



Indian Institute of Technology Madras
Chennai-600 036
Department of Civil Engineering

Ref No: CIE/Ligy/2013/GC-MS/SPL

March 6, 2014

DUE on: 20th March 2014

Sir/Madam,

1. Quotations are invited **in duplicate (Two bidding covers)** for the **item/s shown as per enclosed Specifications.**
2. The quotations duly sealed and superscribed on the envelope with the enquiry reference No. & due date should be addressed to the **Head of the Department, and contain two bidding system covers of Technical & Commercial Bids, so as to reach on or before the due date.**
3. The quotation should be valid for **(60) Sixty days from the due date and period of delivery time** required.
4. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the quotations, **wherever applicable.** Samples if called for, submitted free of charges and collected back at the suppliers expenses. Additionally, **the required information as per specifications are to be provided by the firm** participating in this tender
5. Firms outside Chennai: Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train/lorry transport must be indicated. If Ex-godown, packing Forwarding and Freight charges must be indicated.
6. Local Firms: Quotations should be for free delivery to this Institute. If quotations are for Ex-godown, delivery charges should be indicated separately.
7. Goods should be **supplied by carriage paid and insured.**
8. Goods shall not be supplied **without an official supply order.**
9. PAYMENT: The mode of payment should be mentioned.
10. Rate of Sales/General Taxes and percent of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Wherever this is not done, no claim for any taxes will be admitted at any stage and any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill.
11. Warranty period: Explicitly Warranty period is to be given by the firms.

Yours sincerely,

[Handwritten Signature]

For Head of the Department

Specification for Chromatograph with Mass Spectrometer (GC-MS)

System should be designed and manufactured under ISO-9001 and should comply with most of international regulatory, safety and electromagnetic compatibility requirement. The chromatography data system should be based on Microsoft Windows operating system for instrument control, data acquisition and data analysis.

GC Specifications:

1. System should be capable of supporting two injectors and at least one detector port other than MS
2. Electronic pneumatic controls/pneumatic control for all the gases
3. Provision to install two columns or more
4. Operating temperature range of oven from near ambient to 425°C
5. Maximum temperature ramp rate of oven should be 40°C
6. Possible to program minimum 5 temperature ramps (6 plateaus)
7. Interface of GC should be independently heated
8. Flow sensor for control and storage of split ratio
9. Inlet should have pressure range from 0-60 psi or better
10. Two capillary injectors should be provided with GC (with split and split-less injection capability).
11. Upgradable with head space system option is preferred.
12. Detector: FID detector should have temperature range upto 400°C or better and have more than 10^7 linear dynamic ranges with preferred minimum detection level less than 3.0 pg of C/s. The data collection rate should be more than 100 Hz and have the capability for FID ignition through software.
13. Flow of all gases should be adjustable and/or controlled by software (no manual control).
14. An automatic liquid sampler and auto-injector must be provided. This must be able to accommodate 50 to 100 samples or more. A spare injection needle (10 micro liter) must be provided. Auto sampler should display area reproducibility of 0.3% RSD for minimum 15 vials or more.

MS Specifications:

LAN based quadrupole MS system with inert source conforming to International safety standards, designed and manufactured under a quality system registered to ISO-9001 with appropriate computer & printer to support the system from original manufacturer. It should include minimum 255 L/s turbo molecular pump with EI ion source.

1. Mass range of 10-1000 amu in 0.1 amu steps or better
2. Mass axis stability should be 0.10 amu/48 hrs
3. Scan speed upto 12,000 u/sec or better
4. Ion source temperature upto 350°C or better
5. Transfer line temperature 100-300°C and software controlled
6. Heated quadrupole preferred with temperature range from- 100-150°C to keep it free of contamination (Quadrupole mass filter consisting of a monolithic quartz structure will be preferable).
7. EI scan sensitivity : 100:1 S/N for 1 pg OFN

8. The mass spectrometer should have the capability to create a minimum 90 SIM ion groups
9. Additional features SIM/scan automated SIM setup and high performance synchronous SIM/scan operation
10. Application like auto tunes, one-click auto tune for BFB, DFTPP or better spectral libraries is required.

Accessories:

1. Purge and trap with suitable accessories.
2. Thermal desorption system with suitable accessories
3. The following capillary columns must be provided along with the system
 - a. HP5-ms/DB5-ms or equivalent
 - b. Zebron 5-HT or equivalent
 - c. Heliflex® ATT-35ms (or equivalent)
 - d. Heliflex® ATT-5ms
4. The system must be supplied with inlet gas purifiers and corresponding metal tubing required, along with a helium cylinder regulator. The gas cylinder will be provided by the user.
5. The system must be provided with a set of installation, operating and troubleshooting manuals both in paper and software forms.
6. An annual maintenance contract (AMC) for two years after the warranty period of the instrument that includes purge and trap and thermal desorption assembly will be preferred.
7. A service center must be available in Chennai for service engineers to attend to the instrument for maintenance or troubleshooting.

Purge and trap Specifications:

1. System should be compliant with USEPA methods 5030, 5035, 8260, 524.2 for the analysis of soils, wastewater and drinking water.
2. System should be optionally capable of dilution options up to 1:100 for aqueous samples.
3. System must be capable of automatically shutting off gas flow in the event of a potentially hazardous over pressure situation.
4. System must have a one year or more manufactures warranty.

Thermal Desorption Specification

Thermal desorber system should have atleast 100 tubes autosampler and the trap should be peltier cooled

1. Thermal desorber should allow the simultaneous analysis of volatiles and semi-volatile organic compounds ranging from n-C₅ to n-C₄₀

General Terms and Conditions:

System should be installed by company professional and thorough technical training to be provided in analyzing and troubleshooting