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| A white and green machine with a glass flask | **Gas Chromatograph (GC) and Mass Spectrometer (MS)****Name of the equipment:** Gas Chromatograph and Mass Spectrometer**Make & Model:**GC: Perkin Elmer Clarus 580MS: Perkin Elmer Clarus SQ 8 S**I-Stem Registration ID-** 3222319 **Category of Instrument**Analytical Chemistry**Types of Analysis / Testing*** Separation, identification, and quantification of volatile and semi-volatile compounds;
* High-sensitivity mass spectrometric detection;
* Qualitative and quantitative analysis of complex mixtures

**Application:** * Pharmaceutical analysis
* Environmental testing (viz. VOC analysis)
* Forensics & toxicology
* Food & flavour analysis
* Petrochemical & industrial chemistry

**Description of Instrument**A high-performance GC-MS system combining the **Clarus 580 GC** (precise separation with advanced temperature control) and the **Clarus SQ 8S MS** (single quadrupole MS for reliable compound identification). |

**Booking Details**

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| **Book through I-STEM:** <https://www.istem.gov.in/>**Slot Booking Link**I-STEM Slot Booking link for External User | **Booking available for**Internal and External Both**Requisition form for** [Internals](https://randc.nitc.ac.in/pdf/instruments/civil/CED-REQUISITION_FORM_Internal.pdf)[Externals](https://randc.nitc.ac.in/pdf/instruments/civil/CED-REQUISITION_FORM_Internal.pdf) |

**Contact Details**

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| **Features of the equipment*** Dual-detection capability (GC with FID/MS for flexible analysis)
* Advanced electronic pressure control (EPC) for precise flow regulation
* Universal MS compatibility with multiple ionization modes (EI)
 | **Unique features/Measurement capabilities, if any*** Mass Range (MS): 1.2 – 1100 amu
* Scan Speed (MS): Up to 10,000 amu/sec
* Detection Limit (GC-MS): Sub-ppb level sensitivity
* Integrated TurboMass/Simplicity software for automated method setup & data analysis
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| **Instrument Technical Description and Major Specifications***(This Specifications Limited to Major 5)** GC Column Oven Temp Range: Ambient +4°C to 450°C
* MS Ion Source Temp: Up to 350°C
* Pressure Range (GC): 0 – 150 psi
* Mass Spectrometer Resolution: Unit resolution (1 amu)
* Data Acquisition Speed: Up to 20 spectra/second
 | **Measurement/Sample specifications:** * Sample Type: Volatile & semi-volatile organic compounds
* Injection Volume (GC): 0.1 – 2 µL (liquid), 1 – 1000 mL (gas)
* Mass Spec Compatibility: EI (Electron Ionization) only
* Column Compatibility: Capillary columns (0.1 – 0.53 mm ID)
* Carrier Gas: Helium, Hydrogen, or Nitrogen
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**Type of Sample Required for Analysis / Testing (Quantity, Pre-Preparation, State etc.) Guidelines for Sample Submission – User Instructions**

* Quantity:
	+ Liquid: 1 – 2 mL (for dilution if needed)
	+ Gas: 50 – 100 mL (in sealed vials)
* Pre-Preparation:
	+ Must be filtered (0.45 µm) to remove particulates
	+ Should be in volatile solvent (e.g., methanol, acetone, hexane)
	+ No heavy salts or non-volatile buffers
* User Instructions:
	+ Provide expected compounds (if known)
	+ Specify required sensitivity (ppm/ppb)
* Type of Samples Analysed:
	+ Organic compounds (drugs, pollutants, flavours, etc.)
	+ Not suitable for metals, polymers, or inorganic salts
	+ Maximum No. of Samples Accepted at a Time: 10 (batch processing possible)
	+ Minimum No. of Days Required for Analysis: 2–5 days (depends on complexity)
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| **Internal** | **External Academic Institutes** | **National R&D Lab** | **Industry** |
| 1500 per sample | 3000 per sample | 3000 per sample | 6000 per sample |