



COMSATS University Islamabad, Lahore Campus
Defence Road, Off Raiwind Road, Lahore

Tender No. CUI-LHR-TN-13-20-1364

Case # 3025

Single Stage Two Envelop Procedure

Title of Tender: **Lab Equipment for Dr. Ume Salma Amjad, Department of Chemical Engineering, CUI-Lahore Campus**

TERMS AND CONDITIONS

1. All pages of bidding documents are mandatory to be signed / stamped, meaning thereby bidder agrees to our terms & conditions mentioned herein, failing which the bid may be rejected.
2. Any addition, deletion or modification of any clause of the procurement terms & conditions/ BoQs of CUI Lahore Campus by any vendor will not be acceptable and may lead to rejection of the bid.
3. Only registered Suppliers, who are on Active Taxpayers List (ATL) of FBR, are eligible to participate in tender.
4. The contract will be executed and handed over in satisfactory conditions up to the entire satisfaction of COMSATS University Islamabad, Lahore Campus.
5. Documents along with Pay Order / Demand Draft amounting to **Rs. 1000/-** as a tender document fee (Non-Refundable) shall be submitted in favor of COMSATS University Islamabad, Lahore Campus to the address given below. No bid will be accepted without tender documents' fee.
6. Part / Advance payments is not allowed.
7. **The exact completion/installation/ delivery time from the date of the purchase / work order will be 60 days. The handing over / completion time for this contract is of critical importance.**
8. Your bid proposal should be inclusive of freight and all other taxes and to be delivered at COMSATS University Islamabad (CUI), Lahore Campus's premises.
9. After opening of bids, CUI-Lahore Campus will examine the bids for completeness as per tender document.
10. Purchase order (s) will be awarded to the lowest or technically recommended bidder (s) on the basis of item wise / subtotal wise / grand total wise according to the nature of BoQs.
11. The bid should be submitted in a sealed envelope up to **April 15, 2020** on or before **1400hrs** and will be opened on the same date **at 1430hrs** in the presence of available bidders.
12. COMSATS University Islamabad, Lahore Campus, will follow the PPRA rule of **single stage two envelope procedure;**
 - i. The bid shall comprise a single package containing **two separate envelopes**. Each envelope shall contain separately the **financial proposal** and the **technical proposal;**
 - ii. The envelopes shall be marked as **“FINANCIAL PROPOSAL”** and **“TECHNICAL PROPOSAL”** in bold and legible letters to avoid confusion;

Signature & Stamp of Bidder

- iii. Initially, only the envelope marked **“TECHNICAL PROPOSAL”** shall be opened;
 - iv. The envelope marked as **“FINANCIAL PROPOSAL”** shall be retained in the custody of the procuring agency without being opened;
 - v. The procuring agency shall evaluate the technical proposal in a manner prescribed in advance, without reference to the price and reject any proposal which does not conform to the specified requirements;
 - vi. During the technical evaluation no **amendments** in the technical proposal shall be permitted;
 - vii. The financial proposals of bids shall be opened publicly at a time, date and venue announced and communicated to the bidders in advance;
 - viii. After the evaluation and approval of the technical proposal the procuring agency, shall at a time within the bid validity period, publicly open the financial proposals of the technically accepted bids only. The financial proposal of bids found technically nonresponsive shall be returned un-opened to the respective bidders;
 - ix. and
 - x. The bid found to be the lowest evaluated bid shall be accepted.
13. The envelope should be marked as under;
- Secretary, Purchase Committee**
COMSATS University Islamabad, Lahore Campus
 Defence Road, Off Raiwind Road, Lahore.
 Tel: 042-111-001-007, Ext: 875
14. The envelope shall also bear the word **“CONFIDENTIAL”** and following identification quotation of **“Lab Equipment for Dr. Ume Salma Amjad, Department of Chemical Engineering, CUI-Lahore Campus”**.
15. The bid form (BoQs) must be duly filled in, stamped and signed by the authorized representative of the bidder.
- 16. If the vendor fails to deliver the goods / services to COMSATS University Islamabad (CUI), Lahore Campus within the given deadline, any of the following can be opted by CUI Lahore campus on the recommendation of the end user and approval of the authority;**
- a. An extension in the delivery period may be granted in case a valid reason/justification with necessary documentary evidence is provided by the vendor supporting the reason for delay.
 - b. A penalty upto 10% of the invoice value may be charged.
 - c. Purchase order may be cancelled along with confiscation of earnest money if the vendor fails to deliver the goods / services after the initial or extended delivery time, as the case may be.
17. If the delivered goods / services are not according to the required quality standards / specifications, the same shall be liable to be rejected after inspection. The vendor would be required to supply as per requirements mentioned in our BoQs, otherwise the purchase / work order will be cancelled after due date with confiscation of earnest money.
18. Deduction of Income Tax and any other tax will be deducted at source according to Government prevailing rules.

19. Payment will be made on submission of Invoice in the name of “COMSATS University Islamabad (CUI), Lahore Campus” with a copy of delivery challan (s) after the complete order has been supplied, inspected and accepted which includes delivery / installation, and COMSATS acceptance / inspection thereof.
20. All prices should be valid for at least **90 days**. Withdrawal or any modification of the original offer within the validity period shall entitle CUI-Lahore Campus to forfeit the earnest money in favor of the CUI-Lahore Campus and / or put a ban on such vendor participation in tenders / works.
21. It is the sole responsibility of the agent / supplier / manufacturer to comply with the applicable laws, be national or international.
22. In case of any dispute or grievance, the matter shall be addressed as per PPRA rules.
23. The CUI-Lahore Campus reserves the right to modify the quantities of goods / services at any time before the award of purchase / work order.
24. Minimum one-year warranty shall be provided from the date of installation or standard warranty whichever is higher
25. **05% of the total value of the Invoice will be retained as security by COMSATS University Islamabad (CUI), Lahore Campus, and will be released after warranty period i.e. 01 Year which will be counted from the date of Installation / Completion of work / Supply.**
26. **The bidder is required to furnish in form of Bank deposit/ CDR / Pay order equivalent to 2% of the total Bid price as Earnest Money crossed in favor of “COMSATS University Islamabad, Lahore Campus”.**
27. **CUI Lahore Campus** reserves the rights to reject the bid if;
 - i. Received without earnest money
 - ii. Received later than the date and time fixed for tender submission
 - iii. The tender is unsigned/ unstamped
 - iv. The offer is ambiguous
 - v. The offer is conditional
 - vi. The offer is from a firm, which is black listed by any Govt. Office.
 - vii. The offer is received by telephone/telex/fax/telegram.
 - viii. Any unsigned / ambiguous erasing, cutting / overwriting etc. is made.
28. The bidder should furnish a certificate as worded below in token of acceptance of all the terms and conditions of the tender otherwise the tender will not be considered under any circumstances.
29. The undersigned affirm that the terms and conditions as contained in this document have been read and accepted and that in the event of selection of my/our rate the agreement in the prescribed form will be entered into:
 - **Company / Vendor Name:**.....
 - **Postal Address:**.....
 - **Tel. / Mobile:**.....**Email:**.....
 - **NTN#:**.....**GST#:**.....
 - **Signature:**
 - **Please also attach the Certificate supporting being Active Taxpayer as per requirement of FBR.**

BoQs of Lab Equipment for Dr. Ume Salma Amjad, Department of Chemical Engineering, CUI-Lahore Campus

Technical Portion (Please mention the quoted model/ brand in technical portion with no mention of price otherwise the bid will be rejected)

No change in the BoQs (Specs & Qty.) of CUI-Lahore Campus, as detailed below, is allowed. Any additional information may be mentioned in the blank columns (i.e. model / brand or Price). Any modification in CUI-Lahore Campus BoQ may lead to rejection of bid (fully or partially).			Please mention the quoted Model / Brand with meeting the all specifications mentioned in BoQs
Sr. #	Item Name & Specifications	Qty	
01	<p><u>Gas Analyzer (Rack Type)</u></p> <ul style="list-style-type: none"> • Measure CO, CO₂, CH₄, H₂, O₂, CnHm and Calorific Value simultaneously • Resolution: CO, CO₂, CH₄, H₂, O₂, CnHm 0.01% • Precision: CO, CO₂, CH₄, CnHm: ≤±1% FS ; H₂, O₂: ≤±2% FS • Repeatability: CO, CO₂, CH₄, H₂, O₂, CnHm: ≤1% • Flow: 0.7~1.2L/min ; • Inlet pressure: 2KPa~50kPa ; • Sampling gas condition: no dust ,no water vapor, no tar ; • Response time(TD+T90): <10s (NDIR); • Warm-up time: 800s • Output: RS232 (digital) + 4~20mA (analogue) • LCD (320X240) display • Configuration: CH₄: 0-100% (NDIR), CO₂: 0-50% (NDIR), CO: 0-20% (NDIR), CnHm: 0-20% (NDIR), O₂: 0-25% (ECD), H₂: 0-100% (TCD) With Calorific Value and • N₂ calculation in real time. Rack type Assembly • Additional gas sampling pump for increasing sample gas flow to be 1L/min (bestflow for gas analysis) • RS232<=>DB9<=>USB cable for PC communication. • Install real time data logging software to read real time data and store data onto the PC. • Computer with Power Backup (1 No.): Specifications compatible with provided software with genuine windows • Gas conditioning device (1 No.) for dust/tar/moisture removal from the sample gas, consist of <ul style="list-style-type: none"> • 2X refillable water scrubber for tar & dust washing; • 1X refillable active carbon filter; • 1X precision filter with replaceable 0.3µm filter element; • Maximum allowed tar load: <1 g/Nm³" • Gases must be provided for calibration purpose • Equipment Power Backup (1 No.): 	01 No.	

Signature & Stamp of Bidder

	<ul style="list-style-type: none"> • online pure sinewave UPS 01 • built in AVR capable of regulating ± 30 volts • Power factor ≥ 0.95 • Power backup in case of power failure for at least 30 mins • Including lead Acid free dry batteries OR • A better alternative as recommended and provided for optimum operations • Warranty: 12 Months from the date of installation with vendor having good local reputation with running machines and well-trained engineers • Training: 2-persons advanced training (Operations, Trouble Shooting etc.) on site. Training Schedule must be attached with the quotation • Rack type, Infrared Syngas Analyzer Gasboard-3100 (Hubei Cubic-Ruiyi Instrument Co.,Ltd) or equivalent <p>Including Installation & Commissioning complete with all aspects</p>		
<p>02</p>	<p><u>Gas Analyzer (Portable Type)</u></p> <ul style="list-style-type: none"> • Measure CO, CO₂, CH₄, H₂, O₂, CnHm and Calorific Value simultaneously • Resolution: CO, CO₂, CH₄, H₂, O₂, CnHm 0.01% • Precision: CO, CO₂, CH₄, CnHm: $\leq \pm 1\%$ FS ; H₂, O₂: $\leq \pm 2\%$ FS • Repeatability: CO, CO₂, CH₄, H₂, O₂, CnHm: $\leq 1\%$ • Flow: 0.7~1.2L/min ; • Inlet pressure: 2KPa~50kPa ; • Sampling gas condition: no dust ,no water vapor, no tar ; • Response time(TD+T90): <10s (NDIR); • Warm-up time: 800s • Output: RS232 (digital) + 4~20mA (analogue) • LCD (320X240) display • Configuration: CH₄: 0-100% (NDIR), CO₂: 0-50% (NDIR), CO: 0-20% (NDIR), CnHm: 0-20% (NDIR), O₂: 0-25% (ECD), H₂: 0-100% (TCD) With Calorific Value and • N₂ calculation in real time. Rack type Assembly • Additional gas sampling pump for increasing sample gas flow to be 1L/min (bestflow for gas analysis) • RS232<=>DB9<=>USB cable for PC communication. • Install real time data logging software to read real time data and store data onto the PC. • Computer with Power Backup (1 No.): Specifications compatible with provided software with genuine windows • Gas conditioning device (1 No.) for dust/tar/moisture removal from the sample gas, consist of <ul style="list-style-type: none"> • 2X refillable water scrubber for tar & dust washing; 	<p>01 No.</p>	

	<ul style="list-style-type: none"> • 1X refillable active carbon filter; • 1X precision filter with replaceable 0.3µm filter element; • Maximum allowed tar load: <1 g/Nm³" • Gases must be provided for calibration purpose • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • A better alternative as recommended and provided for optimum operations • Warranty: 12 Months from the date of installation with vendor having good local reputation with running machines and well trained engineers • Training: 2-persons advanced training (Operations, Trouble Shooting etc.) on site. Training Schedule must be attached with the quotation • Portable type, Infrared Syngas Analyzer Gasboard-3100P (Hubei Cubic-Ruiyi Instrument Co.,Ltd) or equivalent <p>Including Installation & Commissioning complete with all aspects</p>		
<p>03</p>	<p><u>Helium Pycnometer</u></p> <ul style="list-style-type: none"> • General features: For measuring density and porosity of the samples • Minimum 02 analysis ports for simultaneous sample preparation and sequential analysis, and automatic repeat measurement mode • Sample cells: Capacity: between 1-to 350cc, 4 variable sizes, Calibration standards for each size • Gas compressor (1 No.): range 1-20 psi, Joints, Traps for moisture • Vacuum pump (1 No.): Upto 20 mbar or better • Purge modes: Continuous flow with user selectable time and Pulse with user selectable number of pressurization/depressurization cycles, Vacuum for user selectable time with automatic valve configuration • Temperature Control: Circulator with -20 °C to 150°C or better • Operation: Digital display on machine with all important information. Also attachable with computer for data transfer and operation through software. • Weighing balance (1 No.): Sensitivity 0.1 mg, standard weights for calibration, Airproof chamber • Accessories: Computer compatible with system and with genuine windows • Installation/ operation / Onsite Training • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • online pure sinewave UPS 01 • built in AVR capable of regulating ± 30 volts • Power factor ≥ 0.95 • Power backup in case of power failure for at least 30 mins 	<p>01 No.</p>	

	<ul style="list-style-type: none"> • Including lead Acid free dry batteries • OR • A better alternative as recommended and provided for optimum operations • Helium gas cylinder (1 No.) with double regulator and certified (pressure rated and tested) • Nitrogen gas cylinder (1 No.) with double regulator and certified (pressure rated and tested) • 2 stage moisture trappers for gas cylinders (2 No.) <p>Warranty 12 Months from the date of installation with vendor having good local reputation for providing high quality equipment. Must have well trained engineers. Including Installation & Commissioning complete with all aspects</p>		
<p>04</p>	<p><u>Hydrogen Generator</u></p> <ul style="list-style-type: none"> • Output flow rate: 0-100ml/min • Output Pressure: 0-0.4Mpa • Pressure Stability: <0.2% • Hydrogen Purity: >99.999% • Maximum Power: 150W • Output Connection: 3mm or 1/8in (M8x1) Male Thread • Liquid Can Volume: 1.2L • Water Consumption: 15ml/h • Water Quality Requirement: electric resistivity $\geq 1M\Omega/cm$ • Electricity Power: AC 220V • Fuse-tube: 250V/2A • Working Environment: Temperature: 10-40°C,Relative Humidity: <85%, No heavy dust • Outside dimensions: 440×210×350 (L×W×H) • Working Mode: Non Stop • LED Display : Operating Time, Current Status, Current Flow <p>Automatic Water Refill, Water-Deficient Warning, Flow-Leaking Warning Including Installation & Commissioning complete with all aspects</p>	<p>01 No.</p>	

05	<p><u>Lab Fume Hood</u></p> <ul style="list-style-type: none"> • 4ft laboratory Fume Hood • (locally fabricated) • External size: 48 (W) x 54 (H) x 26 (D) Inch Approx. • Internal Size: 42 (W) x 36 (H) x 25 (D) Inch Approx. • External construction: Oven baked epoxy painted E.G steel body 18sgw • Working surface: • Polypropylene working surface and drainage trough. • Motor and blower system: • Thermal protected motor. • 208/240volts, 50/60 Hz. • HP1/3AO. • 1.7A, 1200RPM, 2 step. • S.S blower of size 9x4” • Powerful motor and blower system capable to generate 100ft/m avg velocity at working surface. • Additional features: • Internal walls made of acid & corrosion resistant Dexeron broad. • One electric multi sockets to work within the Hood. • Inlets for water, gas & Vacuum with controller • Vapor proof fluorescent lights. • All function control panel for convenient handling. • Vertical heat resistant, corrosion/ acid proof tempered safety glass sash electrical motorizes operated. • Regulated air supply power requirement: 220V, 50Hz. • Base Cabinet: • Oven baked epoxy painted E.G steel body. • Standard height: 30” • For the storage of chemicals <p>Including Installation & Commissioning complete with all aspects</p>	01 No.	
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Bid Evaluation Criteria

All bids shall be evaluated in accordance with the following evaluation criteria and other terms & conditions set forth in this bidding document.

- a. **The bids shall be evaluated to strictly ensure that the quoted brand/ model meet all the BoQ/ specification requirements given in the tender document for each item.**
- b. **In addition to the BoQ requirements, vendors must meet the vendor qualification criteria /company profile requirements (if any), as set forth in this tender document.**
- c. **Supporting literature of the quoted model must be attached for verification & technical evaluation of the required specification by the technical committee. In case of any clash is found between the quoted model and the supported literature may lead to rejection of bid.**

Financial Portion (Price and Brand/Model to be mention only in Financial Proposal in a separate sealed envelope) Strictly on our BoQs Form.

Vendors are required to provide both unit and total price of each item and calculations must be made carefully to avoid mistakes. However, in case, total price does not match with the unit price and quantity due to calculation error or typo error, any of the following can be opted

1. The bid may be rejected on the reason of ambiguity (OR)
2. Unit price will be considered as final and total price of the respective item will be calculated by multiplying it with the quantity required. Sub-totals and grand total will also be corrected accordingly.

No change in the BoQs (Specs & Qty.) of CUI-Lahore Campus, as detailed below, is allowed. Any additional information may be mentioned in the blank columns (i.e. model / brand or Price). Any modification in CUI-Lahore Campus BoQ may lead to rejection of bid (fully or partially).

Prices should be quoted inclusive of all applicable taxes

Sr. #	Item Name & Specifications	Qty	Quoted Model / Brand / Make	Unit Price (Rs)	Total Price (Rs)
01	<p><u>Gas Analyzer (Rack Type)</u></p> <ul style="list-style-type: none"> • Measure CO, CO₂, CH₄, H₂, O₂, CnHm and Calorific Value simultaneously • Resolution: CO, CO₂, CH₄, H₂, O₂, CnHm 0.01% • Precision: CO, CO₂, CH₄, CnHm: ≤±1% FS ; H₂, O₂: ≤±2% FS • Repeatability: CO, CO₂, CH₄, H₂, O₂, CnHm: ≤1% • Flow: 0.7~1.2L/min ; • Inlet pressure: 2KPa~50kPa ; • Sampling gas condition: no dust ,no water vapor, no tar ; • Response time(TD+T90): <10s (NDIR); • Warm-up time: 800s • Output: RS232 (digital) + 4~20mA (analogue) • LCD (320X240) display • Configuration: CH₄: 0-100% (NDIR), CO₂: 0-50% (NDIR), CO: 0-20% (NDIR), CnHm: 0-20% (NDIR), O₂: 0-25% (ECD), H₂: 0-100% (TCD) With Calorific Value and • N₂ calculation in real time. Rack type Assembly • Additional gas sampling pump for increasing sample gas flow to be 1L/min (bestflow for gas analysis) • RS232<=>DB9<=>USB cable for PC communication. • Install real time data logging software to read real time data and store data onto the PC. • Computer with Power Backup (1 No.): Specifications compatible with provided software with genuine windows • Gas conditioning device (1 No.) for dust/tar/moisture removal from the sample gas, consist of 	01 No.			

Signature & Stamp of Bidder

	<ul style="list-style-type: none"> • 2X refillable water scrubber for tar & dust washing; • 1X refillable active carbon filter; • 1X precision filter with replaceable 0.3µm filter element; • Maximum allowed tar load: <1 g/Nm³ • Gases must be provided for calibration purpose • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • online pure sinewave UPS 01 • built in AVR capable of regulating ± 30 volts • Power factor ≥ 0.95 • Power backup in case of power failure for at least 30 mins • Including lead Acid free dry batteries OR • A better alternative as recommended and provided for optimum operations • Warranty: 12 Months from the date of installation with vendor having good local reputation with running machines and well-trained engineers • Training: 2-persons advanced training (Operations, Trouble Shooting etc.) on site. Training Schedule must be attached with the quotation • Rack type, Infrared Syngas Analyzer Gasboard-3100 (Hubei Cubic-Ruiyi Instrument Co.,Ltd) or equivalent <p>Including Installation & Commissioning complete with all aspects</p>				
<p>02</p>	<p><u>Gas Analyzer (Portable Type)</u></p> <ul style="list-style-type: none"> • Measure CO, CO₂, CH₄, H₂, O₂, CnHm and Calorific Value simultaneously • Resolution: CO, CO₂, CH₄, H₂, O₂, CnHm 0.01% • Precision: CO, CO₂, CH₄, CnHm: ≤±1% FS ; H₂, O₂: ≤±2% FS • Repeatability: CO, CO₂, CH₄, H₂, O₂,CnHm: ≤1% • Flow:0.7~1.2L/min ; • Inlet pressure: 2KPa~50kPa ; • Sampling gas condition: no dust ,no water vapor, no tar ; • Response time(TD+T90): <10s (NDIR); • Warm-up time: 800s • Output: RS232 (digital) + 4~20mA (analogue) • LCD (320X240) display • Configuration: CH₄: 0-100% (NDIR), CO₂: 0-50% (NDIR), CO: 0-20% (NDIR), CnHm: 0-20% (NDIR), O₂: 0-25% (ECD), H₂: 0-100% (TCD) With Calorific Value and • N₂ calculation in real time. Rack type Assembly 	<p>01 No.</p>			

	<ul style="list-style-type: none"> • Additional gas sampling pump for increasing sample gas flow to be 1L/min (bestflow for gas analysis) • RS232<=>DB9<=>USB cable for PC communication. • Install real time data logging software to read real time data and store data onto the PC. • Computer with Power Backup (1 No.): Specifications compatible with provided software with genuine windows • Gas conditioning device (1 No.) for dust/tar/moisture removal from the sample gas, consist of <ul style="list-style-type: none"> • 2X refillable water scrubber for tar & dust washing; • 1X refillable active carbon filter; • 1X precision filter with replaceable 0.3µm filter element; • Maximum allowed tar load: <1 g/Nm3" • Gases must be provided for calibration purpose • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • A better alternative as recommended and provided for optimum operations • Warranty: 12 Months from the date of installation with vendor having good local reputation with running machines and well trained engineers • Training: 2-persons advanced training (Operations, Trouble Shooting etc.) on site. Training Schedule must be attached with the quotation • Portable type, Infrared Syngas Analyzer Gasboard-3100P (Hubei Cubic-Ruiyi Instrument Co.,Ltd) or equivalent <p>Including Installation & Commissioning complete with all aspects</p>				
03	<p><u>Helium Pycnometer</u></p> <ul style="list-style-type: none"> • General features: For measuring density and porosity of the samples • Minimum 02 analysis ports for simultaneous sample preparation and sequential analysis, and automatic repeat measurement mode • Sample cells: Capacity: between 1-to 350cc, 4 variable sizes, Calibration standards for each size • Gas compressor (1 No.): range 1-20 psi, Joints, Traps for moisture • Vacuum pump (1 No.): Upto 20 mbar or better • Purge modes: Continuous flow with user selectable time and Pulse with user selectable number of pressurization/depressurization cycles, 	01 No.			

	<p>Vacuum for user selectable time with automatic valve configuration</p> <ul style="list-style-type: none"> • Temperature Control: Circulator with -20 °C to 150°C or better • Operation: Digital display on machine with all important information. Also attachable with computer for data transfer and operation through software. • Weighing balance (1 No.): Sensitivity 0.1 mg, standard weights for calibration, Airproof chamber • Accessories: Computer compatible with system and with genuine windows • Installation/ operation / Onsite Training • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • online pure sinewave UPS 01 • built in AVR capable of regulating ± 30 volts • Power factor ≥ 0.95 • Power backup in case of power failure for at least 30 mins • Including lead Acid free dry batteries • OR • A better alternative as recommended and provided for optimum operations • Helium gas cylinder (1 No.) with double regulator and certified (pressure rated and tested) • Nitrogen gas cylinder (1 No.) with double regulator and certified (pressure rated and tested) • 2 stage moisture trappers for gas cylinders (2 No.) <p>Warranty 12 Months from the date of installation with vendor having good local reputation for providing high quality equipment. Must have well trained engineers. Including Installation & Commissioning complete with all aspects</p>				
<p>04</p>	<p><u>Hydrogen Generator</u></p> <ul style="list-style-type: none"> • Output flow rate: 0-100ml/min • Output Pressure: 0-0.4Mpa • Pressure Stability: <0.2% • Hydrogen Purity: >99.999% • Maximum Power: 150W • Output Connection: 3mm or 1/8in (M8x1) Male Thread • Liquid Can Volume: 1.2L • Water Consumption: 15ml/h • Water Quality Requirement: electric resistivity $\geq 1M\Omega/cm$ • Electricity Power: AC 220V • Fuse-tube: 250V/2A • Working Environment: Temperature: 10-40°C, Relative Humidity: <85%, No heavy dust 	<p>01 No.</p>			

	<ul style="list-style-type: none"> • Outside dimensions: 440×210×350 (L×W×H) • Working Mode: Non Stop • LED Display : Operating Time, Current Status, Current Flow <p>Automatic Water Refill, Water-Deficient Warning, Flow-Leaking Warning Including Installation & Commissioning complete with all aspects</p>				
05	<p><u>Lab Fume Hood</u></p> <ul style="list-style-type: none"> • 4ft laboratory Fume Hood • (locally fabricated) • External size: 48 (W) x 54 (H) x 26 (D) Inch Approx. • Internal Size: 42 (W) x 36 (H) x 25 (D) Inch Approx. • External construction: Oven baked epoxy painted E.G steel body 18sgw • Working surface: • Polypropylene working surface and drainage trough. • Motor and blower system: • Thermal protected motor. • 208/240volts, 50/60 Hz. • HP1/3AO. • 1.7A, 1200RPM, 2 step. • S.S blower of size 9x4” • Powerful motor and blower system capable to generate 100ft/m avg velocity at working surface. • Additional features: • Internal walls made of acid & corrosion resistant Dexeron broad. • One electric multi sockets to work within the Hood. • Inlets for water, gas & Vacuum with controller • Vapor proof fluorescent lights. • All function control panel for convenient handling. • Vertical heat resistant, corrosion/ acid proof tempered safety glass sash electrical motorizes operated. • Regulated air supply power requirement: 220V, 50Hz. • Base Cabinet: • Oven baked epoxy painted E.G steel body. • Standard height: 30” • For the storage of chemicals <p>Including Installation & Commissioning complete with all aspects</p>	01 No.			

01	<p><u>Gas Analyzer (Rack Type)</u></p> <ul style="list-style-type: none"> • Measure CO, CO₂, CH₄, H₂, O₂, CnHm and Calorific Value simultaneously • Resolution: CO, CO₂, CH₄, H₂, O₂, CnHm 0.01% • Precision: CO, CO₂, CH₄, CnHm: ≤±1% FS ; H₂, O₂: ≤±2% FS • Repeatability: CO, CO₂, CH₄, H₂, O₂, CnHm: ≤1% • Flow: 0.7~1.2L/min ; • Inlet pressure: 2KPa~50kPa ; • Sampling gas condition: no dust ,no water vapor, no tar ; • Response time(TD+T90): <10s (NDIR); • Warm-up time: 800s • Output: RS232 (digital) + 4~20mA (analogue) • LCD (320X240) display • Configuration: CH₄: 0-100% (NDIR), CO₂: 0-50% (NDIR), CO: 0-20% (NDIR), CnHm: 0-20% (NDIR), O₂: 0-25% (ECD), H₂: 0-100% (TCD) With Calorific Value and • N₂ calculation in real time. Rack type Assembly • Additional gas sampling pump for increasing sample gas flow to be 1L/min (bestflow for gas analysis) • RS232<=>DB9<=>USB cable for PC communication. • Install real time data logging software to read real time data and store data onto the PC. • Computer with Power Backup (1 No.): Specifications compatible with provided software with genuine windows • Gas conditioning device (1 No.) for dust/tar/moisture removal from the sample gas, consist of <ul style="list-style-type: none"> • 2X refillable water scrubber for tar & dust washing; • 1X refillable active carbon filter; • 1X precision filter with replaceable 0.3µm filter element; • Maximum allowed tar load: <1 g/Nm³" • Gases must be provided for calibration purpose • Equipment Power Backup (1 No.): <ul style="list-style-type: none"> • online pure sinewave UPS 01 • built in AVR capable of regulating ± 30 volts • Power factor ≥ 0.95 • Power backup in case of power failure for at least 30 mins • Including lead Acid free dry batteries <p>OR</p>	01 No.			
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	<ul style="list-style-type: none"> • A better alternative as recommended and provided for optimum operations • Warranty: 12 Months from the date of installation with vendor having good local reputation with running machines and well-trained engineers • Training: 2-persons advanced training (Operations, Trouble Shooting etc.) on site. Training Schedule must be attached with the quotation • Rack type, Infrared Syngas Analyzer Gasboard-3100 (Hubei Cubic-Ruiyi Instrument Co.,Ltd) or equivalent <p>Including Installation & Commissioning complete with all aspects</p>				
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Special Terms and conditions;

- i. **Please submit the technical and financial bid (rates) on our prescribed BoQs Form and clearly mention the quoted model / brands, with complete terms and conditions signed, stamped with both bids, otherwise your bid (s) may be rejected.**
- ii. **Vendor will be responsible for Onsite Installation & Commissioning of the delivered equipment's.**
- iii. **Purchase / work order (s) will be awarded on Item wise Basis.**
- iv. **Kindly attach the Tender fee with Technical Bid and Bid money / CDR with Financial Bid.**
- v. **Multiple rates of an item may also lead to the rejection of bid / item.**