



**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**  
**MATERIALS MANAGEMENT DIVISION**  
**Powai, Mumbai 400076**

**Purchase Requisition No. 1000012881 (SRM/RFX No. 6100000245)**

**Technical specification of Gas Chromatography Mass Spectrophotometer**

**1. MS specifications:** Brand new quadruple mass spectrometer with noncoated inner source confirming to international safety standards, designed and manufactured under a quality system registered to ISO 9001 with appropriate computer and printer to support the system from original manufacturer. Should include

- i) a turbo molecular pump with both Inert CI and EI ion source.
- ii) Mass range from 1.6 to at least 1000 amu
- iii) Mass axis stability should be 0.10 amu/48 hrs
- iv) Scan speed >18000 u/sec
- v) Ion source temp upto 350°C for better sensitivity for active compounds and it should be programmable. Transfer temp 100-350°C; Quadrapole temp 106-200°C. Quadrapole should be heated to keep quadrapole clean for a longer period.
- vi) Electron energy 5–241 eV
- vii) EI source should be inert to active compounds and should be programmable.
- viii) The EI source should have a dual filament design with automatic software selection of the other filament if one fail during analysis
- ix) EI/CI MSD | S/N Ratio : 1,500:1 with 1 pg/μL OFN, 1,200:1 (PCI), 2,000:1 (NCI) for 1 pg/μL OFN

**2. Gas Chromatograph (GC)**

A brand new GC system with one injector should have the capability of:

- i) Split/splitless capillary column injection unit which is electronically controlled via Electronic Pneumatic Controller (EPC).
- ii) Operating temp range from near ambient to 450°C
- iii) Maximum temp rate 115°C
- iv) Possible to programme 20 ramps (21 plateaus)
- v) Possible to adjust pressure in increments of 0.001 psi, pressure setting range of 0-95 psi
- vi) Flow sensor for control & storage of split ratio
- vii) Possible to use capillary columns of 50, 100, 250, 320 microns and above
- xii) Should have an auto sampler of 150 vials
- xiii) Electronic motor actuated automatic injection system
- xiv) One programmable multimode injector
- xvi) Vendors must supply imported GC syringes of 1, 5, 10, 25, 100ul 2 nos. each with GC.
- xvii) All carrier & detector gases must be electronically controlled.
- xviii) Should have a touch screen display unit.

### **3. Flame Ionization Detector (FID)**

- i) Minimum detectable level (for tridecane); < 1.2 pgC/s (Tridecane)
- ii) Data acquisition rate of upto 500 Hz
- iii) Software should quote original licensed software
- iv) Microsoft Windows base operating system for instrumental control, data acquisition, data analysis, library search, Quantitation, automation & customization with online and offline sessions provided
- v) Flameout detection & automatic reignition of FID should be possible.
- vi) Computer and laser printer should be provided with the systems
- vii) Should quote Semiquant software, e-method can be downloaded from vender site. Should have Auto SIM Facility to save time to setup SIM manual Method.

## **5. Headspace Sampler**

Headspace Sampling Method must be standard full electronically control through PC. It must contain minimum 12 vials sampler. For safety measures, it must have leak inspection capacity.

## **6. Tuning**

i) System should include a variety of auto tune algorithms to tune the instruments for maximum sensitivity or for specific target compounds

## **7. Essential Accessories require to operate GC-MS**

i) No. of column 1 + 1 chiral column compatible with neutral type of organic compounds.

ii) Free of cost installation and training of staff/scientists of this laboratory. Atleast five working days of training should be given by installation and applicable engineers.

iii) Should quote deconvolution programmed software to deconvolute spectra in a single step for the entire TIC for complex and dirty matrix

## **8. Warranty**

GC-MS instrument should be supplied with 3 years warranty.