

List of Instruments for Chemistry Lab

Name of the instruments	Specification/Brand	Quantity
Microprocessor UV Visible Spectrophotometer and cells	See page-13	1
LABORATORY CONDUCTIVITY METER	See page-5	2
pH Meter Auto cum Manual	See page-5	2
Stopwatch	Digital	4
Viscometer	See page-6	2
DIGITAL BULK DENSITY APPARATUS	See page-6	1
Weighing Balance	capacity: 320g readability: 0.001g	4
HIGH PRECISION BALANCE DIGITAL	capacity: 100g readability: 0.0001g Accuracy 0.001g	1
Digital Automatic Polarimeter	See page-6	1
Constant Temperature Water Bath	See page-7	4
desiccator	Electric desiccator	2
Heating Mantle	See page-8	3

Hot Air Oven	See page-8	1
App. For Melting point determination	See page-9	1
Centrifuge(for qualitative analysis)	See page-9	2
Magnetic Stirrer + magnetic bid	Any brand	4
TDS Meter	See page-10	1
Vacuum Desiccators	See page-10	5
Distillation Unit	Output 4L / hour , Heavy Duty, wall hanging type to fit with clamp, electrically operated, single walled, capable of producing pyrogen free distilled water as per IP standards	1
De-ionized Water plant	Capable of producing ion free water ~20lit/hour	1
-pH cum Conductivity cum Temperature Meter (Const.temp)	See page-10	
Vortex Mixer (Quick Tube Mixer)	See page-11	1
Potentiometer(digital)with glass, calomel, silver, platinum electrode	See page-12	4

Mechanical shaker(Rotary)	See page-12	1
Microwave oven	LG MP-9889FCR Microwave Oven	2
Fridge(390 liter)	LG GL-408YSQ4 Double Door Refrigerator	2
Ac(1.5 ton)	Voltas	4
Computer	Model No: HP PRO3330MT Possessor: I5-2400 2nd gen Ram: 2GB Hard Disk: 500GB DVD RW: yes Monitor: 18.5/ Warranty – 3 years	10
Computer	Model No: 3090 590 pA Possessor: Dual core Ram: 2 GB Hard Disk:500 GB DVD RW: yes Monitor: 18.5 tft Warranty – 3 years	5
UPS	On Line Ups 5 KVA With 2 hours Backup: Numeric	1
Printer	Hp lesser jet(model 1120 plus)	4
Color Printer & Scanner & Fax	HP Color LaserJet 2840 All-in-One Printer/Copier/Scanner/Fax (Q3950A#ABA)	2
Projecter + Laptop(320GBHD, 4GB RAM, CORE i3)	Sony	2

Infrastructure Requirements for Chemistry Lab

Chemical storage rack (metallic)

chemical rack storage

1.Size:2000 x 600 x 2000 mm³

2. both side accessible

3.Layers:4

4. Capacity: 200kg/ layer

Chemical storage Cabinets metallic

17.5''W x 22.5''H x 18''D

Polyethylene Acid and Corrosive Chemical storage Cabinets

Chemical carrier cart

Tray Dryer

Stands and clamps

Fume Hood

Gas Plant (Petrol or LPG)

Working Table (with gas line, chemical racks, electric line and water line with acid proof basin)

Wooden tools- 60 nos.

Computer table for computer lab with electric and internet (LAN) connection

Revolving Chair for each computer table

Infrastructure Requerments for Class room and stuff room

Table	2 Nos
Chair	4 Nos
Bench	20 Nos
Board (white)and duster	8 nos
Green (glass) and duster	2 nos
Chalk	5 Box
White board marker (with different colour)	32 nos
Magnet	32 nos
Attendee book	10 nos
Register for chemicals	10 nos
Paper for printers	5 rim
Clips	10 box
Scisores	5 nos
Cello tape	12 nos
Glu stick	12 nos

Complete tea/ coffee sate	2 nos
Cover files	50 nos
Open files	50 nos
Plastic tray	10 nos
Pend and stand	50 nos
Short note pad	100 nos

Infrastructure Requerments for Teachers Room

Computer table with a working desk	4 nos
Revolving Chair	4 nos
Suprem chair	20 nos

Specification for **LABORATORY CONDUCTIVITY METER:**

Display : 4 digit High Brightness LED

Range : 0 to 20 mS, 0 to 200 mS, 0 to 2 mS, 0 to 20 mS, 0 to 200 mS, switch selectable

Resolution : 0.01 mS on most sensitive range

Accuracy : 0.1% \pm 1 digit

Temperature Compensation : 0 to 60 °C Manual

Temperature Coefficient : 1.3 to 2.7% / °C, Factory set for 2%.

Cell constant : 1.0 \pm 10% / 0.1 \pm 10% (to be specified with order)

Excitation : 120 Hz sine wave

Enclosure : Powder Coated Steel with Stainless Steel tilt stand.

Power : 230V AC \pm 15%, 50 Hz

Dimensions : 245(W) x 60(H) x 190(D)

Standard Accessories : Electrode stand, Instrument Dust cover, Instruction manual, Test report,

1413 mS calibration solution.

OPTION : Display in TDS units

Cell Constant 1.0 00

Cell Constant 0.1 01

Cell Constant 1.0 & 0.1 03

Add Suffix TDS for display in TDS units.

Conductivity Cells :

Glass Body, Platinised platinum electrodes, Cell Constant 1.0

Glass Body, Platinised platinum electrodes, Cell Constant 0.1

Teflon sleeved Glass Body, Platinised platinum electrodes, Cell Constant 1.0

Teflon sleeved Glass Body, Platinised platinum electrodes, Cell Constant 0.1

Specification for **pH Meter Auto cum Manual :**

- **Display:** Digital 12 mm Red LED
- **Range:** pH : 0.00 to 14.00 pH, mV 0 to +- 1999 mV.
- **Digital Temp. Indication:** 0 to 100 °C
- **Accuracy:** +- 0.01 pH, +- 1 mV, +- 1 Count.
- **Temp Compensation:** Automatic Temp Compensation, Digital temp. Indicator with Pt 100 Sensor
- **Electrode Connector:** BNC type for combined pH Electrode. in toughen Glass

Specification of Digital Viscometer:

RotorSpeed(rpm):6/12/30/60
 RotorNo.:1,2,3,4
 Measuring Range:10 ~ 10⁵ mPa · S
 Accuracy(Newtonian Fluid): ±5%

Specification of DIGITAL BULK DENSITY APPARATUS:

- Cylinder Capacity: 50ml. X 2 nos.
- No. Of Drops: Adjustable between 1 to 9999 drops.
- Display: Digital 12 mm Red LED
- Drop Height: 25mm approx.
- Dimension: 350 W X 270 D X 280mm H
- Weight: 11 kg. Approx.
- Optional: Measuring Cylinder- 2 Nos.

Specification for Digital Automatic Polarometer:

Measuring Range - 45° to +45°
 Accuracy +0.02°
 Reproducibility +0 .01°
 Resolution 0.005°
 Light Source Soudium Lamp
 Optical Wavelengths 589.44 nm
 Stable Time 5minutes
 Round Cuvette 100 or 200 mm
 Power Requirements 220 VAC / 50Hz

Range of measurement Angular Scale:	+45Â° to -45Â°
Minimum value in (Angular Scale):	0.001Â°
Range of measurement (Sugar Scale):	+120Â° to -120Â°
Minimum value in Sugar Scale:	0.01Â°
Repeatability: sample transmittance:	>1%

Minimum sample transmittance:	1%
Measuring:	>Specific rotation, >Optical rotation, >International Sugar Scale >Concentration.

Specifications of Constant Temperature Water Bath :

■ Performance		
Circulation Type	Water Jet Pump Circulation (Closed System Circulation)	
Operating Temp. Range	Room Temp. +15 to 100deg.C	Room Temp. +15 to 200deg.C
Temp. Adjustment Accuracy	±0.01 (at 20deg.C)	
Temp. Indication Unit	0.1deg.C	
Circulation Pump	Water Jet Pump Circulation	
Pump Max. Flow (50/60Hz)	14/15L/min.	
Pump Max. Lift (50/60Hz)	2.8/3.4m	
Heater	1kW	1.2kW
Surrounding Operation Temp. Range	5 to 30deg.C	
■ Controller		
Temp. Control System	PID Control by Micro Computer	
Temp. Setting/Display	Digital Setting, LED Display, Fluorescent Display Tube Type Guide Display	
Temp. Sensor	Pt Sensor, Pt100Ω A-class (for Temp. Control)+ K-thermocouple (for Overheat Prevention) Double Sensor	
Timer	1 min. to 99hrs. 59min., 100 to 999.9hrs.Timer/Time Changeable Function	
Operation Function	Fixed Temp. Operation, Automatic Stop/Start Operation at Setting Time, Program Operation (Max. 99 steps, Repeating, Gradient Operation), Programming Automatic Start Operation, Temporary Operating-Stop Function.	
■ Standard		

Water Bath Dimension	W239 x D299 x H200mm	
Water Bath Capacity	13L	
Effective Water Bath Dimension	W227 x D150 x H200mm (Frontage Corner R34)	
External Dimension	W310 x D410 x H620mm (Water Bath Height)	
Power Source	AC100V, 50/60Hz, 11A	
Weight	Approx. 16kg	

Specifications for Heating mental:

Voltage : 230 Volts AC Supply

Outer : Made of Aluminium

Inner : Fiber Glass Yarn Thread

Insulation : Glass Wool

Specification for Hot Air Oven:

Heat Circulation : Horizontal Fan Assisted

Usable Volume : 3.375 cubic feet

Capacity : Up to 4 perspiroMETER Units

No. of Shelf's : 2 Stainless Steel Shelves (Detachable)

Maximum Temperature : Ambient to 250 °C

Least Count : 1 °C

Accuracy : + 2 °C

Heater Capacity : 750 watt x 2 Heaters = 1500 Watt

Electric Supply : 220 + 10% Volt. 50 Hz Single Phases. AC.

Rate of Heating Thermostat (19) 20 % : 1° C Per 1 ½ Minute

Thermostat at (19) 50 % : 2° C Per Minute

Thermostat at (19) 100 % : 3° C Per Minute

Overall Dimensions of the UNIT : 550 (L) x 700 (W) x 820 (H) mm.

21.5" (L) x 27.5" (W) x 32.5" (H) Inch.

Net weight of the unit : 84 kg. (185 lbs)

Specification of App. For Melting point determination :

Positions for melting point capillaries	3
Positions for boiling point capillaries	1
Storable methods for melting point	50
Storable methods for boiling point	50
Magnification of lens	2.5 x
Display	Colour, TFT, 320x240, 3.5"
Determination temperature range	ambient + 10°C to 400°C
Temperature resolution	0.1°C
Accuracy melting point at 0.5°C/min up to 250°C	
250 to 400°C	+/- 0,3°C +/- 0,3°C to +/- 0,5°C
Repeatability melting point at 0.5°C/min	+/- 0,1°C
Accuracy boiling point at 1.0°C/min up to 400°C	+/- 0,5°C
Repeatability boiling point at 1.0°C/min	+/- 0,3°C
Temperature gradients, °C/min	0.1, 0.2, 0.5, 1, 2, 5, 10, 20
Head-up time (50°C-350°C)	~ 4 min
Cool-down time (350°C-50°C)	~ 13 min
Electrical supply	100-240V (+/-10%), 50 - 60 Hz
Power consumption	150W

Specification of Centrifuge(for qualitative analysis) :

Max. speed	4000rpm
Capacity	6× 20ml
Max. RCF	1790*g
Power source	220V 50Hz 110V 60Hz
Time range	0-30min

Specification of TDS Meter:

Description	TDS Meter
Range	0~50.0 ppm 0~500 ppm 0~5.00 ppt
Resolution	0.1/1ppm 0.01ppt
Accuracy	±1%FS

Vacuum Desiccators:

Product Type	Vacuum Desiccator	
Exterior Dimensions	" W	9
	" H	10.25
	" D	7.5
Diameter	7.75" (197 mm)	
Flange OD	9.0625" (230 mm)	
Clearance above plate	6.1875" (157 mm)	
Material	polycarbonate cover, polypropylene body	
Plate size	190 mm	

**Specification of pH cum Conductivity cum Temperature Meter:
Digital Ph Conductivity & Temp. Meter**

Digital Display 3 digit LED.
 Power 220V AC 10% 50Hz.

PARAMETERS

Range 0-14pH.
 Resolution 0.01pH.
 Accuracy 0.02 pH1 digit.
 Input Impedance >1012 ohms.
 Temperature Compensation 0-100C (manual).
 Slope Correction . 80 to 120%

CONDUCTIVITY

Range 0 to 20mS/cm in 5

Specification of Vortex Mixer (Quick Tube Mixer)

technical data	Motion	Orbital
	Speed range (rpm)	0 - 3,000
	Speed Setting / Display	Analog / Scale
	Speed Control type	Adjustment Knob
	Orbit (mm, dia)	4
	Operating mode	Touch, 2-type continuous
	Motor rating input / output (W)	12W / 6W
	Motor type	BLDC (Brushless Direct Current) motor
	Drive system	Eccentric drive & support arm with vibrating motion
General data	Exterior dimension without Attachment(mm/inch, WxDxH)	154x210x83 / 6.06x8.27x3.27
	Electrical requirements	DC 24v & 1A power adapter, free with voltage and frequency (AC 100v - 240v, 50/60Hz)
	Max. temp	80°C
	Permissible ambient temperature (°C)	+5 ~ 40°C
	Permissible relative humidity (%)	up to 80%
	Max. supportde load incl. attachment (kg)	0.5
	Safety Device	Self-resetting / Current limit protection
Protection class acc. DIN EN 60529	IP 42	

	Net weight (kg / lbs)	3.5/7.72
	Gross weight carton approx. (kg / lbs)	4.12/9.08
	Packing size (W X D X H) (mm/inch)	325x225x130/12.8x8.86x5.12
Material	Body, Tube & Micro-plat tray	Polypropylene
	Rubber platform	Silicone rubber
	Test Tube sponge rack	Polyethylene

Specification of Potentiometer :

RANGE	0 to $\pm 199.9\text{mV}$ 0 to $\pm 1999\text{ mV}$
RESOLUTION	$\pm 0.1\text{mV}$
REPEATABILITY	$\pm 1\text{mV}$
ACCURACY	$\pm 1\text{mV} \pm 1\text{ digit}$
INPUT IMPEDANCE	$> 1012\text{ ohms}$
OPERATING TEMPERATURE	10°C to 45°C
DISPLAY	3 ½ Digit 0.5" seven segment LED display with auto polarity indication
POWER	230V $\pm 10\%$ AC, 50 Hz.
DIMENSIONS	275 X 175 X 76mm
WEIGHT	2.5 Kg (Approx.)
ACCESSORIES	Platinum Electrode, Reference Electrode, Glass Electrode and Silver Electrode-1No each. Buffer Tablets 4 pH & 7 pH Operation Manual Electrode Stand and Dust Cover.

Specification of Mechanical Shaker(rotary) :

Scientifically designed for mixing, diffusion, VDRL test & development of cultures.

Heavy base & compact design for continuous use.

Heavy Removable/Interchangeable S.Steel platform with lotus clamp to hold various capacity conical flask.

Digital control with RPM Indicator.

Power 230V, AC, 50Hz, Mains.

Specification of UV - VIS Spectrophotometer:

Specifications

Wavelength Range	190 to 900nm (performance guaranteed range). Extendable to 1,100nm through the use of the optional photomultiplier. (The measurable range maybe restricted in the shorter wavelength side depending on the type of photomultiplier used.)
Monochromator System	UV-2450: Single monochromator with a high-performance blazed holographic grating in the aberration corrected Czerny-Turner mounting.
	UV-2550: Double monochromator with a high-performance double-blazed holographic grating in the aberration corrected Czerny-Turner mounting.
Resolution	0.1nm
Spectral Bandwidth	0.1, 0.2, 0.5, 1, 2 and 5nm
Wavelength Accuracy	±0.3nm
Wavelength Repeatability	±0.1nm
Wavelength Scanning Speed	FAST, MEDIUM, SLOW, and SUPER SLOW
Light Source	50W halogen lamp (2,000 hours of life) and D ² lamp (500 hours of life)
Light Source lamp switching	Selectable between 282nm and 393nm
Stray Light	UV-2450: Less than 0.015% at 220nm and 340nm UV-2550: Less than 0.0003% at 220nm and 340nm
Detector	Photomultiplier R-928
Photometric System	Double beam, direct ratio system with dynode feedback

Photometric Mode	Absorbance (Abs.), transmittance (%), reflectance (%) and energy (E).
Photometric Range	Absorbance: -4~5 Abs. (0.001 Abs. increments) Transmittance: 0~999.9% (0.01 increments) Reflectance: 0~999.9% (0.01% increments)
Photometric Accuracy	± 0.002 Abs (0~0.5 Abs), ± 0.004 Abs (0.5~1 Abs), ± 0.3 T (0~100% T) (all determined with NIST 930D standard filter)
Photometric Repeatability	0.001 Abs (0~0.5 Abs), ± 0.1 % T
Baseline Correction	Selectable with storage in firmware
Baseline Flatness	Within ± 0.001 Abs. (excluding noise, 2nm slit width and SLOW wavelength scanning speed)
Drift	Less than 0.0004 Abs. per hour (after 2 hours warm-up)
Dimensions	570 (W) x 660 (D) x 275 (H) (mm)
Weight	36kg
Power Supply	AC 100V/120V/220V/240V, 50/60Hz 250VA (switch-selectable)