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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 580 MS: 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 |
| **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 |

**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 |