MAHARHSI DAYANAND UNIVERSITY, ROHTAK.

TENDER NOTICE

Sealed tenders super scribed as "Tender for general labware items, analysis instruments and machines" and addressed to Head, Department of Pharmaceutical Sciences, M.D. University, Rohtak, along with Demand Draft of earnest money @ 2 % of quoted value in favour of the Finance Officer, M.D. University, Rohtak, are invited latest by 20-01-2009, at 4.00 pm. The detailed specifications of equipments and terms & conditions are available with Department of Pharmaceutical Sciences, M.D. University, Rohtak, as well as on the University website (www.mdurohtak.com). The tender will be opened on 21-01-2009 in the Department of Pharmaceutical Sciences, at 10.00'am.

REGISTRAR

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DEPARTMENT OF PHARMACEUTICAL SCIENCES
MAHARHSI DAYANAND UNIVERSITY, ROHTAK.

Specification for machines – part two

Equipment	Specifications	Quantity required
Ultrasonic Bath	Benchtop model, constructed with stainless steel tank and case; capacity upto 9 litres or less, fitted with timer and heater; thermostatically controlled to a working temp. of 80 degrees C; fitted with two high intensity horn transducers. Peak pulse power 300 VA, Heater – 600 VA and frequency 33 KHz. Supplied with plastic lid and stainless steel basket, with cranked handle, to fit over the ends of the tank; working on 220 V AC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure uniform operation.	01 No.
Transdermal diffusion assembly	Suitable for drug percutaneous diffusion experiments, with manual sampling. System package to include six complete diffusion cell assemblies, 6-cell drive with programmable control, stainless steel stand and manual sampling syringe. Provided with a jacketed beaker for pre-heating replacement media, and a circulating bath to deliver precise temp control for the system. Optional accessory to include fully automated sampling and collection system, with protocols, simultaneous replacement of media and sample archiving, along with validation protocols. Optional autosampler to have 6-channel syring pump, Teflon valves and sample tubing, automated media replacement at time of sampling, programmable cell dilutions, jacketed media replacement beaker and supply kit. Vertical Diffusion cells to have small orifice and a small volume, upto 4 ml, preferably as per FDA recommendations for SUPAC SS. The glass cell assembly to include receptor chamber, donor chamber with easy to use clamp, dosage water, sampling and media replacement ports, outside jacket for temperature control and magnetic stirrer. Cells should be adoptable to both manual and automated sampling. Cells to be designed to be air-sealed from donor side, to minimize any back-diffusion from automated sampling. Cells to be provided with a bubble trap in the replacement port. System to be supplied with one extra set (six) of diffusion cells. Please quote for AMC / extended	01

	warranty for at least 3 years. Complete in all aspects so as to ensure smooth handling.	
Ultrasonicator	High intensity Ultrasonic processor for high volume applications --High intensity ultrasonic processor, suitable to process a wide variety of organic and inorganic materials in applications such as cell disruption, sample preparation, homogenization, disaggregation and sonochemical reactions. Automated tuning, automatic amplitude compensation; highly efficient convertor designed for heavy duty operation, with no ancillary cooling required; piezo electric convertor, type PZT crystal; titanium alloy probes, remote control connector; high volume applications model, microprocessor controlled, with integral temperature monitor, automatic switch off if sample temperature reaches preset limit, 1 to 100 degrees C; digital display, independent on/off pulser; elapsed time indicator; variable amplitude control; sensitive overload protection, energy set point. Processing capacity upto 250 ml, power output 750 W, frequency 20 KHz, supplied with clamp, stand, jack, temperature probe, microtips, etc. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure uniform operation.	01
Microtome	Microtome : Precision Rotary Microtome. Useful for sectioning of tissues. Wheel counterbalanced with locking device and automatic feed and release mechanism. Provided with a light cover hinged at the back for protection of internal parts from dust. Feed range of 1 to 50 microns in step of 1 micron each controlled by dial control in the front position. Feed crank located at the left side of the microtome. Automatic cessation of feed powl when the feed reaches the extreme forward position. Incorporates ball and flange type of object holder for positioning of the object at the desired position. Complete with 120 mm knife with back and handle in case (supplied with one extra complete set of 120 mm, 150 mm, 180 mm and 200 mm knifes). Supplied with 6 block holders (of 37 mm, 25 mm and 20 mm diam. Made of brass), horning stone (one plus one extra) , 05 bottle of lubricating oil and dust cover. Embedding rings (disposable) to be provided, 04 for each size. L – moulds of at least 3 sizes, 4 pairs each, to be supplied along with the machine. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
Deep freezer	Deep freezer (microprocessor controlled with automatic voltage stabilizer) Double walled units have thick PUF insulation between inner and outer well. Outer wall	01

	scratch free moulded or steel sheet duly powder coated. Temperature range from ambient to -40^{0}C achieved by hermetically sealed compressor. Sturdy angle iron framed body mounted on castor wheels. Microprocessor based digital temperature indicator-cum-contrlller. CFC free eco friendly compressor. Should work on220/230 volts AC supply. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
Cooling centrifuge	High speed refrigerated centrifuge. Microprocessor controlled. Minimum speed of 18000 rpm and minimum RCF of 25000 x g or more. Maximum capacity of 4 x 250 ml. Brushless induction motor, temperature range of minus 20 ^{o}C to plus 40^{o}C, 9/10 acceleration and declaration steps, automatic rotor recognition and rotor quick set system. Advance drive technology to compensate for small imbalance. Digital display of RPM, RCF, temperature, time and graphical display of run profile. Bicontainment designed autoclavable rotors. Angle rotor of capacity 8 x 10 ml, 24 x 2.0 ml. 6 x 50 ml. Swing out rotor of capacity 4 x 250 ml. Adapter 5 ml, 15 ml, 15 ml conical tube and 50 ml tubes. Swing out rotor for microtitre plates be also quoted. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
High speed centrifuge	General purpose centrifuge, table top mode, with rpm between 10000 and 21000 with different angle rotors for 50 ml, 15 ml 10 ml and 1.2 ml. Model with small volume be preferred. G value between 20000 X g and 40000 X g. Swing out rotor with different adaptors to handle small and large volumes be quoted. Micro titrator rotor should also be quoted. Quotation should be submitted both for refrigerated and non-refrigerated models. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
Research Microscope with photography assembly	Digital microscope model, along with high resolution camera : Microscope trinocular observation head, 30 degree inclined, 360 rotatable. Interpupillary distance adjustable between 55 – 75 mm. Diopter adjustment ring on ocular to provide correction for eye acutiy. Eye piece high point 10 X paired, 70 mm. Objectives achromatic 4 X, 10 X, 40 X and 100 X. Mechanical body of U shaped stand, mechanical stage size 142 X 132 mm with movement of 50 X 75 mm, ball bearing guideways and large knobs for positioned co-axial focusing. Pre-focussing leer and tension adjustment ring provided. Quadraple nosepiece revolves on ball bearing	01

	with positive indexing. Soft rubber knurled grip on nose piece. Sub stage condenser, abbe type, 1.25, having a spherical lens, adjustable iris diaphragm. Supplied along with 2 mega pixel, or higher, fully compatible, along with latest software for imaging. Digital camera should adopt high performance USB 2.0, image sensor ½ inch CMOS, image format 1600 X 1200. Capable of being adopted on to the microscope. Quotation for supplying with / without the computer / laptop should also be submitted. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
Projection Microscope	Projection microscope : Heavy duty body, coars and fine focusing system and triple revolving nose piece. A plain stage of 120 X 120 mm with two spring clips to hold the slide. Provision for attachable graduated mechanical stage. A 150 mm diam. screen attached to the microscope eyepiece tube. Powered with 12 V, 20 W halogen lam. Light arrangement workable by rack and pinion. Objectives of 10 X, 20 X and 40 X, projection eye piece of 10 X. Supplied with spare achromatic objective 40 X, spare oil immersion 100 X, and graduated mechanical stage. Supplied with one extra halogen lamp. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
Peristaltic pumps	Peristaltic pumps : Variable speed drive, no contamination of the fluid or pump, self priming and can safely run dry, positive displacement, no back flow, ideal for shear sensitive, viscous, aggressive and corrosive liquids, instant start / stop and reverse facility. Flow rate 0.3 ml / min to 130 ml / min., flow accuracy better than +/- 1 %, Tube size 0.5 to 4.8 mm I.D., Wall thickness 1.6 mm, External input TTL input for on / off, and 0 -10 V for rpm control. Please quote for all optional configurations. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure uniform operation.	02
Microwave oven	Microwave Ovens : Suitable for chemical processing or for general laboratory heating applications. Output power upto 1000 Watts of microwave power. Required power 230 V AC, 50 Hz. Cavity exhaust airflow upto 15 cfm, into free air. Operating frequency upto 2 – 3 GHz, option of frequency and power control. The oven cavity and housing to be of stainless steel while the electronics to be coated to resist the effects of corrosive environments. A ¼" vacuum or gas stainless steel feedthrough to be included. Uniform heating should be available, without any turntable. Adjustable power	02 + 02

	levels feature to be provided. High volume air flow out of the cavity. Cavity exhaust through a chemically resistant duct to be provided. Cavity and housing to be made from stainless steel. Cavity floor to be made from ceramic. Door to be treated to resist corrosion. Electronics section to be positively pressurized with air. Stainless steel feedthrough for process gas or vacuum. Mode stirrer in place of turntable. Two speeds for the air flow from the cavity. Programmable for cycling the microwave power on and off, ratio of power on & off time. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	

(Dr. Arun Nanda)
Head of the Department

DEPARTMENT OF PHARMACEUTICAL SCIENCES
MAHARSHI DAYANAND UNIVERSITY, ROHTAK.

Specifications of items for analysis instruments – part II

Equipment	**Specification**	**Qty reqd.**
Atomic absorption spectrophotometer	Optics : True Double Beam optical design Monochromator : The system should be based on Echelle Grating with 75 lines/mm and optimized for both UV and Visible energy. Slit width should be auto selectable through PC; Detector : Solid State Detector or similar advanced detector; WaveLength Range : 190-900 nm; It should have D2 lamp background correction facility; Should have 2 nos power supply for EDL / ULTRA/ Super Lamps; System should have four lamp holder with built-in power supply for EDL/super lamps. All lamps should be coded and provided with usage meter. All the method parameters related with lamp selection, calibration, control of flow gases should be thru' windows based control software. The AAS unit will be operated with windows Software for controlling analyzer, setting-up the method parameters, analyzing the samples, performing calibrations, etc. The unit shall have flexibility of purging the optics so as to operate in demanding atmosphere of	01

	laboratory. The system should be supplied with CD so as to prompt self installation of AAS operation. All the electronic boards included in a single box so that user can have flexibility to change for replacement. The system should have built-in power supply at least for two lamps so as to accommodate super/EDL lamps like As, Se, Hg etc. for Vapour Generation studies. Various safety interlocks like burner head, gas pressure, nebulizer, drain full condition etc. should be integrated inside the system. The nebulizer should be resistant to all sorts of acids and solvents. It should have a built-in nebulization device like flow spoiler and impact bead. Minimum abs. of 0.5 is assured for 5 ppm Cu with 0.25% RSD. Should have N20 Regulator with Preheater From AAS manufacturers. Following should be included Multi element lamps for Zn , Cu, Cb, Al , Ca, Mg SOFTWARE: PC Controlled software can be added to the system in future for controlling various accessories like Graphite Furnace, FIAS, and Auto dilution. Please quote for Coded Hallow cathode Lamps & EDL lamps, also quote all essential accessories for Installation of system. Please note Necessary items as mentioned below should be quoted by supplier Branded computer with latest configuration -1no Laser printer B/w -1no Regulator for C_2 H_2 -1no Gas cylinders for N_2O, C_2H_2 1each -2no Fume Hood - 1no Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
HPTLC for PC lab	HPTLC Sample Applicator : Spray-on Technique, Dot-or line application ; Programmable with keyboard or PC Software GxP/GLP Conformed; Integrated Software for Scanner / Densitometer; For 200 x 200 mm size HPTLC plates, TLC plates or foils as dot or line; Dual Syringe Concept. “Dosing Syringe’’ for spotting of sample and “Filling Syringe” for sample / flush solvent introduction to avoid damage to the tip of syringe and to avoid contamination; Constant distance (Automatic) between the TLC/HPTLC Plate surface and the tip of the needle to avoid any	01

	diffusion of the spots or scratching of the plate surface, when plates of different thicknesses are used; Automatic clamping of the plates; All parameters for the application of upto 30 samples are entered by built-in keyboard. 2-line LCD display; One method contains the plate size, no., length and distance of the path, the volume applied, as well as the rate of application. The sample number and volume factor can be indicated for each path. The battery-buffered memory holds 10 different methods. Application Rate : 3-120 s/µL; Resolution : 2000 steps/µL; Time Requirements : 35 s for 30 x 300 nl in one filling ; Interface : 2 x RS 232; With integrated software coloured codes for samples and standards allow fast entering without mix-up. The number of application is directly taken over from windows method parameter; A true picture of the plate is displayed on which all parameters are entered. Various samples are marked by different colours; It should be expandable and compatible (upgradable) into full automatic application system with Autosampler (optional) and it should control Autosampler via serial interface and monitors the selection of the sample vial, the delivery of sample and rinsing process. Twin Trough Chambers - 1 No. each; 100mm x 100 mm and 100mm x 200 mm Separating Chamber to hold five 200 x 200 mm HPTLC/TLC plates simultaneously 1 No. to wash TLC plates before used and stored them in protected manner. This is useful for quantitative trace analysis; Dipping Chamber (inert glass), 200 x 200 and 100 x 100 - 1 No. each to improve uniformity of reagent distribution HPTLC Densitometer cum Scanner - 1 No; Full PC controlled operation with Windows based Software (Powerful 32 bit); Wavelength Range : 190 – 900 nm; Cut-off filters : 370, 420, 450, 550 nm ; AD Converter : 19 bit (for better S/N ratio and sensitivity); Graphics : 2D, 3D and text input; Measurement Modes : Absorbance or Fluorescence; Linear scan and meander scan (Zig-Zag); Two Wavelength measurement (to compensate inhomogeneous background on the plate, to compensate for irregularities in gels as well as streaks and bubbles); Multi wavelength measurement (for optical resolution of fractions	

	which are not adequately separated) Chromatograms are recorded automatically at up to 30 different wavelengths. 3 dimension (3D) presentation of this measurement is possible. Multi-wavelength measurement is very helpful to find out low level impurities; Built-in Spot Optimization Program for the spot which might not have developed linearly; On-line integration; Calibration : Linear, Polynomial or Michaelis-Menten Function ; Spectra : between 190 and 900 nm; Automatic filter and lamp change; Carrier Plate with magnetic strips to attached films, electro-pherogram and foils; All measurement and evaluation procedures carried out automatically and are reported on the monitor in real time. Network processing possible; Compensation of shorterm variation and ageing of the lamps possible. Lamp warm-up time and signal time is minimum; Optical components can be flushed with nitrogen (for wavelength less than 200 nm). Automatic adjustment of the size of sensing light beam. The slit width from 0.4 to 10 mm and slit height from 20 µm to 2 mm are possible. Total 64 combinations of slit size available (8 slit height and 8 slit width). This is useful to scan a large number of different spots of various sizes. VISUALISATION DEVICE 1No. Cabinet for viewing the TLC/HPTLC plates at 254nm and 360nm in an undarkened room having viewing window made up of polyacrylate glass and provides adequate protection from reflected short wavelength UV light. Including UV protection goggles. TLC Test Kit 1 No. Consists of : Horizontal Separation Chambers, Application Templates, Micro-capillaries, lipophilic and hydrophilic dyestuff test solution, 100 HPTLC K 60 F 254, 50 x 50 mm plates, practical book of TLC. Local Items like PC, Printer, Nitrogen Cylinder with Regulator and suitable UPS should be offered separately . Installation, commission and training at site free of charge. Warranty : 12 months from the date of installation. UV Detection System with Photo documentation Facility and Digital Camera . For observation and documentation of thin layer chromatograms in UV light at 254 nm and 366 nm	

	and in white light even when room is not darked. Two daylight tubes, two 8 Watt low pressure HG tube for 254 nm and four 8 Watt low pressure HG tubes for 366 nm. Uniform illumination for object 200mm x 200 mm size. The observation plate of polyacrylate glass to provide adequate protection from reflected short-wavelength UV light. For transmitted light illumination it should have built-in special day light tube with a power of 8 Watt. Documentation Top to combine with digital camera. It should completely excludes stray light from the system. Special filter for UV work. Can be mounted in the integrated filter magazines. Technical Specifications : Illumination from above : Daylight 2 x 1 Daylight Tube 366nm 2 x 2 Hg Low Pressure Tube 254 nm 2 x 1 Hg Low Pressure Tube Illumination from below : Daylight 1 Daylight Tube Light scattering window 200 x 200 mm Illumination strength (Distance 10 cm) 254 nm 2.0 mW / cm2 366 nm 4.8 mW / cm2 Digital Camera (Canon or Equivalent) Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
CHN analyzer for PC lab	CHN analyzer for PC lab -- Organic Elemental Analyzer CHN/S/O unit with Elemental Analyser software along with essential accessories as follows: Capable of measuring CHN. CHNS and/or Oxygen in organic compounds. Analysis times 6 minutes for CHN mode; 8 minutes for CHNS mode; and 4 minutes for Oxygen mode. Analytical Range Element Range (mgs) C 0.001 – 3.6 H 0.001 – 1.0 N 0.001 – 6.0 S 0.001 – 2.0 0.001 – 2.0 Accuracy of measurement : He + 0.3% absolute and Ar + 0.4% absolute. Precision of measurement : He + 0.2%, Ar + 0.3% Column Switching Accessory option for switching	01

	between CHN or CHNS to Oxygen mode.; Built-in 60-position, vertical gravity feed Auto-Sampler; Chromatography columns for product gas separation; Solid State Pressure Transducer to control pressure; Both dynamic and static combustion should be provided; Built-in, automatically activated copper reagent reduction; Automatic Wake-Up and Shutdown at operator-selected date and time; Analyzer must provide built-in continuously resident or on demand diagnostics; Operator-selected automatically sequenced leak test and electronic failure capability; Capable of both single standard and linear regression calibration; Provide a recalculation feature for sample weight, K factors, and/or blanks; Capable of analyzing samples up to 500 mgs, depending on sample matrix; Provide for Steady state readout of analysis; Analyzer must not require scrubbers or traps for either CHN or CHNS modes; Microbalance capable of a resolution of 0.1 microgram and a weighing range to 1000 milligrams should be included with the offer; All the data of CHN Analyzer should be transferred to PC including sample id, code, operator id, CHN concentration in tabular form; The provision should be in software for CFR 21 Part 11 compliance tools to be provided as well as various statistical evaluation like standard deviation, mean calculations, tabular results etc; The software should be based on Windows operation system XP. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
Auto titrator	Advanced Microprocessor based system with easy interchangeable burette assemblies (1/5/10/25 ml.); Imported Burette assemblies with Burette validation factor for dispensing correction; Alphanumeric entries of Sample Name, Titrant Name, Identification No. & Date for report printout; System can be converted to perform KF titration by simply changing Burette assembly. and same should be quoted with the system; Serial port for balance and PC and parallel port for printer.Compatiable printer should be quoted with the system.All electrodes required should be quoted along with the system; Three standardized modes of Titrations such as : a. Incremental b. Equilibrium c. Cutoff by pH	01

	d. pH Stat; End Point (EP) calculation by First, Last, Largest, All and Selectable with display and printout; User selectable Decimal selection for Results i.e. 0.0001, 0.001 , 0.01 or 0.1; Differential Electrode Amplifier unit for Potentiometric and Voltametric Titrations; Report Formats should be available. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
GLC for PC lab	GLC for PC lab -- Gas Chromatograph with FID ISO Certified Gas Chromatograph. 4-6 line Microprocessor controlled Gas Chromatograph to provide all needed data including Temperature, Pressure/ Flow parameter, type of Carrier Gas, Carrier gas column pressure, flow rates, split flow, detector gas flow rates and all detector parameter. With Programmable Electronic Control for complete system. Microprocessor should be capable of actual observation of chromatogram online. COLUMN OVEN : Temperature range : Ambient to 4500C with user selectable column overheat protection. Ramp rate : atleast 0.2 to 450C/ min. Heat up time : 500C to 2500C in 3 mins or less. Cool down time : 2500C to 500C in 5 mins or less. PNEUMATICS : Programmable Electronic control with single point control via software. Facility to compensate for variations in ambient temperature and pressure for maximum stability. Direct setting of split flow rates and ratios. Automatic leak testing and three ramp pressure program. Pneumatic program rates 0-100.0 psi/min or 0-100.0ml/min2 or 0-200.0 cm/s -min. INJECTORS (QTY - 2NOS.) : Split/ Splitless Capillary Injector with Programmable Temperature vaporizer (PTV); EPC/ PPC control; Automatic control of split vent and purge flows; It should have atleast three ramp temperature program : Temperature range from 50-5000C or better in 10C increments; Ramping rate from 10C/min. to 2000C/min or better; DETECTORS : (Capable to Install two or more detectors simultaneously) Autoignite FID; Autoignition, flame out detection.;	01

	Temperature range : 1000C to 4500C in 10C increments; Min. detectable Quantity : < 3 X 10-12 g C/sec at S/N = 2:1; Linearity > 106 or better; Makeup gas should not be required for operation. DATA COMMUNICATION : Should be quoted with Relevant Part No. having original copyright software from GC Manufacturer.. Must have data processing for Dual Flow line operation. MS Windows XP based with facility to connect to LIMS without any upgrade. Built in Audit trail facility and user level selectivity for operation. Buffered interface architecture with facility of interface validation with traceable NIST standard; ACCESSORIES (Must quote relevant Part Numbers) to be provided by GC Manufacturer - Column: CAPILLARY COLUMN 60 Mtr Column with (5%-Diphenyl) – Dimethylpolysiloxane; Installation kit : Must include the Gas Purification System; SEPTA 50 nos Nozzle Extractor tool 01 1-mm i.d. liner quartz 01 Hour glass liner 01 Graphite Ferrules 06 NECESSARY LOCAL ITEMS/ Hardware - Branded P-iv Computer with Laser B/w printer - GAS CYLINDERS – 3 nos REGULATORS -3no - 5 KVA online UPS with 30 min backup Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
HPLC for IP lab and MAT lab	HPLC SYSTEM With uv-vis refractive index Detector Microprocessor based Modular HPLC System with following Specifications is required along with RP-18 as well as RP-8 and Silica column; Single Binary HPLC system with a provision for upgrading to Quaternary solvent delivery system any time; Dual reciprocating piston design with Serial mixing, precise linear, concave and convex gradients and pulse less flow. The pump must have a flow precision of typically +/-0.1% typically at 1ml/min	02

	with water; The flow rate range must be 0.01 – 10.00mL/min with 0- 6,200 psi pressure range at all flow rates for precise analytical analysis; Compositional accuracy for the system should be typically 0.5% or better; The pump must be controlled from own keyboard and MS software; Pump seal should be guaranteed for long run with any aqueous buffer, organic / non-polar solvents; On line Vacuum degasser multi channel (> 4) should be built –in the system to remove the dissolve air in the Pumping System as well as in Autosampler internal needle wash solution; Manual Injector (Rheodyne) with built in 20ul loop with auto switch and gas tight 100ul syringe. **UV-VIS Detector** Detection Type - Dual beam optics; Wavelength range- 90-700 nm (D_2 & W lamp); Bandwidth - 5 nm or better; Wavelength accuracy :+/- 1nm; Drift - < 1 x 10^{-4} AU/hr; Noise - < +/- 0.75 x 10^{-5} AU, 210 - 280 nm & 1ml/min standard flowing conditions; Flow Cell - Standard 12 ul, 10mm pathlength; Sensitivity Range - 0.0005 - 3.000 AUFS; **Refractive Index Detector (RID)** The Refractive Index (RI) Detector should be highly stable and sensitive LC and GPC detector for use with compounds that do not have high absorptivity in the UV range, such as polymers, sugars, organic acids and triglycerides. The RI detector should be with deflection-type design, allows sensitive detection of these compounds with low noise and drift characteristics. The advanced detector should have features for internal temperature control of the flow cell, offset adjustment, autozero and autopurge of the reference cell, all with easy keypad entry. A full-color LCD should allows the user to set and verify analytical conditions and baseline trends in highly sensitive day to day analysis. Detection Type - Deflection-microprocessor control ; Light Source - Tungsten Range (RIU) - 1.00 – 1.75; Interface - Keyboard / colour LCD Display; Noise (RIU) - +/- 2. 5 x 10^{-9}; Drift (RIU/h/oC) : +/- 2. 0 x 10^{-7} Flow cell : 8 ul volume, Thermostatting : 35 degree C, adjustable to 50 degree C Column Oven : Peltier cooling 5 o C 90 ^{o}C with temperature accuracy + 1 ^{o}C over entire range,	

	Should able to hold min. 3 column of 4.6 X 30cm for GPC/SEC analysis of proteins of different molecular weights, leakage sensor, with provision for column selection valve capacity with 6 switching positions Chromatography Software & Data Station: Single keyboard control of entire system Full 32 bit Architecture, Compatibility with Uv-Vis, RI, FLD and Diode array detector, Compatibility to import and export the data, Online help,GLP compliance, Flexible report publisher; Data workstation with latest configuration with dual core, 3 Ghz,512 MB RAM, 1 GB Cache, 80GB HDD, 17" TFT Screen, Optical mouse, Mouse Pad, USB ports, Serial & Parallel ports, Windows Software and Desk Jet Colour Printer. Mobile data station with LCD screen for easy transfer of data from workstation to system and vice versa and also have the facility for research paper publishing software with Windows word publisher; i) Local Items : Require branded PC, with latest configuration and Windows XP service pack , Desk jet Printer; 3 KVA with 30 min backup online UPS; Solvent filtration kit with organic & aqueous filter; Sample filtration kit with organic & aqueous filter. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
HPLC for DRA Lab	Quaternary Gradient HPLC System with PDA Detector Quaternary Gradient Pump with built-in degasser (4 channel) and leak sensor - 01 No; Double speed control System to suppress pulsation; Flow Rate Range : 0.001 to 9.999 mL/min; Flow Rate Accuracy : ±2 µL/min., ±2% upto 8.0mL/min. Flow Rate Stability : RSD 0.075%; GLP Related Functions : Pressure Profile, Liquid Feed, Quantity counter, Registration / Output of the plunger seal replacement date, Registration / Output of the Serial Number, Double Speed Section error check-up, Autosampler - 01 No; Direct Injection System No. of Vial : 200; Injection Volume Reproducibility : 0.3% RSD; Injection Volume Range : 0.1 to upto 4500µL ; Faster Cycle Time, Accurate and Reproducible Injection Volumes, Low Carryover Sample Vial Detection Function ; GLP Related Functions : Date of Seal Replacement, No. of	01

	Injection after replacement ; Facility for 3 micro plates, 384 holes to allow measurement of 1152 samples at a time ; Column Oven - 01 No; Temperature Control System Block heating and Air circulation; Temperature Control Range : Ambient – 150C to ambient +500C (upto 650C) Temperature Control Accuracy : ±0.10C ; It should accommodate 3 columns of 25 cm length ; Peltier Controlled Temperature System ; Built-in Leak Sensor ; Diode Array Detector (PDA) Detector - 01 No No. of photo diode bits : 1024 Light source : D2 lamp, Tungsten, Mercury lamp for wavelength inspection Wavelength Range : 190 – 900 nm Wavelength Accuracy: ±1 nm. Wavelength Resolution : 0.78nm/bit Noise : 0.5 x 10-5 AU or less Drift : 0.5 x 10-3 AU per hour or less Spectral Acquisition Cycle :Selectable from 50, 100, 200, 400, 800, 1600 and 3200 msec; GLP Related Function : Date of Deuterium Lamp and other lamp Replacement, Number of ignition, Ignition Time, Energy, Automatic Wavelength Check ; PDA Software with Multi Chromatogram mode, Chromatographic Peak Purity Calculation and Spectral Library search. The detector should have a large lamp house to stabilize light source. Protection of monochromator from fluctuation in ambient temperature by separating and insulation the monochromator and lamp house, lamp house cooling, built-in temperature sensor with fan to adjust the air flow rate according to the temperature changes to further minimize the temperature changes in the instrument. This ensures low noise level, high stability and stable analysis at any time. Grating monochromator ensures uniform wavelength resolution from ultraviolet to visible region. Digital Noise reduction technology to provide low noise, sharp peeks even at sampling period as short as a 0.05 second. Built-in mercury lamp for automatic wavelength check; Lamp and Flow cell replacement from the front; Software for Data Acquisition, Instrument Control and Data Processing - 01 No; FDA 21 Part 11 Compliant (Traceability Function, Digital Signature	

	Function, Security Function); Reliable Communication via e-Line and USB; HPLC Columns - 250mm x 4.6mm ,C18 Column– 5 micron particle size - 01 No. Local Items : PC, Printer and Sample/Solvent Filtration Kit should be quoted. Fluorescence Detector : 01 No.; Light source : Xe lamp, Hg lamp (for wavelength check); Wavelength range : Excitation side: 200 to 850nm Emission side: 250 to 900nm ; Wavelength accuracy: ±3nm; Spectral bandwidth : Excitation side: 15nm, Emission side: 15, 30nm (switchable); Sensitivity : S/N ratio at Raman peak of water: 900 or better (baseline method); Material of wetted parts: Quartz, fluorocarbon resin. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	
Particle size analyzer for IP lab	Table top model, based on laser diffraction technique. Measurement of powder particle size distribution by dry dispersion or by suspension in an appropriate liquid. Quick measurement in a few minutes only. Particle size range : 0.7 to 400 mm. Laser emitter: Laser diode, 830 nm, laser power:3mW, Modulator frequency 400 Hz, Detector: Using photodiode sensor, Sample quantity up to 10 gms for liquid mode and up to 100 gms for dry mode. PC compatible. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to enable smooth operation.	01
Double beam UV-VIS spectrophotometer for IP lab	Double beam UV-VIS Spectrophotometer. Unit to have diverse measurement modes, including wavelength scan, time scan, multiwavelength measurement, etc. Fast wavelength scan over the entire wavelength range with maximum scan speed of 3600 nm/min and direct spectra display on LCD. Validation function for GLP / GMP standards. Wavelength range 190 – 900 nm. Setting wavelength resolution 0.1 nm. Wavelength accuracy +/- 0.3 nm. Wavelength repeatability 0.1 nm. Spectral bandwidth variable from 0.5 to 5 nm. Photometric accuracy and repeatability from less than/equal to + / - 0.5 %. Stray light less than or equal to 0.015 %. Baseline stability less than or equal to 0.001 abs / hr. Baseline flatness less than or equal to 0.001 abs. Capable of using micro	01

	cuvettes also, along with general cuvettes. PC control with software for kinetic measurement, quantifications, concentration values, etc. Supplied with two sets of 06 quartz cuvettes and one set of quartz microcuvettes. Please quote for disposable cuvettes also. Supplied along compatible with contant voltage transformer. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to enable smooth operation.	
TGA Analyzer for IP Lab	RESEARCH GRADE HIGH RESOLUTION TGA Analyzer : Furnace design should be of vertical design. TGA should have Ultra Microbalance with 0.1 µg sensitivity and weighing precision better than 0 .01%. Maximum sample weight upto 1300 mg including pan weight. Temperature Range should be ambient to 1000 degrees C. The Furnace should have Low Thermal Mass Furnace with built-in Pt. resistance heating elements. The furnace should have facility of auto calibration, auto clean furnace etc. The system should be evacuated upto 10^{-3} pressure and should have capability to use various types' inert and active gases. The provision of ion sprays to avoid static change. Furnace should cool down to room temperature from 1000 degrees C in less than 15 minutes with built-in force air cooling. Software for High Resolution should be quoted & Digital Mass flow controller should be also included with the system. Balance assembly should have thermos tatting capability to minimize isothermal drift. Movement of Furnace should be software controlled. Furnace should be protected with chamber sleeve to avoid convection effects. In future TGA should have capability to upgrade with FTIR combination for EGA (Gas Evolved Analysis). In future the TGA should be upgradeable with the Auto sampler also. The vendor should also quote for Branded computer with Desk jet printer. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
Spectrofluorometer for IP lab	Spectrofluorimeter : Source: Xe lamp with pulse frequency > 60 Hz and pulse width at half peak height<5us. Wavelength range: Excitation from 200 nm – 900 nm	01

	Emission from 200nm – 900 nm Detectors: Wide range high sensitivity R928 Photomultiplier Tube. Sensitivity: Minimum signal to noise level using the Raman band of water at excitation 350nm should be 500:1 RMS Signal Averaging time: 1 sec Scan speed: From 10nm to 24000 nm/min Monochromator: Should exclude second order stray light Wavelength accuracy: Within $\pm$ 1.5 nm in the entire range of 00 to 900nm Wavelength reproducibility: Should be within $\pm$ 0.3 nm Spectral bandwidth: Excitation 1.5 nm to 10 nm Emission 1.5 nm to 10nm Equipment should be compatible and should have attachment of polarizer that can polarize (rotate) light in all directions viz. from lift to right, from bottom to up, and vice versa. Temperature controller: Peltier thermostat, with multi cell holder and temperature probe & controller Microplate Reader Software: Basic software to run the instrument and software for the measurement of life time, kinetics and as a function of temperature etc., Florescence Quartz Cuvettes (10mm pathlength): 50 or 40 ul cells (2 Nos), 400ul cells (2 Nos) PC & Printer: Suitable PC and Laser printer to run the system to be provided Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to ensure smooth operation.	

(Dr. Arun Nanda)
Head of the Department

DEPARTMENT OF PHARMACEUTICAL SCIENCES
MAHARSHI DAYANAND UNIVERSITY, ROHTAK.

Specifications for general labware items.

Equipments	Specifications	Quantity

		Required
Hot air ovens	**Mammert type.** Sturdy double walled units with outer chamber made of M.S.sheet duly powder coated/painted with inner made of anodised aluminium or S.S sheet. System to avoid thermal losses between inner and outer chamber (filled with high grade glass wool). Beaded heating elements in ribs, at bottom and sides. Inner chamber provided with ribs for adjusting perforated shelves to convenient temperature. Provided with air circulating fan. Optimal size: 450 x 600 x 450 mm inner chamber, or bigger size. Please quote for model with aluminium chamber, electronic timer, digital temp indicator cum controller, microprocessor PID based temp indicator cum controller. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	06
Mechanical shakers (rotary flask shakers)	**ROTARY FLASK SHAKER:** Designed for continuous shaking of solutions in Erlynmeyer Flasks from 50 to 1000 ml capacity. It is a compact bench type table top model with platform fitted with rubber discs mounted on ball bearing crank shafts to give an orbital motion to the flasks, with in a diameter of approx. 2". To work on 220/230 volts A.C supply. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation	03
Vortex shakers	**VORTEX SHAKER:** Useful for stirring centrifugal tubes, test tube or small flasks. Fitted with a Neoprene rubber cup mounted eccentrically on the shaft against which it held the tube with its lower and pressing against the cup. To work on 220/230 volts A.C supply. Complete in all aspects so as to facilitate smooth operation.	03
Chemical balances	**CHEMICAL BALANCES:** Laboratory, double pan, chemical balances of capacity upto 200 g with sensitivity upto 0.2 g. Pans of stainless steel. Provision of rider placement. Supplied with a spirit level and level adjustment screws. Balance supplied in a wooden box with movable glass doors. Supplied	15

	with one full set of weight box. Complete in all aspects so as to facilitate smooth operation.	
Electronic balances – low precision	Electronic balances of capacity upto 300g with accuracy upto 0.01g (10mg), platters of diameters upto 116 mm and LCD display. Supplied with a spirit level and level adjustment screws. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	06
Electronic balances – high precision	**ELECTRONIC BALANCES:** Electronic balances of capacity upto 150g with accuracy upto 0.001g (1mg), platters of diameters upto 110 mm and LCD display. Supplied with a spirit level and level adjustment screws. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	03
Magnetic stirrers	**MAGNETICS STIRRERS (heavy duty permanent magnet):** Compact stirring device utilizing a rotating magnetic field which induces variable speed stirring action, with/without hot plate. Controller of temperature of hot plate and stirring speed, with display of the temperature and the stirring speed. Capacity of the stirrer upto 10 liters. Supplied with a set of at least six Teflon-coated magnet beads, of different sizes. To work on 220/230 volts AC supply. Complete in all aspects so as to facilitate smooth operation.	15
Hot plates	**HOT PLATES (with cast iron top):** For continuous heating upto 350^{o}C with body made of specially designed perforated P.C.R.C. Sheet painted with attractive stove enamel with insulted elements. To work on 220/230 volts A.C supply. Provided with a temp. regulator, on/off LED indicator, cord and plug assembly. Complete in all aspects so as to facilitate smooth operation.	15
Water baths, 6 holes	**WATER BATH (double walled):** Thermostatic double walled water bath with inner chamber made of stainless steel and outer wall made of M.S. sheet	06

	dully powder coated/painted. The gap between outer and inner walls should be filled with special grade glass wool for insulation. Top cover with at least 6 holes of 75 mm (3 inch) or bigger, with concentric rings. The concentric rigs should be removable. Temperature should be thermostatically controlled from ambient to $90^{o}C \pm 1^{o}C$. Heating to be attained by an immersion type element, with an accuracy of +/- 1 degree C. Panel provided with pilot lamps, thermostat control knob, etc. Supplied with one extra heater element, and complete with plug and cord. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Mixers (laboratory stirrers)	**MIXERS (laboratory stirrer):** The motor stirrer of speed 4000 rpm or higher clamped to a C.P. rod fitted on a heavy cast iron base. The height and angle of the stirrer should be adjustable according to the requirement. Variable speed with speed regulators fitted with S.S. Stirrer rod to give smooth and noiseless operation. On/off switch, speed regulator, cord & plug provided. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	06
pH metrs	**pH METERS:** pH and redox potential measurements in 4 digits display, with slope correction facility. Range of measurements should be pH 0-14 continuous, MV 0-199 mV; with resolution pH 0.01, 1 mV, accuracy pH 0.01, 0.1mV and temperature compensation 0-$100^{o}C$. pH meter complete with combined pH electrode with gold plated connector, two plastic bottles and electrode stand. Accessories- (a) automatic temperature compensation probe, (b) pH electrode 0-14 pH. Supplied with one extra combined pH electrode. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	04
Colorimeters	**COLORIMETERS (photoelectric calorimeter):** Digital photoelectric colorimeter with 8 high standard glass filters ranging from 400 to 680 nm for	03

	blood and chemical analysis. Complete with 6.8V/250mA tungstone lamp light source, selenium photocell detector and sample system of 15 mm diameter matched glass cuvettes. Supplied with one 6.8V/250mA tungstone lamp extra with the equipment and with at least 3 full sets of glass cuvettes. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Conductivity meter	**Conductivity Meter** : Versatile, stable and accurate instrument to measure conductivity of water and other aqueous solutions for laboratory. Highly stable and accurate, cell constant adjustment facility, temp coefficient correction facility. 5 ranges from 0 to 1000 Mhos/cm; 3 ½ digital LED display; ± 2 % accuracy; resolution 0.1 micro Mhos/cm; temp. compensation provided; Platinum dip cell; provided with a conductivity cell, operation manual, dust cover. Working on 220 V AC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Nephlometer (turbidity meter)	Nephlometer (turbidity meter): Analog model, battery cum mains operated. Range 10 to 1000 JTU; resolution 1 JTU; accuracy ± 3 % ; sample system 30 mm clear glass tube; light source 6.8 V tungsten lamp; photodiode detector; 3 ½ digit LED display. Provided with two test tube sets, operation manual and dust cover. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Flame Photometer	Flame Photometer: Rugged, reliable and accurate instrument to determine concentration of Na, K, Li and Ca solution in clinical laboratories. Narrow band interference filters; dual channel display. Provided with Na, K, Ca and Li filters. Range Na=0-100 ppm, Ca=20-100	01

	ppm, K=1-100 ppm, Li=10-100 ppm. Sensitivity Na=5 ppm, Ca=10 ppm, K=5 ppm, Li=10 ppm. Accuracy ± 2 % upto 40 ppm and ± 5 % above 40 ppm. Repeatability ± 2 % count. Silicon photodiode detector. Narrow band interference glass filters. Black bakelite, axial flow type nebulizer. Flame system LPG and dry oil free air. Warmup time not more than 10 min. Working on 220 V AC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Water deionizers	Water Deionizers : Digital model, consisting of an in-built prefilter and very high exchanging capacity non-corrosive cation and anion resin columns, prefilled with imported resins for efficient results, having treated water parameters conforming to IS. It should yield chemically pure water equal to multiple distilled water having a conductivity of less than 10 micro siemens / cm and pH of 7.5 to 9 pH. Fitted with a sturdy multi control valve, can be connected directly to water tap. Fitted with a digital conductivity meter. Supplied with one plastic chemical proof regeneration tank. Output / hrs upto 100 litres, or higher. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	03
Water distillation assembly (quartz)	Water distillation assembly (quartz): All quartz water distillation assembly, double stage, with quartz boiler and quartz condenser. Output 3 lit / hr or higher. Coil type heater of high class nichrome wire, embedded in electronic grade transparent pure fused quartz tubes. Supplied with metallic stand, electrical fittings, and automatic cut off device for safety of heaters. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	03
Fuming cupboards	Fuming cupboards : Fabricated out of thick wooden board; designed so as to throw out all toxic/harmful vapours, thus protecting costly instruments and the persons working in the lab. Outer finished with sunmica and inner epoxy painted. Working table top made of	02

	stainless steel and a small wash basin with connections provided for inlet and outlet of water. Front door to move vertically up and down with concealed counter balanced weight. Unit fitted with fluorescent light and a gas cock for gas/air supply. Front facing panel fitted with 15/5 amp socket with switches for exhaust system and fluorescent light. To work on 220 V AC. Working size 6 X 2 X 2 ft or bigger. Fitted with ss lining on work area walls and fume duct. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Vacuum Pumps	Vacuum Pumps : Single stage, rotary type. Mounted on a heavy steel base plate. Fitted with a heavy duty, 0.25 HP or higher electric motor. V – belt driven, at a speed of 400 rpm. Fabricated out of high grade cast iron. Fitted with belt guard for the safety of the user. Single stage model, capacity 75 lit / min or better. Provided with moisture trap, vacuum gauge with regulator and vacuum oil. To work on 220 V AC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	03
Gel Electrophoresis apparatus	Gel electrophoresis apparatus : Vertical slab gel electrophoresis apparatus, made out of thick Perspex sheet, with fixed upper and lower buffer tanks. Complete with 1 comb, 3 spacers, 1 plain glass plate, 1 notched glass plate, clamps, electrode terminals. Supplied with platinum electrodes of 99.9 % purity. Adjustable height with ss rods. Should be supplied with gradient marker, spare rectangular notched glass plate, gel casting unit, spare comb and a set of 3 pcs of acrylic spacer. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Polarimeter	Polarimeter: Research Polarimeter, ensuring very accurate results and accepting observation tubes upto 400 mm length. Equipped with latest imported optical system. Optical design with rotating half shadow system. Also provides indication about the direction for the	01

	rotating of the material being examined. Highly accurate glass scale, divided to read angular degrees. Angular scale from 0 to 360 degrees, subdivided to 1 degree reading to 0.1 and by estimation 0.010. Supplied with high quality sodium lamp, with solid state transformer workable on 220 V AC. Supplied with all accessories required. . Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	

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Specifications of machines

Name of the item to be purchased	Specifications	Quantity
Stability chambers	Environmental/stability chambers, digital programmable microprocessor PID controller, precise temp and humidity control. Large tempered safety glass window for sample observations. Provided with safety features of hydraulic over temp protection, , low water level warning and cut off. Electrical leakage breaker. Chamber capacity up to 150 lit or higher. Heating type—forced convection by co-axial fan, temp range minus 20 to 120 degree celcius, temp accuracy +/- 0.3 degree celcius at 20 degree celcius, temp uniformity +/- 0.8 degree celcius, at 20 degree celcius. Humidity range 35 to 98 % RH, depending upon temp range, water boiler with immersed incolony sheath heater. Humidity accuracy +/- 3 % at 60 %, Humidity uniformity +/- 6 % at 60 %. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to ensure smooth operation.	06
Roller compactor	Lab model Roller compactor, max output 2 to 5 kgs/hr, roll speed 6 to 29 rpm, feed screw speed 5 to 86 rpm,	01

	roll drive motor 1.5 HP, 3, AC, Feed screw drive motor 1 HP, 3, AC. Desirable : safety clutch along with main roll drive, variable speed drive unit, safety clutch, easy cleaning, built-in panel and indicators for feeding unit, on-off/feed screw/main switch/forward/reverse switches provided, RPM indicators for roll and feed screw, emergency stop, digital RPM indicator. Scraper desirable to prevent powder sticking on the rolls. Built in granulation breaker along with a screen (different sizes) so as to collect granules. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Table top spray dryer	Laboratory tabletop/bench model, self contained unit capable of converting a solution or suspension to powder in a single operation. Small sample size, up to 50 – 100 ml desirable. Peristaltic pump delivery of liquid from sample container to the 02 fluid nozzle, mounted on the drying chamber. Compressed air from inbuilt compressor supply to the nozzle, resulting in atomization of the liquid into a fine spray. Air from the blower heated by an electrical air heater and blown through the drying chamber. Provided with a cyclone separator and glass collection bottle. Exhaust air through a ss hose into the atmosphere. The blower, electrical air heater, air compressor and the pump housed in a steel panel, with free and easy access. Air entry into the panel by filtration through fine cloth filters. Chamber and cyclone of borosilicate glass, with clamp fittings, designed for easy assembly and removal. Peristaltic pump mounting on the front of the panel with easy accessibility. Easy to clean. Panel provided with inlet temp controller, outlet temp indicator, on/off switch and indicator for blower, on/off switch and indicator for heater, on/off switch and indicator for air compressor, on/off switch and indicator for feed pump, pump speed control with LCD display, compressor air pressure control with LCD display of air pressure. Evaporation rate of water at inlet temp of 25 degree calcius approx 1500 ml/hr, air inlet temp range upto 250 degree celcius. Heater capacity 3 KWH, Spray system: 2 fluid nozzle. Spray/hot airflow:upward counter co-current, Air compressor inbuilt, Power supply 230 V, 50 Hz, 15 amp. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all	01

	aspects so as to enable smooth operation.	
Automated capsule filling machine	Automated bench top capsule filling machine for powder and pellet filling. Designed to fill gelating capsules, as per GMP standards, human touch free capsulation. Auto rejection of un-opened capsules, fully automated capsulation work cycle. Small change over time, all contact parts of SS 316. Maximum output 3000 capsules/hr. Capsule size: 00-0-1-2-3-4. Electric voltage 230 V, single phase, 50/60 Hz. AC motor rating 90 W, 1400 rpm, 230 V, 3 phase (gear box ratio 30:1), rated power 0.75 KW (including the vacuum pump). Vacuum pump capacity 6 cub. Mt per hr. Air compressor capacity 50 lit/min., working pressure 1.5 bar. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to ensure smooth operation.	01
Semi-automatic liquid filling machine	Portable, compact design, all contact parts of S.S. 304/316 quality, machine totally covered with S.S. 304, should be easy to change over, +/- 1 % volume, accuracy in single dose filling, Filling range : 2 ml to 1000 ml (with suitable change over syringe), powered with electric motor, 1 HP / 220 volts / single phase, complete in all aspects so as to facilitate smooth operation. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to ensure uniform operation.	01
Table top sieve shaker	Electromagnetic table top sieve shaker, suitable both for dry and wet sieving, mode of operation continuous and intermittent, sieve capacity upto 8 full size sieves, programmable timer from 1 – 99 min, power level programmable from 5 to 20, LCD display, noise level less than 71 dB with sieves and material at maximum power level, supplied with two full sets of sieves, working on 230 V AC, 50 Hz, 600 VA, Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Automated tablet / capsule dissolution rate test apparatus, with autosampler	SIX STAGE DISSOLUTION RATE TEST APPARATUS (AS PER IP/BP/USP) with AUTOSAMPLER: For simultaneously carrying out six dissolution tests of test tablets/ capsules/ granules **with provision of autosampling**, suitable for quality control and research laboratories in pharmaceuticals Industries. System	02 + 02

	should have SS Paddles/Baskets with Mono Shaft Design & water circulating Pump for precise temperature control in molded Water Bath System should have facility for simultaneous dispensing of tablet with low evaporation recovery lids. The System should have intelligent motorized sampling accessory & should check temperature probes to check the temperature in each vessels during the sampling interval The system should have a auto sampler having 12 Channels Peristaltic Pump for precise and accurate transfer of sample with automatic pressure setting. Sampling Range 0.5 to 25.5 ml or better, Maximum No. of Intervals should be 30 or better. The system should have alphanumeric keyboard for method parameter entry & should have validation software to validate parameters like RPM, Temperature Sampling Volume and Replenishing Volume Two buffers/media dissolution test capabilities with built-in clean function. It should have Built in Real Time clock **(RTC)** for time display and on report printout, **GLP Compliant Printout** with Sample Name, ID No., Date, Time etc for Authentication. The system should have Recovery Test Facility to study 100% Drug Dissolution in a programmed interval or split interval time. The system software should have facility to calculate %D by entering Abs. values. The compatible printer & IQ/OQ documents should be quoted along with the system. Assembled on a mild steel platform on which a constant temperature water bath made of acrylic, kept on the top of platform. Unit may incorporate one synchronous motor to drive six spindles simultaneously. A set of stirring accessories consisting of stainless steel rod with detachable gold plated basket and stainless steel stirring paddles as per IP/BP/USP standard supplied for fixing it to each spindle. A microcomputer based RPM controller and has fixed RPM setting 25, 50, 75, 100, 125 and 150. The top cover of the acrylic water bath tank to hold seven or eight numbers of round bottom flanged glass vessel, provided with acrylic top cover and having a centre hole with slit for the stirrer shaft. A 1.5 kw water heater running on all the four side of the water bath, provided with a stirrer in the water bath. Temperature and time indicator display unit thereby providing accurate digital indication of both the parameters. An indicator to show temperature and time alternately	

<table>
<tr><td></td><td>every 5 seconds, atleast PT-100 probe for temperature sensing. The vessel arrangement is three or four on front side and four on backside. Supplied with one extra stirrer shaft, basket, paddle and dissolution container. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth working.
<table>
<tr><td>RPM :</td><td>20 – 250</td></tr>
<tr><td>Resolution</td><td>1 R.P.M</td></tr>
<tr><td>Accuracy :</td><td>1 R.P.M</td></tr>
<tr><td>Temperature</td><td>Digital display 37.0 degree C to 37.2 degree C</td></tr>
<tr><td>Timer :</td><td>1 min. to 99 hrs. 59 mm. Micro-com. Based.</td></tr>
<tr><td>Power :</td><td>230 V 50 Hz 110 V 50/60 Hz (Optional)</td></tr>
<tr><td>Autosampler:</td><td>Complete assembly with peristaltic pump, tubing etc. suitable to withdraw samples from 1.0 ml to 10.0 ml, with programming and printing facilty. Compatible with working of dissolution rate test apparatus as per IP/BP/USP standards.</td></tr>
</table></td><td></td></tr>
<tr><td>Tablet / Capsule Disintegration rate test assembly</td><td>TABLET DISINTEGRATION APPARATUS (AS PER IP/BP/USP) : Specially designed for testing the disintegration time threshold for solid dosage medication. Easy installation and operation. The programmable timer to be set Hours to Seconds. The baskets are automatically parked at the top position at the end of the test and the timer gives an alarm. For the better viewing of the disintegration illumination to be provided at the base of the unit. The temperature can be set from 20° C to 50° C and controlled by the Sensor with an accuracy of ± 0.3° C. The machine should generate printout which contains date, time, calibration date, next calibration due date, test start/ finish time & online validation of beaker Temperature. The apparatus can carry out two disintegration test tablets simultaneously. 230 volts single phase A.C 50 Hz. Supplied with one extra container. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth working.
<table>
<tr><td>Temperature</td><td>10°C to 50° C</td></tr>
</table></td><td>02 + 02</td></tr>
</table>

<table>
<tr><td></td><td></td><td><table>
<tr><td>Accuracy :</td><td>0.3°C</td></tr>
<tr><td>Resolution :</td><td>0.1° C</td></tr>
<tr><td>Timer Range</td><td>99 Hrs. 59 Min. 59 Sec.</td></tr>
<tr><td>Stroke</td><td>55mm, 30 Strokes/min</td></tr>
<tr><td>Power :</td><td>230 V 50 Hz 110 v 60 Hz</td></tr>
<tr><td>Display</td><td>LCD</td></tr>
</table></td><td></td></tr>
<tr><td>Friability test apparatus</td><td>TABLET FRIABILITY TEST APPARATUS: Specially to determine the durability of tablets from the time of production to the time use, to test abrasion and impact hardness of the tablets, made of transparent acrylic drums. The drums to be equipped with a plastic blade which carries the tablets along with it up to predetermined height while the drums rotate and tablets are allowed to slide and let them slide down.
Micro-Computer based Digital display system, touch switches on the front panel of the apparatus for setting the required total number of revolution of the drum which rotate at 25 revolutions per minute. Revolution starting from minimum number 1 to required set number to 9999 displayed on the window as per pre-setting. An audible alarm sounds alarming the operator, and to display the percentage of the abrasion of the tablets on the front panel by feeding the correct data with the help of programmable touch Switches. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth working.<table>
<tr><td>Speed :</td><td>25 RPM</td></tr>
<tr><td>Accuracy :</td><td>1 RPM</td></tr>
<tr><td>Counter :</td><td>1 to 9999 revolutions</td></tr>
<tr><td>No. of Drums :</td><td>One or Two as per model</td></tr>
<tr><td>Display :</td><td>4 Digits LCD</td></tr>
<tr><td>Supply :</td><td>230 V / 50 Hz 1 Ph. (Optional 110 V 60 Hz)</td></tr>
</table></td><td>02 + 02</td></tr>
<tr><td>Tablet hardness tester</td><td>TABLET HARDNESS TESTER:
Thickness / Diameter and Hardness Measurements from one test, Stepper motor driven mechanism, Easy to calibrate and Microcontroller based system with Backlit 2 line Big character LCD Display.
Report generation and printing of report facility, the storage of results and provision of printing , completely Menu driven with suggested actions Error messages. The hardness range from 0.5 Kg to 50.0 Kg., N or Kp. A removable tray attached at the back side of the Machine, the small hand held brush provided to clean the Sample fragments. Please quote for Warranty / AMC for an extended period of at least 3 years.</td><td>02 + 02</td></tr>
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<tr>
<td></td>
<td>Complete in all aspects so as to facilitate smooth working.

<table>
<tr><td>Hardness Accuracy</td><td>+ 0.1 Kg</td></tr>
<tr><td>Diameter/Thickness Range</td><td>2.0 - 35.0 mm.</td></tr>
<tr><td>Hardness</td><td>Kilogram(Kg) ; Newtons (N); Kilopounds (Kp)</td></tr>
<tr><td>Ramp rate :</td><td>3 Degree C per minutes</td></tr>
<tr><td>Power :</td><td>230 V / 50 Hz 110 V 50/60 Hz</td></tr>
<tr><td>Diameter :</td><td>Millimeter (mm)</td></tr>
<tr><td>Test Method :</td><td>Automatic</td></tr>
<tr><td>Test Data :</td><td>Hardness, Diameter, Thickness</td></tr>
<tr><td>Display :</td><td>2 x 16 Character Backlit LCD all angle Display</td></tr>
<tr><td>Clock :</td><td>Real time Clock</td></tr>
<tr><td>Memory :</td><td>Results of 50 Tablets</td></tr>
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<td></td>
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<tr>
<td>Kalweka type all purpose machine</td>
<td>KALWEKA TYPE ALL PURPOSE MACHINE
VERTICAL MAIN DRIVE [VMD]:
Vertical Main Drive, 1 HP, 230 v, 50 Hz, 3500 Rpm single phase D.C Motor, connected to Sturdy worm Reduction Gear Box, completely Maintenance free. Variable speed, between 0 to 400 RPM, via an electronic speed controller and digital displayed. A timer in order to set time-based operations. Easily mountable and dismountable multi-attachments (followings) with the drive using two quick locking and unlocking knobs. Complete in all aspects so as to facilitate smooth working. Quotation for the following accessories to be supplied .
PLANETARY MIXER:
Suitable for mixing for pastes ointments & creams, can also be used for wet powders. A mixing paddle and Teflon scrapper, (shaped in such manner; minimum clearance with the mixing kettle) and Easy to remove kettle.
DRY GRANULATOR:
Two motor driven rollers with teeth, forcing the material to be granulated with very low proportion of powder. Sturdy attachment and can be run continuously</td>
<td>01</td>
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	for granulating tablets / slugs and pellets. *UNIVERSAL GEARING:* For different attachment like the Coating Pan, Polishing Drum, Pelletier, Cube Mixer, etc. to change the operating angles for the above attachments. An adjustment of the angle of operation from 0 to 75 degrees. *DOUBLE CONE MIXER:* Used for rapid mixing of all types of free flowing powders and granules. Uniform, and multidimensional arrangement of the mixer walls to ensure good mixing. Stainless steel vessel and secured with threaded knobs. Provision for attachment to the Universal Gearing. *SIEVE SHAKER:* Operate on the reciprocating cam principle. Provision for the adjustment of intensity of the vibration by change in the speed of the drive unit, fitted with various sieve sets according to customer's requirements and includes a sieve set. *COATING PAN:* To produce uniform coating on tablets, used with the universal Gearing and provision for different tilting angle up to 45 Degree with speed control at any desired RPM. An infrared radiator for drying the coated tablets; pan capacity Approx. 3.0 Kg. *V – BLENDER:* Used for mixing of dry powder, SS Construction. Provision for fitting with the Universal Gearing *MIXER:* Stainless steel housing with a provision of attachment to universal gearing. *POLISHING DRUM:* Felt lined inside of a metal drum for polishing coated tablets. The bottom of the drum also lined with felt. Provision for fitting with the Universal Gearing exactly like the coating pan and the cube mixer. A top cover fitted with acrylic sheet, which locks quickly in to place with closures. *BALL MILL – STANDERD MODEL:* Sturdy attachment and used for grinding crystalline materials and for the mixing of dry materials. Stainless steel jar and balls, which vary in diameter for 30 to 40 mm. The jar rest on two spindles. One of which driven spindle. The jar and balls can be sterilized in a water bath. Provision for fitting with the Universal Gearing *PELLETIZER:* To be equipped with a tilting and locking device, which	

	is easy to operate. This permits adjustment of the infinitely variable setting of the pan angle, over its whole range. adjustable scraper for the cleaning of the sides as well as the bottom of the pan. All parts made of polished stainless steel. Provision for fitting with the Universal Gearing *HOMOGNISER:* Suitable for mixing of different types of liquids with the 2 Liter capacity of Stainless bowl consisting of a Mixing Rotor Blades. Adjustable speed of the mixing of Rotor Blade from 0 to 400 RPM using electronic speed control unit. All contact parts made from stainless steel. Suitable for screwing on our Horizontal Main Drive with the help of two knobs. Provision for fitting with the Universal Gearing *LABORATORY KNEADER:* Inside of the through two z- shaped stirrers rotate towards each other at different speed. Stirrers and trough are made of stainless steel. The unit should have a capacity of 500mg to 2 kg. Provision of a double jacket for cooling or heating with water. The trough to be closed with cover made of acrylic so that the kneading operation can be watched. The trough can be tilted for emptying or cleaning. Provision for fitting with the Universal Gearing *WET GRANULATOR:* Equipped with an oscillating rotor suitable for wet granulates of various granule sizes. Sieves easily exchangeable. Rotor, sieve and all parts coming in to contact with the material to be constructed of stainless steel, supplied with one sieve each of 1.0 and 1.6 mm mesh size. The capacity of the machine to be of 25-30 kg per hour, or lesser. Provision for fitting with the Universal Gearing *POWDER MIXER [RIBBON MIXER]:* The power mixer having horizontal half round bowl open on upper side with acrylic cover and specially designed mixing blade having two stages both right and left hand ribbon type mixing blades. The left and right hand spiral with upper and lower blade is rotated to circulate the material to be mixed. The half round bowl and spiral mixing blade made out of stainless steel having bowl capacity of 5 kg. And operational capacity of 3.5 kg.[approx]. Within few minutes, it can be empty by tilting. Provision for fitting with the Universal Gearing *AGITATOR:*	

	Used for stirring, agitating and beating for all kind of liquids, emulsions, suspension and similar mixtures. Tiring action duplicates manual stirring motions. The total capacity of the kettle is 2 Liters. The working capacity approx. 1-3.5 Kg. The kettles and stirring arm are made of stainless steel. Provision for fitting with the Universal Gearing *SEMI AUTOMETIC DOSING FILLING FOR LIQUIDS:* Accurate dosing, drip free filling, fast disassembly of the pump and valves for easy cleaning, pumps and valves made from stainless steel. adjustable by 25 to 150 ml. Filling Needles made of stainless steel and supplied for any container to be filled. Different sizes of dozing pump to be supplied. The capacity of the Machine between 100 and 200 fills per hour. Filling range of this attachment is 5 ML to 200 ML. An exchangeable nozzle to be supplied with the attachment in three different diameters with opening of 2mm, 4mm, and 8mm. The capacity of charging hopper 5 Liters and all material contact parts are made from stainless steel. Provision for fitting with the Universal Gearing *SEMI AUTOMETIC DOSING FILLING FOR OINTMENTS:* Easy adjustment, quick removal of the pump and Charging Hopper for cleaning. suitable for filling drip free and accurately, ointments, creams, pharmaceuticals and cosmetic emulsion, toothpaste, oil paints, jam, ketchup, and similar products in to tubes, jars, bottles, plastic containers etc., the capacity of these attachments between 10 and 100 fills per hour. Made of stainless steel, with hopper capacity of 2 liters. Provision for fitting with the Universal Gearing. Please quote for Warranty / AMC for an extended period of at least 3 years.Complete in all aspects so as to facilitate smooth working.	
Ice making machine	Ice Flaking Machine (CFC free and puff insulated) Outer body made of ss sheet, buffed to mirror finish. Inner chamber and lid of storage bin made of ss and the unit insulated with PUFF for minimal thermal losses. Requiring plain tap water connection. Ice flaking to come out from the crushing assembly within 25 minutes or lesser, and collected in a collecting bin for ready use. Continuous availability of ice flakes till the machine is on. Automatic cut off when the collecting	01

	bin is full of ice flakes. Collecting bin fully insulated with PUFF to prevent melting of ice flakes. Well balance refrigerated system, with Kirloskar (or any other reputed brand) make hermatic sealed compressor, fan motor assembly and non-CFC gas to cool the crusher assembly for producing the ice. Crusher assembly made of brass and ss and driven by heavy duty induction motor coupled to reduction gear. Crusher assembly to be supplied with water from in-built water collecting tank, fitted with a float valve for regulating water supply. Drain at the bottom of the collecting tank to be provided. CFC free, eco-friendly compressor. To work in 220 volts, 50 Hz electricity supply. Please quote for Warranty / AMC for an extended period of at least 3 years.Complete in all aspects so as to facilitate smooth operation.	
Table top freeze dryer	Table top freeze dryer (lyophilizer) Housed in a super structure steel frame, mounted on swivel casters. Complete with Perspex see through lid, gasket and control instruments, including microprocessor based digital temperature controller and electronic digital vacuum indicator. Unit made out of hermatically sealed compressor, with 100 lit/ min direct motor drive, rotary vane type, vacuum pump, of double stage, with air ballast having ultimate vacuum of 1 X 10^{-3} torr on pumphead. Condensor trap to be non-magnetic ss fabricated, argon welded, dished bottom for complete effluent removal. Referigeration coils made up of copper bonded to outside of condenser, heavily insulated. Temperature upto minus 40 degree C, at ambient temperature of 20 degrees C maintained through a microprocessor based digital temp indicator. Vacuum drum to have 6 – or 12 – port manifold (main drying chamber) made up of ss, non magnetic grade, with Perspex top cover, CFC free and PUFF insulated. Capacity 3 – 6 litres approx. for 6 / 12 tests, with digital vacuum indicator and tranducer. Unit supplied with secondary drying unit, pre-freezing attachment, heat rack with 2 / 3 individually heated racks for accelerated freeze drying of small samples in bulk (tray, Petri dish, beakers, etc), adoptable to main drying chamber. Supplied along with automatic voltage stabilizer, 5 KVA capacity. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth	01

	operartion.	
BOD Incubator	**BOD Incubator**: A double walled convection heated unit ,of capacity >. 4 cu ft and volume. > 110 lit , having outer body constructed out of thick PCRC sheet duly pre-treated with primers and rust proofing and painted with long lasting stove enamel or elegantly powder coated and the inner chamber made of heavy gauge stainless steel sheet preferably of SS-304 grade and the gap between the walls filled with high grade mineral glass wool The unit should be provided with two doors , the inner door made of thick glass/float glass, equipped with magnetic door closer and the outer door should be made of mild steel sheet lined with stainless steel from inside, provided with lock and key arrangement. The unit should also contain multiple stainless steel shelves , air circulating fans, proper heating and cooling systems , a temperature regulating unit to control temp. from 5 to 50 degree C, with a sensitivity of +/- 0.5^{o} C or better with electronic digital temp. controller-cum-indicator and fuse ,a door operated illumination system comprising of fluorescent lights and a control panel consisting of self illuminated mains ON / OFF switch. Supplied complete with adjustable shelves, cord and plug. Provided with finned tube evaporator, and CFC free Eco-friendly compressor. Supplied along with automatic voltage stabilizer. To work on 220 volts AC supply. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate uniform operation.	1 + 1
Lab scale Fermentor	Laboratory scale fermentor, designed for multipurpose fermentation such as microbial, plant cell culture and animal cell culture. Graphic use interface provision to show state of fermentation process in real time. Peristaltic pumps installed to supply acid, base, antifoam agent and culture media. Controller displays and control parameters like pH, DO, temperature and RPM. Interchangeable culture vessel, upto 3 litres or higher, supplied with one extra culture vessel. Top driven agitator motor to keep the system clean from any contamination. Economy model preferred. Autoclavable vessel provision. Separate inlet and outlet valves, flow meters, multiple blade shaft and an air flow pipe with HEPA filters at the end. Easy access for removal of contents. Please quote for Warranty /	01

	AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
High precision hot air oven	High precision hot air oven, microprocessor controlled. Sturdy, double walled unit, outer chamber made of ms sheet, duly enamel painted. Inner chamber made up of stainless steel. Inner chamber provided with ribs for adjusting perforated shelves to convenient height. Temp controlled by microprocessor based PID Digital Temperature cum controller, from ambient to 300 degrees C with accuracy of +/- 3 degrees C. Air ventilator provided on the sides of the unit. Unit fitted with air circulation fan. To work on 220 volts AC. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth operation.	02
Table top fluid bed dryer	Table top fluid bed dryer. Designed for processing of fine powders, pellets, granules, crystals, tablets and organic solvents. Product drying, top spraying granulating and coating-in volumes ranging from 200 ml to 2 litres. Provided with interchangeable components and containers. Supplied along with at least one extra container and one extra set of filter bags. Simple to clean and maintain. Special air distributor plate for controlled product movement. Continuously operating blow-pack filter cleaning system. Air flow rate 2 cub. Meters per minutes or higher. Stat. pressure up to 5000 N per sq. mt. Motor power 1 KW or higher. Compressed air minimum 4 bar. Heating capacity upto 90 degrees C, 2.2 KW. To work on 220 V AC. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Aerosol filling assembly	Aerosol filling assembly, table – top model, for small scale simultaneous sealing and filling of liquid and compressed gaseous propellants, semi-pneumatic and hand operated system. Includes product fillers, with volume dosing system, for low or high viscosity liquids ; Crimpers to crimp a 1” valve (with or without vacuum), capable of adopting to valves of different diameters onto glass / metal bottles or special packages. Supplied with at least 1000 metal containers and 1000 glass containers, capacity 30 – 100 ml, with complet valve assembly ; and one cylinder of liquefied gas	01

	propellant. Capable of being used for filling of cosmetics and pharmaceuticals. Easy process of filling of aerosol propellant. Supplied along with pump / booster pump mechanism and all accessories required for smooth operation. Please quote for Warranty / AMC for an extended period of at least 3 years. Complete in all aspects so as to ensure smooth operation.	

(Dr. Arun Nanda)
Head of the Department

DEPARTMENT OF PHARMACEUTICAL SCIENCES
MAHARSHI DAYANAND UNIVERSITY, ROHTAK.

Specifications for analysis instruments

Equipment/ instrument	Specifications	Quantity required
Brookefield's viscometer	DV-III+ Digital Brookefield Rheometer, with continuous display of viscosity, temp, shear rate, shear stress, % torque, spindle, program status, built in RTD temp probe for sample monitoring, stand alone programming, built in math models, parallel printer, serial and analog voltage outputs, PC compatible, supplied with cone and plate accessories and complete set of all spindles, along with control and data collection software. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Karl Fischer Titration Apparatus for IP lab	Karl Fischer Titration Apparatus Technical Specifications : Dosing accuracy : Systematic error 0.1 %; Random error 0.05 %; determined according to EN ISO 8655-6 Display matrix : High contrast 8-lines LCD with 64 x 128 pixel and background illumination ; contrast Adjustable Indicator electrode : Dual platinum electrode Connection 2 x mm socket Measuring range : 100 ppm – 100 % Number of methods: 8 (3 x sample, 3 x titre, 2 x blank value) End criteria : End point delay, drift Statistic : Mean value, standard deviation and rel. relative standard deviation Keyboard : 5-pole DIN socket for PC keyboards with DIN plug RS-232-C Interfaces : Two bidirectional RS-232-C interfaces for PC/printer and balance/appliances Cylinder : 20 ml made of borosilicate glass Valve : 3/2-port directional control valve made of PTFE / ETFE To document results, the KF Titrator should have a facility to connect a printer, to one of the two	01 + 01

	RS-232-C interfaces. It should have facility to choose to print the results in standard, brief or GLP form. The GLP documentation should include the consumption, result, statistics, originally weighed quantity/submitted quantity, date, time, sample ID, titre, blank value, drift, titration period, method used, titration parameter, calculation formula with values used and an addition input field for the user. The glass cylinders should be precisely calibrated made of borosilicate glass and provided with an UV protective coating. The dosing piston is to be driven by a step motor with a resolution of 8,000 steps. All parts of the KF titrator that come into contact with liquids are to be made of chemically resistant materials. A polyester front foil should protect the keyboard and display, and the tubing is to be in FEP with UV protection. The KF Titrator should have the facility to connect a balance for automatic transfer of the weighing data and a printer at the same time. The Titrator should be supplied with titration stand with built in magnetic stirrer and pump ,titration vessel , double platinum electrode for KF titrations and starter kit. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Top pan loading electronic balances for IP & DRA lab.& PC lab	Top pan loading electronic balances : One touch, fully automatic, self-calibrating balances, capacity upto 120 g or higher, resolution 0.1 mg, or better, Pan size upto 90 mm or bigger. Easy access door, splash proof keyboard and display, advanced stabilization software provided, automatic adjustable environment setting, multiple weighing units, GLP compliant, capable of communication with PC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	02 + 02 + 02
Moisture analyzer for IP lab	Moisture analyzer : Fast and uniform heating, with 400 W halogen lamp; high reproducibility; max. sample weight capacity upto 100 g or less; weight resolution	01

	upto 0.001 g or better; moisture content display upto 0.001 %; moisture content accuracy upto 0.05 %; drying temp 50 – 200 degree C, with 1 degree C increment; measurement memory provision; measurement mode automatic mode preferred; moisture content (wet or dry base)/dry content/ratio/weight provided; heating mode standard/quick/step provision; display type large VFD; operating temp 5 – 40 degree C, less than 85 % RH; provided with self check function. Sample pan size upto 90 mm. Communicating with computer, provided with relevant latest software. Test sample requirement upto 10 g or smaller, measurement time less than 10 mins. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
Rheometer for IP lab	Rheometer : Sine wave vibro viscometer, using tuning fork vibration method. Viscosity measurement mPas, Pas, cP, P. Viscosity measurement range 0.3 mPas to 10 Pas, or higher. Temp measurement 1 – 100 degree C. Provision of selectable wide measurement range, high measurement accuracy, temp measurement, real time measurement, continuous measurement, viscosity calibration, data collection and graphing software, small sample size less than 50 ml, easy cleaning, non-newtonian sample, viscosity measurement, sol and gel measurement, flowing sample measurement, fluorescent display, foaming sample measurement. Supplied with manual, AC adaptor, CD ROM, sample cups, cables, etc. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
IR Moisture balance for PC lab	IR Moisture balance : Capacity 1mg / 0.01 %; resolution 0.01% moisture; Tare range full; repeatability 2 mg or 0.2 % (1 g sample) or 0.02 % (10 g sample); Units of measure: grams / % moisture / % solid; Interface provided; calibration automatic; drying temp range 50 -160 degree C, in increments of 1 degrees C. Please quote for all accessories required. Please quote for AMC / extended	02

	warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
IR moisture balance for IP lab	Infrared Moisture Balance : Based upon weighing sample and drying for evaporating moisture; heating system of IR bulb. Provided with a bulb for sensing temperature. Heat control knob provided to adjust heat of the bulb. Provided with one spare IR lamp and a set of at least 100 disposible pans. Working on 220 V AC, 50 Hz. Provided with on/off toggle switch, pointer adjustment screw, scale adjustment screw, etc. **COLORIMETERS (photoelectric calorimeter):** Digital photoelectric colorimeter with 8 high standard glass filters ranging from 400 to 680 nm for blood and chemical analysis. Complete with 6.8V/250mA tungstone lamp light source, selenium photocell detector and sample system of 15 mm diameter matched glass cuvettes. One 6.8V/250mA tungstone lamp extra with the equipment.	02
Automatic melting point apparatus	Modes of Detection Pharma, Thermo; Key board Soft touch membranes, Alpha Numeric; Display Back lighted 20 characters 2 lines LCD; Print Format Results and all stored programs. Compatible printer should be supplied; Furnace Design To accept atleast three capillaries at a time; Over Heating Protection Automatic Temperature cutoffs; Melting Point Detection's Audible Beep with Automatic Temperature Locking will be preferred; Measuring Method Photo-sensing; Temperature Range Ambient + 10° C to 285° C or better Resolution 0.1° C or better Accuracy ± 0.3° C Safety Cutoffs This facility should be available. Heating Rates 0.2, 0.5, 1.0, 2.0, 3.0° C/min in Pharma Mode. 5 and 10° C in Thermo Mode. Method Storage 15 Programs or better. Calibration As per USP Standard. Results Melting Point of individual channel with averaging facility. Power Supply 230 Volts AC ± 10%.	01

	Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	
High precision bp/mp apparatus for DRA lab	High precision bp/mp apparatus: Modes of Detection Pharma, Thermo; Key board Soft touch membranes, Alpha Numeric; Display Back lighted 20 characters 2 lines LCD; Print Format Results and all stored programs.compatible printer should be supplied; Furnace Design To accept atleast three capillaries at a time; Over Heating ProtectionAutomatic Temperature cutoffs; Melting Point Detection's Audible Beep with Automatic Temperature Locking will be preferred; Measuring Method Photo-sensing; Temperature Range Ambient + 10° C to 285° C or better Resolution 0.1° C or better Accuracy ± 0.3° C Safety Cutoffs This facility should be available. Heating Rates 0.2, 0.5, 1.0, 2.0, 3.0° C/min in Pharma Mode. 5 and 10° C in Thermo Mode. Method Storage 15 Programs or better. Calibration As per USP Standard. ResultsMelting Point of individual channel with averaging facility. Power Supply 230 Volts AC ± 10%. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	01
Antibiotic zone reader	Antibiotic Zone Reader : Microprocess based design. To provide for an accurate method for measuring the zone of inhibition to 0.02 mm, within range of 0 to 36 mm diameter. Magnified image of inhibition zone to be clearly visible on the prism; calibration facility. Digital LED reading. To work on 230 V AC. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	02
RO Water Treatment Plant for DRA Lab.	Reverse Osmosis based Water Treatment Plant : To yield zero conductivity water, suitable for drug formulations. Capacity upto 300 gallons per	01

	day or higher. Provided with all accessories including spms, built-in process adopter, high pressure pumps and motors, pressure regulator valves and pressure gauges for inlet and concentrates, UV ystem, system psi guage, pretreatement / softner plant. Capable of being connected to tap water and continuous opertions, to work on 230 V AC. Provided with on/off switch, float switches, low pressure switch, fused control circuit, UV light switch, lights for power/running/flushing/low pressure/tank full/pretreatment lockout/low level, etc. Please quote for AMC / extended warranty for at least 3 years. Complete in all aspects so as to facilitate smooth operation.	

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Head of the Deptt.

MAHARSHI DAYANAND UNIVERSITY ROHTAK

TERMS AND CONDITIONS GOVERNING THE TENDERS FOR THE SUPPLY OF EQUIPMENTS, INSTRUMENTS, MACHINES, LABORATORY ITEMS ETC. DURING THE YEAR-2008-2009

1. Every tender shall be accompanied y the earnest money equal to 2 % of the involved value. The earnest money should be deposited through Bank Draft in favour of the Finance Officer, M. D. University, Rohtak, payable at the State Bank of India, Maharshi Dayanand University, Rohtak.
2. The tender received without earnest money or after the due date shall not be entertained except with the special approval of the Registrar.
3. The supplies shall be executed within the time specified in the supply order which may be extended by the Registrar on other application of the supplier explaining reasons/circumstances due to which time limit could not be adhered to. In the event of the supplier failing to supply the material within time, he shall be liable to pay as compensation an amount equal to one percent or such small amount as the Registrar

may decided on the said amount of the contract, for every day that the quantity remains incomplete, provided that the entire amount of compensation shall not exceed 10 percent of the total amount of the contract. An appeal against these orders shall however lie with the Vice-Chancellor whose decision shall be final.

4. In case the contractor backs out of his contract, the earnest money deposited by him shall be forfeited besides any other action as may be considered necessary by the Vice-Chancellor.
5. All the charges including packing, forwarding and installation, taxes and other levies should be specified in the tender. The charges etc. not specified in the tender shall not be paid.
6. The quantity of material/supplies shall be subject to increase or decrease on the tendered rates. This increase or decrease shall be communicated by the University within 230 days of acceptance of the tender.
7. Supplies shall be made as per the schedule and within such time as is indicated in the supply order.
8. 100% payment will be made on receipt and inspection of goods to ensure the specifications and their good condition.
9. The rates accepted by the University shall be applicable up to 28.2.2009 and the supplier shall have to make supply during the period as and when required.
10. The tenders shall be opened by the Purchase Committee in the presence of contractor/supplier and the Committee reserves the right for negotiation thereafter if considered necessary.
11. The Registrar reserves the right to reject or accept any offer without assigning any reasons.
12. All disputes subject to Rohtak jurisdiction.
13. Guarantee / warrantee of items must be mentioned.
14. The University stands exempted from the payment of Central Excise Duty/Custom Duty. The rates be quoted keeping that fact in view. Necessary certificate will be provided by the University.

Head
Department of Pharmaceutical Sciences
M.D. University, Rohtak

Signature_____
Name of the Firm.