

REFERENCE OF TENDER	DESCRIPTION OF TENDER	TIME PERIOD OF TENDER	DEPARTMENT/DIVISION/UNIT REQUESTING TENDER	FEES	CLOSING DATE NOT LATER THAN 12.00AM	FOCAL PERSON
KK/93/2024/DSS	TO SUPPLY, DELIVER, INSTALL AND COMMISSION ONE(1) UNIT GAS CHROMATOGRAPHY MASS SPECTROMETRY SYSTEM, FOR PHYSICAL EVIDENCE SECTION, DEPARTMENT OF SCIENTIFIC SERVICES, MINISTRY OF HEALTH	-	DEPARTMENT OF SCIENTIFIC SERVICES	\$50.00	21 ST MAY 2024	<p>Haji Abdul Wafi Zulfadli bin Haji Awang Physical Evidance Section Department of Scientific Services Ministry Of Health Negara Brunei Darussalam Contact No: 2382424 ext 6046 Fax : 231946 email : wafi.awang@moh.gov.bn</p>

NOMBOR TAWARAN : KK/93/2024/DSS

**KEMENTERIAN KESIHATAN
NEGARA BRUNEI DARUSSALAM**

**TO SUPPLY, DELIVER, INSTALL AND COMMISSION ONE(1) UNIT
GAS CHROMATOGRAPHY MASS SPECTROMETRY SYSTEM, FOR
PHYSICAL EVIDENCE SECTION, DEPARTMENT OF SCIENTIFIC
SERVICES, MINISTRY OF HEALTH**

YURAN TAWARAN: \$50.00

NOMBOR RESIT :

TARIKH TUTUP : HARI SELASA, 21HB MAY 2024

JAM : 2.00 PETANG

KEPADA :

**PENGERUSI LEMBAGA TAWARAN KECIL
PETI TAWARAN, TINGKAT BAWAH
BANGUNAN KEMENTERIAN KESIHATAN
COMMONWEALTH DRIVE
BANDAR SERI BEGAWAN BB 3910
NEGARA BRUNEI DARUSSALAM**

(CLUSTERING)

SECTION 2

SPECIFICATIONS AND REQUIREMENTS

TENDER REFERENCE NO: KK/93/2024/DSS

INVITATION TO TENDER
TO SUPPLY, DELIVER, INSTALL AND COMMISSION ONE (1) UNIT GAS CHROMATOGRAPHY
MASS SPECTROMETRY SYSTEM, FOR PHYSICAL EVIDENCE SECTION, DEPARTMENT OF
SCIENTIFIC SERVICES, MINISTRY OF HEALTH

NAME OF ITEM	GAS CHROMATOGRAPHY MASS SPECTROMETRY SYSTEM
---------------------	--

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
1	<u>GENERAL</u>
1.1	One complete system of Gas Chromatography Mass Spectrometry with its operating accessories which includes: - 1. GC Mainframe 2. Column Oven 3. Split/Splitless Injector 4. Quadrupole MS 5. Autosampler 6. Data Management and Acquisition System 7. Database/Library 8. Accessories 9. Site Preparations 10. Standards 11. Consumables 12. Documentation 13. Training 14. Warranty and Preventive Maintenance
2	<u>GC MAINFRAME</u>
2.1	Must be able to support 3 inlets, 4 detectors and 4 signals acquisition monitored simultaneously on the GC and software.
2.2	The GC must be able to monitor usage counters and provides graphic display. It must also provide a real-time notification via indicator/advisor when a counter limit has been reached for consumables such as injector port septum, glass insert (liner), syringe and coolant.
2.3	GC must have an independent display on the hardware. It should be full colour touch screen LCD display with Graphical User Interface (GUI).
2.4	Pre-programmed leak tests must be available from monitoring software for safety purposes.
2.5	Upgradability for Heart Cut GC System, Detector Splitting System (multiple detection capability), Detector Switching System, and/or Backflush System with easy-to-use dedicated integrated Advanced Flow Technology Software.
2.6	Support a Wide-Bore Injector (WBI) unit
2.7	Must have Gas Saver function to reduce carrier gas consumption after injection or when on stand-by.
2.8	Auto-shutdown feature available for GC to shutdown automatically after a batch run to conserve energy and gas
2.9	Must have advanced intelligent self-diagnosis feature. Electrical system, flow control systems and sensors must be fully supported by the operating software.
2.10	Retention time repeatability: <0.008% (or equivalent to 0.0008min)

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
2.11	Area repeatability: < 1% RSD
3	<u>COLUMN OVEN</u>
3.1	Operating temperature range: ambient + 2°C to 450°C
3.2	Oven temperature set point resolution: 0.1°C.
3.3	Oven must support ramps / plateaus and negative ramps must be allowed.
3.4	Oven cooling time: from 450°C to 50°C must be less than 4 mins (under non-specific conditions). Built-in programmable oven cool-down rate for columns of different stability.
3.5	Built-in oven light that facilitates column installation.
3.6	One-click installation of column by hand without the use of spanner or other tools.
4	<u>SPLIT/SPLITLESS INJECTOR</u>
4.1	Must be able to install up to 3 independently temperature-controlled injector units simultaneously.
4.2	Must be able to install up to 3 flow lines simultaneously.
4.3	One-click opening of injector port by hand for easy maintenance.
4.4	Must be able to select pressure units as psi, kPa or bar.
4.5	Split ratio range: 0 to 9999.9
4.6	Maximum operating temperature up to 450°C.
4.7	At least 3 pressure programming methods, including constant linear velocity mode. Excluding ramped mode as it is not considered as an independent programming method.
4.8	Pressure programming steps: up to 7.
4.9	Pressure setting range: 0 to 1035 kPa (0 to 150 psi)
4.10	Flow programming steps: up to 7.
4.11	Able to set flow range for He, H ₂ and N ₂ .
5	<u>QUADRUPOLE MS</u>
5.1	Cleanable metal rods quadrupoles.
5.2	The quadrupoles must have the pre-rods as filter to minimize the influence of contamination and thus increase the sensitivity.
5.3	The system must have Electronic Ionisation (EI)/ Chemical Ionisation (CI) source as option switchable between EI / CI mode without changing ion source.
5.4	Mass range: 1.5 to 1090 amu with unit mass resolution over the entire mass range.
5.5	Fast scan rate to achieve more information and more data points for accurate quantitation.
5.6	Faster scan cycles for obtaining highly precise data from fast GCMS and able to support advance applications such as comprehensive GC x GC.
5.7	Independent ion source and transfer line heating over a user- selectable temperature range: Ion Source: 100 to 350°C, Transfer Line: 50 to 350°C

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
5.8	Front access ion source for ease of maintenance without the need to remove the top cover.
5.9	The mass spectrometer should have Twin-Line capability to eliminate the need to swap columns when switching applications.
5.10	Software must have automatic SIM table creation function included to create SIM window base on elution time.
5.11	The SIM mode is capable up to 64 groups of masses with 128 masses per group may be time programmed.
5.12	The mass spectrometer should have over-drive lens to minimize random noise enhancing the Signal-to-Noise.
5.13	The vacuum system should consist of high capacity turbo molecular pump with differential vacuum exhaust system. Minimum 300 L/Sec capacity to allow higher flow rates up to 8 ml/min or more.
5.14	2 filaments available for both EI and CI ionization mode allowing automatic switching to another when one fails.
5.15	Should have eco-friendly feature which reduces the power consumption in analysis standby mode.
6	<u>AUTOSAMPLER</u>
6.1	Headspace Autosampler with the following specifications:
6.1.1	Vial capacity/Sample tray: 20 ml/ 90-vial capacity
6.1.2	Vial incubator capacity: 12-vial capacity (simultaneously heated)
6.1.3	Sampling mode: Loop/Trap mode
6.1.4	Max. oven temp.: 300°C
6.1.5	Max. sample line temp.: 300°C
6.1.6	Max. transfer line temp.: 350°C
6.1.7	Vial shaking feature available
6.1.8	Area repeatability: < 0.7 %RSD
6.1.9	Carry-over : < 0.0001 %
6.2	Liquid Autosampler with the following specifications:
6.2.1	Auto injector rack should be a standard 6-sampler rack for 1.5 ml vials and can accommodate up to 12 samples.
6.2.2	Auto Sampler carousel should be multifunctional, high throughput sampler which can accommodate up to 150 samples for 1.5 ml vials.
6.2.3	Autosampler must has alignment free installation.
6.2.4	Random access in sample sequencing.
6.2.5	Capable of 1 ~ 99 injections per sample.
6.2.6	Sample volume injection: 0.1 ~ 8.0 µl. Optionally, should be capable of 0.5 ~ 40 µl & 2.5 ~ 200 µl injection.
6.2.7	Selectable two stages syringe speed and three stages plunger movement speed.
6.2.8	Cross contamination of <10 ⁻⁴ .

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
6.2.9	Stand-by time: 0 ~ 99.9 sec after sample suction; 0 ~ 99.9 sec after sample injection.
6.2.10	0 ~ 20 syringe pumping with pre-wash and post-wash after injection of samples.
6.2.11	Changeable syringe depth of vial insertion in up-down directions to access different layer of sample solution.
6.2.12	Solvent flush method and Standard Addition Mode should be available.
6.2.13	Multi-injection up to 18 mL should be possible for large volume injection.
6.2.14	Repeatability of injection: must be less than 2%.
7	<u>DATA MANAGEMENT AND ACQUISITION SYSTEM</u>
7.1	Data Management System must be supplied for the control of the GCMS and its auxiliary equipment as well as allowing users for the recording and reviewing of the analysis data
7.2	The software package should allow for the complete control of the GCMS.
7.3	The system shall include:
7.3.1	One (1) unit of Desktop PC with specifications following equipment manufacturer's recommendation.
7.3.2	Latest compatible processor for use with the GCMS software.
7.3.3	At least 512GB Solid state drive or higher.
7.3.4	At least 24" LED color monitor.
7.3.5	Internal or external DVD-RW disk drive.
7.3.6	Standard Keyboard.
7.3.7	Optical Mouse.
7.3.8	Ethernet and USB port.
7.3.9	Genuine latest Microsoft Windows software compatible for use with the GCMS software.
7.3.10	Genuine latest Microsoft Office software which should include Word, Excel and Powerpoint.
7.3.11	Genuine Antivirus with 5 years subscriptions. No free internet version is allowed.
7.3.12	Three (3) units of at least 1TB external USB Solid State Drives (SSD)
7.3.13	One (1) unit Colour Laserjet Printer.
7.3.14	Two (2) sets Toners for each colour: <ul style="list-style-type: none"> • Black • Cyan • Magenta • Yellow
8	<u>DATABASE/LIBRARY</u>
8.1	System must come with latest NIST Library for unknown compounds search.
9	<u>OPERATING ACCESSORIES</u>

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
9.1	One (1) unit of 10KVA Uninterrupted power supply (UPS) must also be provided and connected to the instrument system and workstation.
9.2	One (1) unit of Oven with the following details:
9.2.1	Volume: at least 108 L
9.2.2	Fan: forced air circulation by quiet air turbine
9.2.3	Setting temperature range: +20 to +300 °C
9.2.4	Setting accuracy temperature: up to 99.9 °C: 0.1 / from 100 °C: 0.5
9.2.5	Oven must be calibrated by ISO 17025 accredited calibration laboratory and provided with calibration certificate with measurement uncertainty. Set point temperature for calibration shall be at 60, 70 and 90°C.
9.3	One (1) unit of suitable nitrogen generator recommended by instrument manufacturer
9.4	Crucible Tongs – 2 pcs
9.5	One (1) unit of manual vial crimper for 20 ml vials for gas samples.
9.6	One (1) unit of manual vial decrimper for 20 ml vials for gas samples.
9.7	Any other accessories required to ensure successful operation of the system shall be included.
10	<u>SITE PREPARATIONS</u>
10.1	The site preparation needed for the successful installation and operation of the equipment system should include if required, but not limited to: a. Electrical systems including additional electrical supply including wiring, outlets and isolators b. Gas piping system & gas regulators c. Workbench (supply / fabrication & installation for space and weight compatibility) Any other deemed necessary to ensure successful and safe installation and operation of the system should be included.
10.2	The site preparation details should be listed out in the quotation/document submitted.
11	<u>STANDARDS</u>
11.1	<u>ASTM E 1618 TEST MIX (2 packs of 5) – One pack to be delivered upon end user's request.</u> <ul style="list-style-type: none"> • Certified Reference Material • Matrix: 0.05% v/v (0.50µl/ml) in Methylene Chloride • Consists of 13 components: <ul style="list-style-type: none"> (i) (C6) <i>n</i>-Hexane (110-54-3) (ii) (C8) <i>n</i>-Octane (111-65-9) (iii) (C10) <i>n</i>-Decane (124-18-5) (iv) (C12) <i>n</i>-Dodecane (112-40-3) (v) (C14) <i>n</i>-Tetradecane (629-59-4) (vi) (C16) <i>n</i>-Hexadecane (544-76-3) (vii) (C18) <i>n</i>-Octadecane (593-45-3) (viii) (C20) <i>n</i>-Eicosane (112-95-8) (ix) 2-Ethyltoluene (611-14-3) (x) 3-Ethyltoluene (620-14-4) (xi) Toluene (108-88-3) (xii) 1,2,4-Trimethylbenzene (95-63-6) (xiii) <i>p</i>-Xylene (106-42-3)

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
11.2	2.5L Dichloromethane (2 bottles) <ul style="list-style-type: none"> • HPLC grade • CAS Number: 75-09-2 • Molecular weight: 84.93g/mol
12	<u>CONSUMABLES</u>
12.1	GC startup kit
12.2	Moisture trap, oxygen trap and hydrocarbon trap – 2 units
12.3	GC Column –SH-Rxi-5MS 30m, 0.25mmID, 0.25um (Restek) – 2 units
12.4	Twenty (20) box of 100 sample vials (1.5 ml vials) with screw-caps suitable for GC injection for liquid sample.
12.5	Twenty (20) box of 100 sample vials (20 ml vials) with caps suitable for GC injection for gas sample.
12.6	0.1 to 10µL Auto Injector Syringe for liquid sample – 5 pcs
12.7	0.5 to 5ml Auto Injector Syringe for gas sample – 5 pcs
12.8	Glass insert split – 5 units
12.9	Glass insert splitless – 5 units
12.10	Ferrule compatible with Column offered – 3 packs
12.11	Septum – 5 packs
12.12	O-Ring – 5 packs
12.13	Gastight Headspace syringe – 3 pcs <ul style="list-style-type: none"> • Volume: 2.5 mL • Glue-Free Needle • 23 gauge, 51 mm, point style 5, (cone tip)
12.14	Activated Charcoal strips – 1000 strips <ul style="list-style-type: none"> • Used to maximize the containment of accelerants at fire scenes.
12.15	Pipette Tips 0.1-20 µl <ul style="list-style-type: none"> • Compatibility: Gilson Pipetman • Volume: 0.1 - 20 µl • Quantity requested: 960 tips
12.16	Pipette Tips 2-200 µl <ul style="list-style-type: none"> • Compatibility: Gilson Pipetman • Volume: 2 - 200 µl • Quantity requested: 960 tips
13	<u>DOCUMENTATION</u>
13.1	Operation manual (1 original and 1 copy)
13.2	Service manual (1 original and 1 copy)
13.3	Spare parts manual (1 original 1 copy)
13.4	Certificate on factory validation, complying with ISO or equivalent (if any)
13.5	On-site validation and commissioning report.

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS
13.6	A declaration of Conformity certificate must be provided.
13.7	A declaration of System Validation certificate must be provided.
13.8	Calibration certificate for Oven must indicate traceability to standards provided by NIST.
14	<u>TRAINING</u>
14.1	Training shall be provided, at no additional cost, as follows:
14.2	On-site training for ALL staff members expected to handle the machine. Please ensure that adequate time is allocated such that training will take place in small groups to minimize staff shortage in the laboratory.
14.3	Certificate of competence is to be issued to all trainees after completion of training.
14.4	The successful tenderer needs to ensure the key users are updated on the current or relevant information related to the system used. They should provide <u>ONE</u> (1) off-site benchwork training for <u>TWO</u> (2) key users. All expenses for attending the benchwork training shall be borne by the vendor; full registration, air ticket, daily allowance, accommodation, transport to and from the airport and place of training.
15	<u>WARRANTY AND PREVENTIVE MAINTENANCE</u>
15.1	A minimum of one (1) year warranty for manufacture's defect on the hardware, software and all cost of repair should be provided.
15.2	After-sales services must be provided for the product after one (1) year
15.3	One-off preventive maintenance to be carried out just before or soon after the one-year warranty period. Scope of work to follow manufacturer's manual / recommendation specific for the equipment offered, which include: <ul style="list-style-type: none"> • Supply, delivery and installation of preventive maintenance kits and/or consumables • Software update (to obtain prior authorization from user and BME) • Inspection • cleaning • alignment • calibration • any other related preventive maintenance works required
15.4	Three (3) years preventive maintenance (PM) after the one-year warranty period expired in accordance to the instrument maintenance program, to be carried out once a year.
15.5	The tenderer is to supply accessories, consumables and Preventive Maintenance Kit for the instrument and gas generator offered throughout the Three (3) years period in accordance to the instrument maintenance program.
15.6	Tenderer to provide the checklist for PM program inclusive the accessories and reagents.
16	<u>DELIVERY</u> Items offered MUST be delivered within _____ from date of approval. (Vendor to indicate the delivery period.)
17	<u>PRICE VALIDITY</u> Price validity MUST NOT BE LESS THAN 90 days or three (3) months.

NO.	GENERAL SPECIFICATIONS
A	Total Price: B\$
B	Delivery Period:
C	Model & Brand:
D	Country of Origin:
E	Where marketed:
F	Year of Manufacture:
G	Warranty:
H	Power Requirement:
I	Battery Back-up:
J	International Safety Standard:
K	Technical Support:
L	Equipment Whole Life Support:
M	Dimensions (WxHxD) cm:
N	User Manuals:
O	Service Manuals:
P	Spare-parts & Consumables Listing:
Q	Technical Training On-Site:
R	Site Requirements:

*To all participating companies, please fill in the table above along with your other documents during submission of tender.

Bahagian/Unit	BAHAGIAN <i>PHYSICAL EVIDENCE</i>	
Bil. Rujukan Bahagian/Unit:	DSS/PEV/PR/2023/004	
Pegawai di rujuk	Nama:	HJ ABDUL WAFI ZULFADLI BIN HJ AWANG
	E-mail:	wafi.awang@moh.gov.bn
	Tel. No.:	2382424 ext 6046 Fax No.: 2381946

SECTION 3
TENDER FORM

To:

TENDER REFERENCE NO: KK/93/2024/DSS

INVITATION TO TENDER

TO SUPPLY, DELIVER, INSTALL AND COMMISSION ONE (1) UNIT GAS CHROMATOGRAPHY MASS SPECTROMETRY SYSTEM, FOR PHYSICAL EVIDENCE SECTION, DEPARTMENT OF SCIENTIFIC SERVICES, MINISTRY OF HEALTH

TENDER OF (*name of tenderer*) _____

Company/Business Registration No _____

Tender Closing Date _____

NAME OF ITEM	
---------------------	--

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
1	<u>GENERAL</u>				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
1.1	<p>One complete system of Gas Chromatography Mass Spectrometry with its operating accessories which includes:</p> <ol style="list-style-type: none"> 1. GC Mainframe 2. Column Oven 3. Split/Splitless Injector 4. Quadrupole MS 5. Autosampler 6. Data Management and Acquisition System 7. Database/Library 8. Accessories 9. Site Preparations 10. Standards 11. Consumables 12. Documentation 13. Training 14. Warranty and Preventive Maintenance 				
2	<u>GC MAINFRAME</u>				
2.1	Must be able to support 3 inlets, 4 detectors and 4 signals acquisition monitored simultaneously on the GC and software.				
2.2	The GC must be able to monitor usage counters and provides graphic display. It must also provide a real-time notification via indicator/advisor when a counter limit has been reached for consumables such as injector port septum, glass insert (liner), syringe and coolant.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/> (Provide evidence for compliance(s)))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
2.3	GC must have an independent display on the hardware. It should be full colour touch screen LCD display with Graphical User Interface (GUI).				
2.4	Pre-programmed leak tests must be available from monitoring software for safety purposes.				
2.5	Upgradability for Heart Cut GC System, Detector Splitting System (multiple detection capability), Detector Switching System, and/or Backflush System with easy-to-use dedicated integrated Advanced Flow Technology Software.				
2.6	Support a Wide-Bore Injector (WBI) unit				
2.7	Must have Gas Saver function to reduce carrier gas consumption after injection or when on stand-by.				
2.8	Auto-shutdown feature available for GC to shutdown automatically after a batch run to conserve energy and gas				
2.9	Must have advanced intelligent self-diagnosis feature. Electrical system, flow control systems and sensors must be fully supported by the operating software.				
2.10	Retention time repeatability: <0.008% (or equivalent to 0.0008min)				
2.11	Area repeatability: < 1% RSD				
3	<u>COLUMN OVEN</u>				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
3.1	Operating temperature range: ambient + 2°C to 450°C				
3.2	Oven temperature set point resolution: 0.1°C.				
3.3	Oven must support ramps / plateaus and negative ramps must be allowed.				
3.4	Oven cooling time: from 450°C to 50°C must be less than 4 mins (under non-specific conditions). Built-in programmable oven cool-down rate for columns of different stability.				
3.5	Built-in oven light that facilitates column installation.				
3.6	One-click installation of column by hand without the use of spanner or other tools.				
4	<u>SPLIT/SPLITLESS INJECTOR</u>				
4.1	Must be able to install up to 3 independently temperature-controlled injector units simultaneously.				
4.2	Must be able to install up to 3 flow lines simultaneously.				
4.3	One-click opening of injector port by hand for easy maintenance.				
4.4	Must be able to select pressure units as psi, kPa or bar.				
4.5	Split ratio range: 0 to 9999.9				
4.6	Maximum operating temperature up to 450°C.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
4.7	At least 3 pressure programming methods, including constant linear velocity mode. Excluding ramped mode as it is not considered as an independent programming method.				
4.8	Pressure programming steps: up to 7.				
4.9	Pressure setting range: 0 to 1035 kPa (0 to 150 psi)				
4.10	Flow programming steps: up to 7.				
4.11	Able to set flow range for He, H ₂ and N ₂ .				
5	<u>QUADRUPOLE MS</u>				
5.1	Cleanable metal rods quadrupoles.				
5.2	The quadrupoles must have the pre-rods as filter to minimize the influence of contamination and thus increase the sensitivity.				
5.3	The system must have Electronic Ionisation (EI)/ Chemical Ionisation (CI) source as option switchable between EI / CI mode without changing ion source.				
5.4	Mass range: 1.5 to 1090 amu with unit mass resolution over the entire mass range.				
5.5	Fast scan rate to achieve more information and more data points for accurate quantitation.				
5.6	Faster scan cycles for obtaining highly precise data from fast GCMS and able to support advance applications such as comprehensive				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
	GC x GC.				
5.7	Independent ion source and transfer line heating over a user- selectable temperature range: Ion Source: 100 to 350°C, Transfer Line: 50 to 350°C				
5.8	Front access ion source for ease of maintenance without the need to remove the top cover.				
5.9	The mass spectrometer should have Twin-Line capability to eliminate the need to swap columns when switching applications.				
5.10	Software must have automatic SIM table creation function included to create SIM window base on elution time.				
5.11	The SIM mode is capable up to 64 groups of masses with 128 masses per group may be time programmed.				
5.12	The mass spectrometer should have over-drive lens to minimize random noise enhancing the Signal-to-Noise.				
5.13	The vacuum system should consist of high capacity turbo molecular pump with differential vacuum exhaust system. Minimum 300 L/Sec capacity to allow higher flow rates up to 8 ml/min or more.				
5.14	2 filaments available for both EI and CI ionization mode allowing automatic switching to another when one fails.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/> (Provide evidence for compliance(s)))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
5.15	Should have eco-friendly feature which reduces the power consumption in analysis standby mode.				
6	AUTOSAMPLER				
6.1	Headspace Autosampler with the following specifications:				
6.1.1	Vial capacity/Sample tray: 20 ml/ 90-vial capacity				
6.1.2	Vial incubator capacity: 12-vial capacity (simultaneously heated)				
6.1.3	Sampling mode: Loop/Trap mode				
6.1.4	Max. oven temp.: 300°C				
6.1.5	Max. sample line temp.: 300°C				
6.1.6	Max. transfer line temp.: 350°C				
6.1.7	Vial shaking feature available				
6.1.8	Area repeatability: < 0.7 %RSD				
6.1.9	Carry-over : < 0.0001 %				
6.2	Liquid Autosampler with the following specifications:				
6.2.1	Auto injector rack should be a standard 6-sampler rack for 1.5 ml vials and can				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
	accommodate up to 12 samples.				
6.2.2	Auto Sampler carousel should be multifunctional, high throughput sampler which can accommodate up to 150 samples for 1.5 ml vials.				
6.2.3	Autosampler must has alignment free installation.				
6.2.4	Random access in sample sequencing.				
6.2.5	Capable of 1 ~ 99 injections per sample.				
6.2.6	Sample volume injection: 0.1 ~ 8.0 µl. Optionally, should be capable of 0.5 ~ 40 µl & 2.5 ~ 200 µl injection.				
6.2.7	Selectable two stages syringe speed and three stages plunger movement speed.				
6.2.8	Cross contamination of 10^{-4}.				
6.2.9	Stand-by time: 0 ~ 99.9 sec after sample suction; 0 ~ 99.9 sec after sample injection.				
6.2.10	0 ~ 20 syringe pumping with pre-wash and post-wash after injection of samples.				
6.2.11	Changeable syringe depth of vial insertion in up-down directions to access different layer of sample solution.				
6.2.12	Solvent flush method and Standard Addition Mode should be available.				
6.2.13	Multi-injection up to 18 mL should be possible for large volume injection.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
6.2.14	Repeatability of injection: must be less than 2%.				
7	<u>DATA MANAGEMENT AND ACQUISITION SYSTEM</u>				
7.1	Data Management System must be supplied for the control of the GCMS and its auxiliary equipment as well as allowing users for the recording and reviewing of the analysis data				
7.2	The software package should allow for the complete control of the GCMS.				
7.3	The system shall include:				
7.3.1	One (1) unit of Desktop PC with specifications following equipment manufacturer's recommendation.				
7.3.2	Latest compatible processor for use with the GCMS software.				
7.3.3	At least 512GB Solid state drive or higher.				
7.3.4	At least 24" LED color monitor.				
7.3.5	Internal or external DVD-RW disk drive.				
7.3.6	Standard Keyboard.				
7.3.7	Optical Mouse.				
7.3.8	Ethernet and USB port.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
7.3.9	Genuine latest Microsoft Windows software compatible for use with the GCMS software.				
7.3.10	Genuine latest Microsoft Office software which should include Word, Excel and Powerpoint.				
7.3.11	Genuine Antivirus with 5 years subscriptions. No free internet version is allowed.				
7.3.12	Three (3) units of at least 1TB external USB Solid State Drives (SSD)				
7.3.13	One (1) unit Colour Laserjet Printer.				
7.3.14	Two (2) sets Toners for each colour: <ul style="list-style-type: none"> • Black • Cyan • Magenta • Yellow 				
8	<u>DATABASE/LIBRARY</u>				
8.1	System must come with latest NIST Library for unknown compounds search.				
9	<u>OPERATING ACCESSORIES</u>				
9.1	One (1) unit of 10KVA Uninterrupted power supply (UPS) must also be provided and connected to the instrument system and workstation.				
9.2	One (1) unit of Oven with the following details:				
9.2.1	Volume: at least 108 L				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/> (Provide evidence for compliance(s)))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
9.2.2	Fan: forced air circulation by quiet air turbine				
9.2.3	Setting temperature range: +20 to +300 °C				
9.2.4	Setting accuracy temperature: up to 99.9 °C: 0.1 / from 100 °C: 0.5				
9.2.5	Oven must be calibrated by ISO 17025 accredited calibration laboratory and provided with calibration certificate with measurement uncertainty. Set point temperature for calibration shall be at 60, 70 and 90°C.				
9.3	One (1) unit of suitable nitrogen generator recommended by instrument manufacturer				
9.4	Crucible Tongs – 2 pcs				
9.5	One (1) unit of manual vial crimper for 20 ml vials for gas samples.				
9.6	One (1) unit of manual vial decrimper for 20 ml vials for gas samples.				
9.7	Any other accessories required to ensure successful operation of the system shall be included.				
10	<u>SITE PREPARATIONS</u>				
10.1	The site preparation needed for the successful installation and operation of the equipment system should include if required, but not limited to: a. Electrical systems including additional electrical supply including wiring, outlets				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
	and isolators b. Gas piping system & gas regulators c. Workbench (supply / fabrication & installation for space and weight compatibility) Any other deemed necessary to ensure successful and safe installation and operation of the system should be included.				
10.2	The site preparation details should be listed out in the quotation/document submitted.				
11	<u>STANDARDS</u>				
11.1	<u>ASTM E 1618 TEST MIX (2 packs of 5) – One pack to be delivered upon end user's request.</u> <ul style="list-style-type: none"> • Certified Reference Material • Matrix: 0.05% v/v (0.50µl/ml) in Methylene Chloride • Consists of 13 components: <ul style="list-style-type: none"> (i) (C6) <i>n</i>-Hexane (110-54-3) (ii) (C8) <i>n</i>-Octane (111-65-9) (iii) (C10) <i>n</i>-Decane (124-18-5) (iv) (C12) <i>n</i>-Dodecane (112-40-3) (v) (C14) <i>n</i>-Tetradecane (629-59-4) (vi) (C16) <i>n</i>-Hexadecane (544-76-3) (vii) (C18) <i>n</i>-Octadecane (593-45-3) (viii) (C20) <i>n</i>-Eicosane (112-95-8) (ix) 2-Ethyltoluene (611-14-3) (x) 3-Ethyltoluene (620-14-4) (xi) Toluene (108-88-3) 				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
	(xii) 1,2,4-Trimethylbenzene (95-63-6) (xiii) <i>p</i> -Xylene (106-42-3)				
11.2	2.5L Dichloromethane (2 bottles) <ul style="list-style-type: none"> • HPLC grade • CAS Number: 75-09-2 • Molecular weight: 84.93g/mol 				
12	<u>CONSUMABLES</u>				
12.1	GC startup kit				
12.2	Moisture trap, oxygen trap and hydrocarbon trap – 2 units				
12.3	GC Column –SH-Rxi-5MS 30m, 0.25mmID, 0.25um (Restek) – 2 units				
12.4	Twenty (20) box of 100 sample vials (1.5 ml vials) with screw-caps suitable for GC injection for liquid sample.				
12.5	Twenty (20) box of 100 sample vials (20 ml vials) with caps suitable for GC injection for gas sample.				
12.6	0.1 to 10µL Auto Injector Syringe for liquid sample – 5 pcs				
12.7	0.5 to 5ml Auto Injector Syringe for gas sample – 5 pcs				
12.8	Glass insert split – 5 units				
12.9	Glass insert splitless – 5 units				
12.10	Ferrule compatible with Column offered – 3 packs				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
12.11	Septum – 5 packs				
12.12	O-Ring – 5 packs				
12.13	Gastight Headspace syringe – 3 pcs <ul style="list-style-type: none"> • Volume: 2.5 mL • Glue-Free Needle • 23 gauge, 51 mm, point style 5, (cone tip) 				
12.14	Activated Charcoal strips – 1000 strips <ul style="list-style-type: none"> • Used to maximize the containment of accelerants at fire scenes. 				
12.15	Pipette Tips 0.1-20 µl <ul style="list-style-type: none"> • Compatibility: Gilson Pipetman • Volume: 0.1 - 20 µl • Quantity requested: 960 tips 				
12.16	Pipette Tips 2-200 µl <ul style="list-style-type: none"> • Compatibility: Gilson Pipetman • Volume: 2 - 200 µl • Quantity requested: 960 tips 				
13	<u>DOCUMENTATION</u>				
13.1	Operation manual (1 original and 1 copy)				
13.2	Service manual (1 original and 1 copy)				
13.3	Spare parts manual (1 original 1 copy)				
13.4	Certificate on factory validation, complying with ISO or equivalent (if any)				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
13.5	On-site validation and commissioning report.				
13.6	A declaration of Conformity certificate must be provided.				
13.7	A declaration of System Validation certificate must be provided.				
13.8	Calibration certificate for Oven must indicate traceability to standards provided by NIST.				
14	<u>TRAINING</u>				
14.1	Training shall be provided, at no additional cost, as follows:				
14.2	On-site training for ALL staff members expected to handle the machine. Please ensure that adequate time is allocated such that training will take place in small groups to minimize staff shortage in the laboratory.				
14.3	Certificate of competence is to be issued to all trainees after completion of training.				
14.4	The successful tenderer needs to ensure the key users are updated on the current or relevant information related to the system used. They should provide <u>ONE</u> (1) off-site benchwork training for <u>TWO</u> (2) key users. All expenses for attending the benchwork training shall be borne by the vendor; full registration, air ticket, daily allowance, accommodation, transport to and from the airport and place of training.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick ✓) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
15	<u>WARRANTY AND PREVENTIVE MAINTENANCE</u>				
15.1	A minimum of one (1) year warranty for manufacture's defect on the hardware, software and all cost of repair should be provided.				
15.2	After-sales services must be provided for the product after one (1) year				
15.3	One-off preventive maintenance to be carried out just before or soon after the one-year warranty period. Scope of work to follow manufacturer's manual / recommendation specific for the equipment offered, which include: <ul style="list-style-type: none"> • Supply, delivery and installation of preventive maintenance kits and/or consumables • Software update (to obtain prior authorization from user and BME) • Inspection • cleaning • alignment • calibration • any other related preventive maintenance works required 				
15.4	Three (3) years preventive maintenance (PM) after the one-year warranty period expired in accordance to the instrument maintenance program, to be carried out once a year.				

NO.	ITEM DESCRIPTIONS AND SPECIFICATIONS	VENDOR'S OFFER			
		COMPLY (Please tick <input checked="" type="checkbox"/>) (Provide evidence for compliance(s))		ITEM DESCRIPTIONS AND SPECIFICATIONS	PRICE (\$)
		YES	NO		
15.5	The tenderer is to supply accessories, consumables and Preventive Maintenance Kit for the instrument and gas generator offered throughout the Three (3) years period in accordance to the instrument maintenance program.				
15.6	Tenderer to provide the checklist for PM program inclusive the accessories and reagents.				
16	<u>DELIVERY</u> Items offered MUST be delivered within _____ from date of approval. (Vendor to indicate the delivery period.)				
17	<u>PRICE VALIDITY</u> Price validity MUST NOT BE LESS THAN 90 days or three (3) months.				

NO.	GENERAL SPECIFICATIONS	VENDOR'S OFFER
A	Total Price: B\$	
B	Delivery Period:	
C	Model & Brand:	
D	Country of Origin:	(leave blank)
E	Where marketed:	
F	Year of Manufacture:	
G	Warranty:	
H	Power Requirement:	
I	Battery Back-up:	
J	International Safety Standard:	
K	Technical Support:	
L	Equipment Whole Life Support:	
M	Dimensions (WxHxD) cm:	
N	User Manuals:	
O	Service Manuals:	
P	Spare-parts & Consumables Listing:	
Q	Technical Training On-Site:	
R	Site Requirements:	

*To all participating companies, please fill in the table above along with your other documents during submission of tender.

1. We offer and undertake on your acceptance of our Tender to provide the above mentioned services in accordance with your Invitation To Tender.
2. Our Tender is fully consistent with and does not contradict or derogate from anything in your Invitation To Tender. We have not qualified or changed any of the provisions of your Invitation To Tender.
3. OUR OFFER IS VALID FOR **TWELVE (12)** CALENDAR MONTHS FROM THE TENDER CLOSING DATE.
4. When requested by you, we shall extend the validity of this offer.
5. We further undertake to give you any further information which you may require.

Dated this _____ day of _____, _____

Signature of authorised officer of Tenderer

Name:

Designation:

Tenderer's official stamp