SUPPLY, DELIVERY, TESTING AND COMMISSIONING OF EQUIPMENT FOR TELECOMMUNICATION SYSTEM AND ENGINEERING, SCHOOL OF SCIENCE AND ENGINEERING, LUMUT CAMPUS, POLITEKNIK BRUNEI, NEGARA BRUNEI DARUSSALAM

ITEM *ITEM*	BANYAK *QUANTITY*	KETERANGAN *DESCRIPTION*
1	**15-30 Sets**	**Soldering station**
		• Plug Type : Type G - British 3-pin
		• Watt : 70W
		• Input Voltage : 230V
		• Output Power : 70W
		• Soldering Tip Temperature : 450°C
		Features :-
		• Temperature accuracy of ±9°C
		• 70W Power station 40% more powerful compared to 50W stations
		• Ergonomic and fast heating soldering iron
		• Features digital display for easy temperature readings
		• Heat resistant silicon cables
		• Standby mode for efficiency
		• Easy tip changes
		The soldering station set include:
		• WE 1 power unit **x1**
		• WEP 70 soldering iron **x1**
		• PH 70 soldering iron rest **x1**
		• Soldering tip **x1**
		• AC power adapter plug must follow Brunei's electrical requirement (230 - 240V, 50Hz)
		• Minimum one (1) Year Warranty
2	**2 Sets**	**COURSE DIGITAL MODULATION METHODS ASK, FSK, (Q)PSK**
		This set include:
		• Experiment card with PSK/QPSK modulator **x1**
		• Experiment card with PSK/QPSK demodulator **x1**
		• Experiment card with ASK modulator/demodulator **x1**
		• Experiment card with FSK modulator/demodulator **x1**
		• Storage case
		• Labsoft browser and course software

		Course contents:
		Introduction to the principle of ASK modulation and demodulation for
		• transmitting digital signals over analog lines
		• Investigation of the spectrum of an ASK-modulated signal by measurement
		• Investigating the relationship between data transfer rate and the required bandwidth
		• Introduction to the principles of FSK modulation and demodulation for transmitting digital signals over analog lines
		• Identifying advantages of FSK modulation over ASK modulation
		• Investigation of the spectrum of an FSK-modulated signal by measurement
		• Investigation of the relationship between data transfer rate and the required bandwidth
		• Introduction to the operation of a PLL
		• Demodulation of FSK signals using a PLL circuit
		• Introduction to the principles of PSK (DPSK) modulation and demodulation
		• Generation of 2 PSK signals at different baud rates
		• Introduction to the principles of QPSK and DQPSK modulation und demodulation
		• Generation of 4 PSK signals
		• Introduction to generation of dibits
		• Relationship between data rate and baud rate by measurement
		• Measurement of signals at the output of modulators and demodulator (ASK, FSK, (Q)PSK) over time
		• List of advantages and disadvantages for various modulation methods
		• Minimum one (1) Year Warranty
3	30 units	**Dip Integrated Circuit (IC) Remover Tool**
		Specifications :-
		• Type : U shape
		• Ends Shape : Flat
		• Material: stainless steel
4	35 units	**1.2 mm Straight Hoof Soldering Iron Tip for use with WEP 70**
5	30 units	**3 Way Adapter with Square-Pin, Universal Socket with Light And 13A Fuse.**
6	20 units	**Extension Reel - 4 Way Socket, 240V 13A (10 Metre)**
7	25 units	**Raspberry Pi4 Case**
		• High-quality ABS construction
		• Secure fit protects your Raspberry Pi 4
		• Optional removable clip-on lid

		• Cut-outs for dual micro HDMI, Audio/Video, USB and Ethernet ports, as well as the USB-C power connector and access to the microSD card
		• Power and activity lights remain visible
		• Anti-slip feet
		• Compatible with Raspberry Pi 4 Case Fan
8	25 units	**USB-C power supply for Raspberry Pi 4 [UK Plug]**
		• 1.5 m cable (Approx.)
		• USB Type-C
		▪ Short circuit, overload and surge protection
		▪ Low power consumption in standby mode
		▪ Double insulated to Class II
		▪ AC power adapter plug must follow Brunei's electrical requirement (230 - 240V, 50Hz)
9	25 units	**Raspberry Pi 4 Case Fan**
		• Input voltage: 5V DC supplied via 40-pin GPIO header on Raspberry Pi 4
		• Fan speed control: Pulse width modulation control via user-selectable GPIO pin
		• Maximum airflow: 1.4 CFM
		• Case material: Clear PC
10	25 units	**Raspberry Pi 4 Model B Micro HDMI to HDMI Cable**
11	2 sets	**Hyper tough 64 piece multi-type screwdriver set**
		• Forward and Reverse ratchet handle
		• 42 screwdriver bits
		• 20 nut drivers
		• 1 flexible extension
12	15-30 sets	**Cleaning Kit WDC/WPB1/Tip activator**
		(WDC - Dry Cleaner with brass cleaning wool, WPB1 - Polishing Bar for removal of compacted oxidized films)
13	15-30 sets	**Arduino Starter Kit**
		This kit include:
		• Projects Book (170 pages) **x1**
		• Arduino Uno **x1**
		• USB cable **x1**
		• Breadboard 400 points **x1**
		• Solid core jumper wires **x70**
		• Easy-to-assemble wooden base **x1**
		• 9v battery snap **x1**
		• Stranded jumper wires (black) **x1**

		• Stranded jumper wires (red) **x1**
		• Phototransistor **x6**
		• Potentiometer 10kOhms **x3**
		• Pushbuttons **x10**
		• Temperature sensor [TMP36] **x1**
		• Tilt sensor **x1**
		• alphanumeric LCD (16x2 characters) **x1**
		• LED (bright white) **x1**
		• LED (RGB) **x1**
		• LEDs (red) **x8**
		• LEDs (green) **x8**
		• LEDs (yellow) **x8**
		• LEDs (blue) **x3**
		• Small DC motor 6/9V **x1**
		• Small servo motor **x1**
		• Piezo capsule [PKM22EPP-40] **x1**
		• H-bridge motor driver [L293D] **x1**
		• Optocouplers [4N35] **x1**
		• Mosfet transistors [IRF520] **x2**
		• Capacitors 100uF **x3**
		• Diodes [1N4007] **x5**
		• Transparent gels (red, green, blue) **x3**
		• Male pins strip (40x1) **x1**
		• Resistors 220 Ohms **x20**
		• Resistors 560 Ohms **x5**
		• Resistors 1 kOhms **x5**
		• Resistors 4.7 kOhms **x5**
		• Resistors 10 kOhms **x20**
		• Resistors 1 Mohms **x5**
		• Resistors 10 Mohms **x5**
14	15-30 sets	**Arduino Explore IoT Kit Rev2**
		This set include:
		Arduino MKR1010
		• 24V relays **x2**
		• SD card holder
		• Tactile buttons **x5**
		• Plug and play connectors for different sensors
		• Temperature sensor
		• Humidity sensor
		• Pressure sensor
		• Gas sensor (VOC)
		• Ambient light sensor

		• RGB color sensor
		• Gesture sensor
		• Accelerometer
		• RGB 1.20" rounded display
		• 18650 Li-Ion rechargeable battery holder
		• RGB LEDs **x5**
		• Buzzer
		• Micro USB cable
		• Moisture sensor
		• PIR sensor
		• Plug-and-play cables for all the sensors
		• Plastic enclosure to attach and protect the hardware
15	4-8 kits	**Resistor Kit CCR-02 Carbon Film Resistors, 48 values,**
		with 1110 pieces, 10 Ω → 1MΩ
		• Kit contents : 1110 Pieces of 10ohm to 1Mohm Carbon Film Resistors
		• Range of Resistor Values : 10ohm to 1Mohm
		• Power Rating : 250mW
		• Resistance Tolerance : ± 5%

Perhatian:

Jika anda berminat untuk mengemukakan tawaran, anda dikehendaki membuat pembayaran sebanyak BND$5.00 ke Bahagian Kewangan Politeknik Brunei di tingkat 12.

Anda juga dikehendaki mengisi **BORANG PENYERTAAN** dalam talian di https://bit.ly/3Hp2RLt dan memuatnaik resit pembayaran ke dalam borang tersebut. Borang Sebutharga (RFQ) dan dokumen yang berkaitan akan dihantar melalui email.

Jika anda memerlukan maklumat lanjut, sila hubungi nursyahiirah.mazlan@pb.edu.bn atau menghubungi no. telepon +673-8278901.

Terima kasih di atas penyertaan anda.

Note:

If you are interested in submitting an offer, you are required to make a payment of BND$5.00 to Finance Division on the 12th floor, Politeknik Brunei.

You are also required to fill in the online PARTICIPATION FORM at https://bit.ly/3Hp2RLt and upload the payment receipt into the form. Quotation Form (RFQ) and related documents will be sent via email.

If you require further information, please do not hesitate to contact nursyahiirah.mazlan@pb.edu.bn or contact no+673-8278901

Thank you and looking forward to your participation.