	Central Medical Supplies Public													
	Specification for Calibration Devices													
No.	Calibration Device	Parameters	Specifications	Quantity Needed	UOM	Offered Quantity	Unit Price	Total Amount/SDG	Manufacturer	Country of Origin	Delivery Time	Training	After Sales	Quality Certificate
1	Patient Simulator	ECG simulator	Display: Digital	4										
		Respiration	Communication: connector between computer and device											
		Temperature	Battery : Lithium-ion rechargeable											
		Invasive blood pressure simulator (IBP)	Battery life: minimum 6hrs											
		Cardiac output	Power input: 240 V ±20% , 50 Hz											
		Non-invasive blood pressure simulator (NIBP)												
		Pulse oximeter tester (SpO <sub>2</sub> analyzer)	ECG : 12 Leads for Adult and neonatal											
		,pacemaker, arrhythmia and performance testing, ,	IBP : 2											
			Temperature: ≥ 30 °C to 42.0 °C											
			Humidity 10 % to 80											
			Respiration Rate: 0 (OFF), 15, 20, 30, 40, 60, 80, 100, 120, 150BrPM											
			Respiration waves: Normal and ventilated											
<u> </u>			U2 % Kange: ≥21 % to 100 %											
<u> </u>		<u> </u>	Preart rate: 2 30 PPM to 300 PPM		<u> </u>							<u> </u>		
			Cardiac output: 2.5, 5, 10 liters per minute $\pm$ 5 %											
<u> </u>			Nibr Nange, 2 10 IIIIIng to 500 IIIIINg	<del> </del>				<u> </u>	<u> </u>	ł		<u> </u>		
F			(with Enough Space Between Posts for					1						
			the Large Diameter Connectors											
			Standard BB Cables					1						
			Full Remote Operation via R\$232											
			Flash Programmable Field Lingradeable											
			Simplified user interface withmulti- button navigation											
			Included all accessories											
2	Electrical Safety Analyze	Mono- hi- and pulsed hi-phasic energy measurement	1CD Display	2										
~	Electrical Safety Analyze	Equipment Leakage Current	Communication: connector between computer and device	-										
		ECG Lead Leakage Current	Power input: 240 V +20% - 50 Hz											
		Line Voltage Measurement	Protection of the pacer input against accidental defibrillation											
		Device Under Test Current Measurement	Voltage Test : Mains, Accessible, and Point to Point											
		Earth/Ground Lead Resistance/	Accuracy : ± (5 % of reading + (2 counts or 0.2 A, whichever is greater))											
		Leakage Current												
		Point-to-Point Testing	Modes of Leakage Current :AC only, DC only and True RMS											
		Enclosure/Chassis Leakage Current	Selectable											
		External Resistance	Test Loads											
		External Leakage Current	85 to 265 VAC Operation											
<b> </b>		Source Receptacle Wiring Integrity	Full 20 amp Rating	<u> </u>								<u> </u>		
		Monitor	Iouch Control Keys - No Knobs	<b>├</b> ──		<b>├</b> ───	ļ							
		MAP (Isolation) Function	LED Status Indicators											
		True PMS Measurements	Solf Tort Boints	<u> </u>	<u> </u>									
			Externally Replaceable Ground Fuse	<u> </u>	<u> </u>			1						
			Automatic Load Reversal Delay	t	<u> </u>			<u> </u>						
1			Soft Carrying Case		1			1	1	1				
3	Defibrillator Analyzer	Binhasic Energy Measurement	Display: Digital	2										
		Charging & discharging Time	Communication: connector between computer and douise	-										
		Charging Austharging Time	Communication, connector between computer and device	<u> </u>				ł						
			Battery life: minimum 2hrs	<u> </u>				1						
-			Power input: 240 V +20% 50 Hz											
			On-Screen viewing of Defibrillator Waveform	t	<u> </u>			<u> </u>						
-			0-1000 Joule Capacity	t	1			<u> </u>				1		
-			Energy Output Measurement : > 0.1   to1000	1	1		-	1	1	1				
-			Accuracy : < ± 1%	1	l			1	1	1		1		
		1	Charge Time Measurement :≥ 0.1 s to 100 s					1						
			Accuracy : ≤ ± 0.05 s	1		1		1				1		
			Waveform storage & playback	1	İ	1						İ		
			≥10 Universal patient lead connectors		1	1		1				1		
1			Full Remote Operation via RS-232											
			Flash Programmable for Upgrades											
			Included all accessories									I		

No.	Calibration Device	Parameters	Specifications	Quantity Needed	UOM	Offered Quantity	Unit Price	Total Amount/SDG	Manufacturer	Country of Origin	Delivery Time	Training	After Sales	Quality Certificate
4	Gas Flow Analyzer	Pressure	Display: Digital	1										
-		Elow	Communication: connector between computer and device											
		Volume	Power input: 240 V ±20% . 50 Hz											
		Oxygen Concentration												
		Ventilator Parameter	Oxygen Measurement: 0 % to 100 %											
		Respiratory Parameters	Gas Compatibility : Air, O2, CO2, N2, N2O and mixtures											
		Pressure Measurements	bi-directional flow											
		calibration for all ventilators, anesthesia machinesand spirometers.	Test Flow : Continuous (High/Low). Volumetric (High/Low)											
			Pressure: High . Low and Airway											
			All Ventilator Parameter											
			Communicates with test software and ventilator											
			Adult, Pediatric and High Frequency ventilation											
			Internally stores all measured and respiratory		-									
			parameters in order to simplify the testing procedure											
			Included all accessories		-									
			≥16 ventilator parameter measurements											
			Trending and statistical analysis of all measured values											
			Onboard graphical display											
			Portable and compact											
			RS232 for computer control											
			Memory for storing results											
			VT for Windows PC software											
			Optional sensor assembly for temperature and humidity											
			measurement											
			unit include:											
			Accessory kit											
			CD, includes: quick-reference card, operator's manual, getting-started manual,											
			Getting-started manual, hard copy and pdf file on CD (MANUAL)											
			Quick-reference card, hard copy and pdf file on CD (		-									
			High-flow sensor											
			Low-flow sensor )											
			High-pressure adapter, male to female)											
			Low-pressure adapter )											
			Oxygen-sensor cable,> 6 ft (FITING)											
			adapter for oxygen sensor											
			Oxygen sensor											
			Covid communications cable DE 222 ACCEMPLY)											
			VE for Windows DC Software (CD DOM)											
_			VT for Windows PC Software (CD ROM)											
5	Electrosurgery Analyzer	Power Measurement output	Uispiay: Uigital	1										
		HF/RF Leakage Current	Communication: connector between computer and device											
<u> </u>		lest load	Battery life: minimum 2hrs											
⊢		peak-to-peak voltage and crest factor	Power input: 240 V ±20% , 50 Hz											
<u> </u>			Test Load - Managements with accuracy of ± 5 % of reading											
<u> </u>			rest-Load : Monopolar and bipolar											
<u> </u>			Power Measurement Output: ≥ 1 to 350 W											
L			Current Measurement (Leakage) : ≥ 30 mA to 2000 mA RMS	L										
			Foot-switch output for triggering the ESU under test											
			storage and Recall: Protocol formats and data may be stored, recalled, printed out, or transferred.											
			include: • Operator's Manual (PDF or CD) (CD-ROM) • Operator's Manual (hard copy) (MANUAL) • ESU- safety leads)											
			(ESU JUMPER LEAD) • Test lead with stackable plugs • (ESU CABLE) • Sure-grip large alligator clip set											
			Include all accessories											

No.	Calibration Device	Parameters	Specifications	Quantity Needed	UOM	Offered Quantity	Unit Price	Total Amount/SDG	Manufacturer	Country of Origin	Delivery Time	Training	After Sales	Quality Certificate
6	Anesthetic Agent Analyzer	Halothane, Enflurane, Isoflurane, Desflurane, and Sevoflurane	Display: Digital	1										
		measures O2, CO2, and N2O 3	Communication: connector between computer and device											
			Battery life: minimum 2hrs											
			Power input: 240 V ±20% , 50 Hz											
			Measures 02 CO2 and N20											
			Respiration Rate: ≥ 1 to 60 BPM											
			Occlusion Clearing											
			Time to Detect Agent: < 15 seconds @ 200ml/min											
			Agent Detection Resolution: 0.1 Volume Percent											
			Mixed Gas Infeshold: 0.2 Vol. % +10% of total concentrations     Orclusion Clearing: Automatic											
			all accessories are Included											
7	NIBP Simulator	Generates pressure	Display: Digital	3										
		Brossure Look Tost	Communication: connector between computer and device	-										
		Pressure Measurement	Battery life: minimum 2hrs											
			Power input: 240 V ±20% , 50 Hz											
			Adult, Neonatal, Hypertensive & Hypotensive Modes											
			Internal cuff for Adult and Neonatal for basic device testing											
			pressure range : ≥ 50 mmHg to 350 mmHg											
			Dynamic simulations for arm- and wrist-curr monitors  Internal cuff volume for basic device testing	1										
			Respiratory artifacts, including spontaneous breathing and controlled	1					1				<u> </u>	
			Arrhythmia simulations, including premature atrial contractions #1 and											
			PC based ansur test automation system to standardize testing protocol											
			High-accuracy pressure transducer											
0	Dulas Quumateu Analusan	Co-O2 Cohumbian	Include all accessories	-										
8	Pulse Oxymetry Analyzer	SpO2 Saturation	Display: Digital	2										
		Perfusion Rate	Power input: 240 V ±20% , 50 Hz											
		Transmission Level (finger)	Small, portable and lightweight											
<u> </u>		Artifacts	Large, easy to read LCD display											
			Rechargeable battery lasts 10 hours minimum											
			SpO2 Saturation: 80 %, -100 %											
			Heart rate: 30,-250 BPM											
			R-curves: Nonin, Masimo, Nellcor, Nihon Kohden, Mindray, GE, Philips,											
			BCI and others											
			Measures all Probe											
			Measurement Red LED/Detector voltage: ≥ 0 V to 4 V											
			Included all accessories											
9	Infusion Pump Analyzer	Delivered Volume Measurement	Display: Digital	2										
		Flow Rate Test	Communication: connector between computer and device											
		Bolus Measurement	Battery life: minimum 2 hrs											
		Occlusion pressure measurement	Power input: 240 V ±20% . 50 Hz											
		P	Tests up to four infusion pumps simultaneously	+									<u> </u>	
			Compatible with virtually any type of infusion device	1				1	1				1	
			Instantaneous and average flow measurement	1								İ	İ	
			Occlusion pressure measurements to 45 psi	1					1				1	-
		<u> </u>	<ul> <li>Circle and dust flow (size the shift section)</li> </ul>	+									<u> </u>	
			Single- and dual-flow (piggyback) testing     Euli DCA testing (balus values a lastistic transmission)	+		├								-
			Full PCA testing (bolus volume, lockout time, and automated external triggering)											
			Autostart mode enables unit to begin testing only when detected fluid is											
			Live graphical view for real real-time pump malfunction/problem											
			<ul> <li>Built-in memory to save test results for printing or downloading to computer</li> </ul>											
			Flow rate : ≥ 0.5 ml/h to 1000 ml/h											
		ļ	Accuracy : ± 1%	<b> </b>		<b>└──</b>								
		ļ	Volume Measurement : ≥ 0.06 ml to 9999 ml	<b> </b>										
			Accuracy : ± 1%	ļ										
			Bolus Volume : ≥ 0.5 ml to 9999 ml		L								L	
			Pressure Measurement Range : ≥ 0 PSI to 45 PSI											

No.	Calibration Device	Parameters	Specifications	Quantity Needed	UOM	Offered Quantity	Unit Price	Total Amount/SDG	Manufacturer	Country of Origin	Delivery Time	Training	After Sales	Quality Certificate
10	Oxygen Analyzer	measure the oxygen concentration	Display: Digital	3										
			Battery life: ≥ 3000 hrs in used											
			Measurement Range: 0 % to 100 %											
			External Oxygen Sensor											
			Oxygen Sensor Cable ≥ 50 cm											
			Breathing Circuit											
			Include all accessories											
11	Infant Incubator Analyzer	Temperature Measurement	Display: Digital	2										
	· · · ·	Humidity Measurement	Communication: connector between computer and device											
		Air Flow	Battery life: minimum 15 hrs continuous operation											
		Sound Level	Power input: 240 V ±20% , 50 Hz											
			Compatible with closed, forced convection incubators and open infant warmers											
			Sound Level : ≥ 30 to 70 dBA											
			Humidity Measuring Range: 0 % RH to 100 % RH											
			Temperature : 5 °C to 60 °C											
			Temperature sensor in contact with mattress											
			Temperature sensor inside incubater											
			Temperature sensor outside incubater											
			Airflow : from 0.1 to 0.7 m/s											
			<ul> <li>Windows<sup>2</sup> compatible INCO software for easy data collection, analysis, and documentation</li> </ul>											
			Include:											
			User Manual											
			Airflow Sensor											
			Universal AC Battery Charger with Worldwide Mains Adapter Set											
			Outside Temperature probe holder											
			Adapter for Radiant Infant Warmer Assembly											
			INCU PC Software (one CD)											
			and all recommended accessories											
12	Pacemaker Analyzer	Test load	Display: Digital	2										
		Transcutaneous Pacer Test	Communication: connector between computer and device											
		Transvenous Pacer Test	Battery life: minimum 15 hrs											
			Power input: 240 V ±20% , 50 Hz											
			Pulse Rate: 30 to 200 PPM											
			Included all accessories											
13	Pulse Oxymeter Simulator	SPO2 output	Display: Digital	3										
		calibrated pulse rate.	Communication: connector between computer and device											
			Battery life: minimum 2hrs											
			External AC Adapter											
			Power input: 240 V ±20% , 50 Hz			<u> </u>								
			SpO2 Saturation:( 80 % - 100 %)	ł										
			Heart rate: 30, 60, 80, 100, 120, 150 and 245 BPM											
			Rates											
			R-curves: Nonin, Masimo, Nellcor, Nihon Kohden, Mindray, GE, Philips,	-										
			Accuracy: ± 1 %											
	Diagnostic Ultrasound													
14	Calibration	Multi Tissue Phantom	Complies with the AIUM standard for quality assurance	1										
			Includes cyst-like and solid structures in various sizes											
			Simulates liver tissue scattering and attenuation											
			Provides resolution targets at several depths     Compatible with all types of imaging equipment, including small parts											
			scanners											
			<ul> <li>Provides resolution targets at several depths</li> </ul>											
			Withstands extreme temperatures, to use for service and quality control use											
			Speed of sound: 1540 m/s ± 10 m/s											
			Attenuation coefficient: 0.5 dB/cm/MHz or 0.7 dB/cm/MHz	Γ										

No.	Calibration Device	Parameters	Specifications	Quantity Needed	UOM	Offered Quantity	Unit Price	Total Amount/SDG	Manufacturer	Country of Origin	Delivery Time	Training	After Sales	Quality Certificate
15	ECG Simulator	Lead Test	Digital display, Portable,	3										
		12 lead ECG simulation	Power: 9 V battery:t:> 150 continuous hours operation											
		12-lead configuration with independent outputs	<ul> <li>Simplified user interface with four button navigation</li> </ul>											
			<ul> <li>Field upgradeable, and easily paired with other devices for</li> </ul>											
			comprehensive testing											
			Humidity 10 % to 80 % non-condensing											
			Amplitude 0.05 mV to 0.45 mV (0.05 mV steps); 0.5 mV to 5.5 mV (0.5											
			mV steps)											
			Included all accessories											
16	Phototherapy Radiometer	measuring and monitor output power of lamps	Digital display, Portable, fixed -bandwidith and battary operated used to	2										
		Determine and monitor irradiance and dosage	measure Irradiance from photothearpy lamps											
		dilivered to newborn.	The detector consist of sensitive photodetector poibe respond to light	-										
		effectiveness	The probe is also provide with wide range-angle lens to match the											
		checheness	cosine receiving function of human skin.											
			Probe Lens matches the cosine receiving function of human skin											
			Spectral range 429 - 473 nm											
			Measurement range: 0-1999 µW/cm2											
			Resolution 1 µW/cm2											
			operating temperature : (0-50)8 C											
			Linearity : ± 3%											
			Radiometer Accurcy: Within ±5% Full scale											
			Included all accessories											
			Provides accurate simulation of wide ranges of normal and											
17	Lung Simulator	accurately simulates human pulmonary function	diseased lung conditions for ventilator testing/calibration and respiratory therapy instruction • Provides an accurate measure of volumes, pressures and flow rates of	2										
			medical equipment											
			pressure sensing equipment communicates with software on apersonal computer Tidal Volume Capacity: > 2.0 L Lung Compliance (adjustable): .01 to .10 L/OmR20 Residual Lung Volume: 1.02 L Accuracy: +/- 3% (at calibration volumes) Airway Resistance (adjustable): Accuracy: +/- 5% (at calibration flows Sterilized Components											
			Included all accessories											
10	Analytic Balance calibrting													
18	Weight	calibrate analyical sensitive balances	Set of weights of 1 mg to 200 g Certificate for set of weights1 mg to 200	1										
			g 3											
			Material: Wooden box with clasp, lined with velvet, a special glove, housing for extractable fractional weights, tweezers and brush. Weight details: 1 mg, 2 mg, 2 mg, 5 mg, 10 mg, 20 mg, 20 mg, 50 mg, 100 mg, 200 mg, 200 mg, 500 mg, 1 g, 2 g, 2 g, 5 g, 10 g, 20 g, 20 g, 50 g, 100 g, 200 g y 200 g Total 23 weights = 611.11 g											
			Set of weights and Certificate for set of weights includeing the flowing:											
			1 mg - 500 mg , 1 g - 50 g , 1 mg - 1 kg ,1 mg - 5 kg . 1 mg - 10 kg . 1g-20kg											
			Weights made from solid, anti-magnetic, polished stainless steel. Suitable											
			Identification number guarantees traceability for weights from 1 g											
			Included all accessories	1										
19	Pepitt Calibration	Ensure accurate, precise volumes from every pipette	Used for single-channel and multi-channel piston-operated pipette	2										
			Resolution 0,01 mg	1										
			Resolution 0,01 mg		l									
			Repeatability < 0,02 mg											
			Line voltage 100 - 240 V											
			Volume Range All standared volume range											
			Inaccuracy Less than 1%											