

TECHNICAL SPECIFICATION FOR ELEMENTAL ANALYZER (CHNS)

S. No.	Specification Requirement
1.0	Scope & Application: Elemental analyser is used for the determination of elements such as Carbon (C), Hydrogen (H), Nitrogen (N) and Sulphur (S)
2.0	GENERAL FEATURES:
(A)	The instrument should be PC operated with original software for analysis of samples. The operating system should be Windows based.
(B)	The instrument shall be based on Advanced Combustion Technique.
(C)	The determination of Carbon, Hydrogen, Nitrogen and Sulphur contents shall be done by oxidising the sample in the presence of excess oxygen and measuring the evolved gases.
(D)	Oxygen content determination shall be done by pyrolysing the sample and measuring the evolved carbon mono-oxide gas.
(E)	It shall be possible to select any of the following operational modes: CHN/CHNS
(G)	Power Supply: 220 \pm 10Volts, 50 \pm 1HZ single Phase AC
(H)	The ability to regenerate the copper reducing agent is essential.
	Technical Parameters: The Elemental Analyzer should have following minimum specifications:
3.0	Parameters / Requirements
3.1	FURNACE UNIT:
(A)	It shall have Combustion, Reduction and Pyrolysis units
(B)	Temperature Range: Combustion Furnace Unit: 100 – 1100 $^{\circ}$ C Reduction Furnace Unit: 100 – 1000 $^{\circ}$ C Pyrolysis Furnace Unit: 100 – 1100 $^{\circ}$ C Sample Temperature: \geq 1800 $^{\circ}$ C
(C)	Combustion / Reduction / Pyrolysis units should have independent temperature control and Static and dynamic combustion technique to ensure complete combustion.
(D)	Ash Removal Assembly: Provision for Ash and residual removal without extracting the reactor from furnace
(E)	Gases Required: Below required gases along with all fitting must be supplied as Carrier Gas: Helium / Argon gas Combustion Gas: Oxygen Pyrolysis Gas: Helium/(H-He) Pneumatic Gas: Air, Nitrogen or Argon
	Automatic weight transfer unit: Without use of manual weights. To be compatible with

	standard microbalance of any major vendors.
3.9	Accessories:
(A)	Sample Capsule: Tin / Silver / Aluminium capsules. For liquid samples long neck capsules & capsule feeding device.
(B)	Capsule sealing press for solids & liquid to be provided.
(C)	Column Switching Accessory for convenient switching between Oxygen and CHN/CHNS modes
4.0	Consumables support: till warranty expires OR For minimum 4000 analysis of CHN & 1000 for CHNS Two cylinder of each gas required as per CHN /CHNS analysis mode with all fitment must be included
5.0	Automatic shut down and start up To reduce the furnace temperature at the user set times and dates as well as to undertake reheat and calibrate.
6.0	The vendor should also have application/service centre in India for supporting the system post sale.
7.0	Software calculation Calculations: Elemental Ratio, Empirical Formula, % Polymer, Solvent of Crystallization, CN ratio or the theoretic energy Diagnostic recording: To provide permanent record of instrument timing, leak testing and status monitoring.
8.0	The vendor should provide compliance statement to be provided point wise showing/highlighting items part as quoted in the quotation for comprehensive technical comparison
9.0	The Prices should be quoted inclusive of all taxes except/ excise duty and FOR Jamia Hmadrad basis. Jamia Hamdard will provide custom/excise exemption certificate
10.0	Two concerned staff of JH must be provided proper training for this instrument.
11.0	Warranty – 3 years

Subject Expert

Coordinator, DST-PURSE

Chan

(F)	A built in gas saver shall be provided to avoid the wastage of carrier gas.
(G)	A safety cut off mechanism shall be provided to check against overheating of the a units against the pre-set values
3.2	AUTOSAMPLER UNIT: An automatic sample feeder capable of holding minimum or more samples.
3.3	SEPARATION UNIT:
(A)	Advanced chromatographic separation: Chromatography frontal gas chromatograph ensure reliable and accurate measurement of combustion gases.
(B)	Chromatographic column Oven Temperature: In between 40°C to 170°C to en complete separation
3.4	DETECTOR UNIT:
(A)	Type of Detector: Thermal Conductivity Detector (TCD)
3.5	ANALYZER UNIT:
(A)	Sample Type: Solid, Viscous and liquid
(B)	Sample Weight Range: 0.1 to 500 mg or more
(C)	Measuring Range: C 0.001-3.5 mgs H 0.001-1.0 mgs N 0.001-5.0 mgs S 0.001-2.0 mgs
(D)	Accuracy: <0.3%
(E)	Repeatability: <=0.2%
3.6	Work Station:
(A)	Hardware: Latest version of desktop PC system along with printer and all other required periph with three years backup support
3.7	Good quality Electronic Analytical Balance with three years warranty
(A)	The system shall have an interface to connect the external balance for automatic we transfer.
(B)	Elemental Analyzer equipped with a Microbalance with controller unit
3.8	Automatic Weight transfer unit: Without use of manual weights. To be compatible

