TO SUPPLY, DELIVER AND COMMISSIONING "CENTRALIZED UNINTERRUPTIBLE POWER SUPPLY SYSTEM" TO INSTITUT PERUBATAN DAN PERGIGIAN TERMAJU UNIVERSITI SAINS MALAYSIA, 13200 KEPALA BATAS, PULAU PINANG

TECHNICAL SPECIFICATION SCHEDULE

QUOTATION NO. : SH1/21/END/CIPPT/U/00154

ITEM NO.	UNIVERSITY'S DESCRIPTION	QUANTITY	BIDDER'S SPECIFICATION (Please Write Your Specification In This Column)	TECHNICAL EVALUATION (FOR OFFICIAL USE ONLY)
A.	**ITEM NAME** **Uninterruptible Power Supply (UPS) System**			
B.	**DESCRIPTIONS** To Upgrade existing Uninterruptible Power Supply System for CTC and ARC to improve reliability, functions, performance skills, space saving and safety.			
C.	**ESSENTIAL COMPONENTS** 1. Centralized Uninterruptible Power Supply for individual Operating Theater Equipment 2. Centralized Uninterruptable Power Supply For Miscellaneous Laboratory Equipment 3. Trade-in existing UPS 4. Installation and Commissioning			

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D.	**TECHNICAL SPECIFICATION**			
	1. Centralized Uninterruptable power supply for individual operating theater equipment			
	1.1 UPS Capacity Rating			
	1.1.1 2000VA / 1400 W	1 unit		
	1.1.2 3000VA/ 2100 W	1 unit		
	1.2 General			
	1.2.1 Technology : Double Conversion, On-line Technology with Advance Battery Management system			
	1.2.2 User Interface : Graphical multilingual LCD display with blue backlight			
	1.2.3 LEDs : Four status-indicating LEDs			
	1.2.4 Topology : True online, double-conversion			
	1.2.5 Diagnostics : Full system self-test			
	1.2.6 UPS Bypass : Automatic bypas			
	1.3 Electrical Input			
	1.3.1 Nominal Voltage : 220–240V			
	1.3.2 Voltage Range : 208/230V: 160–276 Vac (with load PF = 0.7)			
	1.3.3 Frequency : 50 or 60 Hz (±5 cycles)			
	1.4 Electrical Output			
	1.4.1 Power Factor : 0.9			
	1.4.2 On Utility Voltage Regulation : ±3% of nominal			
	1.4.3 On Battery Voltage Regulation : ±3% of nominal			
	1.4.4 Efficiency : >95% high efficiency mode, online >86%			
	1.4.5 Frequency Regulation : ±3% Hz online			
	1.4.6 Load Crest Factor : 3 to 1			

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	1.5 Battery 1.5.1 Internal Battery Type : VRLA 12V/9 Ah (both internal and external) 1.5.2 EBM Battery Type : 9 Ah, sealed, lead-acid; maintenance free 1.5.3 Battery Runtime : >5 minutes with internal batteries @100% load 1.5.4 Battery Replacement : Hot-swappable internal and external batteries 1.5.5 Back-up time : 30 minutes at full load 1.5.6 Start-On-Battery : Allows start of UPS without utility input 1.6 Communications 1.6.1 Serial Port : RS-232 as standard 1.6.2 USB : As standard (HID) 1.6.3 Relay output : Common alarm as standard 1.6.4 Communications Slot : Optional communication slots (BD Slot) 1.7 Software 1.7.1 The Power Management and monitoring software must be included with the UPS 1.8 Environmental 1.8.1 Safety Markings : 120/208V: UL, CUL, VCCI / 230V: CE, GS 1.8.2 EMC Markings : 120V: FCC Class B, EN55022 Class B (1.5 kVA and below); FCC Class A, EN55022 Class A (2.0 kVA and above) / 230V: CE (per IEC/EN62040-2) 1.8.3 Emissions : Category C1, 1.8.4 Immunity : Category C2) 1.8.5 Audible Noise : <50dB 1.8.6 Ambient Operating : 0˚C (32˚F) to +40˚C (104˚F)			

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	1.8.7 Storage Temperature : -20˚C (-4˚F) to +40˚C (104˚F) with batteries and -25˚C (-13˚F) to +55˚C (131 ˚F) without batteries 1.8.8 Relative Humidity : 5–90% non-condensing 1.9 Electrical Wiring 1.9.1 The new electrical wiring for UPS input and output to the existing power DB shall be included and change new cable from new UPS panel to battery bank rack.			
	2. Centralized Uninterruptable Power Supply For Miscellaneous Laboratory Equipment 2.1 UPS capacity rating: 2.1.1 60kVA 2.2 General 2.2.1 Technology : Double Conversion, On-line Technology with Advanced Battery Management system 2.2.2 User Interface : Graphical multilingual LCD display with blue backlight 2.2.3 LEDs : Four status-indicating LEDs 2.2.4 Topology : True online, double-conversion 2.2.5 Diagnostics : Full system self-test 2.2.6 UPS Bypass : Automatic bypass 2.2.7 IGBT Technology for charger and Inverter, Built-in. 2.2.8 Cooling Fans shall be available for internal heat dissipation of UPS 2.3 Electrical Input 2.3.1 Rated Voltage : 380/400/415 VAC 3-phase, N, PE 2.3.2 Voltage Range : ± 20% at 100% load without depleting battery 2.3.3 Frequency Range : 45-65 Hz	4 units		

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	2.3.4 Rated Frequency : 50/60 Hz 2.3.5 Power Factor : 0.99 typical, active input PFC 2.3.6 Efficiency : 93% online, 99% Efficiency Optimizer 2.3.7 Frequency Range: 50 / 60 Hz ± 10% Auto Sensing 2.4 Electrical Output 2.4.1 Voltage : 380/ 400/ 415 VAC selectable, with high performance PWM inverter, providing 0.9 p.f output 2.4.2 Frequency : 50/60 Hz 2.4.3 Frequency Regulation Synchronized to line, +/-0.5, +/- 1.0, +/-2.0 Hz selectable. Free running +/- 0.005 Hz 2.4.4 Voltage Regulation : ± 2% static 2.4.5 Dynamic Response : ± 5% at 100% load change 2.4.6 Recovery time : < 1 ms 2.4.7 Voltage Distortion : < 2% THD at rated linear load; < 5% THD at rated non-linear load 2.4.8 Overload: ≤ 125% for 10 Min, ≤ 150% for 1 Min, ≥ 150% for 300 ms 2.5 Battery 2.5.1 Type : Valve regulated sealed lead acid, design life 5 years 2.5.2 Recharge time : < 5 hrs to 95% capacity 2.5.3 Battery management : Battery management system/ Advance Battery Management (ABM) Charging and Monitoring System with DC Expert (on-line battery testing) 2.5.4 Back-up time : 30 minutes at full load 2.5.5 Start-On Battery : Allows start of UPS without utility supply			

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	2.6 Control Features 2.6.1 User Interface : Monitoring panel with LCD display 2.6.2 LEDs : UPS on, Line on, Battery operation, Bypass, Audible alarm, Line failure, low battery, bypass, and alarm 2.6.3 Communications Port 1 RS232, 1 relay contacts, 1 REPO 2 environmental input , Voltage Free Relays 2.6.4 Parallel Redundancy : Can be upgraded with Hot Sync redundant/ capacity. 2.6.5 Display : Colour Touch Screen Display. 2.6.6 IP Rating : IP 20 2.6.7 Protection: Short circuit, Input Under/over voltage, Over temperature, Over current, Over load, DC Bus under/over voltage and Battery low 2.6.8 Audible alarms: Alarm for battery low & High, Inverter under & over voltage, Overload, Short circuit, Fan/temperature & UPS fault 2.6.9 Advanced battery management with temperature compensation. 2.7 Software Specification 2.7.1 Power management and monitoring software must be included with the UPS. 2.7.2 The system shall be link with existing IPPT Building Automation System (BAS) 2.7.3 Communications: SNMP Card to monitor UPS. 2.7.4 Delivers a global view of power devices across the network from any PC with an Internet browser 2.7.5 Enables single, Web-based interface for remote monitoring and management of: -UPSs.			

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	2.7.6 Offers a plug-in that provides unique benefits for virtualized environments. 2.7.7 Monitor and manage power devices and environmental sensors in multiple locations, from any PC on the network. 2.7.8 Definable views-choose what information you want to see at a glance 2.7.9 Power issue alerts. 2.7.10 Auto discovery-automatic detection of devices on the network. 2.7.11 Information on power consumption. 2.7.12 Historic trend views. 2.7.13 Asset management. 2.8 SNMP Specification 2.8.1 Open monitor via Web Browser. 2.8.2 Offer SNMP MIB to monitor UPS status. 2.8.3 Automatically detect and exchange 10M/100M Fast Ethernet. 2.8.4 Support wake-on LAN function. 2.8.5 Supported protocol such as TCP/IP, UDP, SNMP, SMTP, SNTP, HTTP, HTTPS, SSL, SSH, IPV4/IPV6, DHCP and so on. 2.8.6 Integrated with Shutdown Wizard, it can prevent data loss from power outage and safely shut down systems. 2.8.7 Able to storage event log more than 200,000 threads, including UPS warnings, faults and EMD warnings, operation data logs from web users to UPS software. It will be stored safely without loss even when power failure occurs. 2.8.8 Support daily reports for event log and data log. 2.8.9 Scheduled UPS on/off and battery test.			

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	2.8.10 Support EMD monitoring and SMS sending.			
	2.8.11 Equipped with real-time clock to record log with date and keep running up to 7 days without power connected.			
	2.9 Electrical Wiring			
	2.9.1 The new electrical wiring for UPS input and output to the existing power DB shall be included and change new cable from new UPS panel (4 units) to battery bank rack.			
	2.10 Environmental			
	2.10.1 Ambient Temperature : 0˚C to 40˚C operating, -15˚C to +45˚C storage			
	2.10.2 Humidity : 15 – 90% RH non-condensing			
	2.10.3 Audible Noise : < 60 dB(A) at 1 meter (noise less room typical)			
	2.11 Certifications			
	2.11.1 EMC Compliance : EN 50091-2 Class A			
	2.11.2 Safety : IEC62040-1-1, IEC 60950, EN62040-1-1, UL 1778			
	2.11.3 Quality : ISO 9001:2000 and ISO 14001:1996			
	2.11.4 Markings : CE and GOST			
	2.12 Dimension			
	2.12.1 The UPS shall require a small foot print only not exceed 700 x 900 x 14000 mm (W X D X H).			
	3. Trade-in existing UPS			
	2.1 The bidder shall quote price for trade in existing UPS			
	2.1.1 Rating and quantity :			
	i. 2000VA / 1400 W	1 Unit		
	ii. 3000VA/ 2100 W	1 Unit		
	iii. 60kVA	4 Units		

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	2.1.2 Weight : ≤ 600kg **4. Installation and Commissioning** 4.1 Dismantle and remove existing UPS. 4.2 Deliver and install of new UPS 4.3 Start up and test run of the UPS and UPS shall be able to function properly and ready to use. 4.4 Installation, test and certifications done by Qualified Engineer provided by vendor. 4.5 Advise Electrical layout diagram for UPS system complete with input protection. 4.6 Schematic diagram of the UPS System and battery enclosure/cabinet shall be included. 4.7 Load Bank Test with origin purchase UPS and battery to be tested, witness and verify by users at country origin/ principal/ factory site. 4.8 Two (2) users (IPPT) will attend the load test arrange and covered by vendor. 4.9 Upon completion and handover, training/briefing are require to understand systems function, operation and maintenance procedure. 4.10 Standard equipment warranty shall be : 4.10.1 UPS : Minimum 2 year from the date of commissioning. 4.10.2 Preventive maintenance (PM) services (on-site) - 4 times during warranty period shall be borne by vendor. The checking shall be as below :- 4.10.2.1 Check and inspect the electrical wiring arrangement for UPS input and output. 4.10.2.2 Visual check if the batteries have any discharges or become deteriorated, also to check and tighten cables for each battery.			

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	4.10.2.3 Checking and cleaning of UPS' boards and fans (using vacuum). 4.10.2.4 Check the battery's health by measuring the voltage and impedance using Battery Hi-Tester. 4.10.2.5 Check the settings / parameters on the UPS display 4.10.2.6 Test run UPS after maintenance work has been carried out. 4.10.2.7 To provide a report on the status of the UPS and batteries in three (3) days after the checking.			
E.	**STANDARD REQUIREMENTS AND INSTRUCTIONS** 1. Bidders Have To Attend A Site Visit **On 29th July 2021, At 10:00 A.M**., Location At **Meeting Room Seksyen Kejuruteraan, Institut Perubatan dan Pergigian Termaju**, **Universiti Sains Malaysia, Bertam, 13200 Kepala Batas, Pulau Pinang**. The Site Visit Is Compulsory For The Bidder Who's Interested In The Bidding. 2. Bidders must have Ministry of Finance Certificate with code: Stesen Janakuasa Elektrik Dan Peralatan Generator/Alat Ganti Dan Bateri 140201: Stesen Janakuasa, Peralatan/Alat Ganti/Aksesori (Primary) **ATAU** 140202: Penjana Kuasa **ATAU** 140203: Alat Penyimpan Tenaga Dan Aksesori **ATAU** 140299: Pembuat 3. Suppliers shall furnish a clause-by-clause commentary (detail comments) on the above requirements. The supplier who commented with texts such as "Yes", "Complied", "Refer to catalogue" or any text of this nature shall be considered as NON-RESPONSIVE. 4. The supplier shall tag and highlight in the catalogue or other related documents the statements that conform to the specification requirements.			

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	5. Power requirement to follow Malaysia's national voltage: 230V/ 415V, 50 Hz for single phase and 3 phase. 6. The component supplied shall be brand new and high quality with proper serial number to prove it and must not be a used or a reconditioned instrument. **7. The component must be fully supplied, delivered, installed and made fully functioning at site (Rooftop of CTC & ARC, IPPT)** 8. The component supplied must be warranted against manufacturing defects for at least 24 months from the date of accepted commissioning. 9. Supplier shall work together with the USM technical personnel from the development office and follows the rule and regulations of USM. 10. The supplier has to give information regarding their servicing capabilities / after sales service for the component quoted. 11. Quotation that does not quote prices exclusive of tax will not be considered. 12. All installation charges inclusive of M&E and builder's works must be borne by the supplier. The supplier shall be responsible for making good of any damages done to the buildings, structures and furnishes. 13. Site assessment and evaluation is compulsory to understand site constrains and on-site installation works that need to be carried out. 14. Service contract and software upgrading must be quoted separately. 15. Supplier shall provide Original Catalogue of all the component supplied. **Documentation** At least two copies of the following documents in English must be provided: 1. Performance test certificates.			

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	2. Service Report 3. Original Catalogue (specify the brand). 4. Manufacturing certificates (if applicable).			

Note:

Supplier must complete this form in two copies and submit both to Bursary. Supplier must stated price exclusive and inclusive of taxes.

_____
Signature & Chop Of Supplier

Tarikh: _____