

**BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY (BUET)
DHAKA**

TECHNICAL SPECIFICATION FOR SUPPLY AND INSTALLATION OF LABORATORY EQUIPMENTS (PKG1).

Package number: G4

NO: HEQEP/CP-3137/Procurement/PacakageG4/26-08-2015/004

Sl.	Item Name	Description	Qty
01	Embedded system and sensors Raspberry Pi	Brand Name	To be mentioned by the bidder
		Model	To be mentioned by the bidder
		Country of origin	To be mentioned by the bidder
		Physical Specifications	
		SoC (System on Chip)	Broadcom BCM2835 or latest
		Standard So C Speed	At least 700Mhz
		RAM	At least 512MB
		Storage	Micro SD
		Ethernet 10/100	Yes
		HDMI output port	Yes
		Composite video output	On 3.5mm jack
		Number of USB2.0 ports	At least 4
		Expansion header	At least 40
		Number of available GPIO	At least 26
3.5mm audio jack	Audio/Video		
Number of camera interface ports (CSI-2)	1 or more		
			20

		Number of LCD display interface ports (DSI)	1 or more	
		Power (bare, approx, 5v)	Around 650mA, 3W	
		Warranty	Min. 1(One) year full warranty	
02	Embedded system and sensors	Brand Name	To be mentioned by the bidder	20
	Arduino (Uno)	Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Microcontroller	ATmega328	
		Operating Voltage	5V	
		Input Voltage (limits)	6-20V	
		Digital I/O Pins	14 (of which 6 provide PWM output)	
		Analog Input Pins	6	
		DC Current per I/O Pin	40 mA	
		DC Current for 3.3V Pin	50 mA	
		Flash Memory	32 KB (ATmega328)	
		SRAM	2 KB (ATmega328)	
		EEPROM	1 KB (ATmega328)	
		Clock Speed	16 MHz	
		Dimension	Length at most 70 mm	
		Warranty	Min. 1(One) year full warranty	
03	Embedded system and sensors	Brand Name	To be mentioned by the bidder	20
	Arduino (Due)	Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Microcontroller	AT91SAM3X8E	

		Operating Voltage	3.3V	
		Input Voltage (limits)	6-16V	
		Digital I/O Pins	54 (of which 12 provide PWM output)	
		Analog Input Pins	12	
		Analog Outputs Pins	2 (DAC)	
		Total DC Output Current on all I/O lines	Max 130 mA	
		DC Current for 3.3V Pin	Max 800 mA	
		DC Current for 5V Pin	Max 800 mA	
		Flash Memory	Min 512 KB * all available for the user applications	
		SRAM	96 KB (two banks: 64KB and 32KB) or more **	
		Clock Speed	84 MHz or more **	
		Dimension	Length at most 102 mm	
		Warranty	Min. 1(One) year full warranty	
04	Embedded system and sensors	Brand	To be mentioned by the bidder	20
		Model	To be mentioned by the bidder	
	BLE Smart Sensor	Country of origin	To be mentioned by the bidder	
		Board	BR-LE4.0-S3A Single Mode Module or similar	
		Memory	At least 256K Flash, at least 8K RAM.	

		Sensors	3-Axis 12-bit accelerometer ($\pm 2, 4, 8, 16g$) 16-bit Light sensor 0-64000 LUX 13-bit Temp sensor $-40^{\circ}C$ to $+85^{\circ}C$ ($\pm 0.5^{\circ}C$)	
		ADC Channel	1 12-bit ADC channel available on a test point	
		Push button and LEDs	At least 2 push buttons and 2 LEDs	
		Communication mode	Bluetooth low energy (BLE), Single and Dual mode	
		Transmit power	$-23dBm$ to $0dBm$ for short to long range applications, software adjustable	
		Power consumption	Ultra low power, $18.2mA$ $0dB$ TX, RX down to $17.9mA$, $1\mu A$ sleep w/timer, and $0.5\mu A$ deep sleep.	
		iBeacons support	YES, configurable for near, far proximity	
		Radio frequency	ISM 2.4GHz module.	
		Diameter (PCB)	Around $25.50mm$ ($1.0''$)	
		Weight	No more than $10gm$ ($0.3oz$)	
		Enclosure Construction	Plastic or clear Urethane, water resistant	
		Battery	3.0 volt lithium coin battery	
		Software, apps, accessories	If any	
		Warranty	Min. 1(One) year full warranty	
05	Pulse Oximeter	Brand	To be mentioned by the bidder	10

	with Bluetooth	Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Type	Fingertip	
		Measurement	blood oxygen saturation levels (SpO2) and pulse rates	
		Wireless interface	Bluetooth 3.0 or above, Bluetooth Low Energy	
		Display system	LED	
		SpO2 measuring range	70-99%	
		SpO2 accuracy	±2%	
		Pulse rate measuring range	30-250 bpm	
		Pulse rate accuracy	±2bpm or ±2%	
		Warranty	Min. 1(One) year full warranty	
		06	Wireless Glucose meter	Brand Name
Model	To be mentioned by the bidder			
Country of origin	To be mentioned by the bidder			
Memory Capacity	At least 255 tests			
Result Range	10 to 600 mg/dL			
Sample Size	Minimum 0.3 microliter			
Test strips	Min 10 (comes with the unit)			
Operating temp	50-104 Degree F			
Test Time	3-5 seconds			
Communication Interface	Bluetooth or Low energy Bluetooth			

		Compatibility	Windows, Apple Mac, Android, Blackberry, Windows Mobile and Java enabled mobile devices	
		Power & Battery	Around 3.6 V	
		Battery Life	At least 2,000 Tests	
		Software and accessories	If any	
		Warranty	Min. 1(One) year full warranty	
07	Fitness band	Brand Name	Internationally reputed brand to be mentioned by the bidder	10
		Manufacturer Website Address	To be mentioned by the bidder	
		Manufacturer Part Number	To be mentioned by the bidder	
		Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Product Line	To be mentioned by the bidder	
		Product Series	To be mentioned by the bidder	
		Wearable	Wrist wearable	
		Sensors	Optical heart rate sensor 3-axis accelerometer Gyrometer GPS Ambient light sensor UV sensor Skin temperature sensor Capacitive sensor Galvanic skin response	
		Compatibility	Windows Phone 8.1 or later, with Bluetooth 4.0 iOS 7.1 or later: iPhone 4s, 5, 5c, 5s, 6, 6 Plus Android 4.3 – 5.0 phones with Bluetooth	

		Battery	Type: Dual 100mAh rechargeable lithium-ion polymer batteries Life: 48 hours of normal use; advanced functionality like GPS will impact battery performance Average charge time: Full charge in less than 1.5 hours Connector: Magnetically-coupled connector to USB		
		Warranty	Min. 1(One) year full warranty		
08	Digital Stethoscope	Brand Name	Internationally reputed brand to be mentioned by the bidder	3	
		Manufacturer Website Address	To be mentioned by the bidder		
		Manufacturer Part Number	To be mentioned by the bidder		
		Model	To be mentioned by the bidder		
		Country of origin	To be mentioned by the bidder		
		Product Line	To be mentioned by the bidder		
		Product Series	To be mentioned by the bidder		
		Technical Information			
		Compatibility	iPhones, iPads, Android, Mac, PC devices		
		Audio jack	standard 3.5mm jack		
		Headphones	in-ear headphones		
		Connections	Smartphone, tablet, computer,		
		Device interface	iPhone, iPad, Android, PC		
		Charge	USB-style Travel Charger (100-240V)		
Battery	Lithium ion				

		Sound type	Ranging from very low frequency (low pitched sounds such as S3), to higher frequencies (lung sounds) and a few in between	
		Warranty	Min. 1(One) year full warranty	
09	Embedded Health Sensor Kit	Brand Name	Internationally reputed brand to be mentioned by the bidder	3
		Manufacturer Website Address	To be mentioned by the bidder	
		Manufacturer Part Number	To be mentioned by the bidder	
		Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Product Line	To be mentioned by the bidder	
		Product Series	To be mentioned by the bidder	
		Technical Information		
		Sensors	<ul style="list-style-type: none"> - Pulse and oxygen in blood sensor (SPO2) - Airflow sensor (breathing) - Body temperature sensor - Electrocardiogram sensor (ECG) - Glucometer sensor - Galvanic skin response sensor (GSR - sweating) - Blood pressure sensor (sphygmomanometer) - Patient position sensor (Accelerometer) - Electromyography Sensor (EMG) 	
		Supported Interface	Arduino, Raspberry Pi and Intel Galileo	

		e-Health Sensor Shield	Must be included. This shield allows Arduino and Raspberry Pi users to perform biometric and medical applications where body monitoring is needed by using 9 different sensors mentioned above.	
		Warranty	Min. 1(One) year full warranty	
10	Heart Rate Monitor	Brand Name	Internationally reputed brand to be mentioned by the bidder	10
		Manufacturer Website Address	To be mentioned by the bidder	
		Manufacturer Part Number	To be mentioned by the bidder	
		Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Product Line	To be mentioned by the bidder	
		Product Series	To be mentioned by the bidder	
		Technical Information		
		Wearable	Around chest, with strap	
		Sensors	heart rate sensor, movement sensors, GPS	
		Measurement	heart rate, speed, and distance	
		Connectivity	Bluetooth 2.0 or above or Bluetooth BLE	
		Compatibility	Android or Windows Phone 8 device	
		Water resistance	YES, upto 1 meter	
		Battery	Rechargeable battery, lasts at least 24 hours continuous usage	
		Warranty	Min. 1(One) year full warranty	

11	Wireless Blood Pressure Monitor	Brand Name	Internationally reputed brand to be mentioned by the bidder	10
		Manufacturer Website Address	To be mentioned by the bidder	
		Manufacturer Part Number	To be mentioned by the bidder	
		Model	To be mentioned by the bidder	
		Country of origin	To be mentioned by the bidder	
		Product Line	To be mentioned by the bidder	
		Product Series	To be mentioned by the bidder	
		Technical Information		
		Wearable	At wrist	
		Measurement	systolic/diastolic numbers, heart rate, pulse wave and measurement time	
		Compatibility	Android, iPhone	
		Measuring method	Oscillometric, automatic inflation and measurement	
		Wireless communication	Bluetooth 3.0 or similar	
		Cuff circumference	5.3" - 8.7" (13.5cm - 22cm)	
		Cuff pressure	0-300mmHg	
		Pressure accuracy	±3mmHg	
		Pulse rate range	40 -180 beats/min,	
		Power	DC 5.0 volt, current 1.0 A	
Battery	Li-ion, 3.7 volt, 400mAh			
Warranty	Min. 1(One) year full			

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