"Thapar Institute of Engineering and Technology
(Deemed to be University under section – 3 of UGC Act, 1956)"
Thapar Technology Campus, Post Box No.32, Patiala 147 004 Punjab INDIA
Ph. No. 0175-2393870, 3871
URL: www.thapar.edu, Email: npsingh@thapar.edu, ashwini.aggarwal@thapar.edu

Enquiry No. TIET/CS/AA/SEE
Dated : February 21,2018

Sub: Request for Quotation(s) for supply of Gas Chromatograph

Dear Sir

We shall be grateful if you kindly let us have your lowest **quotations** for the following materials. THE QUOTATIONS SHOULD REACH THE UNDERSIGNED **LATEST BY** January 05 March2018 through courier or e-mail (quotation sent by mail from distant locations needs also to be validated through courier/ regd post as hard copy) accompanied by appropriate illustrative literature/catalogues/pamphlets/technical details and specifications as the case may be. **On the quotation envelope/ subject the Enquiry Number & Date should be mentioned on the top of the Envelope/mail subject.**

Sr. No.	Item Name	Qty.
1.	Gas chromatograph with three detectors See attached sheet for specifications, and details Kindly send technical bid and commercial bid separately) Technical bid should have references of same equipment/ material supplied (Also send the relevant documents as per attached circular ignore if already sent earlier)	01 Set

The offer sent by you must furnish the following details:

1. Name, Make & specifications of each item.
2. Cost of the item with MRP.(Treat it mandatory)
3. Educational discount if any.
4. Validity of quotation should be at least 60 Days.
5. GST extra.
6. Delivery FOR Thapar Institute of Engineering & Technology, Patiala/ CIP Delhi for import products kindly mention HSS code of each product and attach copy of BOE of item last cleared in support
7. Insurance, Freight & other charges if any.
8. Minimum Delivery Period.
9. Payment terms. Net 30 days against delivery or satisfactory installation at Thapar University. whichever applicable
10. Guarantee / Warranty Information.

Regards,

Sd/-

Head Commercial

SPECIFICATIONS OF MICROPROCESSOR BASED GAS CHROMATOGRAPH

- System should have Multichannel & Multifunction control with accuracy and ease of operation
- Method / Programme can be developed, stored, recalled and run with simple keyboard operation
- Column Oven Temperature Ambient to 400°C in steps of 1°C
- Minimum no. of 6 Ramps and 7 Isothermal.
- Facility for the storage of atleast 9 method files. Should be retained in memory when Mains is switched off.
- Event controls, Auto diagnostics and RS232 interface for Data Communication should be provided.
- At least two nos. Auxiliary controls should be there.
- Injector system should consist of a SS body which fits into a universal base and accepts Removable Glass insert.
- Should be able to accept Glass or Metal Packed Columns, Fused Silica Capillary Columns. There should be a heated universal injector base and it two injectors.
- Column Oven of approximately 12-15 liters.
- Auto cooling system for fast cooling.
- Quartz Jet with all glass system
- DFC valves for packed column
- Large Display.
- Separate control of display and Heater assembly
- System should be truly modular (separate module for Microprocessor, FID, Interface) for ease of Serviceability.
- Six way Temp Control system. (Ovn, Inj, Det, tcd, Aux1, Aux2)
- Display of Set & Actual Temp.

Detectors

FLAME IONISATION DETECTOR:

Dual Flame Ionization Detector with control module (FID) with excellent sensitivity and wide linear dynamic range .Sensitivity Better than2 x 10^{-12} g/sec. Dual Differential type amplifier with Amplifier Sensitivity 2x 10^{12}A/mv. Linearity10^{7}.

THERMAL CONDUCTIVITY DETECTOR:

Design	:	Dual Path 4 Filament
Filaments	:	Tungsten-Rhenium
Mode	:	Dual Column
Operating Temperature Range	:	Ambient to 400° C in steps of 0.1° C
Filament Current	:	0-400mA range
Temperature Stability	:	±0.1°C
Sensitivity	:	3500 ml mv/mg [N-C16] at 80°C temperature (resistance)
Noise	:	<20uV
Electronics	:	Full-Bridge (constant temperature resistance) mode with filament Temp.
Filament Temp.	:	150-400°C

Electron Capture Detector (ECD)

a) Radio Active Source	:	10 mCi – Ni – 63
b) Minimum Detection Limit	:	1 ppb of Lindane
c) Linear Dynamic Range	:	1×10^4
d) Makeup Gas Type	:	Nitrogen / Helium
e) Max. Temp Range	:	Ambient to 350°C in steps of 1°C or with an accuracy of ± 1°C

Column:

1. Carboxen-1010 plot capillary column

General description

Application: This column is ideal for the separation of all major components in permanent gas (**helium, hydrogen, oxygen, nitrogen, carbon monoxide, methane,** and **carbon dioxide**) and light hydrocarbons (C2-C3) in the same analysis. This column can also separate oxygen from nitrogen at sub ambient temperatures.

2. Molecular Sieve column 5A

General description

Application: Molecular sieves, synthetic forms of Zeolite packing, have been for separating light gases (oxygen, nitrogen, methane, and carbon monoxide) and inert gases (helium, argon, neon, krypton, and xenon).

Recording Device:

Windows based Dual Channel Chromatography Data Station having following specifications along with Latest Branded PC & Laser Printer Dell/HP Desktop (Core i5 (6th Generation)- 6 GB RAM- 1 TB HDD, >19.5" screen, Graphic card, DVD writer, Lifetime Windows 10 & MS Office 2016 and HP Laser Jet Pro MFP M126nw Printer should also be quoted.

a. HARDWARE: A-D Conversion: Voltage to frequency type, Sampling Rate: 80 samples per second, Dynamic Range: 10, Range: 10mV to 1V, Sensitivity: 0.1uV/sec.
b. SOFTWARE: Should run on MS WINDOWS.
c. QUANTITATION: Type: Area%, Height%, Normalisation, Internal & External Standard, No. of Levels: Atleast 100, Curve Fittings: Point to Point, Linear, Quadratic, Cubic, Fourth Order, Fifth order and Exponential.
d. BASE CORRECTION FUNCTIONS: i. Area Inhibit, Autozero ii. Force base, Valley to Valley, Horizontal Base iii. Extensions forward and reverse iv. Tangential and Exponential skimming v. Negative Peak detection vi. Manual Base correction
e. REPROCESSING: i. Zoom with mouse and reference plot ii. Plot annotation includes peak numbers, retention times, peak names, component numbers, area height, amount iii. Batch reprocessing of upto 100 chromatograms should be possible
f. CHROMATOGRAM VIEWING: Overlay upto and atleast 8 chromatograms with programmable angle of projection and chromatogram spacing. Stock mode of display also available.
g. REAL TIME PROCESSING: Real time Processing of channel. Background correction with Multi tasking.

Following Standard Accessories should also be quoted.

1. Nitrogen, Hydrogen, Argon and Zero Air Gas Cylinders of 47 Litre water capacity filled with UHP gases and fitted with Filters and Double stage pressure regulators (SS make) (certified new cylinders).
2. Standards of known concentration of Hydrogen, Carbon dioxide, Carbon monoxide and Methane
3. Gas Tight Syringe of 1ml capacity – 3 No.
4. Liquid Syringe of 1ul & 10ul capacity-3 No. each
5. SS Packed Column for analysis of gases– 2 Nos.
6. Capillary Column (30 mtr) for ECD.
7. Online/Sinewave UPS of 5 KVA capacities (30 mts backup).
8. Gas Purification & Control Panel (Complete with Toggle Valves, Oxy Traps, HC Traps & Moisture Traps)
9. All pipes and fitting should be of SS 316.

TERMS & CONDITIONS:

The GLC system should be complete in all respect to install commission and to demonstrate with our samples. The supplier should also provide all the consumables, connectors, cables etc. along with the system. The supplier should provide free training at our lab free of cost. The GLC system should be guaranteed for one year for any manufacturing defect from the date of installation.

1. The firm should also give atleast 3 days training to our Scientist free of cost at Principals Factory.
2. The Company quoting the instrument must have at least 10 years of experience in the field of Gas Chromatography.
3. Manufacturer should have good installation base in Academic Institutions. Quoting firm should also enclose list of users in Academic Institutions like IIT's, NIT's etc.
4. Copy of Manufacturer DGS&D/NSIC Certificate should also be enclosed.
5. Supplier should be ISO Certified / Instrument should be CE Certified.
6. Manufacturer should be Registered with GST, Income Tax, Deptts. Copy of Certificates should be enclosed with the tender.
7. Must enclose Performance Certificates/Customer Satisfaction Report for the units supplied in Last 2-3 years.
8. Company Profile along with Background of the Promoters should be submitted.
9. Manufacturer should have Application Lab for all kind of Support.
10. Must have all India Service Support Network and provide the List.