A. Equipment list of Different Labs

S.No.	Name of Equipment	Quantity
	Applied Physics Lab	
1.	**Lenz's Law Demonstrator** • Drop a mass through the 1.5-meter tube. It takes about half a second to drop. Lenz's Tube • Magnetic Mass • Non Magnetic Mass • With computer interface • With complete accessories rod, stand, clamps etc **UK / USA / JAPAN / EU**	5
2.	Van de Graff Generator • Power Supply • Lucite Column • Plume • Discharge Spheres • Electric Whirl **UK / USA / JAPAN / EU**	5
3.	**Polarization Analyzer** • Polarizers • Rotary Motion Sensor • Light Sensor • Optics System • Laser • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	5
4.	**Coulombs law** **Confirming Coulombs law - Measuring with the force sensor** Bodies for electric charge, set 1 Trolley 1 Precision metal rail, 50 cm 1 Clamp rider 2 Mobile-CASSY 2 WiFi 1 Force sensor S, ±1N 1 High Voltage Power Supply 25 kV 1 Cable for high voltages, 1.5 m 1 Insulated stand rod, 25 cm 1 Saddle base 1 Small clip plug 1 Electrometer amplifier 1 Plug-in power supply 12 V AC 1 Capacitor 1 nF, STE 2/19 1 Capacitor 10 nF, STE 2/19 1 Faraday's cup 1 Clamping plug 1 Connecting rod 1 Stand base, V-shaped, small 1 Stand rod 25 cm, 12 mm Ø 1	5

	Leybold multiclamp	1		
	Connecting lead 19 A, 50 cm, red/blue, pair	1		
	Connecting lead 19 A, 25 cm, black	1		
	Connecting lead 19 A, 50 cm, black	1		
	Connecting lead 19 A, 100 cm, black	1		
	Connecting lead 32 A, 200 cm, yellow/green	1		
	Complete with :-			
	Confirming Coulombs law - Recording and evaluating with CASSY			
	Bodies for electric charge, set	1		
	Trolley	1		
	Precision metal rail, 50 cm	1		
	Clamp rider	2		
	Sensor-CASSY 2	1		
	CASSY Lab 2	1		
	Force sensor S, ±1N	1		
	Rotary motion sensor S	1		
	High Voltage Power Supply 25 kV	1		
	Cable for high voltages, 1.5 m	1		
	Insulated stand rod, 25 cm	1		
	Saddle base	1		
	Small clip plug	1		
	Electrometer amplifier	1		
	Plug-in power supply 12 V AC	1		
	Capacitor 1 nF, STE 2/19	1		
	Capacitor 10 nF, STE 2/19	1		
	Multimeter LDanalog 20	1		
	Faraday's cup	1		
	Clamping plug	1		
	Connecting rod	1		
	Stand rod 25 cm, 12 mm Ø	1		
	Stand base, V-shaped, small	1		
	Leybold multiclamp	1		
	Driving weights, set	1		
	Simple bench clamp	1		
	Fishing line	1		
	Connecting lead 19 A, 50 cm, red/blue, pair	1		
	Connecting lead 19 A, 25 cm, black	1		
	Connecting lead 19 A, 50 cm, black	1		
	Connecting lead 32 A, 200 cm, yellow/green	2		
	UK / USA / JAPAN / EU	**5 Set**		
5	**Faraday's Law of Induction** • Induction Wand • Variable Gap Magnet • Unshrouded Voltage Sensor • 2-Axis Magnetic Field Sensor • Rotary Motion Sensor • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**			5

6.	**Thermal conductivity** **Determining the thermal conductivity of building materials using the single-plate method** Calorimetric chamber Building materials for calorimetric chamber DC-High Current Power Supply 1...32 V/0...20 A Sensor-CASSY 2 CASSY Lab 2 NiCr-Ni adapter S, Type K Temperature probe, NiCr-Ni, 1.5 mm, Type K Connecting lead 19 A, 50 cm, black, pair Connecting lead 32 A, 100 cm, black **Complete With :-** **Determining the thermal conductivity of building materials using the heat flux plate principle** Calorimetric chamber Building materials for calorimetric chamber DC-High Current Power Supply 1...32 V/0...20 A Sensor-CASSY 2 CASSY Lab 2 NiCr-Ni adapter S, Type K Temperature probe, NiCr-Ni, 1.5 mm, Type K Connecting lead 32 A, 100 cm, black **Complete With :-** **Damping temperature fluctuations using multiple-layered walls** Calorimetric chamber Building materials for calorimetric chamber DC-High Current Power Supply 1...32 V/0...20 A Sensor-CASSY 2 CASSY Lab 2 NiCr-Ni adapter S, Type K Temperature probe, NiCr-Ni, 1.5 mm, Type K Halogen lamp 12 V, 50/100 W Halogen bulb 12 V/100 W, G6.35 Saddle base Connecting lead 32 A, 100 cm, black **UK / USA / JAPAN / EU**	 1 1 1 1 1 1 2 1 4 1 1 1 1 1 2 3 2 1 1 1 1 1 2 3 1 1 1 2 **5 Set**		5
7.	**Human Eye Model** **Specifications** • Adjustable Focal Length Lens • Set of Lenses • Retina Screen • Pupil Aperture • Foam Lens Holder • Human Eye Model Without Lens • Experiment Manual			5

	• With complete accessories **UK / USA / JAPAN / EU**	
8.	**Interference and Diffraction of light Apparatus** • Optical Track • Precision Slits • Laser • Aperture Bracket • Linear Translator • High Sensitivity Light Sensor • Rotary Motion Sensor • Experiment Manual • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	4
9.	**Universal interface (Pasco)** **Interface with the following built in features:** • High speed-analog inputs • Digital inputs (Photogates and other timing devices) • Digital Inputs • USB connection • Power Supply • Function Generator **UK / USA / JAPAN / EU**	4
10.	**Hook's Law** • Cart Launcher • 1.2 m Track With Carts • Force Sensor Track Bracket • Elastic Bumper • Spring Kit • Motion Sensor • High Resolution Force Sensor • Experiment Manual • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	5
11.	**Projectile Motion** • Mini Launcher • Time-of-Flight Accessory • Photogate • Phone Jack Extender Cable • Large C Clamp (6 Pack) • Plumb Bobs (10 Pack) • 30 Meter Measuring Tape • Experiment Manual • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	5
12.	**BasicOpticsSystem**	5

	Specifications • 1.2mOpticsTrack • Basic OpticsLightSource • Basic OpticsGeometricLensSet • AccessoryLensSet • Concave/ConvexMirror • AdjustableLensHolder • Ray OpticsKit • Ray Table • ViewingScreen • GroundGlassLenses • LensAssortment • GeometricLensSet • Experiment Manual • With complete accessories **UK / USA / JAPAN / EU**	
13.	**Ideal Gas Law Apparatus** • Ideal Gas Law Apparatus • Pressure and Temperature Sensor • Experiment Manual • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	02
Electrical / Electronic Lab		
14.	**Transistor/diode tester and curve tracer.** **Specifications** The system built in display for curve tracer. The system must be able to check and identify the pin and type of diode and transistors and trace the curve of all Major types of diode and transistors. **UK / USA / JAPAN / EU**	8
15.	**Low Voltage AC/DC Power Supply** **Output Voltage:** 0 to 30 V DC or above **Current:** From 0 to 12 V, 10 A m linearly decreasing voltage setting Meter: Digital display (volts/amps) **A C – Output Voltage:** 0 to 24 V AC or above, continuously adjustable; **Current:** 0 to 6**:** Digital display (volts/amps); **Power Source:** AC 115/230 VAC, 50/60 Hz, **Power Use:** 320 OR above. **UK / USA / JAPAN / EU**	7
16.	**AC Power meter (bench type)** **Specifications:** Power Meter is equipped with a 16-bit CPU microprocessor Multifunction of full-digitized measurement, calibration and output. Accurately measure the distortion signal of waveform. Except for its essential measurement on AC voltage, AC current, AC power, Power factor,and Frequency, the power meter also provides additional features ratio setting, display value holding, the value of maximum and minimum Holding, range selecting, auto-ranging etc. **UK / USA / JAPAN / EU**	5
17.	**DC Power Supply** **Specifications:** 4 Channel Linear DC Power Supply, DC Voltage Range: 0 ~ 30V	7

	DC Current Range: 0 ~ 3A or above Max. Power Range: 200W Linear / Switching Mode:. **UK / USA / JAPAN / EU**			
18.	**Analog Oscilloscope** **Specifications:** 300MHzBandwidth or above, 4 Input Channels. **UK / USA / JAPAN / EU**			5
19.	**Handheld oscilloscope** **Specifications:** 100/200Mhz or above with built in multimeter etc. **UK / USA / JAPAN / EU**			4
20.	**COM3LAB Multimedia: Fundamentals of Electrical Engineering** **COM3LAB Multimedia: DC Technology** COM3LAB Course: DC Technology I COM3LAB Course: DC Technology II COM3LAB: Master Unit **FOR TABLETS** Interfaces for many available models **ANTI-THEFT PORT** using a Kensington lock **PC** interface for controlling course boards (RJ45/USB/WLAN) **FUNCTION GENERATOR** up to 100 KHz Square-wave, triangular, sinusoidal, DC 8-BIT DIGITAL ANALYSER 2mm safety sockets **4-CHANNEL OSCILLOSCOPE** The integrated oscilloscope offers many advantages: Four differential inputs Measuring rate: 2 M-samples per channel Resolution: 12 bits per channel Memory depth: 4 K-samples per channel Set of Safety Cables (2mm, 16 Qty., 6 x 30cm & 10 x 15cm) DVD: COM3LAB Software **Additionally recommended:** COM3LAB Course: Protoboard II COM3LAB: Protoboard II Accessories COM3LAB: Suitcase **COM3LAB Multimedia: AC Technology** COM3LAB Course: AC Technology I COM3LAB Course: AC Technology II COM3LAB: Master Unit	1 1 1 1 1 1 1 1 1 1 1		5

		Set of Safety Cables (2mm, 16 Qty., 6 x 30cm & 10 x 15cm)	1		
		DVD: COM3LAB Software	1		
		Additionally recommended:			
		COM3LAB Course: Protoboard II	1		
		COM3LAB: Protoboard II Accessories	1		
		COM3LAB: Suitcase	1		
		COM3LAB Multimedia: Electrical Components			
		COM3LAB Course: Electronic Components I	1		
		COM3LAB Course: Electronic Components II	1		
		COM3LAB: Master Unit	1		
		Set of Safety Cables (2mm, 16 Qty., 6 x 30cm & 10 x 15cm)	1		
		DVD: COM3LAB Software	1		
		Additionally recommended:			
		COM3LAB Course: Protoboard II	1		
		COM3LAB: Protoboard II Accessories	1		
		COM3LAB: Suitcase	1		
		COM3LAB Multimedia: Digital Technology			
		COM3LAB Course: Digital Technology I	1		
		COM3LAB Course: Digital Technology II	1		
		COM3LAB: Master Unit	1		
		Set of Safety Cables (2mm, 16 Qty., 6 x 30cm & 10 x 15cm)	2		
		DVD: COM3LAB Software	1		
		Additionally recommended:			
		COM3LAB: Suitcase	1		
		COM3LAB Multimedia: Three-Phase Technology			
		COM3LAB Course: Three-Phase Technology	1		
		COM3LAB: Master Unit	1		
		Set of Safety Cables (2mm, 16 Qty., 6 x 30cm & 10 x 15cm)	1		
		DVD: COM3LAB Software	1		
		Additionally recommended:			

			4 Set		
21	**Optoelectronics** **Recording the characteristics of a phototransistor connected as a photodiode** Plug-in board, DIN A4, STE Phototransistor lateral, STE 2/19 Resistor 100 Ohm, STE 2/19 Resistor 10 kOhm, STE 2/19 Lamp holder E10, lateral, STE 2/19 Bulb 12 V/3 W, E10, set of 10 Bridging plugs STE 2/19, set of 10 AC/DC power supply PRO 0...12 V/3 A Oscilloscope 30 MHz, two-channel, analogous Screened cable, BNC/4 mm Connecting lead 19 A, 50 cm, red/blue, pair **Complete with :-** **Assembling a purely optical transmission line** Plug-in board, DIN A4, STE Light emitting diode green, STE 2/19 Light emitting diode red, lateral, STE 2/19 Phototransistor lateral, STE 2/19 Transistor BD 138, PNP, e.b., STE 4/50 Operational amplifier, LM 741, STE 4/50 Resistor 47 Ohm, STE 2/19 Resistor 470 Ohm, STE 2/19 Resistor 1 kOhm, STE 2/19 Resistor 2.2 kOhm, STE 2/19 Resistor 10 kOhm, STE 2/19 Resistor 47 kOhm, STE 2/19 Capacitor 4.7 µF, STE 2/19 Capacitor (el.) 100 µF, STE 2/19 Capacitor (el.) 470 µF, STE 2/19 Bridging plugs STE 2/19, set of 10 DC Power Supply 2 x 0...16 V/2 x 0...5 A Function generator S 12 Earphone Connecting lead 19 A, 50 cm, red/blue, pair Connecting lead 19 A, 25 cm, black Connecting lead 19 A, 50 cm, black . **UK / USA / JAPAN / EU**	1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 3 1 2 1 1 1 1 1 2 3 1 **4 Set**		1
22	**True RMS Handheld multimeter with temperature sensor** **UK / USA / JAPAN / EU**				7
23.	**Electronic & Electrical Trainer Integrated Lab Equipment** Integrated automatic instrument-type practice unit equipped with an oscilloscope, function generator, power supplier and digital multimeter Implement all the instruments for circuit practice into one equipment. Help acquire a clear electronics theory through automation practice (AC signal analysis). Practice GUI (Graphic User Interface) of Touch Screen mode. Carefully selected 50 types or above electric & electronics practice themes. **UK / USA / JAPAN / EU**				4

24.	**Optoelectronic training system** **Specifications:** Wide range optoelectronic component like photodiode, phototransistor. Photovoltaic cell (solar cell), infrared, ultraviolet, thermal imagine etc. **UK / USA / JAPAN / EU**	4
Biomedical Workshop		
25.	**Teaching Ultrasound and Grey Scale / Color Doppler with all Phantoms simulator cum analyzer** **UK / USA / JAPAN / EU**	1
26.	**Ventilator Tester Kit with Different Simulation of Pathologies with Cpap and Bipap** **UK / USA / JAPAN / EU**	1

<table>
<tr>
<td>27</td>
<td>
<h2>Incubator - Radiant Warmer Analyzer</h2>
Incubator/Radiant Warmer Analyzer simplifies testing and verifying the performance of baby incubators, transport incubators, and radiant warmers.

Airflow
Sound
Humidity
Air and surface temperature in 6 independent points
Optional skin temperature testing

<table>
<tr><th colspan="2">Power</th></tr>
<tr><td>Power Adapter – Universal voltage</td><td>Input: 100 V to 240 V with adaptors 50 Hz/60 Hz
Output: 15V dc, 1.3 A maximum</td></tr>
<tr><td>Rechargeable lithium-ion battery, internal</td><td>7.4 V, 7800 mAh, 58 Wh
24 hour battery life with 30 second sample rate</td></tr>
<tr><th colspan="2">Measurements and tests specifications</th></tr>
<tr><td>Air conduction peripheral temperature sensors for incubator (T1-T5)</td><td>5 sensors
Range: 0 ˚C to 50 ˚C
Accuracy: ±0.05 ˚C
Display resolution: 0.01 ˚C</td></tr>
<tr><td>Air convection temperature sensors for radiant warmers, sensors in pucks (black discs)</td><td>5 pucks
Range: 0 ˚C to 50 ˚C
Accuracy: ±0.2 ˚C
Display resolution: 0.01 ˚C</td></tr>
<tr><td>Relative humidity</td><td>Range: 0 % to 100 %,
Accuracy: ±3 % RH (0 % to 100 %, non-condensing)
Display Resolution: 0.1% RH</td></tr>
<tr><td>Airflow</td><td>C, 50 % RH°Range: 0.2 m/sec to 2.0 m/sec at 35
Accuracy: ±0.1 m/sec
Display Resolution: 0.01 m/sec</td></tr>
<tr><td>Sound Pressure</td><td>30 dB(A) to 100 db(A)
Accuracy: ±5 dB(A)
Display resolution: 0.1 dB(A)
IEC-61672-1 Class 2 from 31.5Hz to 8kHz</td></tr>
<tr><td>Surface temperature</td><td>Range: 5 ˚C to 60 ˚C
Accuracy: ±0.5 ˚C
Display Resolution: 0.05 ˚C</td></tr>
<tr><td>Skin temperature probe with reference thermometer</td><td>Range: 0 ˚C to 50 ˚C
Accuracy: ±0.05 ˚C
Display Resolution: 0.01 ˚C</td></tr>
</table>
UK / USA / JAPAN / EU
</td>
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</tr>
<tr>
<td>28.</td>
<td>
<h2>ProSim 8 Vital Signs Patient Simulator</h2>
The ProSim 8 tests ECG (including fetal ECG/IUP and arrhythmias), respiration, temperature, IBP/cardiac catheterization, cardiac output, NIBP and SpO2 . Wireless PC communication, customized presets, auto-sequences, barcode scanning, onboard memory, direct data capture, printing functions and single-step adjustability maximizes testing productivity; a customized carry case doubles as a mobile work station
Specifications:
Temperature:
Operating:10 ˚C to 40 ˚C (50 ˚F to 104 ˚F)
Storage: -20 ˚C to +60 ˚C (- 4 ˚F to 140 ˚F
Humidity: 10 % to 90 % non-condensing
Parameter Specifications:
</td>
<td>1</td>
</tr>
</table>

Non-Invasive Blood Pressure		
Pressure Units	mmHg or kPa	
Manometer (Pressure Meter)	**Range** 10 mmHg to 400 mmHg **Resolution** 0.1 mmHg **Accuracy** ± (0.5 % reading + 0.5 mmHg)	
Pressure Source	**Target pressure range** 20 mmHg to 400 mmHg **Resolution** 1 mmHg	
NIBP Simulations	**Pulse**	2 mmHg max into 500 ml NIBP system
	Volume of air moved	1.25 ml max
	Simulations (systolic/diastolic [MAP])	Adult: 60/30 (40), 80/50 (60); 100/65 (77); 120/80 (93); 150/100 (117); and 200/150 (167) and 255/195 (215) Neonatal: 35/15 (22); 60/30 (40); 80/50 (60); 100/65 (77); 120/80 (93) and 150/100
	Repeatability	Pressure variability: systolic and diastolic pressures are variable by 1 mmHg Within ± 2 mmHg (at maximal pulse size independent of device under test)
	Synchronization: normal Sinus heart rates: 30 BPM to 240 BPM	Maximum rate at 1 ml: 240 BPM achievable with pulses up to 1 ml Maximum rate at 1.25 ml: 180 BPM
Synchronization: Arrhythmias	Premature atrial contraction (PAC), premature ventricular contraction (PVC), atrial fibrillation, and missed beat	
Leak Test	Target pressure	20 to 400 mmHg
	Elapse time	0:30 to 5:00 minutes: seconds in 30 second steps
	Leakage rate	0 mmHg/minute to 200 mmHg/minute
Pressure Relief Test Range	100 to 400 mmHg	

Temperature	
Temperature	30 ˚C to 42.0 ˚C in 0.5 ˚C steps
Accuracy	± 0.4 ˚C
Compatibility	Yellow Springs, Inc. (YSI) Series 400 and 700
Output	Circular DIN 4-Pin

Invasive Blood Pressure	
Channels	2, each independently settable with identical parameters and are individually electrically isolated from all other signals
Input/Output Impedance	300 Ω - or ± 10 %

Exciter Input Range	2 to 16 V peak	
Exciter-Input Frequency Range	DC to 5000 Hz	
Transducer Sensitivity	5 (default) or 40 µV/V/mmHg	
Pressure Accuracy	± (1 % of setting + 1 mmHg) accuracy guaranteed for dc excitation only	
Static Pressure	- 10 to + 300 mmHg in 1 mmHg steps	
Pressure Units	mmHg or Kpa	
Dynamic Waveforms	Types (default pressures	Arterial (120/80) Radial artery (120/80) Left ventricle (120/00) Right ventricle (25/00) Pulmonary artery (25/10) Pulmonary-artery wedge (10/2) Right atrium (central venous or CVP) (15/10)
	Pressure variability	Systolic and diastolic pressures are independently variable in 1 mmHg steps
Swan-Ganz Sequence	**Right atrium, right ventrical (RV), pulmonary artery (PA), pulmonary artery wedge (PAW)**	
Cardiac Catheterization	Chambers	Aortic, pulmonary valve, and mitral valve
Respiration Artifact	Arterial, radial artery, and left ventricle	5 % to 10 % multiplication
	Other	5 mmHg or 10 mmHg
BP Output	**Circular DIN 5-Pin**	
Power-On Default	**0 mmHg**	

SpO_2 Test (Optional)		
% O_2	Range	30 % to 100 %
	Resolution	1 %
% O_2 Accuracy	**With oximeter manufacturer's R-curve**	Saturation within UUT specific range: ± (1 count + specified accuracy of the UUT) Saturation outside UUT specific range: monotonic with unspecified accuracy
	With Fluke Biomedical R-curves	91 % to 100 % ± (3 counts + specified accuracy of the UUT) 81 % to 90 % ± (5 counts + specified accuracy of the UUT) 71 % to 80 % ± (7 counts + specified accuracy of the UUT) Below 7 % monotonic with unspecified accuracy

Respirations	
Rate	0 (OFF), 10 BrPM to 150 BrPM in 1 BrPM steps

	Waves	Normal or ventilated	
	Ratio (inspiration:expiration)	**Normal** 1:1, 1:2, 1:3, 1:4, 1:5 **Ventilated** 1:1	
	Impedance Variations (? Ω)	0.00 Ω to 1.00 Ω iin 0.05 Ω steps and 1Ω to 5 Ω in 0.25 Ω steps	
	Accuracy Delta	± (3 % of setting + 0.05 Ω)	
	Baseline	500 Ω, 1000 Ω (default), 1500 Ω, 2000 Ω, Leads I, II, III	
	Accuracy Baseline	±5 %	
	Respiration Lead	LA or LL (default)	
	Apnea Selection	12 sec, 22 sec, or 32 seconds (one-time events), or continuous (Apnea ON = respiration OFF)	
	Power-On Default	20 BrPM, delta 1.0 Ω **UK / USA / JAPAN / EU**	
29.	**Rigid & Flexible Endoscope Tester** A simple-to-use, quick check for rigid endoscopes. Finally, there is a simple tool for technical and non-technical personnel to perform a quick evaluation of most rigid endoscopes., your staff diagnoses problems during incoming inspections, after complaints, pre- and post-service, and as a routine preventive-maintenance inspection. **Specifications** **Outer Diameter of Eyepiece**: 31.75 mm +0 -0.1 per DIN 58105 **End-Cap Inner Diameter**: No less then 120 mm **Optical Design**: **Focal length:** 40 mm ± 3%; **Refraction:** 25 dpt; **Material:** PMMA (Plexiglass); **Diameter:** 19 mm **Focal Point Adjustment Scale**: 16 cm **Maximum Diameter of Rigid Endoscope**: <10 mm **Environmental**: **Operating Temperature:** 15 to 40 ˚C; **Storage Temperature:** -10 to +65 ˚C; **Relative Humidity:** 95% max **UK / USA / JAPAN / EU**		1
30.	**Infusion Device Analyzer** **Flow rate Measurement** **Technique:** Flow is calculated by measuring volume over time **Range:** 0.5 ml/h to 1000 ml/h **Accuracy:**1 % of reading ±1 LSD for flows of 16 ml/h to 200 ml/h for volumes over 20 ml, otherwise 2 % of reading ±1 LSD for volumes over 10 ml under laboratory conditions **Max Test Duration: 10 hours battery** **Volume measurement:** **Technique:** Volume measured directly by the measuring module in minimum sample sizes of 60 microliters **Range:**0.06 ml to 999 ml		1

<table>
<tr><td></td><td>Accuracy: 1 % of reading ±1 LSD for flow rates of 16 ml/h to 200 ml/h for volumes over 20 ml. Otherwise 2 % of reading ±1 LSD for volumes over 10 ml under laboratory conditions.
Max Test Duration: 10 hours battery

Pressure Measurement:
Technique: Direct measurement of pressure at the inlet port
Range: 0 psi to 45 psi or equivalent in mmHg and kPa
Accuracy: 1 % of full scale ±1 LSD under laboratory conditions
Max Test Duration: 30 Minutes
UK / USA / JAPAN / EU</td><td></td></tr>
<tr><td>31</td><td>Phototherapy Radiometer
The Phototherapy Radiometer is designed for the accurate measurement of light radiation in the blue part of the spectrum from 400-480 nanometers.
Features include:
Large LCD
Accurate to ±5 % of full scale
Spectral range of 429 nm to 473 nm
<table><tr><th colspan="2">Specifications</th></tr><tr><td>Spectral range</td><td>429 - 473 nm
(max. 97% response at 453 nm)</td></tr><tr><td>Measurement range</td><td>0-1999 µW/cm^2</td></tr><tr><td>Resolution</td><td>1 µW/cm^2</td></tr><tr><td>Probe</td><td>Lens matches the cosine receiving function of human skin</td></tr><tr><td>Power</td><td>9 V battery; an arrow appears on display for battery replacement; 150 continuous hours operation</td></tr></table>UK / USA / JAPAN / EU</td><td>1</td></tr>
<tr><td>32</td><td>Fetal Simulator
Fetal Simulator simulates fetal and maternal ECG as well as uterine activity to test and troubleshoot fetal electronic monitors and to train clinical staff.
Features include:
Mechanical heart for ultrasound simulation
TOCO simulation (external or IUP)
Ultrasound simulation (including twins)
Maternal ECG simulation
<table><tr><th colspan="2">Fetal ECG</th></tr><tr><td>Static Rates:</td><td>30, 60, 90, 120, 150, 180, 210, and 240 BPM</td></tr><tr><td>ECG Sensitivity:</td><td>50 µV, 100 µV, 200 µV, 0.5 mV, 1 mV, and 2 mV
US-1 tracks primary fetal ECG rates. US-2 tracks secondary fetal activity for either independent “normal or “twins simulation, US-2 rate fixed at 140 BPM</td></tr><tr><td>Fetal Patterns:</td><td>Note: US-1 fetal ECG track these selections. US-2 is in normal pattern, except during TREND #1 selection.</td></tr><tr><td>Variability selections (added to fetal ECG)</td><td>Absent variability, low variability, mild variability, high variability, severe variability, and long-tern variability</td></tr><tr><td>Note:</td><td>These patterns repeat and toco channel will perform toco wave selected</td></tr></table></td><td>1</td></tr>
</table>

	Optional mechanical fetal heart — Provides a mechanical interface to the ultrasound transducer; can be connected to either ultrasound channels. This option, due to its power consumption, requires an ac power adapter to be connected. **UK / USA / JAPAN / EU**	
33	**Medical ScopeMeter® Portable Oscilloscope** Taking the guesswork out of medical imaging testing and troubleshooting, the Medical ScopeMeter® Portable Oscilloscope,. • Connect-and-view automated capture of complex waveforms: simplified connect-and-go for longer time-based measurements • Memory save and recall set-up • Waveform compare for quick and easy pass/fail • Single-button user interface very intuitive and easy to navigate • 3-in-1 multimeter, portable oscilloscope and paperless recorder saves you time and tools **Specifications** • 2 Channel • Voltage probe set, 10:1, 300 MHz, one set red • Voltage probe set, 10:1, 300 MHz, one set blue • TL175 TwistGuard™ safety-designed test leads set (1 red, 1 black) • External battery charger for BP290 and BP291 • FlukeView Software for Windows • Hard shell protective carrying case • Li-Ion battery pack, 2400 mAh • Medical Accessory Kit **UK / USA / JAPAN / EU**	2

<table>
<tr>
<td>34</td>
<td>
MaxO2 PLUS AE Oxygen Analyzer
The MaxO2 PLUS AE is an oxygen tester analyzer that measures the oxygen concentration in a flow of gas from a medical gas source or through a medical gas-flow device such as a ventilator or anesthesia system, or within an infant incubator. It is handheld and rugged to suit the needs of portable use. The MaxO2 PLUS AE comes equipped with a two-year warranty on both analyzer and sensor.
Features include:

One-touch calibration, with reminder
Long battery life (approx. 5,000 hrs)
Impact resistant and drip proof
External MAX-250E Oxygen Sensor

<table>
<tr><th colspan="3">Specifications</th></tr>
<tr><td></td><td>Measurement Range:</td><td>0 % to 100 %</td></tr>
<tr><td></td><td>Resolution:</td><td>0.1 %</td></tr>
<tr><td></td><td>Accuracy and Linearity:</td><td>1 % of full scale at constant tempe and pressure when calibrated at fu</td></tr>
<tr><td></td><td>Total Accuracy:</td><td>± 3 % actual oxygen level overfull range</td></tr>
<tr><td></td><td>Response Time:</td><td>90 % of final value in approx. 15 s</td></tr>
<tr><td></td><td>Warm-up Time:</td><td>None required</td></tr>
<tr><td>Power Supply</td><td>Battery Life:</td><td>Approx. 5000 hrs with continuous</td></tr>
<tr><td></td><td>Low Battery Indication:</td><td>“BAT icon displayed on LCD</td></tr>
<tr><td></td><td>Sensor Type:</td><td>Maxtec® MAX-250E for AE model</td></tr>
<tr><td></td><td>Expected Sensor Life:</td><td>> 900,000 O2 % hours minimum, in typical medical applications</td></tr>
<tr><td></td><td>Power Requirements:</td><td>2, AA alkaline batteries</td></tr>
</table>
UK / USA / JAPAN / EU
</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>Comprehensive tool kit with Weatherproof Toolbox
UK / USA / JAPAN / EU</td>
<td>6</td>
</tr>
<tr>
<td>36.</td>
<td>Ultraviolet A,B,C Tester
UK / USA / JAPAN / EU</td>
<td>1</td>
</tr>
<tr>
<td>37.</td>
<td>IR A,B,C Tester
UK / USA / JAPAN / EU</td>
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<td>38.</td>
<td>
Gas Flow Analyzer
Accurately and reliably conduct in-depth testing of gas flow medical equipment, especially devices requiring ultra-low flow and ultra-low pressure measurements with Gas Flow Analyzer.

Designed to world renowned Molbloc-L calibration specifications ensuring traceability to global regulatory standards
Conduct anesthesia and flow meter tests that rely on high accuracy
Built-in line sensors automatically test humidity, temperature and oxygen while compensating for atmospheric pressure and environmental conditions
Perfect for OEMs, clinical benchtop testing, government and field service use

<table>
<tr><th colspan="2">Features</th></tr>
<tr><td>Battery life hours</td><td>8 hrs</td></tr>
<tr><td>Charge time in hours</td><td>5 hrs, typical</td></tr>
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<td>1</td>
</tr>
</table>

Memory	internal memory
Ultra-low flow ports	±750 ml/min
Ultra-low pressure port	0 to 10 mbar
Flow	
Full range flow channel (includes both low and high flow)	
Range	±300 slpm
Accuracy (air)	1.7 % or 0.04 slpm
Ultra-low flow channel	
Range	±750 ml/min
Accuracy (air)	±1.7 % or 0.01 slpm
Volume	
Range	±100 l
Accuracy	±1.75 % or 0.02 l
Pressure	
High pressure	
Range	-0.8 to 10 bar
Accuracy	±1 % or ±0.007 bar
Differential low pressure	
Range	±160 mbar
Accuracy	±0.5 % or ±0.1 mbar
Ultra-low pressure	
Range	0 to 10 mbar
Accuracy	±1 % or ±0.01 mbar
Airway pressure	
Range	±160 mbar
Accuracy	±0.5 % or ±0.1 mbar
Barometric pressure	
Range	550 to 1240 mbar
Accuracy	±1 % or ±5 mbar

Breath parameters	
Inspiratory tidal volume range	0 to 60 l
Inspiratory tidal volume accuracy	±1.75 % or 0.02 l
Expiratory tidal volume range	0 to 60 l
Expiratory tidal volume accuracy	±1.75 % or 0.02 l
Minute volume range	0 to 100 l
Minute volume accuracy	±1.75 % or 0.02 l
Breath rate range	1 to 1500 bpm
Breath rate accuracy	±1 %
Inspiratory to expiratory time ratio (I:E) range	1:300 to 300:1
Inspiratory to expiratory time ratio (I:E) accuracy	±2 % or 0.1
Peak inspiratory pressure (PIP) range	±160 mbar
Peak inspiratory pressure (PIP) accuracy	±0.75 % or 0.1 mbar

	Inspiratory pause pressure range	±160 mbar		
	Inspiratory pause pressure	±0.75 % or 0.1 mbar		
	Mean airway pressure range	±160 mbar		
	Mean airway pressure accuracy	±0.75 % or 0.1 mbar		
	Positive end expiratory pressure (PEEP) range	±160 mbar		
	Positive end expiratory pressure (PEEP) accuracy	±0.75 % or 0.1 mbar		
	Lung compliance range	0 to 1000 ml/mbar		
	Lung compliance accuracy	±3 % or 0.1 ml/mbar		
	Inspiratory time range	0 to 60 s		
	Inspiratory time accuracy	0.02 s		
	Inspiratory hold time range	0 to 60 s		
	Inspiratory hold time accuracy	1 % or 0.1 s		
	Expiratory time range	0 to 90 s		
	Expiratory time accuracy	0.5 % or 0.01 s		
	Expiratory hold time range	0 to 90 s		
	Expiratory hold time accuracy	0.02 s		
	Peak expiratory flow range	±300 lpm		
	Peak expiratory flow accuracy	±1.7 % or 0.04 lpm		
	Peak inspiratory flow range	±300 lpm		
	UK / USA / JAPAN / EU			
Gait Analysis Lab				
39.	**UP MINI 2 3D PRINTER** UP 3D Printing Software with STL import & Automatic Support Generation 1 x 500g Spool of White ABS Material 2 x UP Flex Boards 2 x UP Perf Boards Tool Kit & Manual **UK / USA / JAPAN / EU**	**1 Set**		1
Biomaterial Lab				
40	**Orthopedic Implants Starter Kit** • Austin-Moore prosthesis : for fracture of the neck of femur • Baksi's prosthesis: for elbow replacement • Charnley prosthesis: for total hip replacement • Condylar blade plate: for condylar fractures of femur • Ender's nail : for fixing inter-trochanteric fracture • Grosse-Kempf (GK) nail : for tibial or femoral shaft fracture • Harrington rod: for fixation of the spine • Hartshill rectangle: for fixation of the spine • Insall Burstein prosthesis: for total knee replacement • Richard N.W. Wohnsinterspinous implant and implantation instrument: intended to be implanted between two adjacent dorsal			1 set

	• Kirschner wire : for fixation of small bones • Kuntscher nail : for fracture of the shaft of femur • Luque rod : for fixation of the spine • Moore's pin : for fracture of the neck of femur • Neer's prosthesis : for shoulder replacement • Rush nail : for diaphyseal fractures of long bone • Smith Peterson (SP) nail : for fracture of the neck of femur Smith Peterson nail with McLaughlin's plate: for inter-trochanteric fracture • Seidel nail: for fracture of the shaft of humerus • Souter's prosthesis : for elbow replacement • Steffee plate : for fixation of the spine • Steinmann pin : for skeletal traction[24] • Swanson prosthesis : for the replacement of joints of the fingers • Talwalkar nail : for fracture of radius and ulna • Thompson prosthesis : for fracture of the neck of femur • Dynamic Hip Screw and Dynamic Condylar Screw • Set of screws, wires, nails and locking. **UK / USA / JAPAN / EU**	
41.	**Ortho Bones (Implant Technology) and Realistic Features** **UK / USA / JAPAN / EU**	4
42.	**Complete Transducers Kit** **Specification** **Instrumentation Module** Wheatstone Bridge with reference potentiometer and selectable value ratio arms. Operational Amplifier with selectable gain and differential input **Oscillator** Centre frequency 465 kHz. **Frequency** Discriminator FM operation and on-board phase sensitive rectifier **Power Amplifier** Unity voltage gain. Maximum output 4 W. **Test Rig** Slide scale micrometer control with 25 mm range, 0.5 mm/full rotation micrometer. Sub-unit lock for Electro-mechanical Transducers and Optical Detector Assembly. **Electro-mechanical Transducers** Variable Resistor 10 kΩ, 0.5 W linear. Variable Capacitor (Area) 2.5 – 20 pF. Variable Capacitor (Distance) 15 – 40 pF. Variable Inductor 9 Ω, 23 – 81 µH. Variable Differential Transformer *Primary resistance:* 6.3 Ω, 140 turns. *Secondary resistance:* 2.5 Ω, 140 turns. Strain Gauge 2 off, 120 Ω resistance	01

Conductance Probe Two parallel, conductive, supported rods with flying leads.

Heat Transducers
Bi-metallic switch Operating temp. 45 °C. Differential 5 °C.
Thermocouple Copper constantan junction approx. 50 µV/°C.
Thermistor Resistance at 20 °C = 2 kΩ.
Platinum resistance Resistance at 20 °C = 100 Ω.

Heat Bar 100/240 V, 50/60 Hz operation.
Main heater 50 W.
Auxiliary heater resistance, 30 W (cold).

Light Transducers
Photo-transistor BP X25.
Photo-diode RS components.
Photo-resistor RPY33.
Lamp holder MBC. 14.4 V, 0.1 A.
Optical Filters 9 slide-mounted. 440, 470, 490, 520, 550, 580, 600, 690,700 nm. 1 infra-red.

Manual supplied Transducers Kit TK2942-1, Books 1, 2 & 3 covering all three kits. The
manuals contain 28 assignments, each having a practical section and an applications section giving industrial examples of the use of the transducer principle under discussion.

Power Supply External ±15 V @ 1.5 A. The Feedback d.c. Power Supply 01-100 is recommended.

Function Generator Timer Counter, Oscilloscope, Capacitance and Resistance Boxes and a Multimeter)

Complete with :-

Operational Amplifier Tutor
Operational Amplifier Tutor
Power Supply +5 V =, +/- 15 V=

An open-board operational amplifier tutor providing three IC Op Amps,
one discrete amplifier,±10 V switchable supply, scaling potentiometers and
all connecting leads. Front panel mimic diagram showing elements and
circuitry. Complete with student assignment manual containing at least 13
assignments

Specification

	Operational Amplifiers 3 Type 741 general purpose, with inverting and non-inverting inputs. 1 Discrete component amplifier with differential input, balance control, constant current source and output amplifier. **Scaling** 3 Single gang 10 kΩ potentiometers. 1 Dual gang 100 kΩ potentiometer. **Connections** All on-board circuit connections by 2 mm sockets and stackable leads. Amplifier outputs and power supply connections by 4 mm sockets. 4 sets of 4 mm - 2 mm transfer sockets. **Switches** 2 three-position switches, one dedicated to the supply of ±10 V. **Power Outputs** 4 sets of 0 V, ±10 V sockets. **Power requirements** 0 V, ±15 V d.c. regulated at 200 mA **UK / USA / JAPAN / EU**	
43.	**Materials Testing System** Material Testing Machine**Attachments:** • Bending Accessories • Four Point bending • Load Anvil • Photo elastic Accessories • Shear Accessories • Compression Accessories • Test Samples (Flat Coupons (Metals & Plastic), Shear Sample, Photo elastic Beams, Compression samples) • Experiment Manual • With Computer interface • With complete accessories (Clevis Grip , adapters etc.) **UK / USA / JAPAN / EU**	02
Biomedical Instrumentation Lab		
44.	**Human Physiology Teaching Kit** It features one compact form factor integrated with 12 of the most commonly used instruments in the laboratory, including an oscilloscope, digital multimeter, function generator, variable power supply, and Bode analyzer. You can connect the PC to these various measurements through USB plug-and-play capabilities and build circuits on a detachable protoboard • ECG, Pulse, Heart sounds, Blood pressure, EMG, EEG, Reflexes Response, Skeletal Muscles, Spirometer **UK / USA / JAPAN / EU**	02
45.	**Required Add-ons for available unit** - XR 4.0 X-ray Fluorescent Screen (09057-26_) Phywe - XR 4.0 X-ray Blood Vessel model of contrast fluid (09058-06) - XRI 4.0 X-ray imaging Set Radio photography set, 09150-88 - XRD 4.0 X-ray dosimetry and radiation damage upgrade set 09170-8	1 each

	UK / USA / JAPAN / EU	
46.	**Transducers and Instrumentation Trainer** The Transducers and Instrumentation Trainer shows didactically the function principles of the transducers most used in industry. It is divided into two parts: the lower part, in which all the input and output transducers are found, while in the upper part, the system of signal conditioning and those of instrumentation are found; **Input Transducers:** Resistance Transducers for applications in angular or linear position:, The Wheatstone Bridge circuit., Temperature sensor IC "Integrated Circuit LM 335"., Photovoltaic Cell. Phototransistor. Photodiode PIN. Photoconductive Cell. Linear Variable Differential Transformer LVDT. Extensiometric Transducer., Airflow Sensor. Air pressure Sensor. Humidity sensor, Slotted optoelectronic Sensor. Opto- reflective Sensor. Inductive sensor, Hall effect Sensor.Permanent D.C. magnet tachogenerator, Dynamical microphone. Ultrasonic receiver. **Output Transducers:** Electrical Resistance, Incandescent Lamp., Applications for the sound output: Buzzing (Buzzer). , Mobile coil loudspeaker, Ultrasonic transmitter. Applications of linear or angular motion: D.C. Soleinod., D.C. Relay., Solenoid Valve. , Permanent Magnet D.C. Motor. **Signal Conditioners:** D.C. Amplifiers. A.C. Amplifier. , Power Amplifier. Current Amplifier. , Buffers., Inverting Amplifier. , Differential amplifier. , V/F and F/V Converters. V/I and I/V Converters. , Full Wave Rectifier., Hysteresis convertible Comparator. , Electronic switch. Oscillator 40 kHz. , Filter 40 kHz. Time-constant convertible Low Pass Filter., Circuit with Mathematical Operation: Adding amplifier.Integrator with different time constants. Differentiator with different time constants. Instrumentation Amplifier. Circuit SAMPLE & HOLD., Amplifiers with gain control and offset. **UK / USA / JAPAN / EU**	02
47.	**Educational Ultrasound Apparatus** • Phantom • Ultrasonic Echoscope • Ultrasonic Probe • Coupling Gel • Ultrasonic Doppler Apparatus • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	03
48.	**Educational Doppler Apparatus** • Phantom • Ultrasonic Probe • Coupling Gel • Ultrasonic Doppler Apparatus • With Computer interface • With complete accessories **UK / USA / JAPAN / EU**	04
	Telemedicine	
49.	**Compact DAQ Module with sensors to acquire real-time physiological data and LabVIEW software** **Practical to be performed:**	01

	• To acquire physiological data from biomedical sensors into VIs. • To apply advance analysis & measurements on acquired signals. • To communicate with VIs across a network using UDP. • To communicate with VIs across a network using TCP/IP protocol. • To observe live data streaming using network streams. • To share data using wireless communication protocols. • To setup a Tele-Monitoring system. To design a Biomedical Data Management System using LabVIEW **UK / USA / JAPAN / EU**	
	Biomedical Control System	
50.	**Base Platform WITH** • DC Motor Control Board • Actuators and Motors Add on Board • Servo Control System with Embedded Controller **UK / USA / JAPAN / EU**	03
	Neural Network Equipment List	
51.	**The Nervous System: Model experimenting illustrating the development of resting potential** • To analyze Ionic permeability • Demonstrate artificial cell membrane • To work on ion pump • To regulate diffusion potential **UK / USA / JAPAN / EU**	03
52.	**Neurosimulator: Membrane time constant and low-pass filtering (with cobra 4)** • Neuro-simulator • Cobra-4 Basic Unit, USB • Neuro-simulator, Power supply 12V/ 2 A • Software Cobra 4 with universal Recoder **UK / USA / JAPAN / EU**	03
53.	**53 .a)** **DENFORD COMPACT 1000 PRO CNC ROUTER** — **1 Set** **<u>Technical Specification :-</u>** Machine Length (A) 875mm Machine Depth (B) 765mm Machine Height (C) 675mm Length with Optional Base (D) 1678mm Height with Optional Base (E) 1440mm Machine Weight 116kg Machine Weight with Opt. Base 230kg Table Size 400 x 240mm Travel X Axis 400mm Travel Y Axis 240mm Travel Z Axis 110mm Beam Clearance 140mm Max. Spindle Speed 24000rpm Non-Ferrous Metal Cutting Yes Spindle Speed Control Yes Spindle Speed Override Yes Max. Feed Rate 5000mm/min Max. 3D Profiling 4500mm/min	03

		Mains Supply Requirements* Single Phase Spindle Motor 1.0kW Axes Motors Stepper Volts 230VAC Amps 8 Amps Hz 50 Hz Electric Connection 13 A Socket **UK / USA / JAPAN / EU**			
	53 .b)	**DENFORD MICROTURN CNC LATHE** **(Suitable for Bench Mounting)** **Technical Specification :-** Machine Length (A) 685mm Machine Depth (B) 654mm Machine Height (C) 688mm Machine Weight 57kg Table Size n/a Swing Over Bed 90mm (150mm opt) Travel X Axis 50mm Travel Y Axis n/a Travel Z Axis 126mm Table to Spindle n/a Max. Spindle Speed 2500rpm Max. Feed Rate 600mm/min Max. 3D Profiling n/a Mains Supply Single Phase Spindle Motor 0.075kW Axes Motors Stepper Volts 230VAC Amps 8 Amps Hz 50 Electrical Connection 13A Socket	**1 Set**		
			1 Set		
		UK / USA / JAPAN / EU			
54.		**Neurobiology: nerve cell interactions (with cobra 4)** • Neurobiology Lab, 230 V • Complex Neural Networks • Nerve cell interactions • Additional Nerve Cell **UK / USA / JAPAN / EU**			03
		Microprocessor and Microcontroller			
55.		CanaKit Raspberry Pi3 Complete Starter Kit-32 GB Edition **UK / USA / JAPAN / EU**			7
56.		Arduino Basic Kit **UK / USA / JAPAN / EU**			7

57.	Inter IoT Developer Kit **UK / USA / JAPAN / EU**	07
58.	BeagleBoard-X15 ARM Cortex A-15 **UK / USA / JAPAN / EU**	07
59.	Benchtop combined Router and Lathe — A3RTCmi^2 **UK / USA / JAPAN / EU**	01

B. Computers and UPS for Equipments

Computers and ups required for the Equipments with are listed and specifications are given below:

S.No	Specifications	Quantity
1.	Core i5 7500 (7TH GEN.) 8GB RAM -1TB SATA HARD DRIVE - INTEL HD GRAPHICS - DVD RW - KEYBOARD – MOUSE	**31**
2.	Intel CORE i7 (7th Gen.), 16GB Memory, NVDIA Ge Force GTX 1070, 256 GB Solid State Drive + 2TB SATA HARD DRIVE - DVDRW - KEYBOARD – MOUSE	**02**
3.	**UPS** 1 KVA UK / USA/ JAPAN / EU	**33**

C. Fixtures and Furniture's

S.No	Name	Quantity
01.	**Office Table** **2.5ft to 4ft**	06
02.	**Medium Back Revolving Chair**	06
03.	**Almarih for Library**	04