

TENDER

FOR

Supply and Installation of

GCMS MS AND GAS ANALYZER

in

BIT MESRA, Ranchi



Tender No.: IC/000557

Tender date: 26th September, 2023

Last Date of submission: 26th October, 2023

Office of the Registrar

Birla Institute of Technology, Mesra

Birla Institute of Technology, Mesra, Ranchi invites tender for supply, installation, commissioning, testing, demonstration and training of **GCMS MS AND GAS ANALYZER** , as per specifications given in the Annexure attached to the Tender.

Tender Reference No.	IC/000557
Last Date and Time for receipt of Tender	26/10/2023 at 1500 Hrs
Address for Communication	As Stated below in the Instructions to the bidders.
Contact detail (For Technical specification / clarification)	cif@bitmesra.ac.in
For technical Details Contact	Dr. S.K.Swain

INSTRUCTIONS TO BIDDERS

All interested vendors are requested to send their sealed quotation for supply of the above item under two bid systems in the following manner:

- a) Envelope – I: Technical Bid.
- b) Envelope – II: Financial Bid.

NOTE: The bid documents are not transferable and the firm's seal and signature of the authorized official must appear on all papers and envelopes submitted.

Both the envelopes should be sealed, signed, marked and kept in a bigger envelop superscribed with the Tender Reference No. and Tender notice detail as appended hereunder.

TENDER FOR SUPPLY OF GCMS MS AND GAS ANALYZER

TENDER REF. NO: IC/000557, DATE: 26/09/2023

LAST DATE FOR SUBMISSION: 26/10/2023 Till 1500 Hrs.

Dy. Registrar (Purchase)
Birla Institute of Technology, Mesra
Ranchi - 835215.

From: M/s -----
Contact No: -----
E-mail ID: -----

Sr. No.	Criteria	Compl y (Yes/N o)	Page number in support of compliance. Deviations (if any) should be mention clearly and details thereof should be indicated.
1.	The supplier must have sold at least 5 GCMS MS AND GAS ANALYZER within India in last 5 (five) years. The supplier should provide list of installation in India with all contact details and model details so that BIT, Mesra can approach contact person for any feedback.		
2.	Specification claimed must be supported by printed literature of the company.		
3.	The supplier of the instrument must confirm in writing that the spares for the entire instrument will be available for a period of at least ten years after the model of equipment supplied has been phased out. For frequently required spares, there should be adequate inventory with the Indian agency.		
4.	Supplier must have proven capability and trained expert manpower to troubleshoot equipment both in the hardware and application part.		
5.	Bidders shall invariably furnish documentary evidence (client's certificate) in support of the satisfactory operation of the equipment.		
6.	Suitable and essential tool kit is to be supplied with the equipment for the required maintenance.		
7.	Any accessories that must be needed for operation of the equipment, but not mentioned in this specification shall also be quoted by the vendor.		
8.	The instrument should be installed and commissioned at site. Site requirement has to be mentioned by the supplier. Complete technical details of pre-installation requirements should be furnished along with the technical bid. Birla Institute of Technology, Mesra will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost		
9.	If in any case, shifting of the instrument is required in future, the vendor need to shift the instrument being offered after installation. It should be free cost for the dismounting, packing, unpacking, re installation and commissioning of the system with test running of the systems. Damage during the shifting if any of the machines must be the liability of the vendor.		
10.	Annual turnover of company must have minimum 5 crores		
11.	Vendor is responsible for unloading the items from shipping vehicle and shifting it to the room specified by BIT Mesra. Unloading the GCMS MS AND GAS ANALYZER unit and shifting the item to lab should under the supervision of a qualified engineer or specialist appointed by vendor. Any unforeseen error occurred due to improper unloading of the items (GCMS MS AND GAS ANALYZER unit and its accessories) or improper handling during shifting the same to lab, will be under the		

	responsibility of vendor. If any such damage happens, that product should be replaced.		
12.	Backup software must be provided on optical media. Any further version of the software and updates must be provided free of cost for 10 years.		
13.	Provision for on-line remote diagnosis of faults should be available.		

Terms & conditions

1. **Representation:** Indian agent can represent different suppliers if the agent is duly authorized by the Principal Company.
2. **Instructions to the OEM:** Either the Indian Agent on behalf of the Principal/OEM or Principal/OEM can bid but both cannot bid simultaneously for the same item/product in the same tender.
3. **Single Order:** A single order will be processed for entire configuration.
4. **Support:** The supplier of the instrument must confirm after warranty the bidder must provide the necessary after sales support for smooth operation of the system for 5year or more.
5. **Delivery date etc.:** Time taken for delivery, installation and commissioning should be separately specified.
6. **Bid Submission:** The bids can be sent to us by Hand/ Speed post/ Courier so as to reach the marked address by due date and time. Late bids will not be accepted. The price bids of only those firms will only be opened who are found to be technically qualified after evaluation. The Institute reserves the right to cancel/reject any or all bids without assigning any reason thereof.
7. **Bid document:** The vendor should read the Tender documents carefully before quoting. It shall be deemed that the vendor has gone through the documents carefully and has understood its implication. Any lack of information shall not relieve the bidder of its responsibility to fulfill its obligations under the Bid.
8. **Price:** Prices quoted should be on F.O.R., BIT Mesra, Ranchi on **Door Delivery** basis.
9. **Technical bid:** The technical bid should accompany full technical literature, pamphlets, leaflets of the technical features of the offered equipment must be submitted for proper evaluation.
10. **Dealers:** Dealership certificate/ authorization certificate from OEM if the bidder is a dealer.
11. **Similar Installation:** A complete list of Institutes' / Organizations' list wherein the installation has been done and a Performance certificate along with such list where these installation has been done in past three years.
12. **Validity of Quotation:** Quotations should be valid at least for 90 days.
13. **Declaration:** The bidder should attach a self-declaration stating that he is not debarred/ blacklisted or banned from any University/ Central Government / PSU / State Govt of India / any other Govt. agencies or any Institute of National / International importance.
14. **GST etc:** Copy of up-to-date GST clearance certificate & sales tax registration certificate indicating also the GSTIN number of the Firm will have to accompany the quotations. Copy of PAN must be submitted of Firm / Company along with the Technical Bid.
15. **Bank Details:** Banker's details of quoting Firm/ Vendor should be clearly mentioned as attached
16. **Performance security:** The supplier shall furnish a Performance Security after installation of the material for an amount of 10% (Ten percent) of the Purchase order value, valid **upto 60 days** after the date of completion of performance obligations including warranty obligations. This Performance Bank guarantee should be issued from any Nationalized Bank and validity of the same will be till **warranty period +60 days** from the date of installation of the material. The claim of the same can be done by email, email id of the bank for correspondence shall be mentioned. The claim period of Performance Bank Guarantee shall be one year after expiry of Performance Bank Guarantee.

17. **Delivery:** Unless otherwise stated, delivery of goods at BIT, Mesra, will have to be executed within Eight (8) weeks from the date of issue of the Purchase Order. All aspects of safe delivery shall be the exclusive responsibility of the OEM / Bidder.
18. **Bid Currencies:** The quoted price should be in Indian Rupees for offers received for suppliers within India and in freely convertible foreign currency in case of offers received for supply from foreign countries.
19. **Foreign bidders:** In case a bidder not doing business within India, it shall furnish the certificate to the effect that the bidder is or will be represented by an agent in India equipped and able to carry out the supply, maintenance, repair obligations etc. during the warranty and post warranty period or ensure a mechanism at place for carrying out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period, without which their offers are liable to be ignored.
20. **Conditional tenders:** Conditional tenders shall not be accepted.
21. **Late and delayed Tenders:** Late and delayed tender will not be considered. In case any unscheduled holiday occurs on prescribed closing/opening date the next working day shall be the prescribed date of closing/opening.
22. **Customs Duty:** The Institute is exempted from payment of Customs Duty Vide GOI Notification No. 51/96 Customs, dated 23.07.1996 & No.24/2007-Customs dated 01.03.2007 with registration no 11/161/1990-TU-V dated 23.03.2022.
23. **Rejection of Tender:** The tenders are liable to be rejected if the conditions mentioned in the tender documents are not complied with. The tender should be complete in all respects and duly signed wherever required. Incomplete and unsigned offer will not be accepted.
24. **Liquidated Damage:** If a firm accepts an order and fails to execute the order in full as per the terms and conditions stipulated therein, it will be open to this Institute to recover liquidated damages from the firm at the rate of 0.5% to 1% per week of the order value subject to a maximum of 10% of the order value. It will also be open to this Institute alternatively, to arrange procurement of the required stores from any other source at the risk and expense of the firm, which accepted the order but failed to execute the order according to stipulated agreed upon.
25. **Payment Terms:** - 100% payment will be released after receiving of stores in good order and condition and successful installation and commissioning duly certified by the concern authority.
26. **Termination for default:** Default is said to have occurred: -
- (a) If the supplier fails to deliver any or all of the services within the time period(s) specified in the purchase order or any extension thereof granted by BIT, Mesra.
 - (b) If the supplier fails to perform any other obligation(s) stated in the Purchase Order.
 - (c) If the vendor, in either of the above circumstances, does not take remedial steps within a period of 30 days after receipt of the default notice from BIT Mesra (or takes longer period in spite of what BIT Mesra may authorize in writing). BIT Mesra may terminate the contract / purchase order in completely or in part. In addition to above, BIT Mesra may at its discretion also take the following actions: BIT Mesra may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate BIT Mesra for any extra expenditure involved towards goods and services to complete the scope of.
27. **Acceptance and rejection of bids:** The Institute may accept or reject any or all the bids in part or in full without assigning any reason and doesn't bind himself to accept the lower bid, without thereby incurring any liability to the affected Bidder or bidders. The institute at its discretion may change the quantity / upgrade the criteria / drop any item or thereof at any time before placing the Purchase Order.
28. **Manual:** One set of operating manual and service manual including detailed drawings and circuit diagrams (in English) should be provided with the instrument

29. **Blacklisting of Supplier:** Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafied/ fraudulent intent.
30. **Delivery at Kolkata Airport/ Seaport only:** Since our SFIS bond is valid in Kolkata Airport/ Seaport only delivery is to be made through Kolkata Airport/ Seaport.
31. **No part Shipment:** While transshipment will be allowed, part shipment will not be allowed.
32. **Clarification of Bids:** Clarifications may be sought by the Evaluation committee of the Institute during the Process of Technical Evaluation. The request for the clarification and the response shall be in writing. There shall be no change in prices or substance of the bid shall be sought, offered or permitted. The Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.
33. **Waivers:** The Institute may waive off any minor informality non-conformity or irregularity in a bid which does not constitute a material deviation, provided such a waiver does not prejudice or affect the relative ranking of any Bidder.
34. **Bid responsiveness:** A responsive bid is one in which the bid is substantively responsible i.e. the bid which conforms to all the terms and conditions of the bidding documents without material deviations. Deviations from or objections or reservations to critical provisions such as those concerning Performance Security, Warranty, Force Majeure, Limitation of liability, Applicable law, and Taxes & Duties will be deemed to be a material deviation. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
35. **No Canvassing:** Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison or contract award may result in rejection of the Bidder's bid.
36. **Rejection of Bid:** If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
37. **Patent Rights:** The Supplier shall indemnify the Institute against all third-party claims of trademark, industrial design right or infringement of Patent arising from the use of Goods or any part thereof in India.
38. **Insurance:** For delivery of goods at site, the insurance shall be obtained by the Supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes.
39. **Packaging:** The packaging should be such to prevent their damage, rough handling during transit and exposure to extreme temperatures etc or deterioration during transit to the final destination as indicated in the Purchase order. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
40. **Tax liabilities:** Suppliers shall be entirely responsible for all duties, taxes, license fees, octroi, road permits, etc., incurred until delivery of the Goods to the Purchaser as per the Purchase order.
41. **Termination for Insolvency:** The Purchaser may at any time terminate the P.O by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.
42. **Jurisdiction :** Any suit, action, or other proceedings arising out of this tender or the subject matter hereof shall be subject to the exclusive jurisdiction of courts of Ranchi.

Registrar

Price bid

1. **Bid Price:** The Bid Price should be enclosed in a sealed envelope and properly marked. The Bidder shall indicate on the appropriate price bid, the unit prices and total bid prices of the goods it proposes to supply under the contract.
2. **Bid Currencies:** Prices should be quoted in Indian Rupees for offers received for supply within India and in freely convertible foreign currency for offers received for supply from foreign country.
3. **Vendor should mention of packing, forwarding, freight, insurance charges, taxes etc. such offer shall be rejected as incomplete.**
4. The price quoted shall remain fixed during the contract period and shall not vary on any account.
5. All lots and items must be listed and priced separately in the Price bid. If a Price bid shows items listed but not priced, their prices shall be assumed to be included in the prices of other items. Lots or items not listed in the Price bid shall be assumed to be not included in the bid.
6. **Customs Duty:** The Institute is exempted from payment of Customs Duty Vide GOI Notification No. 51/96 Customs, dated 23.07.1996 & No.24/2007-Customs dated 01.03.2007 with registration no 11/161/1990-TU-V dated 23.03.2022.
7. **Arithmetical errors:** The arithmetical errors will be rectified as follows. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between the figures and words. The amount in words will prevail. If the supplier does not accept the correction of errors, its bid will be rejected.
8. Prices indicated on the price-bid should be mentioned in the following manner:

For Goods manufactured within India

- i) The price of the goods should be quoted Ex –works.
- ii) GST and other taxes etc. which will be payable on the goods if the contract is awarded. The details should be mentioned separately.
- iii) The charges for inland transportation, insurance and other local services required for delivering the goods at the desired destination as specified in the price bid.
- iv) The installation, commissioning and training charges including any incidental services, (if any) should be clearly mentioned.

For Imported Goods:

- i) The price of the goods, quoted on FCA (named place of delivery abroad) or FOB (named port of shipment), as specified in the price schedule form.
- ii) The charges for insurance and transportation of the goods to the port/place of destination.
- iii) The agency commission charges, (if any).
- iv) The installation, commissioning and training charges including any incidental services, (if any).
- v) The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the Incoterms published by the International Chambers of Commerce, Paris.
- vi) **Delivery at Kolkata Airport/ Seaport only:** As we do not have clearing agent in any other Airport, delivery is to be made only at Kolkata.

Registrar

Annexure- I.

Proforma for Performance Statement (last three years)

Sr. No	Name of the Buyer (With full address)	Order No. and date	Full description of the Item and value	PO Value	Delivery Details		Delay reason (if any)	Attach satisfactory performance certificate (from the buyer)	Contact Persons Details and contact No.
					As per P.O	Supply date			

Annexure II

Technical specification of GCMS MS AND GAS ANALYZER

Sl. No	Features	Prescribed Specification
1.0	GCMSMS System	Triple Quadrupole Gas Chromatograph mass spectrometer system with two injection ports, FID MS/MS detector and windows base software should be capable for qualitative and quantitative analysis of liquid, Gas and Solid samples for wide range of academic and R&D application such as Persistent Organic Pollutants, Hydrocarbons including PAH, Alcohols, Fatty Acids, Heterocyclic Compounds (including PCB's, pesticides etc.), VOC's in water, air and soil/sediments samples, Pesticide residues in Herbal drugs, Fruits, vegetables, water and soil, plant metabolites, new compounds from herbal source, food contaminants and adulterants, volatile oils, petroleum products at <1ppb levels. The system should be supplied with all accessories required to make it fully functional for the above analysis. The complete system should be supplied and supported by single vendor. The system should be most advanced and latest model of the manufacturer. Model number of the equipment proposed to be supplied should be clearly mentioned. Specifications for GCMS/MS System should have of the following minimum specification (better & higher specification will be given preference):
1.1	Column oven	<p>The system should have All temperature and time functions should be controlled by microprocessor based controller.</p> <ul style="list-style-type: none"> • Temperature: Operating Range Ambient +4°C to 450°C or better • Heating rate: from 50 to 450 °C within 5 min or better • Cooling down rate: from 450 to 50 °C in less than 5 min or better • Temperature programming facility. • Maximum inlet temperature ramp rate : 120 oC / minute or better for all voltages • Should have oven power safety(power off when door is open)
1.2	Column	<ul style="list-style-type: none"> • DB 5 or equivalent: 1 No • DB 1: or equivalent : 1 No • DB 624 or equivalent: 1 No <p>TG Polar or equivalent: 1 No</p>
1.3	Inlet	<p>The system should have</p> <ul style="list-style-type: none"> • Programmable Temperature Vaporizer (PTV) or equivalent • Temperature ramped split / split less and large volume injection modes. • Electronic pressure/ flow control. • Pressure setting range 0 to 100psi or more <p>Injector for FID should also be quoted.</p>
1.4	Liquid, Head Space	The system should have

	auto Sampler with Solid Phase Micro Extraction	<ul style="list-style-type: none"> • Auto injector/sampler for Liquid injector (approx 100 vials) and HS with minimum 45 sample vials capacity • Completely programmable from software.
1.5	Back flush	The system should have column end or mid column backflush to remove unwanted components/ contaminants/ high boilers.
1.6	Triple Qudrupole MS/MS System	<p>The system should have</p> <ul style="list-style-type: none"> • Mass range: Qudrupole 10 to 1000 amu or better. • Mass resolution: minimum 0.7 (width at half height). • Mass axis stability: ± 0.1 amu over 24 hours or more • Linear Dynamic range: minimum 6th order of magnitude. • Scan rate (electronic): 10000 amu/sec or better • Ionization modes: EI (Electron ionization) and CI (Chemical ionization) modes Ion source should have heating capacity of 350°C or more. • CI: must be capable to operate with different reagent gasses & electronic flow control for reagent gasses. • Collision cell gas pressure must be electronically/Software controllable. • Collision energy must be variable • Scan Modes: <ul style="list-style-type: none"> i. Should be able to do Scan, SIM, MRM/SRM, Parent ion scan, Product ion Scan, and Neutral loss scan-time segment based ii. Simultaneous Full Scan-SIM or Full Scan/MRM or SRM whenever required iii. SRM/MRM Speed: minimum of 800 MRM/sec iv. Minimum MRM dwell time of 0.5 milli seconds or better. • Installation checkout sensitivity must be better than – • Instrument detection limit: 0.5fg or less octafluoronaphthalene (OFN) installation check out/ Reference specification. • EI Scan sensitivity : 1 μl of 1 pg/μl Octafluoronaphthalene (OFN) should give S/N greater than 1000:1 in scan mode 1 μl injection from m/z 50 to 300 for m/z 272. • EI MRM Sensitivity : 1 μL of 100 fg/μL Octafluoronaphthalene (OFN) should produce the following minimum signal-to-noise for the transition from m/z 272 to m/z 222: 6,000:1 or better on 30 mt.column. • The system should be able to accommodate direct insertion probe(DIP)/ Thermal separation Probe(TSP) for introduction of solid samples directly. • Turbomolecular pump: Air cooled turbomolecular pumps, Rotary vane fore-line pumps supporting the turbo-molecular vacuum pump • Noise reduction cover for fore line pump. • Software controlled auto-tune or manual-tune to enable quick start-up for quantitative analysis.

		<ul style="list-style-type: none"> Independently heated GC / MS interface. Extended dynamic range Electron Multiplier or off-axis high-energy detector with configuration to direct the charged ion of interest away from the neutrals with long life and better sensitivity. The instrument supplier has to demonstrate that the machine is suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethroids, PCBs and VOCs in Fish, vegetables and water at < 1ppb level.
1.7	FID Detector	<ul style="list-style-type: none"> MDL < 3pgC/Sec or better Sensitivity > 0.015 coulombs/g C Linear Dynamic Range > 10⁷ or better <p>Detector must be compatible for both capillary and packed column</p>
1.8	Nitrogen evaporator	The system should be provided with a suitable Nitrogen evaporator system of 20-25 samples processing capacity in one batch along with proper fume hood system. The specification along with the model should be provided at the time of tendering.
1.9	Micro Solid Phase Extractor	SPE cartridges for pesticides, PAH, PCBs along with universal vacuum manifold kit & collection rack should be supplied. (Qty- 100 nos of each cartridge). The vacuum manifold kit should support 24 well extraction plates with glass block manifold kits. The system should be supplied with a imported vacuum pump.
1.10	Pre Concentrator	<p>Manifolds for easy sample evaporation. Integrated pressure relief valve to protect against excessive gas flow and dangerous pressure build up. The compatible aluminium blocks for optimal thermal conductivity should be supplied.</p> <p>Easy set up to attach the module and gas tubings should be possible. The module should contain a thermometer well.</p>
1.11	Sample Preparation kits	<p>QuEChERS Kits (200 nos each) for Pesticides etc in following matrices:</p> <ul style="list-style-type: none"> Water High fat containing materials Highly Pigmented materials (eg chlorophyll, lycopene, carotene etc)
1.12	Software	The software should be an original licensed copy software with specific part number mentioned in the offer with integrated database. No pirated version of the software will be allowed and if found the offer will be strictly rejected. Periodical updates of the software should be provided free of cost for a period of ten years. The MS based software must be a Windows 10 or latest based platform and have the ability to control both the MS, GC, Auto Sampler and Head Space devices. The software should be capable controlling all aspects of Mass spectrometer, Data acquisition, peak integration, calibration, quantification, QC calculations, must be fully automated and can be performed in a multiple batch analysis mode. Manual and Auto tune options should be provided. The instrument must be capable of acquiring data in MRM/SRM or SIR/SIM mode. Library searching facility should be available. All flow controller i.e carrier flow, gas flow, etc should be set through software. The data analysis software should be unkeyed or multi-user licensed, to allow installation at minimum 2 PCs. Universal

		application range (ASCII files import/ export, word/ excel compatibility, pdf formats) should be available.. Full remote diagnostics software should be included in the standard software package. The system should also have the facility for automatic data transfer from GCMSMS to the institute server.
1.13	Library	The system should be provided with latest and licensed original version of NIST 2020 or latest version (in CD/ROM Format) library for natural products, flavors, fragrances, pheromones, drugs, pesticides, Forensic Data, Metabolites and Environmental data. The data analysis software should be unkeyed or multi-user licensed, to allow installation at minimum 2 PCs.
1.14	Calibration Standard kits and Standards(All NIST or equivalent Traceable with traceability Certificates)	i) EPA 550/550 1 Polycyclic Aromatic Hydrocarbon Mix 16 Components in Acetonitrile and Methanol 1 mL., 01 No ii) EPA 525 Semi-Volatility Organic Compounds (conc. 1mg/mL) Mix 25 Components in Acetone : 1mL, 02 No. iii) EPA Aromatic Hydrocarbon Mix 16 Components : 1mL; 02 No iv) EPA 507 Internal Standard (Triphenyl phosphate) 1mL; 01 No v) FAME Standard: 1ml; 2 Nos
1.15	Accessories and Consumables	a. EI filament and CI Filaments: 02 Nos each b. SEPTA for injectors: Non stick, Low bleed, high puncture tolerance and Max. Temp 350 °C (for each injector). (100 No.) c. Liners : i) Suitable Inert Injector Liner for SS & SSL (02 No.) ii) Suitable Injector Liner upto 10 µL (1 Nos.) iii) Suitable Injector Liner upto 250 µL (1 Nos.) iv) Liner O-Rings Max Temp 375°C (50 Nos.) d. FERRULES AND NUTS for injector end and detector end: 50 No. each for GCMS/MS and FID e. VIALS, CAPS AND TOOL FOR AUTOSAMPLER (Only Compatible sizes should be supplied) : i) Vial sets 1-2ml, screw/crimp type Amber glass - 500No. ii) Vial sets 1-2ml, screw/crimp type Clear glass - 500No. iii) Recovery vials clear glass– 100 Nos iv) Head Space Vials 10ml & 20 ml– 100 Nos each v) 300/500 µL vials inserts – 50 Nos vi) Septa PTFE/Silicone (for 1-2 mL Vials) - 200 Nos vii) Ergonomic crimping tools for different vial types viii) Ergonomic decrimping/decapping tools for different vial types f. Autosampler Syringe i) 10 µL (02 Nos.) ii) 50 µL (01 No.) iii) 100 µL (01 No.) g. Pesticide grade glass wool: 01 No h. Vacuum Pump Oil: 2L i. Gas Tube Cutter: 1 Nos j. All the gas to be supplied given below should be as per the GCMSMS requirement grade. i) Argon gas filled cylinder (7 cm ³) : 1 No ii) Helium gas filled cylinder (7 cm ³) :1 No

		<p>iii) Nitrogen gas filled cylinder (7 cm³) :1 No</p> <p>iv) Methane gas filled cylinder (7 cm³) :1 No</p> <p>v) Zero air generator with all accessories</p> <p>vi) Separate Gas regulators with all necessary connectors, regulators, valves and tubing for Argon, Nitrogen, Helium, methane: Three number each</p> <p>vii) Gas distribution and purification panel/line for all above gases with moisture trap, hydrocarbon trap, oxy trap etc with appropriate fittings and installation of all gases</p> <p>viii) Spare set gas purification cartridges: 2 set</p> <p>k) Installation Kit</p> <p>l) Suitable granite/ wooden table for GCMS MS System.</p> <p>m) Any other accessories as felt required for the proper functioning of the instrument for three years. The supplier will be solely responsible for any additional requirements of these accessories/ spares/ consumables within these periods.</p>
1.16	Computer & Printer	A suitable /compatible branded computer for system control & data acquisition. It should have following minimum specs:i5/ i7 processor, 8GB RAM, 1 TB HDD or above, DVD combo drive, 6 USB Ports, 21" TFT/LED Color Monitor, Keys Keyboard, Optical mouse, with original operating system, HP or any standard brand Laser Jet Printer with scanner.
1.17	UPS	Suitable 10KVA online UPS having at least 3 Hours battery backup should be supplied.
1.18	Manual	One set of operational manual and service manual (both hard and soft copy in English) should be supplied with the equipment.
2.0	Gas Analyzer System	The system should be equipped with Electron Capture Detector (ECD), Flame Ionization Detector (FID), Thermal Conductivity Detector (TCD) and column switching for the gas and liquid sample analysis. The system should be capable to analyze various gases samples like hydrogen, carbon dioxide, carbon monoxide, oxygen, nitrogen, chlorine, methane, hydrogen sulfide, sulfur dioxide, arsine, methyl arsine gas, hydrocarbon etc. Online gas analysis should be available in the system. The system should be supplied with all accessories required to make it fully functional for the above analysis. The complete system should be supplied and supported by single vendor. The system should be most advanced and latest model of the manufacturer. Model number of the equipment proposed to be supplied should be clearly mentioned. Specifications for Gas Analyzer should have of the following minimum specification (better & higher specification will be given preference)
2.1	Gas Chromatograph	<p>1) Usable volume : 14L or More</p> <p>2) Automatic cooling under processor control</p>

	Oven	3) Temperature operating range : 4 ⁰ C above ambient to 450 ⁰ C or more 4) Temperature set-point resolution: 0.1°C 5) 0.1°C Temperature Accuracy : ± 0.1°C 6) Overheat Protection: Maximum temperature protection adjustable from Built-in Alarm and Auto shut off of heating control.
2.2	Inlet	- Maximum no. of installation: three (1) Packed inlet a) Maximum Temperature : 200 °C b) Pressure setting range : 0.01 - 100 psi or better c) Total flow setting range : 0.1-100 ml/min or better d) Temperature set point : 0.1°C or better e) Temperature stability < ±0.1°C (2) Capillary inlet (Split/Splitless switchable) a) Maximum Temperature : 400oC b) Pressure setting range : 0.01 ~ 100 psi or better c) Splitless time set point : 0.01min d) Temperature set point : 0.1°C e) Temperature stability < ±0.1°C f) Septum purge: Fixed
2.3	Detector	(i) Flame Ionization Detector with electronic gas controller – 1 Set (a) With Built-in Signal Amplifier Unit and Integrator output. (b) Signal Range : High and Low (c) Sensitivity: Better than 0.1ppm for Hexane (d) Operating Temperature : 5°C above ambient to 450°C, ±0.2°C through computer programming (ii) Thermal Conductivity Detector with electronic gas controller - 1 Set a) With Built-in Signal Amplifier Unit and Integrator output. b) Range : High and Low c) Operating Temperature: 5°C above ambient to 400°C, ±0.2°C through computer programme. iii) Electron Capture Detector with electronic gas controller - 1 Set (Optional) a) High sensitivity and wide dynamic range featuring acquisition rate as high as 300 Hz b) Integrated electronic gas control (IEC) c) Max T = 400°C or better (Usable for both Packed Column and Capillary Column. Any one injection at a time)
2.4	Pneumatic Controls (PC)	Column carrier gas regulation is precise and can be set within ±0.1 PSI. Digital Display of the pressure set to the column. Digital Flow display in case of packed column with the control from Imported Differential Flow Controllers (1 or 2) Digital Column back pressure display improves high precision in capillary column use. Make-up Gas Precision Regulation and Digital Pressure Display and

		Control. Pressure Range : 0 – 60 PSI Pressure Accuracy : ± 0.1 PSI Pressure Readability : ± 0.1 PSI
2.5	Methanizer (1 set)	(1) Reaction Chamber Assembly for high performance methanization (2) Cartridge heater and RTD sensor for temperature controlling of Methanizer chamber (3) Maximum Operating Temperature: 400 °C
2.6	Built-in Auto Gas Sampler	(a) Microcontroller based Automated Gas sampler Equipment with Column Switching Unit for online gas chromatography (b) Sampling at atmospheric pressure also
2.7	Column	<ul style="list-style-type: none"> Column packed SS HS-Q 80/100 3M 2.0MM ID 1/8" OD gen config precond NOC KIT-C or equivalent : 1 No Column packed SS Porapak Q 80/100 4M 2.0MM ID 1/8" OD or equivalent : 1 No Column packed SS HS-Q 80/100 1M 2.0MM ID 1/8" OD GEN config precond NOC KIT-C P/N. PC12115 or equivalent : 1 No Column packed SS Porapak Q 80/100 1M 2.0MM ID 1/8" OD or equivalent : 1 No Carboxen 15 feet X 1/8" SS 80/100 mesh or equivalent - 1 No
2.8	Online Gas analysis Arrangement	The system should have the facility for online gas analysis facility.
2.9	Calibration Standards	Calibration Gas can 0.5 litre capacity (CH ₄ , H ₂ , O ₂ , N ₂ , CO, CO ₂ in balance Helium 0.5ltrs WC in suitable composition) – 2 Nos
2.10	Accessories and Consumables	i) 1ml Gas tight syringe : 2 Nos ii) Liquid Syringe 10 μ L: 2 Nos viii) Sampling Loop with nuts and Ferrules: 5 Nos ix) Tedler Bag: 2 Nos x) All the gas to be supplied given below should be as per the Gas Chromatography requirement grade. a) Hydrogen gas filled cylinder (7 cm ³) : 1 No b) Helium gas filled cylinder (7 cm ³) : 1 No c) Nitrogen gas filled cylinder (7 cm ³) : 1 No d) Zero air gas cylinder (7 cm ³): 1No e) Separate Gas regulators with all necessary connectors, regulators, valves and tubing for Hydrogen, Nitrogen, Helium, Zero air: One number each f) Gas distribution and purification panel/line for all above gases with moisture trap, hydrocarbon trap, oxy trap etc with appropriate fittings and installation of all gases g) Spare set gas purification cartridges: 2 set xi) Snoop Leak detector Bottle: 1 No xii) Installation Kit xiii) Suitable granite/ wooden table for Gas Analyzer.

		xiv) Any other accessories as felt required for the proper functioning of the instrument for three years. The supplier will be solely responsible for any additional requirements of these accessories/ spares/ consumables within these periods.
2.11	Software	The software should be an original licensed copy software with specific part number mentioned in the offer. No pirated version of the software will be allowed and if found the offer will be strictly rejected. Periodical updates of the software should be provided free of cost for a period of ten years. The software must be a Windows10 or latest based platform and have the ability to control both the GC, Detector and Auto Sampler. The necessary software for data acquisition, control, chromatographic data analyses and evaluation, qualitative and quantitative analysis, reporting etc. should be quoted. The software should be easy to handle and user friendly.
2.12	Computer	A suitable/ compatible branded computer for system control & data acquisition. It should have following minimum specs:i5/ i7 processor, 8GB RAM, 1 TB HDD or above, DVD combo drive, 6 USB Ports, 21" TFT/LED Color Monitor, Keys Keyboard, Optical mouse, with original operating system, HP or any standard brand
2.13	UPS	Suitable 6 KVA online UPS having at least 2 Hours battery backup should be supplied.
2.14	Manual	One set of operational manual and service manual (both hard and soft copy in English) should be supplied with the equipment.
3.0	Pre installation Requirements	Complete technical details of pre-installation requirements should be furnished along with the technical bid. Birla Institute of Technology, Mesra will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost.
3.1	Training	The manufacturer / supplier of instrument should provide five days onsite training in both hardware and software to the laboratory personnel in the installation, operation and maintenance of the instruments. The supplier or manufacturer should also provide five days applications training. After successful installation and application training at BIT Mesra, the supplier should arrange hands-on and in-depth training to two scientific/technical person of CIF, BIT Mesra for one week on operation, trouble shooting, maintenance and application of the GCMSMS system at the company's application facility at their expenses including travel , accommodation etc. Sample analysis support at your application premises is required.
3.2	Warranty	Minimum warranty of 3 years should be quoted with main systems. The supplier should provide comprehensive warranty for 3 years for all components without any additional cost to the purchaser from the date of satisfactory commissioning of equipment. Components include all parts (accessories/ consumables / spares parts) of the equipment. All accessories/ consumable/ spare parts replaced shall be from OEM/ Supplier of same model or higher version. If within a period of three years after commission,

		<p>any accessory / consumable/ spare part is proved to be defective then such product shall be replaced by the manufacturer / supplier. Such replacement shall be sole obligation of manufacturer / supplier, Including payment of charges for freight delivery, custom duty and transportation, if any. In case of breakdown during the warranty period, a competent Service Engineering of the supplier should make as many visits as are required to rectify the problem and replace the faulty parts, without any liability of cost. Service response time must be less than 72 hours. Otherwise the warranty period shall automatically be extended by the time taken to rectify the defects. Also the service engineer should come for two preventive maintenance in every year. Annual calibration of the equipment shall be a part of the warranty. It shall also be mandatory to perform calibration after every major repair/ breakdown. Warranty of the instrument will be effective from the date of successful completion of installation, demonstration and application training of the instrument. Annual maintenance contract (AMC) for additional 02 years subsequent to the warranty period should be quoted(Optional).</p>
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