

Tender Specifications for Gas Chromatograph Triple Quadruple Mass Spectrometer (GCQQQ)

Competitive quotations in sealed covers are invited for the purchase of the Gas Chromatograph Triple Quadruple Mass Spectrometer (GCQQQ) with following specifications: -

i. Gas Chromatograph:

1. Fully automated single channel system.
2. PPC/EPC/AFC/IEC for auto-sampler, injector & detector with all zones.
3. Gas Pneumatic program rates 0-100.0 psi/min/ 0-100.0 mL/min/0-200.0 cm/sec or ballistic or suitable as per instrument requirement.
4. Chromatographic performance: -
 - Retention time repeatability: <0.0008 minutes
 - Typical peak area repeatability: <0.5 % RSD
5. System must have touch screen/Monitor based user interface for instrument operation.
6. All parameters should be stored as a part of method for better analysis reproducibility.
7. Instrument compatible to computer and software should be Window 10 or Latest.
8. System should have retention time locking capability/automatic adjustment of retention time/Retention time alignment.

ii. GC Oven:

1. Volume: approximately 12.8 Litres or more for easy fixing and removing different types/dimension of columns without compromising rate of heating or cooling of oven.
2. All temperature and time functions should be micro-processor controlled and displayed on the screen/Monitor.
3. Oven must accommodate upto Two 30 m × 0.25 mm ID capillary columns.
4. Temperature range 5°C above ambient to 400 °C.
5. Maximum oven heating rate: 100 °C/min or above.
6. Cool down time from 400 °C to 50 °C is less than 5 minutes or better.
7. Temperature program: 8 ramps & 9 plateaus or better.
8. Temperature set point resolution: 1 degree °C.

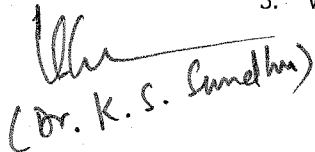
iii. Temperature Programmable Split/Splitless Capillary injector/MMI/PTV: Qty- 1

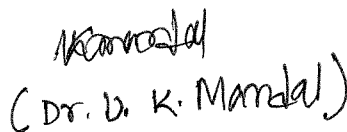
1. Temperature-programmable inlet.
2. Inlet should have large volume Injection Capability.
3. Temperature-programming up to 3 ramps and at up to 800 deg C/ Min.
4. Operating Temperature range 50 °C to 400 °C
5. Split Ratio: 500:1
6. PPC/AFC/EPC/IEC pneumatics include automatic control of split vent by split flow or split ratio.

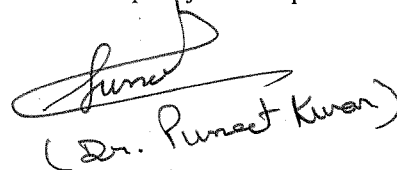
iv. Sample introduction/handling system with liquid injection & syringe-based headspace injection Module :Qty-1

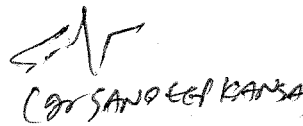
a. Auto Injector :-

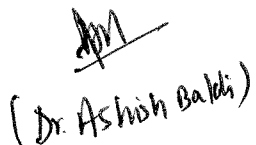
1. Inbuilt/External Autosampler - 100 Vials capacity.
2. Capable to inject sample volume from 1.2 uL to maximum 50.0 uL.
3. System should have user friendly operations & auto sampler syringe should be user changeable.
4. Vial size - 1.5 ml or 2 ml.
5. Waste and wash vial size - 5 or 8 ml or suitable as per system requirement.

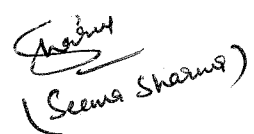

(Dr. K. S. Suresh)

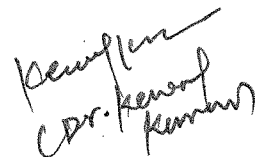

(Dr. D. K. Mandal)

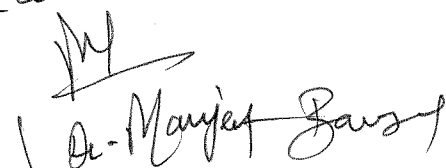

(Dr. Puneet Kaur)

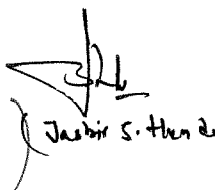

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(Dr. Ashish Baidi)


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(Jasbir S. Hena)

b. Head Space Sampler :-

1. Temperature control from 40 degree to 150 degree C.
2. Syringe based technique.
3. 20/10/22 ml vial capacity.
4. 45 or more vials capacity.

v. Triple Quadruple Mass Spectrometer:

1. Ionization Mode: Electron Ionization (EI)
2. Mass Analyzer: Triple Quadruple
3. Quadruple: Heated or suitable mechanism to remove the neutrals efficiently.
4. Electron energy range: 10-150 eV
5. Mass Range: 10 to 1000 amu or better
6. Mass axis stability: ± 0.1 amu over 24/48 hours or better.
7. Mass resolution: 0.7 Da or better
8. MRM/SRM speed: 700 transition / second.
9. Dwell time: 0.5 msec or better.
10. Vacuum pump: Dual inlet/stage Turbomolecular pump (>230 L/s)
11. Source temperature: upto 350°C
12. Scan rate: 15,000 amu/s or better
13. Detection Limit: Instrument detection limit on OFN should be 1 fg or less with the injection of 1 ul of 2 fg/ul OFN standard.
14. All scan ranges should be provided- Full Scan, SIM, SRM, Product ion, Precursor ion and Neutral loss.
15. EI SRM/MRM Scan mode sensitivity: 100 fg OFN S/N \geq 30000:1 or 1 fg OFN S/N \geq 300:1 or better.
16. Calibration Standards for EI Mode.
17. Ion source can be easily removable
18. Filament should be of best quality.


vi. Software:

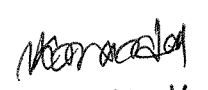
System should be quoted with original licensed software needed to control the system along with original CDs for GC as well as MSMS. No migration kit or right to copy software is acceptable. Single point control of all GC-MSMS and its modules, customizable reports; also, should have data acquisition, control, data evaluation, reporting sequencing etc. features


Control System:-

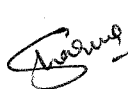
WorkStation Instrument Control software should allow to perform the following tasks:


- a. Start and stop the instruments from the software.
- b. Download settings to the GC and the Triple Quad in real time to control the instrument.
- c. Evaluate if the MS parameters are within the limits to produce the specified mass accuracy and resolution with a Check tune report.
- d. Optimize MS parameters automatically or manually through software tuning programs and print an Auto tune report.
- e. Monitor the actual conditions of the instrument. View the real-time plot for chromatograms and instrument parameters (both GC and MSMS) and print a real-time plot report.

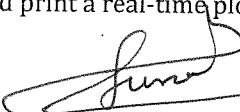

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Quantitative/Qualitative analysis Features of the software:-

The analysis software should be able to perform the following tasks:-

- a. Imports information directly from the acquisition method.
- b. Provide a curve-fit assistant to test all fits and statistics on curve quality.
- c. Allow fast method development.
- d. Qualitative Analysis program to present large amounts of data for review in one central location.
- e. Extract chromatograms, View and extract peak spectra, Subtract background, Integrate the chromatogram.
- f. Find compounds of all peaks automatically against databases and extract them as output.
- g. Extract mass isotopomer data.

vii. System should be quoted with below libraries & accessories:-

1. 2017 NIST Mass Spectral Library with sealed original CDs or Dongle.
2. Dedicated MRM Pesticide Database.
3. Certified reference material for Pesticides (atleast 200 pesticides).
4. QUECHER Kits for different food matrix 200 (Extraction and Clean up) Each - Meat, Milk, Rice, Wheat, Fruits & Vegetables - Total Qty for 1200 Samples. (Extraction Kits for 1200 samples & Clean up Kits for 1200 Samples).
5. HPLC/GCMS Grade Chemicals - Acetonitrile :- 25 L, Acetic Acid: 1 L, Ethyl Acetate: 5 L.
6. CE Certified imported Vortex with IR Sensor to reduce strain on wrists up to 3000 rpm.
7. CE Certified Imported Refrigerated Centrifuge with 15000 rpm, upto Minus 10 Degree, with 5 Program keys to protocols, 1.5/2ml, 15ml and 50 ml metallic rotor with metallic lid. Qty.1
8. Imported Auto pipette with fully autoclavable feature - 10-100ul Qty. 1 & 100-1000ul Qty 1.

viii. Columns:- Below listed 30m GCMSMS Capillary Columns should be quoted with OEM Part number: -

1. RTX-5 or equivalent - Qty 2
2. RTX-1701 or equivalent - Qty 2
3. RTX-35 or equivalent --- Qty 2

1. **Gas Cylinders & Gas Purification Panel:** Helium Gas cylinders (3 Qty), Nitrogen Gas Cylinder (3 Qty), Double stage SS regulators for each gas line with 2 stage gas manifold device for each gas line. Please quote any other cylinder like Argon etc if the same is required for collision gas in your instrument., purification panels, 180 Feet SS Tubing with color Sleeves, 100 Feet Plastic Channel and other arrangements of each cylinder holdings.
2. **Computer:** Processor: **Intel Xeon E3-1225v5**, Operating System: Windows 10, Processor Speed : 3.3 GHz, 8MB cache, Hard disk : 500GB 7200 RPM SATA Hard Drive, Graphics : Intel HD Graphics P530, Display : 24 Inch HD Monitor, Optical Mouse - System should be preferably supplied with system from factory.
3. **Printer :** Laser jet Black and White Printer.

ix. Warranty : 1 years warranty on complete system including Gas Chromatograph, Autosampler Sampler, Computer, Printer, Gas Purification Panel & Gas Regulators. Warranty Period will start after successful installation.

x. System Validation : - Vendor should provide IQOQ for Hardware and Software. Installation report will be signed after completion of Validation Certificate.

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(Anand Kumar)
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(Dr. Anil Kanwar)
(Dr. J. K. Thakur)

xi. GCQQQ Maintenance Kit with below OEM Pat numbers: -

1. Auto-sampler Syringe 10ul-- Qty 10
2. Liner for split/splitless mode - Qty 5 each
3. Compatible Ferrules for MS - Qty 10
4. MS Filament for EI--- Qty 2
5. Vacuum Pump Oil ---10 Liters
6. 2 ml Vials with screw cap --- Qty. 1000
7. HS Vials with screw cap - Qty 200
8. HS Needle 5ml - Qty 2
9. Inlet Septa - Qty. 500
10. Column nut for MS - Qty 10


xiv. Technical Literature:-


All specifications asked in tender should be supported by published literature preferably with publication number. Any claim deviating from published documents will not be entertained. Information in published documents attached with tender documents will be taken for final comparative. No letter head certified justification will be entertained.

xv. Demonstration of Instrument:- Technical committee may ask for demo before taking final discussion in vendor's lab with raw samples.


Important Note:-

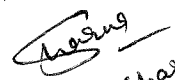
1. Vendor should have ISO 9001 Certification.
2. All the requirements laid down under the above specifications must carefully read and understood before claiming your instrument as "complied".
3. Please provide compliance statement sheet with technical bid and if there is any deviation in above mentioned specifications should be clearly highlighted in remarks.
4. User list should be attached along with literature.
5. The vendor should have office or agents in India. Qualified technical and service personnel should be available in India (preferably in Chandigarh or Delhi).
6. Instrument should be quoted for F.O.R. destination.

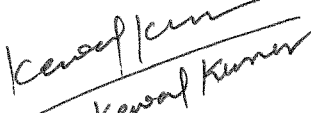

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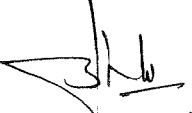

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