 3D operation. In built leak sensor . Inbuilt lamp optimization software to ensure batter sensitivity. Computer Platform:- a standard make PC with all necessary hardware and operating software is required to operate the LC MS-MS. All hardware and software including divers heavy duty. Duplex laser printer, 20 inch TFT color monitor, device interface cards or control cards/ networks adaptor card must be preinstalled and preconfigured on the computer provided .The computer must control the mass spectrometer ,LC system, & auto sampler, in an integrated fashion. Training & application support:- 8/10 days training for 2 persons at the application laboratory Additional accessories to be included:- Gas Generator and UPS : A suitable gas Generator capable of providing all the Gases at the required purity, pressure and flow rate for the mass spectrometer must be quoted. The compressor should be noise free. All the required accessories such as arrangement for nitrogen gas supply through gas generator, Compressor, and any other essential item like additional gas cylinder for operation of the instrument should be supplied along with the instruments. Quote for the supply of 1unit of 10KVA UPS with maintenance free batteries with minimum of 120 minutes battery backup. Instrument should be compatible and be provided with computer, laser printer and necessary software and UPS 1 KVA for computer.	
39	ICP-MS	General system specifications:-	

		• System must include liquid sample introduction system ,RF Plasma Ion source , Quadrupole based universal cell to eliminate spectroscopic interference using either collision gases with KED or pure reaction gases such as Ammonia and Oxygen for DRC mode(with Dynamic band pass tuning), Quadrupole mass filter , quadapole Ion deflector, Simultaneous duel stage discrete dynode detector and a triple cone interface , all under computer control • Fully automated system start up shut down an optimization an computer control instrument tuning for optimum performance. • Quadrupole must be able to scan a minimum of 5000 amu per/sec to achieve maximum productivity from transient signal when jumping between light masses and high massage • Quadrupole resolution setting are dynamically scanned as each elements is analysis. • High mass ranges must be at least 285 amu or grater • Modem or TCPIP monitoring system diagnostics for remote service trouble shooting and remote operation of the system • All analytical system operations from component optimization to methods development to calibrations to analysis to reports must be able to be performed using a single software program. • Full system must use single- phase power and remains in specifications as laboutary temperature varies 10 to 35^0 C at up to 2^0C per hour . • System must be able to sufficient cooled by Heat exchanger in laboratory temperatures below 30^0C. A refrigerated recirculator is not required in laboratory temperatures below 30^0C • System must b fully compliant with US EPA methodology for method 200.8 and Method SW 846-6020. • ICP-MS system must have a fully color plasma view window for useful visuals on the sample cone, plasma color and injector tip	

		• Unit must be a bench top design with a utility free rear, enable it to be placed directly against the wall(some service procedures may required movement from wall) • System must not required any periodic maintenance (cleaning)or replacement of: a. Collision, collision/reaction or universal cell b. Main filtering quadrupole For the system's lifetime by the user or the manufactures service engineers *instrument manual documentation required <u>Specific subsystem requirement</u> Sample introduction must include : • For general sample work load , low flow (0.25 ml/min.)sample introduction system with no o-rings: concentric nebulizer , cyclonic spray chamber, and quartz injector • Waste saving low flow up take nebulizer, designed to handle user defined applications • Close coupled , three –channel integral peristaltic pump, computer control , must be integrated within the ICP- MS system • Design where component contain outside torch enclosure to eliminate to need for extraneous spray chamber cooling hardware and for easy access of alternate component and accessible from the front of instrument. To this end the sample introduction component must be accessible from the front of instrument. • Cassette style torch mount where entire torch and injector assembly can be easily remove together with one hand • Fully automated one touch X,Y,Z torch alignment • Fully demountable torch which allows changing of injector without torch remover.	

		Ion source and RF plasma system must include • Computer controlled 40MHz RF generator operating from 500 to 1600 watts for automatic control of torch ignition ,shut down and system warm up • Design where RF generator and load coil do not required water cooling • The RF generator which does not required an impedance matching network providing for adaptation to any change plasma impedance with in 50 nanoseconds • The RF generator which electrically decouples the plasma from the Ion optics and allow independent adjustment of the Ion optic parameters and the plasma conditions • Design that does not require plasma “screens””shields”. Plasma Interface must include: • A Triple cone design consisting of Sample , Skimmer and Hyper-skimmer cones with all cones with all cones at ground potential (do not require voltage to meet specifications). • Design with no change extraction lens which create higher backgrounds for elements such as Li, B, K, Ni and Pt. • Standard large orifice sample and skimmer cones with 1.1 and 0.9 mm diameters respectively. • Design with rapid mounting and removal cone design, easily accessible from the front of the instrument. • Quadrupole Ion Defector for complete separation of ions from photons and neutrals with 90 degree bend of ions into Universal Cell, making the cell and mass analyzing quadrupole completely maintenance free. System must include or be field- upgradeable to include a Universal Cell describer below: • System must incorporate a Universal Cell offering three modes of operation: Standard Mode, Collision Cell Mode	

		with KED and Dynamic Reaction Cell mode with the ability to utilize a wide variety of glass (including pure reactive gases such as oxygen) for the life of instrument with no degradation to the gas channel, turbo pump or cell. • The cell must be able to switch between modes(venting corresponding gases- no gas, helium, pure ammonia)within 10 seconds so that all three modes can be incorporated into a practical single method. • In standard Mode: A. Universal cell must be able to operate with no gas and no energy barrier for optimal single –to-noise performance on elements with no interfaces. B. The Universal cell must be able to detune the signal response of selective elements to enable incorporation of high concentration elements(outside of the system's 10orders of dynamic range from 0.1 cps> 1e9 cps) into a single analysis (Extended Dynamic Range). • In Collision Cell Mode: A. Universal cell must be able to operate as a passive ion guide with an energy barrier at the cell exit for KED. B. The Universal Cell must be able to detune the signal response of selective elements to enable incorporation of high concentration elements(outside of the system's 10 orders of dynamic range from 0.1 cps to >1e9 cps)into a signal analysis (Extended Dynamic Range). • In Dynamic Reaction Cell Mode: A. The band pass on the Universal Cell must have the ability to provide both high mass and low cutoffs. B. The Universal cell must be able to detune the signal response of selective elements to enable incorporation oh high concentration elements (outside of the systems	

		10 order of dynamic range from(0.1 cps to . 1e9 cps) into a single analysis (Extended Dynamic Range). • In Dynamic Reaction Cell Mode: A. The band pass on the Universal ell must have the ability to provided both high mass and low mass cutoffs. B. The Universal Cell shall provided a user selectable mass band pass window that is variable in resolution and mass position. The mass band pass window shall be dynamically in concert with the quadrupole mass spectrometer during analysis of sample. C. There should be an accelerating voltage across the Universal cell, to control the speed of the ions through the cell. D. The transmission band pass of the Universal Cell shall be variable from analyte to analyte. E. The velocity of the ion bean through the reaction cell shall be controlled by the selection of the voltage on the entrance and exit plate of the cell. F. The Universal Cell must be able to use pure reaction gases such as pure oxygen or pure ammonia. The flow and optimization of the gases shall be under full operator control. G. The Universal cell shall be capable of reducing the intensity of isobaric and polyatomic interfering species by up to 10 orders of magnitude. H. The Universal Cell must be able to selectively detune the signal response of selective elements to enable incorporation of high concentration elements (outside of the system's 10order of dynamic range from 0.1 cps.1e9 cps) into a single analysis (Extended Dynamic Range) Quadrupole Mass Analyzer Assembly must meet the following: • The quadrupole mass filter shall utilize gole metalized ceramic	

		rood technology for best stability and operate at 2.5 MH z for exceptional resolution and abundance sensitivity. • The quadrupole must: A. Be able to scan up to 5000 amu per second B. Operate with dwell times as short as 0.1 ms C. Operate with Peak hop settings time<0.2 ms regardless of mass change D. Operate with peak hop slew speed up to 1.6 M amu/sec E. Offer mass range to m/z =285 for separation of actinides • Stability of the quadrapole mass calibration and resolution must be maintained by having critical part of the quadrupole power supply temperature controlled. In This configuration, the quadrupole power supply will be unaffected by fluctuations in laboratory temperature. • The analyzer quadrupole must have the ability to discretely control the resolution of selected mass regions dynamically, without affecting the overall nominal regions. Ion Detector Assembly must meet the following: • The ion detector must be a simultaneous dual-stage discrete dynode electron multiplier, providing element concentration calibration over 10 orders of magnitude (from 0.1 cps. 1e9 cps) dynamic range in a single scan using both analog and pulse ion counting made, and offer protection against overloaded in both pulse counting and analog modes. The detector must: A. Provide a dead time<35ns B. Provide switching between pulse or analog in ,0.2ms C. Provide transient date acquisition up to 5000 data points/ sec D. Provided dynamic range to 1.5 GHz (1.5 e^9cps) • The dual-stage detector assembly must come standard with the	

		system Vacuum System must met the following: • The vacuum system must consist of four stage vacuum system utilizing a triple inlet turbo molecular pump to maintain vacuum at $1e^{6}$ Torr (or lower), includes vacuum chamber isolation valve which automatically closes as plasma is extinguished or with system faults. The pumping system shall have enough capacity to system fault. The pumping system shall have enough capacity to system faults. The pumping system shall have enough capacity to reach operating vacuum from atmosphere in less than 20 minutes. • In the event of vacuum failure, the entire vacuum system must be automatically back-filled by inert gas to preserve the cleanliness of the system. • Turbo molecular vacuum pump must be purged by an inert gas during operation to prevent damage by reactive gases and/or corrosive vapors such as those generated by the analysis of phosphoric acid. • Computer controlled single roughing pump must utilize ultra-long life PFPE (Fomblin) fluid and automatically shift into energy saving mode when the plasma acid. • Computer controlled single roughing pump must utilize ultra-long life PFPE (Fomblin) fluid and automatically shift into energy saving mode when the plasma is off. System Controlled and Operating System must meet the following: • 32 bit computer operating system. • Color graphic monitor. • High capacity printer. System Software must be include: • Routine Maintenance Alerts; scheduled user defined alerts for continued operations.	

		• Method Development wizards. • Pre-set methods • Automated quality control checking feature including at no charge. • The system software shall support the feature included at no charge. • The system software shall support the following calibration cove fit modes for Quantitative analysis: A. Linear least squares. B. Weighted liner least squares. C. Linear forced –through –zero least squares. D. Method of standard additions (Matrix Matched calibration) E. Additions calibration. • Real time graphic with ability to display transient and continuous signal profiles. • Quantitative analysis including external calibration, additions (matrix matched)calibration, method of standard additions, isotope ratios and isotope dilution, and semi quantitative analysis. • All analytical raw data must be retained and stored on hard disk, encrypted to prevent tampering per US EPA requirement to support a complete data audit trail. • Per EPA methods requirements the time and date must be printed on each sheet of data generated by the system printer. • Per EPA methods requirements, the quadruple must be able to be turned or mass calibrated on a minimum of 5 elements(Be, CO, In, Mg, Pb) providing a printed mass calibration report with all elements. • QC protocol limits on measured values, allowing the analysis to defined when and how an action is taken , and to specify a	

		second QC action for automatic operation in the event that the first action fails. • On-Line help with quick steps to reference entire instrument user manual. • Data reprocessing on stored data without re-running sample for changes of calibration points, internal standard points of curve fit mode • Computer controlled automatic selection of Universal Cell gas When multiple gases or mixed mode are specified within a single method. • Computer controlled automated optimization of Universal Cell gas flow. • System must be capable of supporting a syringe-pump based auto diction system • The software must support auto dilutions by both a global dilution factor and serial dilutions for sample out of range Auto sample options must meet the following: • The system must include a random access auto sample capable of holding 150 or more 15 ml sample vessels, or accommodate the existing Model S-10/AS 93 Auto sample. • The system must be capable of controlling with the instrument software the CETAC ADX-500 auto dilution system. • The system must be interface anal with ESI auto sample and FAST system. Instrument Required UPS 10KVA Sample Preparation : Microwave digestion unit -1 No Microwave heating system must have a measured minimum power output of 1600 watts. System must be capable of delivering un pulsed continuous power at 400, 800 and 1600 watts for precise heating control. System must have a built in operating system with high resolution	

		fluorescent display and alphanumeric keypad for entry of operating parameters and sample identification. System must operate stand alone and must not required the use of any external/remote control mechanism for operating. For safety the unite shall have the ability to monitor and display the pressure inside the control vessel up to 1500 psi. System software must automatically adjust the power delivery based upon sampe load and pre-programmed controlled settings. System must be capable of processing up to 40 high pressure (500psi) vessels simultaneously. Vessels must be able to be individually loaded and removed from the microwave for ease of handling. Microwave digestion vessels must be vent able in order to meet current and pending EPA procedures. Vessels which can not be safely vented before uncapping represent a significant safety hazard and are unacceptable for bid purposes. System must be equipped with a temperature device that will accurately measure and control the temperature inside the vessels up to 300C.For safety reasons the system must include a continuous cavity monitoring system that disable the magnetron when it senses a vessel vent or failure, even if the event occurs on a vessel that is not connected to a senor line. System must have the capability to contiguously stir the sample during the digestion process. System shall have attenuated Inlet/outlet ports to allow for vacuum and/or gas purge. Lines to be introduced into the cavity without permitting leak of microwave energy. System must carry a minimum one year warranty on parts and Instrument should be compatible and be provided with computer, Laser printer and necessary software and UPS 1KVA for Computer Accessories: Cylinders with regulators, control panel and gas stations	
40	Water purification system	Micro process Control Should be provided with easy cartridge replacement Tank 10L/H Conductivity <2uS/cm Feed Water Specification	

		Feed Water pressure 0to 5 bar Feed Conductivity <100uS/cm Colloid index SDI <3 Free Chlorine <0.5mg/1 Fe <0.1mg/1 Ultrapure water specification Output :1.5-31/min Conductivity at 25 deg C : 0.055µS/cm Resistivity at 25 deg C :18.2MΩ-cm Toc : <1ppb D Nase, R Nase, DNA Bacteria : <1cfu/ml End toxins : 0.001 EU/ml Particles :<0.1Um per ml Power supply : 100-240 Tank Capacity : 30L	
41	HPTLC	Automatic TLC Sample Applicator for spot / line Application, Spray on technique, 4 mode of application ---Quantitative analysis, micro preparative, In –situ and superimpose .10 method storage, stand –alone or PC control. For Analytical work (0-10 mm band / 0.1 to 20U L vol) and preparative work (190mm band,500uL vol) sample positioning on X & Y axis freely selectable, variable rate of delivery, easy to clean sample syringe, accepts 100 & 500 syringe diagnostic built in Validation built in. Link to System Manager. Chromatogram Development Chambers(Twin Through Chambers) All glass, small internal volume chambers, bottom divided into two halves; maximum 5-15 ml mobile phase/ run S.S Lid appropriate size thanks for 20x20,20x10,10x10,10x5 cm Plates. Chromatography Visualization –(Uv Cabinet) Uv Cabinet, duel wavelength 254 nm + 366nm with guaranteed minimum intensity, as follows: UV lamp UW/CM2 at 17 cm distance. Short wave UV (254nm) 1600, long wave (366)nm 1000, Visible light (<400)0.4 100% protection to viewer's eyes and skin from UV light for safty. High tech 25 khz power supply for	

		flicker less, instant illumination . Portable darkroom. Auto switch off after 10 min. TLC SCANNER & Data evaluation: Computer controlled scanner for automatic spectrum scanning for identification / purity check, automatic quantitative measurement. All TLC / HPTLC sizes acceptable, Absorbance/ Fluorescence, Scan speed 100 mm/ sec with 25 µm resolution , Wavelength range 190-800 nm, Monochromator flushing by nitrogen, Data sampling rate-4000/ sec. optics for HPTLC measurements. Spectrum scan 100 nm/ sec.999 spectra/ plate. Pilot slit image is illuminated with visible light / Compartment illumination with UV 254 or 366 nm or white light 4 watt tube to check sample / light beam alignment D2, HG, W lamp built in. Self diagnostic built in. Service dialoong built in . Universal filter for florescence, slit size selectable, narrow bandwidth for spectrum, wide band wide for quantification . EPROM upgradeable. 32 bit software, linked to system manager, Automatic / Video integration , Auto baseline correction , spot check facility, 3D display with data storage Calibration single level, multilevel, liner/ non –liner, statistics Reproducibility check, GLP complaint , self diagnostic built –in , Auto calculation of data from Wts and dil . factors, Computer generated random no. for each report. Impurity calculation as per various pharmacopoeias. Lamp use tracking 2 level digital user manual. Integrated software to document, control and manage all the instrumental steps of HPTLC analysis including application development scanning and photo recording and documentation32 bit windows XP based upgradable. Image Comparison viewer software. TLC/ HPTLC PLATE HEATER: stain resistant Ceram glass top: temperature range 25-200 degree. Gradient automatic multiple development chambers: PC controlled unit comprising chromatogram developing chamber and control module.	

		Facilities available: 1. Chemical Lab 500 Sq.ft 2. Instrumentation Lab 500 Sq.ft 3. Microbiology Lab 2000 Sq.ft 4. Recharge and development 500 Sq.ft 5. Sampling and sample preparation room 500 Sq.ft 6. Wet processing lab 1500 Sq.ft 7. Solvent/ Chemical storage room 500 Sq.ft 8. Food making and sensory Lab 1750 Sq.ft 9. Uninterrupted power supply room 500 Sq.ft 10. Library /Reading room 2000 Sq.ft 11. Staff room 500 Sq.ft Sub Total:=10750 Staircase, passage and open are 4300Sq.ft Total area required=15050, Say 15000Sq.ft. Land Area= 3000M^2 Project Cost= 861.84Lakhs.	