

**Laboratory** Quality Solutions (India), B-451/452, 2<sup>nd</sup> Floor, Nehru Ground, Faridabad, Haryana

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2717 (in lieu of C-0306, C-0402 & C-0495)

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**Validity** 19.05.2018 to 18.05.2020

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>ELECTRO-TECHNICAL CALIBRATION</u></b>				
<b>I.</b>	<b>MEASURE</b>			
1.	DC Current <sup>#</sup>	100 $\mu$ A to 1 mA 1 mA to 1 A 1 A to 9 A	1.25 % to 0.50 % 0.50 % to 0.30 % 0.30 % to 0.2 %	Using 6 ½ DMM Model-8846- A Make: Fluke with Multifunction Calibrator
2.	AC Current <sup>#</sup>	<b>50 Hz</b> 100 $\mu$ A to 10 mA 10 mA to 1 A 1 A to 9 A	0.35 % to 0.52 % 0.52 % to 0.30 % 0.30 % to 0.80 %	Using 6 ½ DMM Model-8846- A Make: Fluke with Multifunction Calibrator
3.	DC Voltage <sup>#</sup>	1 mV to 90 mV 100 mV to 100 V 100 V to 900 V	0.10 % to 0.001 % 0.01 % to 0.04 % 0.04 % to 0.01 %	Using 6 ½ DMM Model-8846- A Make: Fluke with Multifunction Calibrator
4.	AC Voltage <sup>#</sup>	<b>50 Hz</b> 100 mV to 90 V 100 V to 900 V	0.30 % to 0.12 % 0.12 % to 0.13 %	Using 6½ DMM Model-8846- A Make: Fluke with Multifunction Calibrator
5.	DC Resistance (2 Wire) <sup>#</sup>	1 $\Omega$ to 10 $\Omega$ 10 $\Omega$ to 100 $\Omega$ 100 $\Omega$ to 100 k $\Omega$ 100 k $\Omega$ to 2 M $\Omega$ 2 M $\Omega$ to 200M $\Omega$	0.36 % to 0.05 % 0.05 % 0.05 % 0.05 % to 0.13% 0.13 % to 2.4 %	Using 6 ½ DMM Model-8846- A Make: Fluke
6.	Inductance <sup>#</sup>	<b>1 kHz</b> 100 $\mu$ H to 100 mH 100 mH to 1 H	1.70 % to 1.24 % 1.24 %	Using LCR-Q Meter Make:AplabModel:4910

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

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7.	Capacitance <sup>#</sup>	1 kHz 1 nF to 1 $\mu$ F	5.22 % to 1.75 %	Using 6 ½ DMM Model-8846- A Make: Fluke
8.	Frequency <sup>#</sup>	50 Hz to 200 kHz	1.16 % to 0.06 %	Using 6 ½ DMM Model-8846- A Make: Fluke
9.	AC High Voltage <sup>#</sup>	50 Hz >1 kV to 5 kV >5 kV to 10 kV	3.61 % to 0.93 % 0.93 % to 2.54 %	Using High Voltage Probe (Fluke) with DMM
10.	DC High Voltage <sup>#</sup>	>1 kV to 5 kV >5 kV to 10 kV	6.35 % to 2.80 % 2.80 %	Using High Voltage Probe (Fluke) with DMM
11.	Energy Meter <sup>#</sup>	Vref=240 v, 50 Hz ( 3 p4w, 1 p2 w) (10A1A(2A) Basic current = 500 A (Clamp on CT) for Direct mode UPF	0.30 %	Using Accu Check Calibrator (LT+)
<b>II.</b>	<b>SOURCE</b>			
1.	Time-Interval <sup>#</sup>	1 s to 999 s	6.53 % to 0.013 %	Using STD. Digital Timer Make: PNJ
2.	Temperature -Simulation <sup>#</sup> (Indicator/Controller, PID, Data Logger, Scanner, Recorder)			
	PT-100/ RTD, Thermocouple	(-) 200 °C to 550 °C	1.3 °C	Using Universal Calibrator by Simulation Method (Radix)
	J-Type	(-) 100 °C to 750°C	1.33 °C	
	R-Type	100 °C to 1760 °C	1.6 °C	
	K-Type	(-) 100 °C to 1372 °C	1.33 °C	
3.	High Current (DC) <sup>#</sup>	>10 A to 90 A >90 A to 900 A	2.7 % to 1.42 % 1.42 % to 1.39 %	Using Multifunction Calibrator with current coil

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4.	High Current (AC) <sup>#</sup>	<b>50 Hz</b> >10 A to 90 A >90 A to 800 A	3.6 % to 3.0 % 3.0 % to 3.49 %	Using Multifunction Calibrator with current coil
5.	Resistance <sup>#</sup> (4 & 2 Wire)	0.001 $\Omega$ 0.01 $\Omega$ 0.1 $\Omega$ 1 $\Omega$ 10 $\Omega$ 100 $\Omega$ 1 k $\Omega$	1.73 % 1.40 % 0.51 % 0.10 % 0.27 % 0.30 % 0.03 %	Using Std. Resistance Box (Discrete Values)
6.	Resistance <sup>#</sup> (4 & 2 Wire)	2M $\Omega$ 20M $\Omega$ 200 M $\Omega$	0.33 % to 1.90 % 1.90 % to 1.04 % 1.04 %	Using Std. Resistance Box (Discrete Values)
7.	Capacitance <sup>#</sup>	<b>1 kHz</b> 1 nF to 10 nF 10 nF to 100 nF 100 nF to 1 $\mu$ F	3.0 % to 1.25 % 1.25 % to 0.99 % 0.99 % to 2.10 %	Using Std. Capacitance Box (Discrete Values) By Direct Method

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<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I. DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)</b>				
1.	Dial Indicator (Plunger) <sup>§</sup> L.C.: 0.001 mm L.C.: 0.01 mm	0 to 25 mm 0 to 100 mm	1.40 $\mu$ m 2.30 $\mu$ m	Using LMM
2.	Dial Indicator-Lever Type <sup>§</sup> L.C.: 0.01 mm L.C.: 0.001 mm L.C.: 0.002 mm	0 to 1.0 mm 0 to 0.14 mm 0 to 0.60 mm	4.40 $\mu$ m 1.90 $\mu$ m 2.00 $\mu$ m	Using LMM
3.	Internal Micrometer Stick Micrometers <sup>§</sup> L.C.: 0.001 mm	50 mm to 500 mm	7.00 $\mu$ m	Using Gauge Blocks (0-Grade) with acc. + Caliper Checker
4.	External Micrometer (Digital/Plain/Analog / Blade/Pitch /Pointed Flange/ Groove) <sup>§</sup> L.C.: 0.001 mm	0 to 25 mm 0 to 150 mm	0.80 $\mu$ m 1.60 $\mu$ m	Using Gauge Blocks (0-Grade), Optical Flat , Set of 4 Optical Parallels
	L.C.: 0.01 mm	> 150 mm to 1000 mm > 1000 mm to 2000 mm	9.5 $\mu$ m 26.0 $\mu$ m	Using Length Bar, Optical Flat, Set of 4 Optical Parallels
5.	Depth Micro Meter <sup>§</sup> L.C.: 0.001 mm	0 to 25 mm 0 to 150 mm	2.5 $\mu$ m 3.9 $\mu$ m	Using Length Bar, Gauge Blocks (0-Grade), Dial Indicator (Lever), Surface Plate, Height Gauge (For Holding)

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6.	Micrometer Head <sup>s</sup> L.C.: 0.001 mm	0 to 50 mm	2.4 $\mu$ m	Using Gauge Blocks (0-Grade), Electronics Probe with Holding Device Optical Flat
7.	Micrometer Setting Rod <sup>s</sup>	25 mm to 150 mm	1.3 $\mu$ m	Using LMM
		>100 mm to 200 mm	2.0 $\mu$ m	Using LMM + Slip Gauges
		>200 mm to 500 mm	5.4 $\mu$ m	Using Length Bar, Gauge Blocks- O Grade Surface Plate & Electronics Probe & Height Gauge (for Holding)
		>500 mm to 1000 mm	7.3 $\mu$ m	
8.	Metric Steels/ Woven Metallic/ Fiber Tapes <sup>s</sup>	0 to 50 meter	200 $\mu$ m $\sqrt{L/1000}$ $\mu$ m (L is in mm)	Using Scale & Tape Calibration Unit
9.	Pie Tape <sup>s</sup>	15 mm to 320 mm	200 $\mu$ m $\sqrt{L/1000}$ $\mu$ m (L is in mm)	Using Scale & Tape Calibration Unit
10.	Bore Gauges <sup>s</sup> (2 -Point) Transmission Accuracy Check) L.C.: 0.001 mm	Upto 2 mm	1.30 $\mu$ m	Using ULM
11.	Three Pin Micrometer <sup>s</sup> L.C.: 0.001 mm	15 mm to 650 mm	3.90 $\mu$ m	Using Set of Ring Gauges

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12.	Height Gauge <sup>s</sup> (Vernier, Dial, Digital) L.C.: 0.01 mm	0 to 300 mm	9.0 $\mu$ m	Using Caliper Checker , Surface Plate, Dial Indicator (Lever)
	L.C.: 0.01 mm	0 to 600 mm	9.2 $\mu$ m	Using Caliper Checker , Surface Plate, Dial Indicator (Lever)
	L.C.: 0.01 mm	0 to 1000 mm	9.7 $\mu$ m	Using Length Bar , Surface Plate, Dial Indicator (Lever)
13.	Vernier Depth Gauge <sup>s</sup> L.C.: 0.001 mm	0 to 200 mm	7.9 $\mu$ m	Using Length Bar Gauge Blocks (0-Grade), Lever dial Surface Plate & Holding Fixture
14.	Dial Thickness Gauge <sup>s</sup> L.C.: 0.01 mm	0 to 50 mm	1.4 $\mu$ m	Using Gauge Blocks (0-Grade)
	L.C.: 0.1 mm	0 to 100 mm	11.5 $\mu$ m	Using Gauge Blocks (0-Grade)
	L.C.: 0.001 mm	0 to 12 mm	0.8 $\mu$ m	Using Gauge Blocks (0-Grade)
15.	Test Sieves <sup>s</sup> (Aperture Size)	0.04 mm to 4.0 mm	5.6 $\mu$ m	Using Profile Projector
		4.0 mm to 125 mm	23.0 $\mu$ m	Using Digital Caliper
16.	Dial Caliper <sup>s</sup> (External) L.C.: 0.01 mm	0 to 50 mm	1.4 $\mu$ m	Using Gauge Blocks (0-Grade)

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
17.	Height Master <sup>\$</sup> Pitch Block Accuracy	0 to 600 mm	7.5 $\mu$ m	Using Linear Height-2D+ Surface plate +O-Grade Slip Gauge Set
18.	Cylindrical Setting Standards <sup>\$</sup>	0.5 mm to 100 mm > 100 mm to 200 mm	1.3 $\mu$ m 2.0 $\mu$ m	Using LMM
19.	Microscope <sup>#</sup> L.C.: 0.1 mm L.C.: 0.01 mm	0 to 1 mm	7.9 $\mu$ m	Using Glass scale
20.	Linear / Electronics 2 D Height Gauge <sup>#</sup> L.C.: 0.0001 mm	0 to 600 mm	5.6 $\mu$ m	Length Bar, Gauge Block (Slip Gauges) "O" Grade Surface Plate, Master Cylinder
21.	Surface Plate <sup>#</sup> Comparator Stand (Granite & Cast Iron) Flatness Deviation	Upto 6000 mm x 6000 mm Upto 300 mm x 300 mm	$0.7 \sqrt{\frac{L+W}{125}} \mu$ m (L & W is in mm)	Using electronics level
22.	Straight Edge <sup>#</sup> (I-Section) Straightness Parallelsim	Up to 6000 mm x 50 mm	$0.7 \sqrt{\frac{L+W}{125}} \mu$ m (L & W is in mm)	Electronics Level
23.	Engineer's Square / Cylindrical Square <sup>\$</sup> Squareness	Up to 600 mm	10.1 $\mu$ m	Surface plate , Master Cylinder, Grade-O Slip Gauge
24.	Angle Plate / Box Angle Plate <sup>\$</sup> Flatness Parallelsim Squareness	Up to 450 mm x 300 mm x 250 mm	12.8 $\mu$ m 13.0 $\mu$ m 10.1 $\mu$ m	Surface plate , Dial indicator ( Lever), Height Gauge Master Cylinder , Jacks

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25.	Plain/ Magnetic V – Block <sup>§</sup> Flatness Parallelism	Up to 200 mm	5.0 $\mu$ m 8.0 $\mu$ m	Using Surface plate , Dial indicator (Lever), Test Mandrels, Cylindrical Work piece) Height Gauge for Holding
26.	Test Mandrels – Straight <sup>§</sup> Variation in Diameter Total Run out	Up to 150 mm	2.0 $\mu$ m 8.0 $\mu$ m	Using Bench Center Dial Indicator (Lever), Plunger Dial, Comparator Stand
27.	Bench Centre <sup>#</sup> Parallelism Coaxiality (Run out)	Up to 3000 mm	9.0 $\sqrt{L}/150$ $\mu$ m (L is in mm) 5.5 $\sqrt{L}/150$ $\mu$ m (L is in mm)	Using Test Mandrels Dial indicator (Lever)
28.	Gear Rolling Tester <sup>#</sup>	Up to 500 mm	3.7 $\mu$ m	Using Gauge Blocks (0-Grade)+ Plunger Dial
29.	Angle Gauges <sup>§</sup>	0° to 180 °	10 sec. of arc	Using Sine Bar , Electronics Probe Dial indicator (Lever), Gauge Blocks (0-Grade) , Surface Plate
30.	Bevel / Degree Protractors <sup>§</sup> L.C.: 0.01 ° / 5 minutes	0° to 180 ° to 0°	3.8 minutes of arc	Using Angle Gauge Block set, Dial indicator (Lever), Surface Plate , Height Gauge, Master Cylinder
31.	Sine Bar <sup>§</sup> Angular Measurements	Up to 300 mm	10 sec.	Using Angle Gauge Block set, Electronics Probe, Dial indicator (Lever), Surface Plate, Height Gauge, Gauge Blocks (0-Grade)

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32.	Combination Set <sup>§</sup> L.C.: 1 °	0° to 180 ° to 0°	36 min.of arc	Using Angle Gauge Block set, Profile Projector
33.	Sprit Level <sup>§</sup> L.C.: 0.02 mm/mtr	Up to 300 mm (Base Length)	6.2 $\mu$ m/mtr	Using Robust Tilting Table, Electronics Level Dial Indicator (Lever), Height Gauge, Surface Plate
34.	Electronics Level <sup>§</sup> L.C.: 10 $\mu$ m/m	Up to 10 mm/mr	5.80 $\mu$ m/mtr	Using Robust Tilting Table, Electronics Level
35.	Radius Gauge <sup>§</sup>	0.6 to 25 mm	8.6 $\mu$ m	Using Profile Projector
36.	Thread Pitch Gauge <sup>§</sup> Pitch Flank Angle	0.25 mm to 6.0 mm Up to 60°	5.8 $\mu$ m 2.4 minutes of arc	Using Profile Projector
37.	Feeler Gauge/ Foils <sup>§</sup>	Up to 3 mm	2.0 $\mu$ m	Using LLM
38.	Coating <sup>§</sup> Thickness Gauge L.C.: 0.1/1 mm	0 to 0.8 mm	4.0 $\mu$ m	Using Master Foils
39.	Hegman Gauge <sup>§</sup>	Upto 100 micron	2.1 $\mu$ m	Using Electronics Probe, Surface Plate
40.	Air Gauge Unit <sup>#</sup>	+/-100 micron	2.1 $\mu$ m	Using Setting Ring Gauge
41.	Thread Ring/Wear Checking Ring Gauge <sup>§</sup> (Effective dia Only)	Dia. 3 mm to 100 mm	2.8 $\mu$ m	Using LMM

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42.	Air Ring Gauge Set <sup>§</sup>	3mm to 100 mm	2.7 $\mu$ m	Using LMM
43.	Plain Plug Gauges <sup>§</sup>	1 mm to 270 mm	2.8 $\mu$ m	Using LMM
44.	Snap Gauge <sup>§</sup>	3 mm to 180 mm	2.8 $\mu$ m	Using LMM
45.	Measuring Pin <sup>§</sup>	0.1mm to 20 mm	1.8 $\mu$ m	Using LMM
46.	Thread Plug /WCP Gauges <sup>§</sup> Effective Diameter	1 mm to 200 mm	2.3 $\mu$ m	Using LMM
47.	Plain Ring Gauge / Master Ring Gauges <sup>§</sup>	3 mm to 180 mm	2.9 $\mu$ m	Using LMM
48.	Ultrasonic Thickness Gauge <sup>§</sup> L.C.: 0.001 mm	0 to 100 mm	4.1 $\mu$ m	Using Gauge Blocks (0-Grade)
49.	Calipers (Vernier, Dial,Digital) <sup>§</sup> L.C.: 0.01 mm	0 to 300 mm	12.5 $\mu$ m	Using Caliper Checker , Gauge Block (0-Grade), Micrometer
		0 to 600 mm	13.2 $\mu$ m	
	L C.: 0.01 mm L. C.: 0.02 mm	0 to 1000 mm 0 to 1000 mm	12.3 $\mu$ m 16.6 $\mu$ m	Using Length Bar , Gauge Block (0-Grade), Micrometer
	L. C.: 0.02 mm	0 to 1800 mm	28.40 $\mu$ m	Using Length Bar , Gauge Block (0-Grade), Micrometer
50.	Metric Steel Scales <sup>§</sup>	0 to 2000 mm	200 $\sqrt{L/1000}$ $\mu$ m (L is in mm)	Using Scale & Tape calibration unit

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51.	Dial Caliper (Internal) <sup>\$</sup>	10 mm to 150 mm	8.3 $\mu$ m	Using Digital Micrometer
52.	Gauge Block Accessories <sup>\$</sup> Flatness Parallelism	Up to 250 mm	0.3 $\mu$ m 2.6 $\mu$ m	Using Optical Flat , Surface Plate , Electronics Probe
53.	Caliper Checker/ Check Master <sup>\$</sup>	0 to 600 mm	8.0 $\mu$ m	Using Linear Height-2D+ Surface plate
<b>II.</b>	<b>DIMENSION (PRECISION INSTRUMENTS)</b>			
1.	Gauge Blocks (Slip Gauges) <sup>\$</sup>	0.5 mm to 25 mm >25 mm to 50 mm >50 mm to 100 mm	0.25 $\mu$ m 0.35 $\mu$ m 0.70 $\mu$ m	Using Gauge Block (Slip Gauges) "K "Grade & Gauge Block Comparator
2.	Length Bar <sup>\$</sup>	25 mm to 150 mm	1.3 $\mu$ m	Using LMM
		>100 mm to 200 mm	2.0 $\mu$ m	Using ULM+Slip gauges
		>200 mm to 500 mm >500 mm to 1000 mm	5.4 $\mu$ m 10.3 $\mu$ m	Using Length Bar, Gauge Blocks- O Grade Surface Plate & Electronics Probe & Height gauge (for Holding)
3.	Profile/ Form Gauge <sup>\$</sup> Linear Angle	Up to 200 mm Up to 60°	5.8 $\mu$ m 2.4 minutes of arc	Using Profile Projector
4.	Gauge Block Comparators <sup>#</sup>	0 to 100 mm	0.10 $\mu$ m	Using Gauge Block (Slip Gauges) "K " Grade

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5.	Dial Calibration Tester <sup>§</sup> L.C.: 0.001 mm	0 to 25 mm	2.20 $\mu$ m	Using Electronics Probe & Gauge Blocks (0-Grade)
6.	Electronics Probe <sup>§</sup> (Comparator) L.C.: 0.01/0.1micron	0 to 25 mm	1.6 $\mu$ m	Using Gauge Block (Slip Gauges) "O" Grade & Surface Plate
7.	Profile Projector <sup>#</sup> Position (Linear), L.C.: 0.001 mm Angle L.C.: 1 sec Magnification (10 x-100 X)	0 to 200 mm 0 to 360 ° 10 X to 100 X	2.2 $\mu$ m 9 sec. $\mu$ m 0.02 %	Using Glass scale , Angle gauges , Gauge Blocks (0-Grade) & Digital caliper
8.	Roughness Master <sup>§</sup> Ra value	Ra -3.20	0.17 $\mu$ m	Using Surface Roughness Tester
9.	Surface Roughness Tester (Portable) <sup>§</sup> Ra = 3.2 , Ra = 2.9 (Two Point only)	Ra -3.20	0.04 $\mu$ m	Using Roughness Master
10.	Optical Flat <sup>§</sup> Type A Flatness	Up to 50 mm	0.11 $\mu$ m	Using Master Flat & Monochromatic Light Source
11.	Optical Parallel <sup>§</sup> S-Type B Flatness Parallelism	Up to 50 mm	0.11 $\mu$ m 0.11 $\mu$ m	Using Master Flat, Monochromatic Light Source , Two Probe Comparator
12.	Spline Plug Ring Gauge – Diameter <sup>§</sup> Over Pin	Dia. 10 mm to 100 mm	3.50 $\mu$ m	Using LMM+ Measuring Pins

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13.	ULM/ LMM <sup>#</sup>	0 to 100 mm	0.70 $\mu$ m	Using K-Grade Slip Gauge Set
<b>III.</b>	<b>UTM, TENSION CREEP AND TORSION TESTING MACHINE</b>			
1.	Uniaxial Static Testing M/C* (CTM, UTM, TTM, Force Gauge) Compression Tension	20 kN to 1000 kN 1 N to 50 k N	0.85 % 0.85 %	Using Force Proving Instruments Using Load cell
<b>IV.</b>	<b>HARDNESS TESTING MACHINES</b>			
1.	Verification of Rockwell Hardness Tester*	HRA HRB HRC	1.0 HRA 1.2 HRB 1.0 HRC	Using Std. Hardness Blocks
2.	Verification of Brinell Hardness Tester*	HBW 10/3000	2.0 %	Using Std. Hardness Blocks
3.	Verification of Vickers Hardness Tester*	HV-5	3.0 %	Using Std. Hardness Blocks
<b>V.</b>	<b>DUROMETER</b>			
1.	Rubber Hardness Tester <sup>\$</sup>	Shore-A Shore-D	0.58 Shore A 0.58 Shore D	Using Precise Balance with Attachment
<b>VI.</b>	<b>TORQUE GENERATING DEVICES</b>			
1.	Torque Wrenches / Torque Screw Driver <sup>\$</sup> Type -1 Class, B,C,D,E & Type -2 Class A, B, D, E	1 Nm to 1000 Nm	3.82% rdg	Using Torque Transducers and Indicator Using Digital Torque Wrench Calibration System

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

**Laboratory** Quality Solutions (India), B-451/452, 2<sup>nd</sup> Floor, Nehru Ground, Faridabad, Haryana

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<b>VII.</b>	<b>PRESSURE INDICATING DEVICES</b>			
1.	Hydraulic Pressure Pressure Gauges/ Switches/ Transmitters/ Transducers <sup>#</sup>	0 to 200 bar 0 to 1000 bar	1.00 bar 4.86 bar	Using Digital Pressure Gauge with Hydraulic Comparator
2.	Pneumatic Pressure Pressure Gauges/ Switches/ Transmitters/ Transducers/ Magnehelic Gauge/ Manometer <sup>#</sup>	0 to 0.34 bar	0.006 bar	Using Digital Manometer with Air Pump
3.	Vacuum Gauges <sup>#</sup>	0 to (-)0.8 bar	0.0044 bar	Using Standard Test gauge with Comparator
<b>VIII.</b>	<b>ACOUSTICS</b>			
1.	Sound Level Meter <sup>\$</sup>	94 dB(@ 1 kHz 114 dB (@ 1 kHz	2.50 d B 2.50 d B	Using Sound level calibrator
<b>IX.</b>	<b>ACCELERATION &amp; SPEED</b>			
1.	Tachometer / RPM Measurement <sup>\$</sup> (Non Contact Type Only)	70 RPM to 500 RPM >500 RPM to 5000 RPM >5000 RPM to 25000 RPM	2.0 RPM 12.0 RPM 54.1 RPM	Using Non-contact Tachometer with RPM Source

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

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<b>X.</b>	<b>MASS</b>			
<b>1.</b>	Weights <sup>s</sup> Calibration of Weight of Class M1 and Coarser (Conventional Mass)	1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 5 kg 10 kg 20 kg 50 kg	0.1 mg 0.1 mg 0.1 mg 0.2 mg 0.2 mg 0.2 mg 0.2mg 0.3 mg 10 mg 10 mg 100 mg 100 mg 2.0g 2.0 g	Standard Weights of Class F1, Weighing Balance with L.C -0.1 mg.  Using Standard Weights of Class F1 Weighing Balance with L.C 0.01g & 1 g.
<b>XI.</b>	<b>WEIGHING SCALE AND BALANCE</b>			
<b>1.</b>	Readability: 0.01 mg / 0.1mg <sup>#</sup> Readability: 0.01 mg/ 0.1 mg Readability: 0.1 mg	1 mg to 70 g 70 g to 200g 1mg to 200g	0.04 mg 0.23 mg 0.42 mg	Standard weights of E1 class (1 mg to 200 g )
<b>2.</b>	Readability: 0.01 g <sup>#</sup>	> 200 g to 1.2 kg	0.02g	Standard weights of F1 class (200g to 1.2 kg)
<b>3.</b>	Readability: 0.1 g <sup>#</sup>	>1.2 kg to 10 kg	0.2g	Standard weights of F1 class (1.2 kg to 10 kg)
<b>4.</b>	Readability: 1 g <sup>#</sup>	>10 kg to 50 kg	1.6 g	Standard weights of F1 class (10kg to 50 kg)

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

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5.	Readability : 20g <sup>#</sup>	>50 kg to 200kg	22 g	Standard weights of F1 & M1 class (50 kg to 200 kg)
<b>XII.</b>	<b>DENSITY AND VISCOSITY</b>			
1.	Hydrometer <sup>\$</sup>	0.700 g/cm <sup>3</sup> to 1.000 g/cm <sup>3</sup>	0.003 g/cm <sup>3</sup>	Standard Hydrometer with Oil
<b>XIII.</b>	<b>VOLUME</b>			
1.	Calibration Of Volume (Pipettes/ Burette Measuring Cylinder/ Volumetric Flask/ Glassware) <sup>\$</sup>	> 1ml to 10ml >10ml to 200 ml	1 $\mu$ l 5 $\mu$ l	Standard Weights, Precision Weighing Balance (with Readability 0.1 mg) and distilled water of known density

Ram Ashray  
Convenor

Avijit Das  
Program Director



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<b><u>THERMAL CALIBRATION</u></b>				
<b>I.</b>	<b>TEMPERATURE</b>			
1.	RTD's, Thermocouples With Controller / Indicator/ Data Logger/ Recorder, Temperature Transmitter, Temperature Gauge, Glass Thermometer, Digital Thermometer <sup>#</sup>	(-) 30 °C to 50 °C	0.5 °C	Using RTD with Indicator/Methanol Liquid Bath /Oil Bath (By Comparison Method)
		>50 °C to 200 °C	0.6 °C	Using RTD with Indicator Oil bath By Comparison Method
		>200 °C to 600 °C >600 °C to 1000 °C >1000 °C to 1200 °C	2.2 °C 2.6 °C 4.5 °C	Using 'R' Type Thermocouple With Indicator/ Dry Block Furnace (By Comparison Method)
2.	Humidity Controller/ Indicator with Sensor/ Thermo Hygrometer <sup>\$</sup>	15 °C to 30 °C 32 % RH to 90 % RH @25°C	0.6 °C 2.0 % RH	Using Digital Temp./ RH Indicator with Sensor & Humidity Chamber
3.	Humidity Chamber/ Environmental Chamber <sup>*</sup>	32 % RH to 90 % RH @25 °C	1.70 % RH @25 °C	Using Digital Hygrometer (Single Position Calibration)
4.	Dry Block Furnace/ Muffle Furnace/ Industrial Furnace - Thermal Mapping <sup>*</sup>	>200 °C to 1000 °C	3.8 °C	Data Logger with 'K & R' Type Thermocouple

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

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5.	Environment Chamber, Furnaces, Freezers, Oven, Vacuum Oven, BOD Incubator, Incubator, Centrifuge Chamber, Cold Room, Hot Room, Autoclave, Aging Oven-Thermal Mapping*	(-) 30 °C to 200 °C	2.0 °C	Data Logger with RTD Sensors (Multi Position / Single Position Calibration)

\* Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

\$ Only in Permanent Laboratory

\* Only for Site Calibration

# The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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Ram Ashray  
Convenor

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Avijit Das  
Program Director