

**THE STATE TRADING CORPORATION OF INDIA LTD.  
(A GOVT. OF INDIA ENTERPRISE)**

Mogul's Court, 5<sup>th</sup> Floor, Basheerbagh, Hyderabad 500 001, India  
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**TENDER NO: STC/HYD/GID/2018-19/04 DATED: 20.08.2018**

The State Trading Corporation of India Ltd., Hyderabad Branch invites offers for import/Local supply of the following item(s) on behalf of Andhra Pradesh Police Department

S No	Name of the Instrument/Equipment	Qty	EMD (Rs)
1	High performance liquid chromatography system with PDA & Fluorescent Detectors	1	60000
2	FTIR Spectrophotometer with library	1	96000
3	U V - VIS Spectrophotometer	6	18000
4	Inductive Coupled Plasma Optical Emission Spectrometer (ICP-OES)	1	240000
5	Steam Distillation Unit For Volatile Poisons	1	24000
6	Automatic viscometer cum density meter	1	12000
7	Kjeldahl Steam Distillation Apparatus	1	4800
8	Water Purification System (De-ionized water)	1	28800
9	Encase 8.07 or Better version	1	76800
10	Belkasoft Evidence Centre	1	16800
11	Recon Mac Complete Imaging and Analysis Tool	1	16800
12	UFED 4PC Ultimate with Chinex, cloud analyser, link analyser	1	60000
13	XRY Complete with pinpoint	1	48000
14	Passware along with encryption analyzer (password recovery software)	1	7200
15	Desktop Computers	4	96000
16	High End Laptop	2	19200
17	High End Mac Workstation	1	7200
18	5KV UPS Systems	2	14400
19	Ballistic Comparison Microscope with Camera attachment1	1	192000
20	Bullet Recovery Box	1	16800
21	Bullet Puller for Small Arms	1	7200
22	Mobile Firing Rest System	1	84000
23	Hand Held Energy dispersive X Ray Fluorescence (ED-XRF)	1	36000
24	Energy Dispersive X Ray Fluorescence Spectrometer (with Air/Peltier Cooling system)	1	132000
25	Eye Piece Less Stereo Microscope with Digital Camera Attachment with measurement software	1	6000
26	Micro Raman Spectroscope	1	72000
27	Scanning Electron Microscope (SEM) with Energy Dispersive X ray Spectrometer (EDS)	1	240000
28.	Audio-Video Enhancement & Authentication System		

28A	Computerized speech lab/equally good software-cum-hardware with best quality noise reduction software (latest version)	1	52800
28B	Automatic speaker identification software (latest version)	1	52800
29.	Stereo Zoom Microscope with Digital Camera attachment with measurement software	1	6000
30.	Micro finn Pippettes	5 sets	6000
31.	RTPCR	1	84000
32.	Bone/Tissue Crygenic Pulveriser	1	16800
33.	Fluorimeter	1	3600
34.	Shaking Water Bath Big	1	8400
35.	Shaking Incubator	1	4800
36.	Mini Gel Submarine Gel System	1	1200
37.	UV Gel Doc with Printer	1	12000
38.	PCR Work Station	1	4800
39.	Magnetic Stirrer with Hot Plate	1	480
40.	Cold Room (4 Degrees)	1	24000
41.	Rapid DNA Analyzer Portable Model	4	9,60,000
42	Gas chromatography system with FID, NPD and head space sampler	5	1200000
43	High performance liquid chromatography system	5	1500000
44	FT-IR spectrophotometer	5	1020000
45	Digital PH meter	4	3200
46	Advanced stereo microscope	5	150000
47	High temperature Muffle Furnace with digital display	1	2000
48	Vibratory Sieve Shaker	1	2000
49	High Resolution Mass Spectrometer with Ultra Pressure Liquid Chromatograph	1	400000
50	Stereo Zoom Microscope with Digital Camera	116	250000

**Quantity is purely tentative. AP Police reserves the right to increase/decrease /cancel any items for administrative reasons.**

For details, please visit websites [www.stclimited.co.in](http://www.stclimited.co.in) or [www.eprocure.gov.in](http://www.eprocure.gov.in). Interested bidders must submit their bids online using e-Procurement portal of NIC ([eprocure.gov.in](http://eprocure.gov.in)) in the prescribed formats along with all necessary documents and information requested herein.

Bidders are requested to submit their most competitive offer for the above products. Bids against this tender shall be received only electronically through the e-procurement Portal of NIC ([eprocure.gov.in](http://eprocure.gov.in)/[eprocure](http://eprocure)).

***“No bids shall be accepted in hard copy or in any other form.”***

Any further Corrigendum/Addendum to the tender documents will be uploaded by STC only on website i.e. [www.stclimited.co.in](http://www.stclimited.co.in), [www.eprocure.gov.in](http://www.eprocure.gov.in) and no press advertisement shall be published for the same

**Please Note –**

- ***Separate offers are to be uploaded for different items.***
- ***Name & Number of the Item to be clearly mentioned.***
- ***Each Item should be quoted separately, with a Warranty Period of Three (03) Years. No deviations are allowed in tenure of Warranty period.***

**TERMS AND CONDITIONS**

Price - You are required to provide CIP & FOR Mangalagiri/Vijayawada/Guntur/Visakhapatnam/Kurnool/Tirupathi, Andhra Pradesh price as per Price Bid Format Attached (Schedule C).

In case of goods being offered in foreign currency, the tenderer should give the CIP Prices, Rate of Import Custom Duty on assessable value for the item quoted with ITC HS Codes and Proof of rate of Import Custom Duty, Custom Clearance charges, Inland Insurance & Transportation charges upto Vijayawada etc. in the Price Bid Format as per Schedule 'C'. Break-up of the Price quoted ie., Cost, insurance, sea freight, Custom Clearance charges, Inland Insurance and Transportation Charges from Port to Destination (Mangalagiri/Vijayawada/Guntur/Visakhapatnam/Kurnool/Tirupathi, Andhra Pradesh) are to be given for imported items.

In case of Local supplies the tenderer should give the FOR Mangalagiri/Vijayawada/Guntur/Visakhapatnam/Kurnool/Tirupathi, Andhra Pradesh Prices giving the break-up of local taxes & levies in the Price Bid format as per Schedule 'C'.

In case of Imported equipment the following will be provided by STC:-

- (i) Authorization in favour of nominated custom clearing handling agent of the supplier,
- (ii) Payment of import custom duty (if and as applicable) (upon receipt of copy of Bill of Entry filed with customs).

1) **Delivery Schedule** – As per terms of Purchase Order (PO). For delayed supplies, penal charges will be levied as per CVC guidelines.

2) **Payment terms** –.

**I. For Imported Item**

We operate on 100% TT Transfer/ LC basis. In case of LC, LC shall be established for 100% order value of which 90% (Ninety Percent) payment under LC will be released against submission of documents pertaining to dispatch of goods along with satisfactory certificate of pre-dispatch inspection.

Payment Against the letter of Credit/Wire Transfer for 90% of the value will be available against presentation of the following documents and also on proof of evidencing of shipment.

Balance 10 (Ten) Percent payment under the LC shall be released/payable only after receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be

issued by the end-user department, after receipt and examination of equipment at their premises in India.

- a. Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of **THE STATE TRADING CORPORATION OF INDIA LTD., GENERAL IMPORTS DIVISION, MOGUL'S COURT, 5<sup>TH</sup> FLOOR, BASHEERBAGH, HYDERABAD 500 001, INDIA AND MARKED FREIGHT PREPAID.**
- b. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: **THE STATE TRADING CORPORATION OF INDIA TD., GENERAL MPORTS DIVISION, MOGUL'S COURT, 5<sup>TH</sup> FLOOR, BASHEERBAGH, HYDERABAD 500 001, INDIA**
- c. Certificate of satisfactory Pre-dispatch inspection report
- d. Certificate of Origin issued by Chamber of Commerce of the exporting country or Equivalent Body in Duplicate.
- e. Specification and Packing list – three copies.
- f. Manufacturer's guarantee certificate – three copies.
- g. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production Month in Year 2018/19) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order
- h. Insurance Policy/ Certificate showing STC as beneficiary - one original and two copies.
- i. Copy of Fax Message (Fax No.00-91-040-23236768), marked to General Imports Division, sent by the seller within 24 hours of issuance of Bill of Lading to buyer notifying the details of the BL No., Goods freighted, Total Invoice Value, Name of the Shipping Line, Loading port and date of departure of the vessel and expected time of its arrival at the Indian Port.
- j. Certificate by the seller that the freightment consists complete requirement as per list of goods given in the Annexure-I enclosed with the order.
- k. Certificate from the seller that one set of non-negotiable documents mentioned under (a) to (j) above has been airmailed/couriered to the following address within 10 Days of departure of the vessel in addition to one set of non-negotiable document sent with the vessel to:

**THE STATE TRADING CORPORATION OF INDIA LTD., GENERAL IMPORTS  
DIVISION, MOGUL'S COURT, 5<sup>TH</sup> FLOOR, BASHEERBAGH, HYDERABAD 500  
001, INDIA**

**II. In case indigenous supply.**

**Payment for domestic supply via RTGS for 100% value will be available against  
presentation of the following documents**

- a. Signed and stamped invoice (Three original) giving details of order number and date. The invoice shall be in the name of The State Trading Corporation of India Ltd. and the end-user department as consignee. Invoice shall be as per Annexure – I enclosed with our order.
  - b. RECEIPT (FOR) GOODS RECEIVED & INSTALLATION CERTIFICATE as per Annexure “C” from the end-user department.
  - c. Satisfactory Pre-Dispatch Inspection Report.
  - d. Specification and Packing List – Two copies.
  - e. Authorised Dealers / suppliers certificate – Two Copies.
- 3) **Validity of Price** – Your offer to be valid for acceptance by us up to 120 days from the Tender closing date.
  - 4) **Airport/Port of Shipment.** – For Imported equipment supplier to mention Airport/Port of shipment
  - 5) **Supplier's RTGS Bank Details** also to be mentioned in the offer, *as well as in the Bills.*
  - 6) **Guarantee Period** – The equipment(s) quoted for shall carry a guarantee for 36 calendar months *from the date of Commissioning/Satisfactory Installation.* The manufacturer shall have to provide after sales service, as and when required at a short notice. Also see Point (F) of Other Terms and Conditions.
  - 7) **Inspection** - Articles supplied shall be strictly as per the approved specifications. Or else, such Articles shall be rejected and returned to the Bidder at his own cost for replacement within 30 days.
  - 8) **Submission of Samples & Demonstration** - Bidders are required to submit a sample & demonstrate the equipment (quoted under the tender) before the Technical Committee of the AP Police Dept.

9) **Schedule to Tender:-**

a	Date of Publication of Tender	20.08.2018
b	Last date for uploading the bid documents and receipt of filled up & duly signed downloaded tender documents containing (scan copies). (EMD in the form of DD to be submitted physically at STC, Hyderabad Office on or before last date ) a) Cover # I Technical bid b) Cover # II Price Bid	12.09.2018 1500 Hrs
c	Date & Time of Opening Technical bid.	12.09.2018 1530 Hrs
d	Technical Evaluation and Demo will be at Police Head Quarters, Vijayawada, Andhra Pradesh	

10) **Offers invited under Two Bid System:**

All Bidders are required to submit their bids item-wise. Bidders should submit the following in Two Covers for each Item

1. Technical Data of Equipment
2. Price Bid for the quoted Equipment(s).

**Please Note**

- **Separate offers are to be uploaded for different items.**
- **Name & Number of the Item to be clearly mentioned.**

**A. Following documents are required to be uploaded online as part of Technical Bid Part**

1. No Deviation Certificate (with a detailed compliance statement for technical specifications) for the Item being offered is to be uploaded as per format enclosed. (Schedule "E"). **Names & Numbers of the Item to be clearly mentioned.**
2. Scanned Copy of Pay Order / Demand Draft/Bid Bond equivalent to 2% of total cost of items towards Earnest Money Deposit or Copy of MSME Certificate mentioning the name of the item quoted. Name & Number of the Item to be clearly mentioned Original Demand Draft / Bid Bond should be submitted at STC, Hyderabad Office before date of close of tender i.e, **12.09.2018**
3. Detailed Technical offer & specifications of the equipment offered to be supplied.
4. An undertaking by the company stating that it has not been blacklisted by any central, union territory and state govt./organization or any Govt. procurement agency as well as convicted by any court of law and the period of blacklisting is not enforced till the date of validity of this offer being submitted.
5. Letter of Authority, in case the bid is being submitted by local agent of the foreign supplier, as per Schedule-A.
6. Rate uniformity certificate. (Schedule – G)

7. Bank details and delivery schedule.
8. Integrity Pact duly stamped and signed. (Schedule – H)
9. Copy of Purchase Orders of similar Equipment supplied to any State/Central/Public Sector Undertakings during the last three years along with performance duly filled in and signed by the tenderer. (Schedule – F).
10. Compliance Statement: Clause-wise/ specification compliance statement for each specification along with relevant supporting literature in the form of company brochure/printed matter highlighting & marking the technical specifications.
11. Certificate that the bidders have fully trained technical staff for installation/Commissioning of equipment/items for efficient after sales service.
12. Audited Balance sheets, profit & loss accounts & Tax returns for the past 3 financial years, duly signed & attested by competent auditors of their countries.

**B. The” Price Bid” Part must contain Price Bid of the Item (Schedule- C, Format enclosed) which must be duly signed & stamped.**

1. Price to be quoted for each Item separately
2. Price to be quoted in INR or any freely convertible currency.
3. Price quoted should be **FOR** Mangalagiri /Vijayawada /Guntur /Visakhapatnam /Kurnool /Tirupathi, Andhra Pradesh\_inclusive of all taxes, freight and other charges
4. Bidders must give detailed break up for the Price quoted duly indicating equipment cost, Tax Component, Freight Charges, maintenance charges for the warranty period.

Please Note: Offers having conditions/deviations are liable to be rejected at the sole discretion of STC. Price Bids of those qualified in Technical Evaluation will alone be opened. Price bid shall be valid for at least 120 days.

The opening of the Technical & Price Bids (online) and also demo will be held at Police Head Quarters, Mangalagiri, AP as per schedule

**SPECIAL INSTRUCTIONS TO THE TENDER NOTICE FOR COMPLIANCE OF THE TENDER PARTICIPANTS: -**

- A. All equipment to be offered with installation, supervision and complete training to operating staff.
- B. Standard Products should be offered, be of latest models and meet **international specifications and norms of safety, environment, pollution etc.** Models and specifications should be clearly spelt out.
- C. It is mandatory to enclose Product literature with Technical Bid Document.
- D. All the Equipment’s should have three-year warranty (parts, travel and labor included).
- E. Details of Service Centres should be mentioned in the Technical Bid

## **OTHER TERMS AND CONDITIONS**

(A) Having regard to STC's Corporate Policy, offers from Principal Manufacturer/Distributor or their Authorized agents with Tender Specific authorization by their principal Manufacturer/Distributor in their favour as per Schedule 'A' enclosed only shall be considered. Offers otherwise submitted, if any, are thus liable to be rejected summarily.

(B) In case of imported equipment, the Authorized agents may quote the prices for and on behalf of their principal manufacturers in the respective foreign currencies. Accordingly, upon award of order STC shall be entering into direct contract with the Principal Manufacturer.

### **(C) Earnest Money Deposit**

- i. Earnest Money Deposit (EMD) in the Form of Pay Order / Demand Draft/ Bid Bond drawn in favour of "The STC of India Ltd., Hyderabad" to be submitted. However, for sake of convenience the foreign suppliers may submit the requisite EMD through their Indian Agents in equivalent Indian Currency, should they so desire. The EMD DD/Pay Order/Bid Bond to be placed in a sealed envelope along with a covering letter duly super-scribing the Tender No., Item & Name of Item addressed to The Branch Manager, STC of India Ltd., Mogul's Court, 5th Floor, Basheerbagh, Hyderabad 500 001 and dropped in the Tender Box placed conspicuously on the 5th floor, Mogul's Court, Basheerbagh, Hyderabad 500 001.
- ii. The Bidders are also requested to provide the RTGS Bank details for future refunds/Payments. EMD's paid by Cheques are not acceptable. The format of Bid Bond is attached. (Schedule-D).
- iii. No interest will be applicable on the EMD payments
- iv. The units registered under MSME/NSIC are eligible for Exemption from payment of Earnest Money Deposit (EMD)
- v. The details of EMD entered during the bid submission, and those available in scanned copies, should tally with the EMD sent physically. Otherwise, the bid may be rejected.
- vi. Earnest Money Deposit (EMD) must reach/submitted online STC before last date and time of bid submission
- vii. The EMD of the unsuccessful bidders would be returned within one month of signing of the Contract with the successful bidder.



- viii. EMD of the successful Bidder will be released only after the Bidder signs the Contract with STC and furnishes a Performance Bank Guarantee (PBG) in the format prescribed in the tender. Annexure 'B'.
- ix. The EMD shall be forfeited by STC, in the following events: (a) Bidder withdraws its bid during the validity period specified in RFP or any extension thereof agreed by the bidder. (b) Bidder does not respond to requests for clarification of its bid. (c) Bidder fails to provide required information during the evaluation process. (d) In case of a successful Bidder, the said Bidder fails to sign the Contract or furnish Performance Bank Guarantee in time.
- (D) For the purpose of equitable comparison and evaluation of the offers, prices quoted in different currencies will be converted to a single currency viz., Indian Rupees as per the TT Selling Rate established by the State Bank of India as on the date of Price Bid Opening. The Comparison of prices & identification of L1 Bidder would be on FOR Destination Basis, duly delivered, commissioned etc. as the case may be on the date of opening of Price Bid.
- (E) The Financial Bids of the Tenderers whose Technical Bids are approved shall alone be opened subsequently.
- (F) Upon award of the Order to the successful bidder, a Performance Guarantee for due performance of the Contract, **valid for a period of 3 Years for each equipment @10% of Purchase Order (PO) value** shall be submitted by the awardee in the prescribed format in favour of end-user department through a Nationalized Bank in India as per Schedule B enclosed.
- (G) For Imported Item, STC would be selling the goods on High Seas Sales basis to the end user Department. All the custom Clearance documents including High Seas Sales Agreement along with Invoice etc. shall be submitted to the supplier's nominated Custom Clearing Agent.
- (H) Conditional offers shall be summarily rejected without any notice.
- (I) The details of after sales service arrangements in main cities of AP along with his complete address to be submitted along with the Bid.
- (J) No deviation, whatsoever, shall be acceptable. The tenderer has to certify that by duly signing and stamping the certificate as per Schedule
- (K) The General Conditions/Technical Specifications of the Equipment will not be modified/relaxed in favour of any Bidders. The decision taken by the AP Police Department will be final.
- (L) An undertaking/certificate stating that the rates quoted are uniform for all the Government Institutions in the country is to be provided. This certificate giving the reference of STC's Tender No. and Date along with your quoted item details may be

submitted in original and the items if proprietary, a certificate to this effect may also be given.

(M) In case of delay in supplies beyond the quoted delivery period, liquidated damages to the extent of 0.5% of the cost of the delayed supplies per week is applicable, subject to a maximum of 10%. Beyond this period, we reserve the right to either extend further or to cancel the contract.

(N) Without any protests or demur, supplier indemnifies STC and its Branches and shall always keep STC fully indemnified and agrees to hold STC and its Branches harmless against any loss, claim, proceedings, damage, demurrage, costs, penalties, taxes, duties liabilities, legal cases, short shipment, quantity/quality/weight/purity, marking/specifications, etc of the material, costs or expenses of whatsoever nature, costs to STC on account of supplier/ handling agent/ omissions /negligence /mistake/misconduct breach or default and or non-fulfilment of terms and conditions of this agreement. The supplier shall keep STC indemnified at all times against any claims/liabilities/proceedings, etc from any third party or otherwise arising out/or in connection with this Tender.

(O) **Arbitration:** Any dispute or difference whatsoever arising between the parties out of or relating to the construction, meaning, scope, operation or effect of this contract or the validity of the breach thereof shall be settled by arbitration in accordance with the Rules of Arbitration of the Indian Council of Arbitration and the award made in pursuance thereof shall be binding on the parties at *Vijayawada*. The supplier hereto agree that the courts and tribunals at *Vijayawada, AP* shall have exclusive jurisdiction to settle any or all disputes which may arise out of or in connection with the Tender. All disputes arising out of this tender shall be decided in accordance with the Laws of India.

(P) STC may at its absolute discretion, reserve the right to shortlist, accept, disqualify, elect to abandon, reject any part or whole of the process at any stage without giving prior notice to the prospective party. STC reserve the right to cancel this tender in totality without assigning any reason at any point of time.

**(Q) Fall clause**

- i. The prices offered under the tender by the bidder shall in no event exceed the lowest price at which bidder sells the items of identical specification to any person/ organization.
- ii. If during the said period, the bidder reduces the offered price, sells or offers to sell such items to any person/ organization at a price lower than the price offered under the tender, it shall forthwith notify such reduction or offer of sale to the STC and the price payable under the contract for the items shall stand corresponding reduced.

(R) **EMD Exemption to MSMEs** – In case of the bidder being a Micro or Small or Medium Enterprises (MSMEs), relevant registration certificate to that effect should be

mandatorily submitted. It should also be clearly indicated whether the MSME is owned by SC or ST entrepreneur, wherever applicable. MSMEs producing valid certificate of registration will be exempted from payment of EMD. If the price quoted by an MSME is within L1+15%, it will be allowed to supply a portion (at least 20 percent of total tendered quantity) of requirement provided the enterprise is able to match the L1 price and the L1 price is from a bidder other than an MSME. In case of two or more MSMEs quoting price within L1+15%, order may be divided as deemed fit by STC.”

Micro or Small or Medium Enterprises (MSMEs) producing valid certificate of registration are given exemption from payment of Earnest Money Deposit (EMD) only if the items being tendered for are being manufactured by them.

**(S) Forfeiture of Performance Guarantee:-** Performance Guarantee may be forfeited in the following cases :-

- a) When any terms and conditions of the contract are breached.
- b) When the tenderer fails to make complete supply and service satisfactorily during the Warranty Period.

**(T) INTEGRITY PACT:**

- i. Signing of Integrity Pact (IP) is mandatory for every bidder participating in this tender. A copy of the IP is enclosed (Schedule- H), which may be deemed to have been signed by STC. A downloadable format of IP is available on the STC website under the link <http://www.stclimited.co.in/corporatecommitments/Integrity-pact.aspx>. The Bidder(s) and STC shall be bound by the provisions of IP in case any complaint relating to the tender is found substantiated.
- ii. The IP shall be executed on a plain paper and duly signed on each page by the same signatory who signs the bid document.
- iii. Any bid not accompanied by duly signed IP by the bidder shall be summarily rejected.
- iv. All sub-contractors/associates whose contribution in the tender is above Rs.5 crore shall sign IP with STC after the tender is awarded to the successful bidder. All bidders shall inform their sub-contractors/associates accordingly.
- v. The Independent External Monitors (IEMs) for this tender shall be Mr. Bibhuti Bhusana. All correspondence to them regarding implementation of IP should be addressed to : Mr. Bibhuti Bhusana , IEM, C/o Chairman & Managing Director, State Trading Corporation of India Ltd., Jawahar Vyapar Bhawan, Tolstoy Marg, New Delhi – 110 001.

**(U) Submission of Bids**

- i. Bids against this Tender shall be received only electronically through the eProcurement Portal of NIC ([eprocure.gov.in](http://eprocure.gov.in)). No bids shall be accepted in hard copy or in any other form.
- ii. For submission of bids, bidders are required to get themselves registered with [eprocure.gov.in](http://eprocure.gov.in) website using Class II / Class III Digital Signature Certificate.

- iii. Earnest Money Deposit (EMD) must reach STC before last date and time of bid submission.
- iv. The bidders are required to upload softcopies of the two parts of the bid viz. Technical & Financial.
- v. A bidder may modify, substitute or withdraw its e-bid after submission before the last date and time of bid submission. No bids shall be modified, substituted or withdrawn by the bidder on or after the last date and time of bid submission.
- vi. STC during the process of verification may ask the bidders to submit any or all the documents in original submitted as part of their online bid anytime during the bid process.
- vii. For any queries relating to the process of online bid submission or queries relating to Procurement Portal (eprocure.gov.in), the bidders may contact CPP Portal Helpdesk on Tel Nos.: 1800-3070-2232, 91-7878007972 and 91-7878007973.
- viii. For specifications and other Technical details bidders may contact: Shri B. Phani Bhushan, Asst. Director, APFSL, email Id: [phani\\_apfsl@yahoo.com](mailto:phani_apfsl@yahoo.com).

**HYDERABAD.**  
**20.08.2018**

**BRANCH MANAGER**  
**Tele No. – 040 23237389/23236216**

**Schedule "A"**

**UNDERTAKING TO BE SUBMITTED BY PRINCIPAL MANUFACTURER / DISTRIBUTOR**

It is to certify that M/s \_\_\_\_\_  
**(Name & Address of Tenderer) is our Authorised Distributor / Dealer. They are Authorised to submit tender for \_\_\_\_\_ (Name of Item) to the State Trading Corporation of India Ltd., Hyderabad against their Tender Notice No \_\_\_\_\_ Dated \_\_\_\_\_.**

The Equipment / Item is Guaranteed for minimum **3 Years** Comprehensive free onsite Guarantee with Spare Parts from the date of completion of satisfactory testing, commissioning installation and Authorised Distributor / Dealer shall during the Guarantee period replace the parts if any, or rectify any manufacturing defect found during the above period so as to make the machinery operative and in perfect condition.

In case of change of Authorised Distributor / Dealer, we will inform the purchase officer accordingly within 15 days of change of authorized distributor/ Dealer. The new Dealer / Distributor will be responsible for after sales & service and annual maintenance and repairs contract as above. In case of failure of Authorised Dealer / Distributor we will be responsible for providing after sales service of the equipment as per terms and conditions of tender and contract.

If there is any defect M/s \_\_\_\_\_ shall replace or upgrade the defective part/faulty which shall also be subject to same guarantee as the original equipment. M/s \_\_\_\_\_ shall bear all costs, travel, labour, material cost which are required on rectification of defects onsite during the guarantee period.

**SIGNATURE OF THE PRINCIPAL MANUFACTURER/ DISTRIBUTOR  
WITH RUBBER STAMP**

Note: This Undertaking should be Typed & Signed by Principal Manufacturer/ Distributor on his Original Letter Pad

**Schedule 'B'**

**PERFORMANCE BANK GUARANTEE FORMAT**

(To be executed by any Nationalized Bank in India having their Branch in the State of End-user Department on stamp paper of Rs.100/-)

Name & Address of the Buyers (End-user Department)

\_\_\_\_\_  
\_\_\_\_\_

1. Against Tender No. \_\_\_\_\_ dated \_\_\_\_\_ and Contract No. \_\_\_\_\_ Dated - \_\_\_\_\_ (hereinafter called the Contract entered into between the STC of India Ltd., Hyderabad which expression shall, unless repugnant to the context or meaning, thereof include its successors, representatives & assigns for and on behalf of \_\_\_\_\_ (hereinafter called the Buyers/End user Department) and M/s. \_\_\_\_\_ (Name and Complete Address) (hereinafter called the Sellers) which expression shall, unless repugnant to the context or meaning, thereof include its successors, representatives & assigns this is to certify that at the request of the Sellers, we \_\_\_\_\_ Bank unconditionally and irrevocably guarantee to pay to the Buyers immediately on first demand, the amount of US \$/Rupees \_\_\_\_\_ (@ 10% of contract value) without any protest or demur or reference to the Sellers if the Sellers fail to perform all or any of their obligations under the said contract. The decision of the Buyer/End user \_\_\_\_\_ or The STC of India Ltd., Hyderabad duly communicated in writing to the bank that the sellers have failed to perform all or any of the obligations under the contract shall not be questioned and be final and conclusive. The said amount of US \$/Rupee \_\_\_\_\_ will accordingly forthwith be paid without any conditions or requirement of our proof whatsoever failing which interest @ 15% p.a. on monthly rest basis shall be payable by the Bank to Buyer.
2. It is fully understood that this guarantee is effective for a period upto \_\_\_\_\_ **(36 Months + Delivery Period)** and that we \_\_\_\_\_ Bank undertake not to revoke this guarantee during its currency (upto claim period) without the consent in writing of the Buyers.
3. We \_\_\_\_\_ Bank, further agree that the buyer shall have the fullest liberty, without affecting in any manner or obligations hereunder to vary/extend any of the terms and conditions of the said contract or/extend time of performance by the Sellers from time to time or to postpone for any time or from time to time any of the powers exercisable by

the Buyers against the said sellers and/or forebear to enforce any of the terms & conditions relating to the said contract and we, \_\_\_\_\_ Bank shall not be released from its liabilities under this guarantee by reasons of any such exercise, variations or extension being granted to the said sellers or for any forbearance and/or commission on the part of the buyers, or any indulgence by the Buyers, to the said Sellers or by any other matter or thing whatsoever which under the law relating to the sureties would, but for this provision have the effect of so releasing us from our liability under this performance guarantee. We further agree that the validity period of this Performance Bank Guarantee will be extended by us upon receipt of any such request in writing from the Buyer and any charges on account thereof shall be to the account of seller

4. We \_\_\_\_\_ Bank further agree that the guarantee herein contained shall not be affected / discharged by any change in the constitution of the said Sellers/Buyers/Bank.
5. The Guarantee will be governed by Indian Laws and will be subject to the jurisdiction of competent courts in the State of Buyer / End – User India alone.
6. No claim shall be admissible against the Buyer in respect of interest on Performance Guarantee regardless of the time of release.
7. The Bank further agrees that decision of the Buyer as to the failure on the part of - \_\_\_\_\_ to fulfill their obligations as aforesaid /or as to the amount payable by the bank to the Buyer shall be final, conclusive & binding on the Bank.
8. This Guarantee will remain in force up to \_\_\_\_\_ (36 Months + Delivery Period) and any demand in respect thereof should reach Bank not later than 10 (Ten) working days (claim period) from the expiry of above validity date.
9. Notwithstanding anything entered hereto Banks liability under this Performance Bank Guarantee shall not exceed \_\_\_\_\_ (in words. Bank is liable to pay the guaranteed amount if Buyer same upon in written claim/demand on of before the expiry date.

FOR \_\_\_\_\_ BANK

ACCEPTED

Witness:-

**Schedule "C"**

**PRICE BID**

**ON THE LETTER HEAD OF THE COMPANY**

Tender No. & Date: \_\_\_\_\_  
S No of the Item as per the Tender Document: \_\_\_\_\_  
Name of the Item Quoted & Quantity: \_\_\_\_\_  
HSN Code of the Equipment: \_\_\_\_\_  
Applicable Customs Duty & IGST \_\_\_\_\_  
Item: Locally supplied/ Imported: \_\_\_\_\_

**For Locally supplied Item/Equipment**

<b>Details of the Price Breakup</b>	<b>Total Amount (per unit)</b>	<b>Total Amount for Tendered Qty</b>
Unit Price (INR)		
Applicable GST %		
Inland Transport & Transit Insurance Charges up to APFSL offices in various locations in Andhra Pradesh		
Other Taxes (if any)		
Total FOR Price incl. of all taxes		

**For Imported Item/Equipment**

<b>Details of the Price Breakup</b>	<b>Total Amount (per unit)</b>	<b>Total Amount for Tendered Qty</b>
CIP Price (.....currency)		
Custom Clearing & Handling Charges (INR)		
Ex Works price (for items/ accessories supplied locally) (if any) (INR)		
Applicable GST for items supplied locally		
Inland Transport & Transit Insurance Charges from Port to APFSL offices in various locations in Andhra Pradesh - (INR)		
Other Taxes (if any)		

**\*Price quoted should strictly be inclusive of Three (03) Years Warranty.**

**\*In case of imported Item, the price should be quoted exclusive of the Customs Duty & IGST, as the same shall be paid directly by STC at actuals.**

We have carefully gone through the Terms and Conditions of the Tender Documents and hereby agree to abide by the same for the fulfillment of the contract. This is to also confirm that I am fully authorized by company for signing and submitting this price bid.

Place:

Date:

SIGNATURE OF THE TENDERER  
NAME & DESIGNATION OF TENDERER  
COMPANY SEAL

**BID BOND PROFORMA**

**Schedule "D"**

(To be executed by any first class international Bank through its branch office in Hyderabad (India) on stamp paper of Rs.100/-).



M/s. State Trading Corporation of India Limited,  
5th Floor, Mogul's Court,  
Basheerbagh,  
Hyderabad-500 001.

Dear Sirs,

1. WHEREAS M/s \_\_\_\_\_ (BIDDER) has offered to supply \_\_\_\_\_ to STC, and the bidder is required to submit a Bid Bond at the rate of US\$ \_\_\_\_\_ along with the offer as a guarantee for fulfillment of all the terms and conditions of subsequent sale. We (Bank with full address) hereby unconditionally and irrevocably guarantee and undertake to pay the amount demanded by STC not exceeding the sum of US Dollars only, in case the bidder fails to perform any or all the obligations, undertaken by him as per STC's acceptance, without any demur, protest and without any reference or recourse to the Bidder notwithstanding any dispute raised by the Bidder in any suit proceedings relating thereto pending before any court or tribunal our liability under these presents being absolute and unequivocal. The payment shall be made to STC across the Counter of the Bank on the same day of receipt of invocation of this Bid Bond. Any such demand in writing made by STC, shall be final, conclusive and binding on us irrespective of any dispute or difference raised by the bidder.
2. Notwithstanding anything mentioned herein before, our liability under this guarantee is restricted to US\$ \_\_\_\_\_ (US\$ \_\_\_\_\_ only) and it will remain in full force up to (one month from the last date of validity of offer). Unless a claim under the guarantee is filed against us on or before \_\_\_\_\_ all your rights under the said Guarantee shall be forfeited and we shall be relieved and discharged from all the liabilities there under. We, \_\_\_\_\_ (Bank) further agree that the Guarantee hereunder contained shall not be affected by any change in the terms of purchase originally offered by the bidder and any change in the Constitution of said Bidder/ STC/ Bank.
3. This bond will be governed by Indian Laws and will be subject to the jurisdiction of courts at New Delhi in India alone.

DATE

FOR

PLACE

BANK

N.B. Bid Bond to be furnished in US Dollars only. Bid Bond in Indian Rupees will not be accepted.

**Schedule "E"**

CERTIFICATE

Certified that the enclosed offer against Tender No. STC/GID/HYD/2018-19/04 dated 20.08.2018 is in total conformity with tender terms & conditions including special instructions and specifications without any deviation, whatsoever.

Detailed compiled statement for Technical Specifications (enclosed) as per the Given format

Item No, as per the Tender Document	Name of the Item	Item/Equipment Technical Specification	Quoted Item Technical Specifications	Compiled with required Technical Specifications (Yes/No)

Place:

SIGNATURE OF THE TENDERER

Date:

NAME & DESIGNATION OF TENDERER

COMPANY SEAL

Schedule "F"

**Proforma for performance (for a period of last five years)**

Bid No. \_\_\_\_\_ Date of Opening \_\_\_\_\_ Time \_\_\_\_\_ Hours

---

STC/HYD/GID/2018-19/04 dated 20.08.2018

Name of the Firm \_\_\_\_\_

Order placed by _____ (Full address of Purchaser)	Order No & Date	Description & Quantity of ordered Equipment Items.	Value of order	Date of completion of delivery		Remarks indicating reasons for late delivery, if any	Has the Equipment being Satisfactorily functioning (Attach a certificate from the Purchaser / Consignee)
				----- ----- As per contract /Actual			
1	2	3	4	5	6	7	8

Signature and seal of the Issuing Authority

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Schedule "G"**

## **Rate Uniformity Certificate**

### **Declaration Form**

I / We have gone through carefully all the tender conditions and Solemnly declare that I / we will abide by any penal action such as qualification or black listing or determination of contract or any action deemed fit taken by STC against us, if it is found that the statements, documents, certificates produced by us are false / fabricated.

We have not quoted / supplied the equipment quoted in this Tender to any agency / state in the country at the rate lower than the rate quoted in the tender.

If I / We quote lower rate than the rate quoted to STC/AP Police, Vijayawada to any other agency / State in the Country in future we will remit the differential cost to STC/AP Police, Vijayawada.

Signature :

Date :

Name of the  
Firm and address :

**Schedule "H"**

**INTEGRITY PACT**

## Between

**The State Trading Corporation of India Limited, a company incorporated under the Companies Act 1956 and having its registered office at Jawahar Vyapar Bhawan, Tolstoy Marg, New Delhi - 110001** hereinafter referred to as “STC”,

And

....., a company registered under ..... and having its registered office at ....., hereinafter referred to as “**The Bidder**”.

## Preamble

STC is an international trading company dealing in purchase, sale, export and import of various commodities.

STC has invited tenders for purchase of ..... and intends to award contract/s for purchase of the same under laid down organizational procedures, STC values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its bidders.

In order to achieve these goals, STC has appointed Independent External Monitors (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

## Section 1 – Commitments of STC

- (1) STC commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
  - (a) No employee of STC, personally or through family members, will in connection with the tender for or the execution of the contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which he/she is not legally entitled to.
  - (b) STC will, during the tender process treat all bidder(s) with equity and reason. STC will in particular, before and during the tender process, provide to all bidders/contractors the same information and will not provide to any bidder(s) confidential/additional information through which the bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  - (c) STC will exclude from the process all known prejudiced persons.
- (2) If STC obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal Code (IPC) or Prevention of Corruption (PC) Act, or if there is a substantive suspicion in this regard, STC will inform its Chief Vigilance Officer and initiate disciplinary actions as per laid down procedures. 22

## Section 2 – Commitments of the Bidder

- (1) The Bidder commits to take all measures necessary to prevent corruption and to observe the following principles during participation in the tender process and during the contract execution.
  - a. The Bidder will not, directly or through any other person or firm, offer, promise or give to any of STC’s employees involved in the tender process or in the execution of the contract or to any third person any material or other benefit which he/she is not legally

entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

- b. The Bidder will not enter with other bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
  - c. The Bidder will not commit any offence under the relevant IPC/PC Act. Further the Bidder will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by STC as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
  - d. The Bidder of foreign origin shall disclose the name and address of its Agents/representatives in India, if any. Similarly the Bidder of Indian nationality shall furnish the name and address of its foreign principals, if any. All the payments made to the Indian agent/representative will be in Indian Rupees only.
  - e. The Bidder will, when presenting the bid, disclose any and all payments made or committed or intended to be made to agents, brokers or any other intermediaries in connection with the award of the contract.
- (2) The Bidder will not instigate third persons/firms to commit offences outlined above or be an accessory to such offences.

### **Section 3- Disqualification from tender process and exclusion from future tenders/contracts**

If the Bidder/Contractor, before award of the contract or during execution thereof commits a transgression through a violation of Section 2 above or in any other form such as to put its reliability or credibility in question, STC shall be entitled to disqualify the Bidder/Contractor from the tender process or to terminate the contract, if already signed, on that ground.

If the Bidder/Contractor commits a serious violation of Section 2 above or in any other form such as to put its reliability or credibility as Bidder/Contractor into question, STC shall also be entitled to exclude the Bidder/Contractor from participating in the future tender processes for duration as may be considered appropriate by it.

### **Section 4 - Compensation for Damages and Forfeiture of EMD**

- i. If STC disqualifies the Bidder/Contractor from the tender process prior to the award of the contract according to Section 3, STC shall be entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security, by forfeiting the same as stipulated in the tender.
- ii. If STC terminates the contract according to Section 3, or if STC is entitled to terminate the contract according to Section 3, STC shall be entitled to demand and recover from the Bidder/Contractor liquidated damages as per contract or the amount equivalent to Performance Bank Guarantee stipulated in the tender.

### **Section 5 – Previous transgression**

1. The Bidder/Contractor declares that it did not commit any transgressions in the last 3 years with any Company in any country with regard to any anti-corruption law or practice or with any other Public Sector Enterprise in India that could justify its exclusion from the tender process.
2. If the Bidder/Contractor makes incorrect statement on this subject, it may lead to disqualification from the tender process or termination of the contract if already awarded.

#### **Section 6 – Equal treatment of all Bidders/Contractors/Subcontractors**

1. The Bidder/Contractor undertakes to demand from all Subcontractor(s) a commitment in conformity with this Integrity Pact, and to submit it to STC before signing of the contract, if awarded in its favour.
2. STC will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.
3. STC will disqualify from the tender process any bidder/contractor who does not sign this Pact with STC or violates its provisions.

#### **Section 7 – Criminal charges against Bidder(s)/Contractor(s) /Subcontractor(s)**

If STC obtains knowledge of conduct of a bidder, contractor or subcontractor or of an employee or a representative or an associate of the bidder, contractor or subcontractor which constitutes corruption, or if STC has substantive suspicion in this regard, STC will inform the same to its Chief Vigilance Officer.

#### **Section 8 – Independent External Monitor /Monitors**

1. STC has appointed competent and credible Independent External Monitor(s) (IEMs) for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, STC.
3. Bidders/Contractors accept that the Monitor has the right to access, without restriction, all project documentation of STC including that provided by the Bidder/Contractor. The Bidder/Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to its project documentation. The same will also be applicable to Subcontractor. The Monitor shall treat the information and documents of STC and the Bidder/Contractor/Subcontractor with confidentiality.
4. STC will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between STC and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of STC and request the Management to discontinue or take correction action or to take other relevant action. The Monitor may in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in specific manner, refrain from action or tolerate action.

6. The Monitor will submit a written report to the CMD, STC within 8 to 10 weeks from the date of reference or intimation to him by STC and should the occasion arise, submit proposals for correcting problematic situations.
7. If the Monitor has reported to the CMD STC a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD STC has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commission.
8. The word Monitor would include both singular and plural.

### **Section 9 – Pact Duration**

This pact begins when both parties have legally signed it. It expires for the Bidder/Contractor twelve months after the last payment under the contract, and for all other bidders six months after the contract has been awarded.

If any claim is made/lodged during this time by either party, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by CMD, STC.

### **Section 10 – Other provisions**

- 1 This Integrity Pact is an independent agreement between the parties and is subject to Indian Law. The arbitration clause if any in the tender / contract shall not apply to this agreement. Place of performance and jurisdiction is the Registered Office of STC. i.e. New Delhi.
- 2 Changes and supplements to this Pact as well as termination notices to be issued, if any, shall be made in writing. Side agreements have not been made.
- 3 If the Bidder/Contractor is a partnership firm or a consortium, this agreement shall be signed by all partners or consortium members.
- 4 Should one or several provisions of this agreement turn out to be void, the remainder of this agreement shall remain valid. In such a case, the parties will strive to come to an agreement to their original intentions.

\_\_\_\_\_  
(For & On behalf of STC)

\_\_\_\_\_  
(For & on behalf of The Bidder/Contractor)

(Office Seal)

(Office Seal)

Place:

Date:

Witness 1 : Name & Address

Witness 2 : Name & Address

### **Technical specifications**

#### **1. HIGH PERFORMANCE LIQUID CHROMATOGRAPHY SYSTEM WITH PDA & FLUORESCENT DETECTORS**

#### **Specifications:**



### **1. Solvent Delivery System**

- HPLC should have a Quaternary Gradient high precision pump.
- It should have a flow rate resolution of 3nl/min or better
- The flow rate should be set between 0.001 to 10 ml/min from micro to semi-preparative flow rates.
- Flow rate accuracy should be  $\pm 1\%$  or better
- Flow rate precision should be less than 0.1% RSD.
- Pressure setting range should be 1-8500 PSI or more and should be compatible to use 2.5 micron particle size columns.
- It should employ active check valves that allow stable delivery of even non-polar organic solvents such as hexane.
- Reservoir tray with Solvent Bottles (5No's) & Automatic rinsing kit must be supplied.
- System should work in the pH range 2 to 12.
- It must have a leak sensor as safety feature.
- It should have functions for maintenance and validation which are accessible by a dedicated operation button.

### **2. On-Line Degassing Unit 1 No**

- Vacuum degassing (5 channel): The built in online degasser with atleast one channel per solvent and one channel for sample manager wash solvents should be quoted. The degassing has a provision for effectively remove /reduce ghost peaks.
- Maximum operating flow rate upto 20ml/min per flow line.
- It must have a leak sensor as a safety feature.
- Self-cleaning capability that extends vacuum pump life by drawing in air when the pump is running.

### **3. Photo-Diode Array Detector 1 No**

- Wavelength range 190 nm - 790 nm.
- Number of Diode Elements : 1024 or better
- High Resolution & High Sensitivity Mode(1.2nm & 8nm)
- Wavelength accuracy  $\pm 1$  nm.
- Wavelength Precision 0.1nm.
- Drift Less than  $5 \times 10^{-4}$  AU/Hour.
- Noise Level  $\pm 0.6 \times 10^{-5}$  AU.
- Linearity 2.0AU.
- PDA data collection in full range and simultaneously monitor eight wavelengths or more (online-while acquisition is on)
- Peak Purity analysis through Ratio-chromatogram.
- Spectrum view, Wavelength scanning.
- Temperature controlled flow cell.
- A leak sensor and lamp replacement protection system (power to lamp automatically turned OFF) should be provided.
- Low Pressure Hg Lamp for wavelength accuracy check or HO membrane.

### **4. Auto-Sampler with cooler**

- The auto sampler tray should have capacity to hold minimum of 100 Nos. or more of 1.5 ml vials.
- Sample injection volume should be variable between 0.1  $\mu$ L to 100  $\mu$ L.

- Injection system should be variable injection volume type with zero sample loss during injection.
- Very fast injection time of 10sec or better/sample for 10µL injection.
- Adequate number of samples to be processed automatically, random access.
- Sample cooler with de-humidifying function under temperature control from 4 to 45°C.
- Flow line rinse capability both before and after sampling should be possible
- Needle aspiration speed should be variable from 0.1 to 15µL /sec
- Rinse aspiration rate should be variable from 1 to 35ul/sec
- Carry over must be within 0.005 % (Napthalene, Chlorhexidine and Caffeine) or better
- Injection volume accuracy within 1%
- The injection precision should be less than 0.2% of RSD value
- It should have a leak sensor, automatic rack and vial recognition as safety feature.
- 1.5 mL Sample Vials along with cap & Septa . 500 No's to be included with crimper.

#### **5. Column Oven**

- Column oven to accommodate up to two or more 30 cm columns, preferably a microprocessor based conforming to ISO 17025 with NABL accredited lab certificate.
- Heating and Cooling method: Forced air circulation method or equivalent
- Temperature control range: 5 to 80°C.
- Temperature accuracy: ± 1°C.
- The oven should have indicators/monitors to know the status of the instrument.

#### **5. Data Management System :**

- Operation of the system should be easy and intuitive via a state-of-the-art suitable Branded - Pentium i-7 Computer, 19" LED monitor, 1TB HDD, 6 GB RAM, Windows 7 or better with Graphical User Interface, Colour Printer.
- It should cover full digital instrument control with self-diagnosis functionality.
- Method file capability should have all LC analysis parameters, data processing parameters, report format, etc.
- The reporting format should be flexible and easy to use in any desired format
- Software must have its own log files for complete audit trails
- System suitability, System security as well as System check functions must be provided which comply with Good Laboratory Practice (GLP) and Regulatory Conformity
- Software should have a Data Base support either with SQL or Oracle for data security & compliance.
- Security features of software must comply fully with FDA, 21 CFR Part 11 guidelines.
- Reports can be output in PDF format
- Single point control of HPLC and its modules from PC .
- IQ, OQ to be provided by the vendor after successful installation.

#### **Installation Accessories**

- C-18 Column - (250 mm x 4.6 mm i.d x 5 um) - 3 No.
- C-8 Column - ( 250 mm x 4.6 mm i.d x 5 um ) - 1 No.
- Branded latest Specifications PC & HP DeskJet Printer
- 5 KVA UPS with 3Hrs. Batter back-up --- 1 No

- Sample & Solvent filtration assembly with Aqueous & Organic Membranes (100 no. each ) along with Vacuum Pump for filtration & degassing of mobile phase & sample.

**Fluorescence Detector:**

- Light Source: Xenon flash lamp
- Optical System: Holographic grating monochromators for both excitation and emission beam.
- Excitation/emission range: 200 -800 nm.
- Spectral Band width: 20 nm.
- Wavelength accuracy:  $\pm 2$  nm.
- Sensitivity: S/N >1000 (Raman spectrum of H<sub>2</sub>O).
- Cell volume : 8 - 10  $\mu$ L
- Data acquisition range 70 Hz or more.
- Maximum cell pressure : 20 bar(290 PSI)
- Time programmed functions: Excitation & emission, wavelength range response switching, wavelength scan, auto zero etc.

**General Conditions:**

**Warranty:** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of HPLC in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**2. FT-IR SPECTROPHOTOMETER WITH LIBRARY**

**Specifications:**

- Highest Signal to noise ration of 30,000:1 peak to peak or better in its class of general use instrument
- The FTIR should have a measuring wave number range of 7300 cm<sup>-1</sup> to 350 cm<sup>-1</sup> with a best spectral resolution of 0.5 cm<sup>-1</sup> selectable in steps of 0.5, 1, 2, 4, 8 and 16 cm<sup>-1</sup>.
- Automatic moisture protection for the beam splitter
- Sample compartment should have non Hygroscopic window material, preferably KRS-5
- The moving mirror mechanism should be non-contact, frictionless Flexible Joint Support mechanism with electro-magnetic drive to ensure smooth movement of moving mirror.
- Purging with Dry Nitrogen should not be an essential criterion.
- Sealed interferometer with reusable Silica gel desiccant.
- The beam splitter should be Germanium coated KBr with anti- humidity coating. Highly stable interferometer with Dynamic Alignment.
- Mechanism so as to get the spectrum under stabilized and optimum conditions. Also ensures short warming up time
- Sequential display of diagnostic results are monitored continuously by status monitor function so as to ensure and optimized measuring conditions
- Accessories are automatically identified and optimum measurement conditions are to be set
- Small installation space without compromising the sensitivity.
- Dedicated Licensed libraries for forensic application should be provided. Pirated or copied Library will not be entertained.

Original Equipment Manufacturer (OEM)/Genuine Spectral Libraries compounds including below:

Toronto Forensic FT-IR Spectral Library

Georgia State Crime Lab Drug FT-IR Spectral Library

A full FT-IR spectral library which should contain 18000 spectra or more for forensic, pharmaceutical, environmental and industrial applications.

- Powerful software, completely compliant to GLP with following features
- Real time Display of spectra
- Compact measurement menus
- Simple measurement mode
- Atmospheric correction mode
- Continuous measurement mode
- Standard Data processing functions like Kramers- Kronig, ATR Correction, Purity / Compare function, Kubelka - Munk Conversion, Search Function, Quantization, Macro programming etc
- Quantization software to be provided with single / multi-point calibration, Multi-linear Regression (Multi-Component analysis) capability.
- Software should have built-in Spectral search function with different algorithms. There should be a provision to create user defined database.
- Software should have **Chemometric software** for calculation of unknown samples by Partial Least Squares (PLS) method.

- IQ, OQ to be provided by the vendor after successful installation.

**Sampling Accessories to be supplied with instrument:**

- NaCl demountable cell for Mull sample or for Nujol base sample.
- KBr Hydraulic Press (pellet maker), Agate Mortar, Pestle, Press Die, Pellet Holder, Liquid cell, KBr Powder set for Pellet Preparation.
- ATR accessory with single beam diamond crystal

Should be supplied with Branded - Pentium i-7 Computer, 19" LED monitor, 500 GB HDD, 6 GB RAM, Windows 7 or better with Graphical User Interface, Colour Printer, 1KVAUPS with one hour backup.

**General Conditions:**

**Warranty:** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of FT-IR in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**3. UV-VIS SPECTROPHOTOMETER:**

**Double Beam UV VIS Spectrophotometer**

Microprocessor based UV-VIS Spectrophotometer with high resolution LCD display with PC software and dedicated soft keypad, for operation on 220V / 50Hz.

- Stand-alone operation or complete control through PC with PC software supplied as standard
- True double beam optics with aberration corrected concave blazed holographic grating in Czerny - Turner mounting for high energy throughput and high quality monochromatic light

- Wide wavelength range of 1,100 nm to 190 nm
- High resolution 1 nm spectral bandwidth over entire wavelength range
- Wavelength setting and display in steps of 0.1nm
- Wavelength accuracy of  $\pm 0.2$  nm for D2 spectral line
- Wavelength reproducibility of  $\pm 0.1$ nm
- Variable wavelength scanning speed of 3,000 nm/min to 2 nm/min
- Ultra low stray light of <0.02%T at 220nm with NaI filter
- Stray light less than 1% at 198 nm with KCl
- Wide Photometric range of -4 to +3.5 Abs and 0 to 400 %T or better
- High Photometric Accuracy of  $\pm 0.002$  Abs at 0.5 Abs
- High Photometric Repeatability of  $<\pm 0.001$  Abs at 0.5 Abs
- Very low baseline drift of 0.0005 Abs/hour or better
- High baseline flatness of  $\pm 0.0006$  Abs over entire wavelength
- Ultra low Photometric noise of <0.00005 Abs
- Dual source – high intensity Tungsten-Halogen and Deuterium lamp or Xenon flash lamp with automatic changeover.
- High sensitivity matched pair Silicon Photodiode detector
- Sufficient number of USB ports for high speed PC and printer connectivity, data storage and transfer through USB pen drive
- Guaranteed compliance with all Pharmacopoeias requirements
- Built in validation program, diagnostic and security functions
- All operational modes as standard – Photometric; Spectrum; Quantization; Kinetics, Time Scan, DNA and Protein Quantization in standalone and PC mode.
- Large sample compartment compatible with wide range of accessories.
  - **Software:**
  - Microsoft Windows 7 or higher version based operating software. Should provide recording, manipulation and storage of spectral data, automatic control over instrument and accessories, automatic recognition of accessory change etc.
  - Display offers walk-up simplicity for real time single wavelength measurements or quick identification of a sample peak.
  - Quantification package makes quantitative analysis straightforward.
  - Advanced fixed wavelength analysis with graphical data display and user defined limits.
  - Integrated calculations provide more data per measurement in Scan and Fixed
  - Wavelength scanning application with advanced tools for peak analysis and

spectral processing.

- Advanced kinetics features including multi-stage measurement, temperature ramping and comprehensive data fitting options.
- Two pairs of Quartz and glass cells of 10 mm path length to be included as part of equipment.
- IQ, OQ to be provided by the vendor after successful installation.
- Should be supplied with Branded PC with a minimum of core i7 or better processor, 6 GB RAM, 500 GB HDD, LED monitor, Colour Printer and 1KVA UPS with one hour backup.

#### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of UV-Visible spectrophotometer in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **4. Inductive Coupled Plasma Optical Emission Spectrometer (ICP-OES)**

##### **SPECIFICATIONS:**

##### **SPECTROMETER:**

1. True simultaneous and background correction reading ICP-OES system using solid-state detector technology.
2. System with bench-top design.
3. The Instrument must have an Echelle-based polychromator that utilizes a single charge coupled device (CCD)/charge induced detector (CID). The system must utilize a prism cross disperser for higher order resolution. The resolution of the system must be 0.007nm at around 200nm. The entire optical system must be enclosed in a purged and thermo stated optical enclosure.

4. A system purge of the polychromator for determinations made at wavelengths below 190nm must be standard. Nitrogen may be used as purge gasses and the gas flows must be controlled by the system controller.
5. The ICP torch must be mounted axially with high sensitivity, to the instrument optical path and, there should be options for demountable torch as well preferably a system with vertical and horizontal viewing.
6. Viewing of the plasma must be computer controlled. Dual View is desirable (torch).
7. The system must utilize at least carbon and argon emission lines in situ to perform the function for calibration.
8. The instrument must be able to perform determinations across the entire spectrum, both UV and Visible 167-750 nm.

### **ICP SYSTEM**

1. The instrument must monitor all three gas pressures (Nebuliser, Plasma and Auxillary) through mass flow control. The interlocks must be continuously monitored and if any interlock is interrupted, the plasma is shutdown automatically.
2. Plasma ignition and shut down must be computer controlled and totally automated.
3. The instrument must include a mechanism to eliminate the cool end of the plasma for minimizing self -absorption and physical interference.

### **SYSTEM DETECTOR**

1. Solid- state detector optimized for performance across the entire emission spectrum, anti-blooming protection to enable the simultaneous measurement of trace level analytes in the presence of major matrix constituents.
2. The detector must have Auto -Integration that allows intense and trace signal to be measured simultaneously.

### **RF GENERATOR**

1. The solid state RF Generator must run at frequency of 40/27MHZ. The RF Power should be variable from 750/1500W or better with capability to use maximum available power.
2. Power output stability should be better than 0.1%.
3. The RF generator must have power transfer efficiency into the plasma of at least 75% to eliminate the need of an inefficient secondary matching net work.

### **SAMPLE INTRODUCTION SYSTEM**

1. The instrument must include appropriate Aqueous kit ICP torch and standard Mein hard nebulizer spray chamber system as a standard. Additional HF kit with HF resistance spray chamber nebulizer system. System should have capability for analysis of organic solvent as well.
2. The system must include a four channel, variable speed, controlled peristaltic pump which allows for on- line addition of internal standards
3. The instrument must include accessories for low detection limits of Mercury and other hydride forming elements.

### **SYSTEM SOFTWARE**



1. The instrument system software shall be based on the windows operating system.
2. The software shall provide full control of all instrument functions including plasma ignition, gas flows, viewing position, and monitoring of safety interlocks.
3. Software should also have comprehensive wavelength library minimum of 40,000 wavelengths with indication of preferred line for each element. It should feature automatic identification of possible spectral interferences when selecting wave lengths for analysis and should have search mode for identification of unknown wave lengths.
4. Software should be of 21 CFR part 11 compliant.

**PERFORMANCE**

1. The instrument must meet all EPA contract lab required detection limits.
2. The instrument must have analytical linearity in excess of 5-6 orders of magnitude with the ability to use alternate wavelengths that measured simultaneously.

**INSTALLATION UTILITIES**

Vendor should supply factory fabricated chillers re-circulator of appropriate capacity along with the system. The scope of supply should also include branded PC, 30" monitor, Pentium i-7, 1TB HDD, 6 GB RAM, Windows 7 or 10 with Graphical User Interface, laser printer, Argon gas cylinders four numbers with one regulator, Fume hood, filters etc...along with 15 KVA UPS for inductive load with built in isolation transformer with 60 minutes back up.

**MISCELLANEOUS**

1. Tuning solution 100ml X6 Nos.
2. Sample Kits for aqueous & 2 multi -elements standards should quoted as standard.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

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**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

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**5. Steam Distillation Unit for Volatile Poisons**

## **Specifications:**

### **Vacuum Switching Valve:**

The vacuum switching valve can be collected in a row without affecting the vacuum distillation condition.

### **Heating Pot Cover**

-The heating pot cover to prevent burns.

- Equipped with discharge valve at the bottom.

### **Controller Display**

Rotation speed, heating temperature (set and actual value), lift .

Allows user to monitor all parameters at a glance.

### **Lifting Stroke**

Electric lift, 0~190mm lift stroke

### **Collection flask with discharge valve**

10 L collection flask, PTFE bottom valve, easy operation for vacuum release.

Rotary flask: 3L

Rotary Motor: 40 W 3-phase AC

Condenser: Vertical double coiler

Heating bath: Stainless steel water bath

Temperature range: RT approx.99°C, digital display

Vacuum :<400.Pa (3mm Hg), Chiller for cooling condenser

Evaporative Power: H2O> 2L/hr, alcohol >4L/hr

Lift type: Electric lift

Power : 2.2KV

Best model

### **General Conditions:**

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

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## **6. AUTOMATIC VISCOMETER CUM DENSITY METER.**

## SPECIFICATIONS

- System should fulfill requirements of ASTM D7042 , ASTM D 4052 ,EN 16896, EN ISO 12185
- Instrument should have one cell to measure viscosity ranging from 0.2 to 30,000 mm<sup>2</sup>/s.
- Instrument should have built-in Oscillating U-tube for measuring density from 0.6 to 3 g/cm<sup>3</sup>.
- Sample temperature for viscosity and Density measurement should get controlled at set temperature between -20 to 135 °C by built-in Peltier solid-state thermostat.
- Viscosity and Density should simultaneously get measured from single injection of sample volume.
- Typical sample volume should be 6 ml.
- Typical solvent volume for cleaning and rinsing should not be more than 15 ml.
- Instrument should have a standard mode for calculating VI according to ASTM D2270.
- Instrument should have integrated provision of calculating and displaying API density, API number and API specific gravity at 15 °C, 20 °C, 29.5°C & 60°F for the product groups A, B and D.
- Display resolution: Viscosity: 5 significant digits, Density: 0.0001 g/cm<sup>3</sup>, Thermostat: 0.001°C(Display).
- Reproducibility Viscosity: + 0.35% + uncertainty of standard
- Reproducibility Density: + 0.0005 g/cc + uncertainty of standard
- Instrument should have in-built Memory for storage of 348 data sets.
- Four, UKAS certified standards, 100 ml each, certified for Viscosity and Density at 20, 40, 60, 80 and 100 Deg. C. should be supplied.
- Instrument should be compact, lightweight bench top device for use in lab and industrial environment with a footprint of maximum 0.5 m<sup>2</sup>.
- The complete system should not consume power more than 250 watt.
- Required sample volume for all parameter measurement: maximum up to 5 mL.
- Special functions - Temperature scan, Temperature table scan, Time scan, Viscosity and density temperature extrapolation, Automatic repetition measurement, Automatic viscosity index measurement, Density Filling Check™,

Built-in air pressure sensor, Full range viscosity correction of density, LIMS connectivity.

- Controls Touch screen, optional keyboard and mouse.
- Interfaces 4 x USB (2.0 full speed), 1 x Ethernet (100 Mbit), 1 x CAN Bus, 1 x RS-232, 1 x VGA
- **General Conditions:**
- **Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.
- **Training:** Hands on trained should be given to the staff members during installation at the customer site.
- **Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.
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## **7. KJELDAHL STEAM DISTILLATION APPARATUS:**

### **Specifications**

1. Microprocessor controlled Steam distillation unit with computer for convenient operation.
2. It should meet all the requirements of established bystandards for quality control and assurance such as ISO – 17025.
3. It should be suitable for all established methods for Kjeldahl determination and methods for determination of Ethyl Alcohol mentioned in BIS / Standard.
4. The unit should have chemical resistant and corrosive free plastic housing and an automatic maintenance free steam generator for distilled or de-ionized water.
5. Steam output to be adjustable from 10 to 100%.
6. It should have facility for calibration of dosing with statistical data total running period, runtime of pumps, number of distillations since installation and last run.
7. Transparent protective door for full view of distillation process, condenser & distribution head.
8. System should have safety features such as tube sensor, door sensor, excess temperature and pressure.
9. Sensors should be operational at 1600 W, 50-60 HZ frequency of 220 to 240 V.
10. It should be supplied with chiller.
11. **General Conditions:**
12. **Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.
13. **Training:** Hands on trained should be given to the staff members during installation at the customer site.
14. **Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.
15. Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

16. **Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.
17. The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

## **8. Water Purification system (De-ionized Water)**

### **Specifications**

- Water Purification system (storage capacity 30L or more) capable of independently dispensing both Type I and Type II water.
- Type II able to use tap water as feed able to accept up to 2000 micro Siemens conductivity.
- Tap water should be treated in a pre-treatment cartridge for efficient removal of particles, colloids, free chlorine and hardness
- Reverse Osmosis step should be water conservative and should ensure constant flow rate and optimal water quality.
- All the cartridges used should have considerable life.
- Should have electro deionization or other equivalent or superior technology for removal of Ions with absolute zero conductivity.
- The resin beads used should be of superior quality and should not degrade by exposure to harsh chemicals.
- The Resin beads should be able to be continuously regenerated without affecting its quality.
- The cartridges should be easily replaceable.
- The replacement cartridges should not be very expensive.
- The Equipment should have a low maintenance cost.
- The generated water should be treated with UV to destroy bacteria, before it is stored in the storage tank. UV lamp with dual wavelength (185 and 254 nm).
- The storage tank should be capable of maintaining the purity of stored water.
- A vent filter should be there for preventing airborne contamination.
- The water dispenser should be Ultra pure water free of particulates, pyrogens, nucleases.
- Should be able to dispense pre assigned volume of water.
- Production rate minimum 5 to 10 Liters per hour.
- Should have calibrated meters for continuous monitoring and display of water quality parameter
- Should have customizable alert and alarms.
- Should meet internationally recognized safety norms
- Prompt services should be available.

### **General Conditions:**

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### **9) Encase Latest Version Forensic Analysis Software Disk Forensic Software**

- 1 Should have gallery view option to quickly reveal all photographs and graphics file stored on hard drives and other media.
- 2 Should have timeline view option to provide an easily to search adjustable, graphical calendar like display for file activity of particular interest.
- 3 Should contain Full Unicode support to allow users to search text and fonts from any foreign county and in any language
- 4 Should support acquisition Restart facility: continue a window acquisition from its point of interruption.
- 5 Should have inbuilt LinEn utility to acquire evidence via boot disk
- 6 Should have inbuilt WinEn utility to acquire RAM evidence
- 7 Should do image verification by CR and MD5
- 8 Should have Inbuilt support for writing scripts & should have pre-built scripts
- 9 Should Support more than 150 Filters and Conditions
- 10 Should Support combining filters to create complex queries using simple "OR" or "AND" Logic`
- 11 Should have Inbuilt Active Directory Information Extractor
- 12 Should be able to automatically rebuild the structure of formatted NTFS AND FAT volumes
- 13 Should support Recovery of deleted file/folders
- 14 Should have Inbuilt windows event log parser, Link file parser to search in unallocated space
- 15 Should have Inbuilt support for Compound (e.g., zipped) documents and file analysis.
- 16 Should support file Signature analysis
- 17 Should have native viewing support for 400 file formats
- 18 Should have built-in Registry Viewer
- 19 Should Meet the mentioned criteria for searching: Unicode index search, Binary search, Proximity Search, Internet and emails search, Active Code Page: keyboard in many language, Case Sensitive, GREP ;Right to Left Reading, Big Endian/Little Endian, UTF-8/UTF-7, Search file slack and unallocated space etc.
- 20 Should Support Internet and Emails Investigation for : Browsing History Analysis, WEB History &chche analysis, Kazaa toolkit, HTML carver, HTML page reconstruction, Internet artifacts, Instant Messenger toolkit - Microsoft Internet Explore, Mozilla Firefox, Opera and Apple Safari
- 21 Should Include Emails Support for: Outlook PSTs/OSTs ('97-'03), Outlook Express DBXs, Microsoft Exchange EDB Parser, Yahoo, Hotmail, MBOX

- archives, Netscape Mail, AOL 6.0, 7.0, 8.0, and 9.0 PFCs, Lotus Notes v6.0.3, v6.5.4 and v7
- 22 Should include system support for:
- a) Hardware and Software RAIDs
  - b) Dynamic disk support for Windows 2000/XP/2003 Server
  - c) Interpret and analyze VMware, Microsoft Virtual PC, DD and SafeBack v2
- Image formats
- d) File System: Windows FAT12/16/32, NTFS; Macintosh HFS, HFS+; Sun Solaris UFS, ZFS; Linux EXT2/3; Reiser; BSD FFS, FreeBSD's Fast File System 2 (FFS2) and FreeBSD's UFS2; Novell's NSS & NWFS; IBM's AIX jfs, JFS and JFS with LVM8; TiVo Series One and Two; CDFS; Joliet; DVD; UDF; ISO 9660; and Plam
- 23 Should support reporting facility with
- a) Listing of all files and folders in a case
  - b) Detailed listing of all URLs and corresponding dates and times of web site visited
  - c) Document incident response report
  - d) Log Records
  - e) Registry
  - f) Detailed hard drive information about physical and logical partitions
  - g) View data about the acquisition, drive geometry, folder structures and bookmarked files and images
  - h) Export reports in Text, RFT (opens in Microsoft Office), HTML, XML or PDF formats.
- 24 Smart phone and Tablet support: Acquire data from devices running the following operating systems: Apple's iOS, Google's Android OS, Rim's Blackberry OS, Nokia Symbian, Microsoft's Windows Mobile OS etc.
- 25 Should have reporting feature for quickly share a report with field investigators, district attorney, supervision and with a few simple clicks select the exact information for your report and generate an easy to review HTML report that can be viewed in any web browser.
- 26 Should support acquisition of mobile evidence from all smartphone operating systems.
- 27 Should support more than 26,000 device profiles
- 28 Should be easily review parsed mobile device evidence from the widest variety of mobile devices including text messages, e-mails, call records, cloud repositories associated with mobile device, internet history, photos, application data, and deleted data.
- 29 Should have built-in bypass functions so that the evidence within a device can be hidden and unable to access.
- 30 Should support SQLite Plist, archives, PDF, HTML and others can be investigated using the file viewer feature.
- 31 Should be able to find, extract, and analyze data within graphic files using Optical Character Recognition. Evidence from graphic files such as PDFs, photos, and other file types will be found when running keyword searches, which uncovers even more critical and relevant evidence needed for the case

- 32 The device must be capable to gather and review evidence from a suspects cloud-based account such as Google Drive, Twitter, Facebook, and others.
- 33 Should allow investigators to locate credit cards, e-mail addresses, and phone numbers to find that extra piece of evidence to help finalize their collection
- 34 Should have several customizable reporting options including HTML, Timeline, PDF, and many other report variations. These reports are created to be shared in a compelling and easy to read way for every case.

**General Conditions:**

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**10) Belkasoft Evidence Center:**

Should be able to perform acquisition, extraction and analysis of various digital storage media, data carving, Live RAM analysis, Cloud data downloading and analysis, generate reports accepted by courts.

**Should be compatible for various types of Evidence viz.,**

- Office documents
- Email clients
- Pictures and videos
- Mobile application data
- Web browser histories, cookies, cache, passwords, etc.
- Chats and instant messenger histories
- Social networks and cloud services
- System files, including jumplists, thumbnails and event logs
- Encrypted files and volumes
- Registry files
- SQLite databases
- Peer-to-peer software
- Plist files
- Geolocation data
- Payment systems

**Should have the following features:**

- Existing files search and analysis. Low-level investigation using Hex Viewer



- Data carving and destroyed evidence recovery
- Live RAM analysis including process extraction and data visualization
- Cloud data analysis (iCloud, Google Drive, Google Plus)
- In-depth Volume Shadow Copy support
- Hibernation file (hiberfil.sys) and page file (pagefile.sys) analysis
- Native SQLite analysis with freelist and WAL support
- Discovers deleted SQLite records, e.g. Skype conversations or WhatsApp messages
- Picture analysis including EXIF and GPS analysis, face/test/pornography/forgery detection
- Video key frame extraction
- Analysis of social communications with Social Graph Builder module
- Encryption detection
- Special files and folders analysis (e.g. Volume Shadow Copy, \$OrphanFiles, \$MFT etc.)
- Hashset analysis
- Flexible analysis
- Advanced search and data filtering, various types of predefined search (card and telephone numbers, names, suspicious words, etc.)

**Should support the following Data Sources and File Systems:**

- Storage devices - Hard drives and removable media
- Disk images - EnCase (including Ex01), L01/Lx01, FTK, DD, Smart, X-Ways, Atola, DMG
- Mobile devices - Mobile backups, UFED dumps, chip-off and JTAG dumps
- Virtual machines - VMWare, Virtual PC, VirtualBox, XenServer.
- Volatile memory - Live RAM dumps; fragmented memory set analysis with BelkaCarving
- Memory files - Hibernation file and Page file
- Unallocated space - Data carving discovers destroyed evidence
- Network traffic - PCAP files
- File systems - FAT, exFAT, NTFS, HFS, HFS+, ext2, ext3, ext4, YAFFS, YAFFS2

**Should be compatible to the following Operating Systems:**

- Windows (all versions, including Windows 10)
- Mac OS X
- Unix-based systems (Linux, FreeBSD, etc.)
- iOS: iPhone, iPad
- Android
- Windows Phone 8/8.1
- Blackberry
- **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

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### **11) Recon Mac complete Imaging and Analysis Tool**

Forensic analysis platform for Mac OS X, iPhone, and iPad data

1) Should quickly Acquire a Snapshot of the User's Device and Provides a visual display of configurations and usage for each device case file, including:

- a) Device type, OS version, serial number, UDID, and IMEI
- b) Artifact summary statistics for documents, emails, movies, calls, voicemail, and more
- c) Device user account information and common Internet account information for applications such as Twitter and iCloud
- d) Recent usage history, including dialed phone numbers (with associated contact information), last running applications, and most recent web-based location searches.

e) Detect VMWare, Virtual Box & Parallels virtual machines

2) Should efficiently Sift through Large Data Sets Media view has built-in support for all commonly used picture and video file types, and it includes several helpful and examiner-oriented analysis features, such as

a) Built-in GPS Mapping:

b) All media files containing GPS data will be identified with a place mark badge

c) Examiners can view media geolocation data on a Mercator map (offline) or using Google Maps (online) directly from the built-in GPS view

d) Proprietary Skin Tone Analysis Algorithm:

e) Sort picture and video files by the skin tone percentage contained in the file

f) Video Frame Analysis:

g) Initially displays video files as 4x4 frame sequences, allowing examiners to quickly triage multiple video files in order to locate potential evidence

3) Recover Every Message from the Most Common Sources See a full log of calls, voicemail, social media activity, and more. Most importantly, examiners can view messaging threads in list view or in their native format, with support for data from:

Text Services

SMS/MMS

iMessage

iChat

Messaging Apps

Skype

Kik

TextPlus

TextFree

Social Media

Facebook

Twitter

LinkedIn

Foursquare

4) Reporting should be incredibly flexible. Examiners may export large data sets in an easily readable format, and can export reports in a variety of formats to enable easy information sharing with all interested third parties. Should be able to:

a) Easily tag evidence and include any and all relevant metadata in the examiner report

b) Export your report in your choice of formats, including

c) pdf                      d)html                      e)docx                      f)txt

g) ExporteDiscovery data to a generic Concordance load file that is compatible with all

major review platforms

h)Mask (blur) sensitive data contained within examiner reports that may be shared with non-authorized third parties"

5) Should analyze Mac OS and dual-boot disk and partition images in multiple formats

6) Should analyze configuration and log files from common OS applications, such as Mail, Safari, iChat and Address Book

7) Should perform rapid searches using metadata.

8) Should gather comprehensive machine usage information

9) Should list detailed information about every iPod and iPhone that has been connected to the machine

10) Should detect VMWare, Virtual Box & Parallels virtual machines

11) Should detect and analyze File Vault-encrypted user directories

12) Should support dd, EnCase, FTK, AFF, and Apple disk images

13) Should run on Microsoft Windows OS as well as Mac OS.

14) Should have full support for Mac OS both as an analysis machine and an investigative target

15) Should analysis of iCloud configuration data

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**12) UFED 4PC Ultimate with Chinex, cloud analyser, link analyser**

Sr. No.	Mobile Phone Forensic Bundle
1	The supplied Mobile Phone Forensic Solution must be capable of logical, file systems and physical mobile data extraction for wide range of mobile phones, mobile tablets and GPS devices with different operating system or chipset.
2	Should support proprietary custom boot loaders to ensure forensically sound extractions.
3	Should be possible to do Simultaneous operations like extraction, decoding and analysis, on a single platform.
4	Should come with a compact and lightweight case.
5	Extraction software should be touch screen enabled, allowing easy use on tablets.
6	Should be operated with a USB software license dongle.

7	Shall be able to recover deleted data e.g. image, SMS, emails, video, GPS locations etc.
8	Shall be able to decode mobile Apps such as Viber, Whatsapp, Skype, Facebook messenger, QQ etc
9	Should support Physical extraction and decoding while bypassing pattern lock / password / PIN from Android devices including Samsung Galaxy families, LG, HTC, Motorola, and more.
10	Physical Extraction using Boot Loader Method with Bypass of Lock for Android 5.x or below). Physical extraction while bypassing lock for the latest firmware up to Android 5.1, using the forensic recovery partition method.
11	Should support Physical extraction from BlackBerry devices running OS 4-7. Physical extraction should be performed using proprietary boot loaders, enabling a forensically sound process. Exclusive decoding: BBM data, apps, emails, Bluetooth and more. should support physical extraction for unlocked (including NAND and NOR memory) BlackBerry 7xxx/8xxx/9xxx devices, including atleast 9930 Bold, 9800 Torch and 8330 Curve.
12	should support file system extraction, backup acquisition & decryption for BlackBerry 10 based devices including Z10, Z30, Classic & Passport.
13	Should enables forensically sound data extraction, decoding and analysis techniques to obtain existing and deleted data from these iOS Devices based on either of Logical / File System or Physical extraction: iPhone 2G,iPhone 3G, iPhone 3GS, iPhone 4, iPhone 4S, iPhone 5,iPhone 5S, iPhone 5C, iPhone 6, iPhone 6Plus, iPod Touch 1G, iPod Touch 2G, iPod Touch 3G, iPod Touch 4G, iPod Touch 5G, iPad Mini, iPad 1, iPad 2, iPad3, iPad 4.
14	Physical extraction and decoding from locked Nokia BB5 devices - password extraction from selected devices. should supports bit-for-bit physical extraction from locked and unlocked Nokia BB5 devices using proprietary boot loaders. should support decoding of Symbian databases including Decoding of intact and deleted contacts, SMS, MMS and call logs; Decoding support for multilingual content.
15	Should support File system extraction from any device running Windows phone 7.5 and 8
16	Should support physical extraction and decoding of devices running Windows Phone devices running OS versions 8.0 and 8.1 and below including 6.0 and 6.5.
17	Should support physical extraction with password bypass for Nokia Lumia Windows Phone 8 devices. Should support recovery of deleted data from unallocated space in the device's flash memory.
18	Should support decoding of JTAG physical extractions of contacts, call logs and SMS from Windows Phone 8.x devices
19	Should enable physical extraction and decoding of data from a range of portable GPS devices . The Decoded data should include: Entered locations, GPS fixes, Favorite locations, GPS info. should support Data Extraction from Garmin & Mio devices. Extracted data includes: Favorites, Past journey (containing all the fixes during the journey),Deleted GPS fixes. Should support TomTom® trip-log decryption
20	Should support comprehensive analysis capabilities including timeline, project analytics, malware detection, and watch list.

21	Should decrypt WhatsApp's new encrypted chat history database i.e. Crypt8 or above.
22	Should support iCloud Backup to Decode the iCloud backup obtained from Apple devices
23	Shall be able to provide a phone power up cable, to be used on mobile device with damage batteries
24	Shall be able to provide generic Android, Windows phones file systems extraction
25	Shall be able to provide MD5 and SHA256 data integrity verifications
26	Shall be able to decode and extract password screen locks for certain devices
27	Shall allow extracted data to be searched, view and exported, including deleted data
28	Shall allow search of data either by specific parameters or open text
29	Shall be able to provide Analyst with ability to search and decode data using python scripting based programming
30	Shall be able to import 3rd party mobile device binary extractions for decoding
31	Shall be able to provide a comprehensive list of supported mobile devices and the their respective data and applications which could be extracted and decoded
32	GPS and location based data. - Shall be able to do physical extraction of GPS devices; - Shall be able to extract GPS data (Geotag, GPS coordinates) from mobile device; - Shall be able to decode GPS data e.g. previously entered locations etc
33	Shall be able to customize and generate reports in different format e.g. HTML, PDF, Excel etc
34	Shall be able to provide an application for report reading for non-licensed users
35	Shall be able to password protect sensitive reports
36	Shall be able to generate reports with organization logo
37	Shall be able to edit fields such as case name, number, examiner's name and more
38	Shall provide input cables for all phones that the system is able to support
39	Shall provide SIM ID Cloning Cards
40	Shall provide Micro, Nano SIM adapter
41	Shall provide either USB flash drive or memory card for saving of extracted data
42	Should support Entities bookmarks for Quick reference pointer set to analyzed data item and data file item.
43	Should support SQLite databases viewer for Viewing, searching and exporting tables and content (including deleted data) from SQLite database files.
44	Shall provide the support for chinese phones extractions with different connectors in kit. should have a connectivity box acts as the interface between the phone and the Tool , enabling the automatic pin-out identification. By selecting "Chinese phones physical extraction" , the phone pin-out should be detected and the extraction will start automatically.

45	Should support Chinese chipsets from MTK ( Mediatek ),Spreadtrum and Infeneon. Using proprietary boot loaders, it should perform a bit-by-bit physical extraction, from devices manufactured with Chinese chipsets, including knockoffs, accessing the device's memory, whilst maintaining forensic integrity. The boot loaders prevent the tampering of data, during physical extraction.
46	Should have link analysis software to quickly identify connection and communication method of different device used.
47	Should provide investigators and analysts an immediate visual picture of the communication methods, to help them understand the relationship between entities and put the puzzle pieces together.
48	Should reveal communication links between multiple mobile devices based on a complete range of existing, hidden and deleted data types: mutual contacts, calls, SMS, MMS, emails, chats, apps messages, locations etc.
49	Should help Visualize the communication directions between entities, pinpointing bidirectional and unidirectional communication.
50	Should support the following Features: <ul style="list-style-type: none"> <li>• Entities analytics: Statistical data shows the frequency of communication and preferred communication methods</li> <li>• Timeline: Displaying a list of events in chronological order</li> <li>• Watch list: Automatically highlight case and category keywords from multiple devices</li> <li>• Advanced filters: Filter links and data based on variety of parameters such as date and time, communication methods, location types, distance and tags</li> <li>• Graph snapshot: Save an image of the current view</li> <li>• External data sources: Import from external sources - Excel, CDR, Text delimited, UFDR</li> <li>• Multiple data sources per person: Import and manage several extraction reports from other data sources, and assign them to the same person.</li> </ul>
51	Should enable using login credentials extracted from a mobile device to extract private user cloud data from key social media, webmail and cloud storage sources, within pre-approved legal boundaries as well as using known username and password .should be possible to decode and use of cloud keys from Mobile device running on both Android and IOS Operating Systems.
52	should support extraction of the following information from a Facebook account using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Posts, Direct messages, Comments, Likes, Images, Videos, Files , Contacts, Embedded location information, Facebook Events .
53	should support extraction of the following information from an Instagram account using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Images and Video posts, Direct messages, Group messages, Comments, Likes, Contacts, Embedded location information .
54	should support extraction of the following information from a Gmail account using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Messages with attachments

55	should support extraction of the following information from a Google Drive using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Images, Video, Files and documents, Revisions
56	should support extraction of the following information from a Dropbox account using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Images, Video, Files and documents, Embedded location information, Revisions
57	should support extraction of the following information from a Google account using both Username + Password and cloud keys extracted from Mobile for both IOS and Android including Search history ; Voice search history ; Device history ; Visited pages (when signed into chrome) history , including Location data, including Contacts.
58	Should support dynamically visualizing and analyzing large cloud data sets in a unified format to bring key insights to the surface for easy analysis.
59	Should support a capability that enables forensic specialists to normalize and organize disparate data retrieved from various service providers into a unified format, to quickly uncover common connections and correlate critical evidence.
60	Should support immediate access to private cloud-based data to save valuable time, and also offering a data source that can be validated against service provider records.
61	Should allow easy export and integrate the Cloud Analyzer data into Link Analysis or other advanced analytical tools, for deeper analysis.
62	It should allow each piece of extracted data to be hashed separately and can be later compared against its origin.
63	Should normalize different cloud services in a unified format and view in Timeline, File Thumbnails, Contacts or Maps format
64	Should generate and share easy-to read, PDF reports for entire data sets or filtered information.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

**Training:** Hands on trained should be given to the staff members during installation at the customer site. Certified training has to be provided at least for two experts.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**13) XRY Complete with Pin Point**

The mobile data recovery system should comply with the following requirement at least:	
1	Solution should Allow a secure forensic extraction of digital data form a wide variety of mobile devices, such as standard mobile phones, China made mobile phones, smartphones, GPS navigation and tracker units, 3G modems, portable music players.
2	It should support logical extraction to recover live data.
3	It should support physical extraction to recover live as well as deleted data.
4	It should support multiple extraction wizard, secure reports.
5	Module to extract data from Chines Phones should be made by the OEM only and should get upgraded with software upgrades.
6	Should be provided in a ruggedized carrying case with all required accessories such as Communication unit, Logical mobile phone cable kit, Physical mobile phone cable kit, SIM id-Cloner device, 10 rewritable SIM id-Cloner examination cards, Write protected memory card reader etc.
7	It should support simultaneous extraction of data from 3 devices at a time through hub.
8	Should generate Hash algorithms.
9	It should support File signature analysis.
10	It should support Selective extraction of data.
11	Should have Windows based software solution.
12	Should support Unique help file for every device.
13	Should extract report content in the form of Summary, Case data General Information Network Information, Contacts, Notes, SMS and MMS, Pictures, video and audio, E-mail, Documents, Files, Device overview, Log etc.
14	Should able to generate report in Excel, Word, Open Office, XML, Google Earth and Print.
15	It should have tools like CD / DVD / Blue-ray burning wizard, Clone SIM cards, Clean registry, License update, Download updates.
16	Should allow One License be used on number of devices.
17	In any event of pause or termination of extraction process, the data extracted be saved.



18	Additional kit should be provided for extraction of data from Chinese phones (Pinpoint) is developed in house and is upgraded regularly for different Chinese phones regularly.
19	Should able to retrieve the passwords and bypass the pattern passwords.
20	Should able to extract the geo-data.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

**Training:** Hands on trained should be given to the staff members during installation at the customer site. Certified training has to be provided at least for two experts.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**14) PASSWARE along with Encryption Analyser (Password recovery software):**

- Should recover passwords for more than 200 varieties of file formats and decrypt hard disks providing an all-in-one user interface.
- Should scan computers and network for password-protected files (should include Encryption Analyser Professional).
- Should acquire memory images of the seized computers (should include FireWire Memory Imager)
- Should retrieve electronic evidence from a Windows Desktop Search Database (should include search Index Examiner).
- Should support Distributed Password Recovery!
- Should run from a USB thumb drive and should recover passwords without installation on a target PC (should include Portable Version).
- Additional features:
- Should instantly recover many password types.
- Should instantly decrypt MS Word and Excel files
- Should reset passwords for Local and Domain Windows Administrators instantly.
- Should recover encryption keys for hard disks protected with BitLocker, including BitLockerToGo!
- Should decrypt TrueCrypt volumes
- Should provide various password recovery attacks (and any combination of them) with an easy-to-use setup wizard and drag & drop attacks editor.
- Should be able to use the legacy Tableau TACC hardware accelerators to speed up the password recovery process.
- Should provide detailed reports with MD5 hash values.

Passware Kit Forensic, along with Passware FireWire Memory Imager, should decrypt BitLocker and TrueCrypt hard disks of the seized computers.

Passware Encryption Analyzer:

- o Should scan files fast - over 4,000 files per minute on an average PC.
- o should list recovery options and launches appropriate password recovery modules if necessary.
- o Should Provide detailed information: file formats, protection methods.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

**Training:** Hands on trained should be given to the staff members during installation at the customer site. Certified training has to be provided at least for two experts.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company brocher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**15) Desk-top computers**

**Sr. No. Description/ Specification**

1 Should have a high-end desktop having following features to perform analysis on the Go

Should have Quad Core Processor,i7-6820HK or better

Should have 64GB Dual Channel DDR4 RAM Memory.

Minimum of 512 GB Solid State internal SATA Drive for OS and Temp

2TB 7200RPM internal HDD for Data

Should have Nvidia GeForce GTX980M 8GB GDDR5 or better

Integrated ports: 1x USB 3.1, 3x USB 3.0, 1x eSATA/USB 3.0 Combo Port

Should provide 24" LED Monitor, Keyboard, Mouse and External Speakers

Should have Windows 10 Pro 64-Bit along with licensed MS office latest version and reputed antivirus with three years license

Integrated I/O Ports: 1 HDMI 1.4a output Port (with HDCP) 2 DisplayPort 1.2 output

Ports 3 USB 3.0 Ports 1 eSATA / USB 3.0 Combo Port (1 x Powerd USB port, AC/DC)

1 Headphone Jack 1 Microphone Jack 1 Line-in Jack 1 S/PDIF output Jack 1 RJ-45

LAN (10/100/1000Mbps)

2 should come with 3 years warranty, update and maintenance.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

### **16) High End Laptop**

<b>Sr. No.</b>	<b>Description/ Specification</b>
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1	Should have a high-end laptop having following features to perform analysis on the Go
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Should have Quad Core Processor,i7-6820HK 2.7GHz, 8MB L3 Cache

Should have 64GB Dual Channel DDR4 RAM Memory.

Minimum of 256 GB Solid State internal SATA Drive for OS and Temp

1TB 7200RPM internal HDD for Data

Should have 15.6" FHD (1920×1080) IPS Matte Display with G-SYNC Technology

Should have Nvidia GeForce GTX980M 8GB GDDR5 or better

Integrated ports: Thunderbolt 3 Connectivity, 1x USB 3.1, 3x USB 3.0, 1x eSATA/USB 3.0 Combo Port

Should have 10/100/1000 Mbps Ethernet LAN

Should have 802.11a/b/g/n Wireless LAN

Should have in-built Bluetooth (Intel 6235AGN)

Should have Kensington Lock Slot

Should have 6-in-1 Card Reader (MMC/RSMHC/SD/Mini-SD/SDHC/SDXC up to UHS-II)

Should have High Definition Audio with minimum of: High Definition audio interface Built-in Array Microphone 2 Built-in Speakers External 7.1CH audio output supported by headphone, microphone, Line-in and S/PDIF jack

Should have Windows 10 Pro 64-Bit along with licensed MS office latest version and reputed antivirus with three years license

Should have Full-Size Illuminated Keyboard with numeric keypad

Should have Touch Pad /with scroll functionality

Should have Biometric Finger Print Reader

Integrated I/O Ports: 1 HDMI 1.4a output Port (with HDCP) 2 DisplayPort 1.2 output Ports 3 USB 3.0 Ports 1 eSATA / USB 3.0 Combo Port (1 x Powerd USB port, AC/DC)

1 Headphone Jack 1 Microphone Jack 1 Line-in Jack 1 S/PDIF output Jack 1 RJ-45 LAN (10/100/1000Mbps)

2 should come with 3 years warranty, update and maintenance.

3 The whole solution should come in strong wheeled carrying case

### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

### **17) High End Mac work station**

Model	<b>Mac Pro</b>
<b>8 - Core; 3.0 GHz</b>	
<b>Processor</b>	Intel Xeon E5 with 12MB L3 cache and Turbo Boost up to 3.9GHz
<b>Memory</b>	16GB (four 4GB) of 1866MHz DDR3 ECC memory
<b>Dual AMD FirePro D700 graphics processors with 6GB of GDDR5 VRAM each</b>	2048 stream processors 384-bit-wide memory bus 264GB/s memory bandwidth 3.5 teraflops performance
<b>Storage</b>	256GB - PCIe-based SSD
<b>Audio</b>	Combined optical digital audio output/analog line out mini-jack 3.5mm headphone jack with headset support HDMI port supports multi-channel audio output Built-in speaker
<b>Connections &amp; Expansions</b>	4 x USB 3.0 6 x Thunderbolt 2.0 Dual Gigabit Ethernet HDMI Ultra HD
<b>Wireless</b>	802.11ac Wi-Fi wireless networking3; IEEE 802.11a/b/g/n compatible Bluetooth 4.0 wireless technology
<b>Display</b>	27-inch (diagonal) Retina 5K display

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

**Training:** Hands on trained should be given to the staff members during installation at the customer site. Certified training has to be provided at least for two experts.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**18) 5KVA UPS SYSTEMS -**

***TECHNICAL SPECIFICATIONS***

1. Should be 5KVA on-line UPS with 2 hours full load battery support.
2. Should work with input 200 to 240v ac 50Hz supply.
3. Should have zero delay changeovers.
4. Should be with output voltage and current monitoring.
5. Should have lead acid sealed battery based support.
6. Power outlet terminated in sockets with isolator protection.
7. Complete wiring and installation inside the laboratory to be covered under the scope of this work.
8. Input DC in for the inverter :120V DC or more.
9. Battery should be from standard and approved brands.
10. Should be with zero maintenance.

**General Conditions:**

**Warranty:** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc. as per applicability.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **19. Ballistics Comparison Microscope with camera attachment**

- 1) **Magnification range:** 6 X - 100 X or better with apo-chromatic objectives
- 2) **Optical source:** Ring Illuminator- LED/ coaxial, cold white, fluorescence
- 3) **Bridge observation modes:** split, superimposed, left and right
- 4) **Magnification steps:** three or more / continuous with intensity and segment controls.
- 5) **Work bench:** motorized vertical movement with smart touch pad controller.
- 6) **Stages:** should have motorized Z axis movement for focusing and Synchronized XY movement for left and right stages.
- 7) **Operation panel-** Touch pad / Touch screen
- 8) **Camera and software:** should have high performance digital camera ( 5 M pixel resolution or better) with latest software packages for relative comparisons, image analysis, enhancement, archiving of samples.
- 9)  **HOLDERS:** Should have cartridge and bullet holders (both universal and on center projectile holder) for all calibers with 360° basic mount and +/- 180° angle fiction.
- 10) **Data processing unit:**
  - a) Branded PC with relevant imaging software for comparison microscope.
  - b) 1 TB external Hard Disk for storing the images.
  - c) Printer : Laser color printer of 1200 X 600 dpi resolution

**UPS : 5 KVA on line UPS with 2 hours backup.**

#### ***TECHNICAL SPECIFICATIONS***

1. Should be 5KVA on-line UPS with 2 hours full load battery support.
2. Should work with input 200 to 240v ac 50Hz supply.
3. Should have zero delay changeovers.
4. Should be with output voltage and current monitoring.
5. Should have lead acid sealed battery based support.
6. Power outlet terminated in sockets with isolator protection.
7. Complete wiring and installation inside the laboratory to be covered under the

scope of this work.

8. Input DC in for the inverter :120V DC or more.

9. Battery should be from standard and approved brands.

10. Should be with zero maintenance.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/ software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**20. Bullet Recovery Box**

Bullet Recovery Box made of stainless steel material (Rust Proof) with movable trolley with lock adjustment.

Dimensions (L X W X H) : 10 X 2 X 2 feet

Height from Ground : Proportionate to the remote firing Rest

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**21. Bullet Puller for Small Arms:**

1) The equipment should safely remove bullet from the cartridge and also to reload the bullet.

2) Calibers : 0.22" to .45"

- 3) It should consist a pacesetter dies, Puller, jig for removing bullet, Reloading kit, BMG press kit etc.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/ software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**22. Mobile firing rest system**

- 1) It must be Suitable to fire various small arms of all known calibers including country made and also useful to measure the trigger pull.
- 2) Should have the latest user friendly software for measuring trigger pull and archive the data and to generate report.
- 3) **Elevation and azimuth range:** +/- 5°.
- 4) Should have wheels and transport tow bar.
- 5) **Accessories:**
  - a) Remote firing control with electronics box.
  - b) Rifle adaptors.
  - c) Pistol and revolver adaptors.
  - d) Laser guide
- 6) **Data processing unit:**
  - a) PC : i7 processor or better, with 4 GB RAM, 1 TB SATA HDD, Optical DVD writer, 27" monitor, Licensed pre-loaded OS Microsoft windows 10 pro or better and good quality internet security Antivirus (licensed)
  - b) Printer : Laser color printer of 1200 X 600 dpi resolution

UPS : 5 KVA on line UPS with 2 hours backup.

***TECHNICAL SPECIFICATIONS***

1. Should be 5KVA on-line UPS with 2 hours full load battery support.
2. Should work with input 200 to 240v ac 50Hz supply.
3. Should have zero delay changeovers.
4. Should be with output voltage and current monitoring.
5. Should have lead acid sealed battery based support.
6. Power outlet terminated in sockets with isolator protection.

- 7 . Complete wiring and installation inside the laboratory to be covered under the scope of this work.
8. Input DC in for the inverter :120V DC or more.
9. Battery should be from standard and approved brands.
10. Should be with zero maintenance.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/ software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**23. Hand Held Energy dispersive X-Ray Fluorescence (ED-XRF)**

- 1) It is suitable for the detection & analysis of gunshot residues on cloths, swabs etc. and traces of copper and lead around the bullet holes on clothes.
- 2) Detection range : Mg to U
- 3) Fluorescent X- Ray detector : Silicon Drift Detector (SDD)
- 4) Excitation Source : Rh / Ag target
- 5) Operating Temperature : -10<sup>0</sup>c to 50<sup>0</sup>c
- 6) Analysis software : latest user friendly software.
- 7) Data storage : 1 GB or more micro SD
- 8) Data transfer through : USB
- 9) Power : rechargeable Li-ion battery
- 10) PC interface : supports for windows 7 or high version

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/ software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.



The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **24.ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETER (WITH AIR/PELTIER COOLING SYSTEM)**

**With the following specifications or better with all spares, accessories etc for preinstallation and ready to operate**

1. Element Detection range : Carbon to Uranium
2. Sample compartment size : 150 mm or more (W) & about 100 mm (H)
3. Collimator : four step variable (1 to 10 mm dia) or better
4. Detector : SDD(Silicon Drift Detector),thermoelectrically Cooled
5. Resolution : 135 ev or better
6. Optics : Built in camera for field view
7. Analysis : Both qualitative & quantitative analysis
8. Accuracy : about 0.5%
9. Sample : Solid, liquid & powder
10. Measuring atmosphere : Air, Vacuum & Helium
11. Tube Voltage & wattage : 50 KV or higher and 50 W
12. Detection limit : 1 ppm to 100 % or nearest
13. Software : Measurement/ analysis software for qualitative analysis and calibration curve method, FP method, film FP method and background FP method for quantitative analysis. Automatic energy calibration and FWHM calibration functions with port generations. Also with auto X-ray tube aging software or equivalent software.
14. Filters : Software selectable filters
15. Sample Holders : For examination of solid, liquid and powder
16. Accessories : Standard tool kit, Mylar films and other Accessories
17. Standards : for system calibration as well as other standards for analysis of gold, silver, aluminium, copper, iron and nickel (CRS standards)
18. Computer : I-5 with Multi core processor, 16 GB RAM, 2 TB Hard disc, 27" LED Monitor or better suitable computer
19. Printer : Colour laser jet printer of 1200 dpi resolution and of standard company
20. UPS : Standard ISI certified UPS with required KVA

#### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

## **25. EYE PIECE LESS STEREO MICROSCOPE (with digital camera attachment and measurement software)**

### **With the following specifications or better**

1. Zoom Ratio : 10:1 or better
2. Magnification : 6 X to 60 X and upgradable facility up to 120X
3. Working distance : 30 to 175 mm or better
4. Optical Head : dynoscopic stereo optical head, ergonomic design with eye piece less technology, expanded pupil design using multi-lenticular disc
  - a
5. Field of view : 10 mm to 50 mm or more
6. Iris diaphragm : double iris diaphragm built into focus module to allow greater depth of field or advanced.
7. Focus : co-axial coarse and fine focus knobs
8. Illumination : integrated LED illumination for both Transmitted and incident lights with built in power supply and LED ring illumination with continuously tunable power source.
9. Measurement facility : with measurement reticle
10. **Modular Camera facility:**
  - a) Resolution : 2560 X 1920 pixel or more, 5 M Pixels or more
  - b) Colour depth : 12 bit or better
  - c) Live Image : Full size live image
  - d) Refresh rate : about 15 fps
  - e) File formats : bmp, jpeg, png, avi etc.,
11. **Computer** : I-7 or better Multi core processor, 16 GB RAM, 2TB hard disc, 32" LED Monitor, with colour Laser jet printer with 1200 dpi of reputed brand and UPS
12. Software : Windows 10, Latest software for image transfer, analysis and Measurement software.

### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

## 26. Micro Raman Spectrometer

A fully automated and fully integrated computer controlled confocal Ramanspectrometer with the capabilities of recording Raman spectrum and RamanImaging. The Spectrometer should be inclusive of research grade microscope withobjectives, detector, Lasers, optics and other necessary accessories, along withcomputers & software for data acquisition and data analysis. The machineshould becapable of performing Raman measurements with a spectral resolution (FWHM) better than 0.5  $\text{cm}^{-1}$ .

### Technical Specification for Raman Spectrometer:

- 1) Spectrograph equipped with research grade microscope capable of producing
- 2) Raman Spectra in the range : 100  $\text{cm}^{-1}$  to 3500  $\text{cm}^{-1}$  or better
- 3) Spectral Range : 200 nm – 2200 nm
- 4) Spectral resolution (FWHM) : 0.5  $\text{cm}^{-1}$
- 5) Spatial resolution: 1 micron or better lateral and 2 micron axial
- 6) Scan to Scan repeatability : 0.05 $\text{cm}^{-1}$
- 7) Gratings: 1200gr/mm, and 2400 gr/mm mounted on an encoder feedback  
Controlled grating stage and must be controlled by software. The gratings should be quickly and easily interchangeable without realignment.  
The spectrograph should allow spectral coverage: 100  $\text{cm}^{-1}$  to 3500  $\text{cm}^{-1}$  or better range in one single continuous acquisition without any step and stitches maintaining high spectral resolution.
- 8) Set of Edge Filters – 100 $\text{cm}^{-1}$  for 532nm and 785nm
- 9) The spectrometer should have a filter wheel with neutral density filters or equivalent technology offering different power levels from 0.00005% to 100% and is software controlled.
- 10) **Raman system should be fully automatic with no manual change of Laser/optics including following**
  - a) Auto alignment and optimization of input laser power.
  - b) Auto switching and auto alignment of laser
  - c) Built-in Silicon and Neon light source for auto Validation, auto calibration and intensity correction
  - d) Motorized switching between laser and white light sample images using integral video

### 11) Lasers:

All the lasers should have air cooled/ better cooling system for maximal confocal performance and should be directly coupled/ equivalent/better technology to the spectrometer. Lasers switching should be software controlled.

- a) Air cooled, Diode Laser 532nm, 50Mw or equally good
- b) Air cooled, Diode Laser 785nm, 250mW or equally good

### 12) Microscope:

A high stability research grade microscope. Microscope should be branded research grade with colour camera for viewing. Microscope should be directly coupled to the spectrometer. Microscope to include Reflected Light illumination1 Included Aiming for the Best

### 13) Binocular head with color video camera

- 14) Objectives - 5X, 20X, 100X

Microscope Enclosure for open lab operation.

### 15) Detector

- a) A multichannel Charge coupled device (CCD) detector:
- b) High efficiency thermoelectrically cooled CCD: A fully automated multichannel
- c) Detectors suitable for Raman measurements -
- d) Pixel Size: 1024 x 256
- e) Peltier cooled to: -70°C
- f) Quantum efficiency better than 40 %
- g) Imaging Speed 1000 spectra/sec

**16) Computer and software:**

The state-of-the-art computer control system compatible-with and optimized for the application software to perform the various measurement options automatically.

The desktop computer Dual Core processor 4 GB RAM, 500GB HDD, DVD-RW, Windows 10 (64 bit) Operating system, 24" LCD display.

**Software license for 2 additional offline workstations**

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**27. Scanning Electron Microscope (SEM)with Energy Dispersive X-ray Spectrometer (EDS) with peltier cooling facility of detector**

Requirement of SEM for high resolution, morphological and compositional analysis of materials suitable for biology, metallurgy, conducting, non-conducting, semiconducting, metals, metal oxides, nanocomposites and polymer applications.

Sl. No.	Description	Specifications
1	Source	Tungsten electron source or advanced, Factory pre-centred filaments are must.
2	Resolution in high vacuum	3 nm at 30 kV or better.
3	Resolution in low vacuum	4 nm at 30 kV or better.
4	Probe Current	1pA to 1µA or better.
5	Acceleration voltage	300v - 30 kV, adjustable or better.
6	Magnification	Less than or equal to 10x to 300,000x or higher continuously variable.

7	Specimen stage	<ul style="list-style-type: none"> <li>• Computer controlled comp centric or equivalent 5 axis or more motorized movements stage or equivalent technology</li> <li>• X = 100 mm or better, Y = 100 mm or better, Z = 50 mm or better.</li> <li>• Specimen tilt: 0 to 80° or better, Rotation: 360°.</li> <li>• The position of the stage has to be displayed on the monitor for sample positions.</li> <li>• Stage navigation software must be provided</li> <li>• Joystick for manual control of the stage</li> </ul>
8	Specimen size	Facility to examine 80 mm diameter sample or more
9	Detectors	<ul style="list-style-type: none"> <li>• Imaging with Secondary electron (SE) and Back scattered electron (BSE) with required resolution mentioned above.</li> <li>• IR CCD/CCD camera for chamber view.</li> </ul>
10	Non conductive samples	Should have low vacuum facility for imaging non conductive samples.
11	Vacuum mode	Menu selectable, switching between high and low vacuum without involving any mechanical / electronic alignments. The column vacuum should be separated from chamber vacuum.
12	Pressure Range in low vacuum mode	10-300 Pa or better.
13	Image display mode	Best monitor, live images of different detector to be viewed simultaneously, full image live display, split live image, built in digital zoom, built in magnification, Pseudo colour, Histogram display, Digital images should have resolution better than 2000 X 2000 pixels and should be saved as BMP, TIFF or JPEG format.
14	Computer	Compatible computer with latest configuration and Windows operating system.
15	Software	<ul style="list-style-type: none"> <li>• Should have the capability for performing 3D data analysis.</li> <li>• Software should be capable to do measurement of data.</li> <li>• Auto contrast, auto focus, auto stigma, auto gun alignment and biasing, maintenance videos, click centre zoom, frame step move, saving position coordinate and seamless auto bias, astigmatism etc</li> </ul>
16	Other accessories requirements	<ul style="list-style-type: none"> <li>• Safety measures against vacuum and power.</li> <li>• Suitable anti-vibration platform, tool kit, spares filaments for three years (approx. 25 hrs per week).</li> <li>• Carbon tape rolls two side sticking: 4 nos</li> <li>• Silver paste: 50 gms</li> <li>• Rp oil 5 lits</li> <li>• Rp oil mist filters 3 nos</li> </ul>

		<ul style="list-style-type: none"> <li>• Multipurpose sample holders for holding wide variety of samples</li> <li>• Specimen preparation kit</li> <li>• Au Sputter cotter with display of time of coating , vacuum indication etc</li> <li>• Calibration of magnification, dimension and resolution.</li> <li>• sample mounting stubs including 45/90 degree SEM mount -4 nos.).</li> </ul>
17	Sputter Coater	Sputter coater with gold target, oil free vacuum or equivalent technology .
18	Energy dispersive X-ray detector (EDS)	<ul style="list-style-type: none"> <li>• EDS should have a minimum area of 20 mm<sup>2</sup>. It should be peltier cooling system .</li> <li>• Elemental detection from Boron to Uranium.</li> <li>• Resolution at least 129 eV.</li> <li>• Should be capable of qualitative, quantitative and mapping analysis.</li> <li>• Software: Automatic peak labelling, qualitative and quantitative analysis, elemental mapping, selective area analysis and multipoint analysis.</li> <li>• Suitable elemental standard.</li> <li>• Standard and standard less technique should be possible.</li> <li>• Customizable report generation.</li> </ul>
19	User manuals	User manuals: Soft and hard copies.
20	List of users	Please provide a list of users.
21	Power Requirements	As per Indian Electrical Standards.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/ software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**28A. Computerized Speech lab with best quality noise reduction software**

1. Analog Input: 2 XLR /Phone -Type & 2 phono Channels
2. Coupling: AC or DC (Channels 3 & 4 switchable)
3. Sampling Rate: 8000 to 200,000 Hz
4. Dynamic Range: > 90 dB
5. Frequency Response: Channel 1 & 2 : 20 to 88 KHz  
Channel 3&4 : AC Mode : 18 to 88 KHz  
Channel 3&4 : DC Mode : low pass roll of at 88 KHz
6. Digital Interface : AES /EBU or SPDIF format ; transformer coupled
7. Software Interface : ASIO & MME
8. Computer Interface : Half size PCI card
9. Analog output : 4 channels : line & speaker , head phone
10. Systems should be supplied with Main program, other required software&Hardware
11. Systems must be supplied with required accessories to take care of Forensic Application.
12. Speech Analyser should be supplied with suitable Latest Computer work station with 8 GB RAM,1TB Hard disk, suitable graphic card,Sennheiser HD 215 head phones and other accessories.
13. HP Laser jet pro cp1025 printer
14. System must be supplied with Gold wave software complete & Format Factory software
15. System should supply with Main program having software features such as Speech Analysis software with comprehensive speech recording, analysis, feedback and measurement program.
16. Software should be useful for voice measurements and forensic work.
17. Software must be delivered with many pre-written macros and users should have facility to create new macros.Software should include a macro that loads a speech file, filters the signal to sound like a phone connection which illustrates the spectrum changes typical of a phone connection.
18. Should have the facility to adjust every function to suit even advanced research requirements. For example, the spectrographic analysis should have adjustments for as many possible filter bandwidths, four window weightings, full scaling, color, pre-emphasis, and dynamic range.
19. Speech Analysis Software should have following Features:
  - Capture and play with any sampling rate
  - Up to eight channels of data,
  - Read and write to wav file format and native file format,
  - Complete IPA symbols,
  - Editing viz. cutting, pasting, digital filtering, and appending,
  - Complete on-line Help and tutorial,
  - Analysis including multiple pitch extraction methods, Pitch -synchronous LPC, Glottal event markers, FFT, Formant history, Spectrogram, Energy, etc.
  - Logging of cursor values,
  - Macros to repeat operational steps,
  - Learn mode to memorize steps,
  - Tags, storable with signal,
  - Complete suite of features for each analysis and editing command,
  - All 32-bit, MDI-compliant for fast operation.

## Signal Enhancement and noise reduction software specifications

- All varieties of filters for noise reduction such as broad band noise filter,
- tone suppressor filter
- click suppressor filter
- dynamic range control
- reverb suppressor
- restoration of clipped wave fragments and reconstruction of lost signal information
- reference noise canceller and other noise suppression filters
- high definition spectrum analyzer
- automatic background noise scan
- other advanced features for noise reduction.

### General Conditions:

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### 28B. Automatic speaker identification software

with more than 95% accuracy which should have capability to compare not only clear voice samples but also slightly distorted and noised samples with as minimum as possible sample input along with suitable hardware which includes

1. The system should be of i-vector technology or better.
2. Language independent
3. Text independent
4. Channel independent
5. Gender Identification
6. Automatic Speaker Segmentation facility
7. Able to export the complete results of the calculations into a file to generate a forensic report.
8. The minimum length of the audio file to perform identification task is seven seconds or better
9. The system should work with audio files with a signal to noise ratio (SNR) of at least 10dB or better
10. The system has to remove noises and non-voice events



11. Should have facility to add new channels and languages to characterize audio samples
12. Should have facility to create bio-metric voice models
13. Should have facility to upload several audio files pertaining to a single case at a time
14. Should have facility to create different bio-metric voice models automatically from different audio files.
15. Preferable facility to identify disguised/partially disguised voice samples.
16. Facility to create different reference model groups.

**Hardware and General software specifications**

- Suitable advanced desktop computer Pentium i7 or better, 8GB RAM, 2 TB hard disk, 2GB/suitable Graphic card, suitable audio card for the above software, 24 bit A/D converter with about dynamic range, 16 channel input and output, compatible PCI card and drivers, micro phone, connection cables, 22 inch monitor with licensed Windows 10, MS Office and reputed antivirus with three years license
- Good quality BOSCH or better make external lab quality speakers
- Sennheiser HD 215 head phones

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**29. Stereo Zoom Microscope With Digital Camera attachment with measurement Software**

<b>SPECIFICATIONS</b>
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**MICROSCOPE SPECIFICATIONS:**

- I. **Zoom ratio** : at least 8:1 apochromatic
- II. **Viewing angle**: at least 35° degrees.
- III. **Optical System** : Apochromatic corrected with Greenough design
- IV. **Magnification range**: 6.3X to 50X 1x lens/10 x EP
- V. **Objective** : 1X or better
- VI. **Maximum resolution** : 450-500 lp/mm
- VII. **Working distance** : At least 90 mm or higher
- VIII. **Field of view** : At least 35 mm or more
- IX. **Adjustable Zoom Limits**: Click stops 5 or more.
- X. **Ergonomic Eyepieces**: 10x/23 with dioptic adjustment (Focusable front lens) for both eyepieces and should be suitable to insert graticules.
- XI. **Illumination**: Built in LED illumination for both transmitted and incident light.
- XII. Microscope, all lenses, Optical System, accessories and digital camera should be from the same Manufacturer.
- XIII. **Optional eyepiece**: 16x/16 with dioptic adjustment(Focusable front lens) for both eyepieces and should be suitable to insert graticules.

**CAMERA SPECIFICATIONS:**

- XIV. **Resolution** : 2560(H) X 1920(V) Pixel or more
- XV. **Type** :Detachable Digital Camera (at least 5 megapixel)
- XVI. **Sensor** :CMOS high definition digital color camera for image and still video capture with software
- XVII. **Pixel Size** : At least 2.2  $\mu\text{m}$  x 2.2  $\mu\text{m}$  , "Digitization: 3 x 8 bit/pixel Integration time: 10  $\mu\text{s}$  up to 2 s
- XVIII. **Exposure time** : 0.1 milli sec to 2.0 sec or better
- XIX. **Adapter** : C-mount
- XX. **Software**: Image acquisition, transferring and measurement from the same manufacturer along with the microscope.
- XXI. **Interfaces**:
  - 1x SD card slot (SD and SDHC cards)
  - 1x mini USB 2.0 (connection cable included)
  - 1x Ethernet RJ45 100 Mbit
  - 1x DVI- D (HDMI), 1x IR sensor.

**Computer Specifications**:I-7 or better multicore processor, 8GB ram or more, 1TB hard disc, 32" LED monitor.

**Software**: Windows-10 latest software for image transfer analysis and measurement.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **30. Micro finnpipettes :**

Micro finnpipettes with adjustable volumes

- 0.2µl to 2 µl
- 2µl to 20µl
- 20µl to 200 µl
- 200µl to 1000 µl and
- 1 ml to 5 ml-

### **31. RTPCR :**

1. An integrated system for both Real-Time PCR & post-PCR (end-Point) analysis using in built Peltier based PCR Machine with 96 well block format.
2. The system should be validated for forensic application as per international forensic guidelines. The validation certificate for the same should be attached.
3. The system should stand alone system i.e. it should have interactive Touch Screen feature to avoid dependency on computer for operation.
4. Maximum ramp of the system rate should be 6°C/sec or more.
5. The instrument should have flexibility to run different samples with varying annealing temperature in same run.
6. The instrument should have flexibility to either used individual tube, 8tube strips or 96 well plate.
7. The instrument should have cloud and wi-fi communication port.
8. The system should have temperature range of 4 °C-99 °C.
9. The systems should have wizard to automatically calculate standards and dilutions, with the ability to set up multiple standard curves.
10. The instrument should use bright white LED as excitation source.
11. The instrument should be capable of storing 10Gb or more data on board.
12. The instrument should be capable of performing multiplexing up to six targets in a single tube. The instrument should be open for calibration of new dyes without requiring the addition of new filter sets.
13. The instrument software should have flexibility of the virtual Standard curve feature which allows the user to input standard curve values (slope and y-intercept), therefore eliminating the need for an in-plate standard curve dilution series
14. The instrument software should have specific quality flags and analysis summary that allow users to quickly assess the DNA sample quality and identify samples that need further review.
15. Dilution calculation and reaction setup tools should be available to speed up STR analysis workflow.

16. The software should provide degradation Index, M: F Ratio and IPCCT flags to guide downstream selection as well workflow selection to go NGS or CE route.
17. The vendor should provide atleast 800rxn of latest forensic validated quantitation kits based on TaqMan chemistry with all necessary accessories and consumables.
18. The instrument should come along with branded laptop/desktop for data analysis.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **32. Bone/Tissue Cryogenic pulverizer**

- o The system should offer processing of a wide variety of forensic samples such as hard tissues, teeth and bones disruption to release high-quality DNA and protein for subsequent purification and analysis.
  - o Should offer fast simultaneous disruption of up to 48 or 192 samples in minutes through high-speed shaking with tungsten heads which heat and grind samples.
  - o Should have provision of effective disruption and homogenization using liquid nitrogen or in frozen condition.
  - o Should have provision for complete isolation & sealing of samples while processing so that there is no chance of cross contamination.
  - o The instrument should include adapters:
    - a) 10 sets of Steel (2 x 10 ml) adapters with compatible Tungsten Carbide Beads.
    - b) One Adapter set for disruption of up to 48 samples in 2 ml micro centrifuge tubes along with compatible Stainless Steel Beads.
    - c) Adapters and grinding beads for higher throughput should be included as additional accessories.
      - o Grinding jar/ adapters can be used to process large samples and should be automatable.
      - o System should have the Digital settings and control of disruption time (10 seconds - 99 minutes) and vibration frequency (3-30 Hz).

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### 33. FLOURIMETER:

1. The instrument should quantify the DNA in low volumes (1-2 µl).
2. It should give quick and accurate results with storage capacity of 500 or more readings.
3. Wavelength range should be between 200 to 1000 nm.
4. Instrument should have touch screen display.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training :** Hands on training should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### 34. Shaking water bath - Big :

Shaking water bath of 30 liters with ambient temperature range of +5°C to 99°C variability along with digital PID controller supported by universal racks of 1 ml to 50 ml and over temperature, current protection capability.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training :** Hands on training should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **35. Shaking incubator:**

Shaking incubator should have digital PID control. The ambient temperature range of the instrument is about +5°C to 80°C. The range of rpm should be between 0 to 300 rpm and should have electronically controlled shaking mechanism. The instrument should accommodate 1ml to 50ml tubes along with universal racks for various tubes with suitable stabilizer.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **36. Mini Gel Submarine Gel System:**

Mini Gel system ( small 12.5 x6 cm)with gel tank, direct connect power supply, standard gel casting set and long gel casting set, 120v, micro casting set for four gels, including casting stands, four 6 x 6 cm gel trays and 4 combs.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **37. UV Gel Doc with printer :**

UV-Gel Documentation instrument to visualize and check quality of isolated DNA in Agarose / Polyacrylamide gel stained with Ethidium bromide dye. Supported by highly configured computer system with image capturing CCD camera facility with 6 mega pixel or above and image analysis soft tools along with proprietary fixed manual lens with F/0.70 aperture or above. The software should include features for auto exposure and 3D dynamic scan. The system should have analysis tools for molecular weight calculation, band distance and merge marker etc.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **38 .PCR work station:**

For preparing PCR reaction mix under sterilized conditions with proper lighting. Built in 254 nm UV light programmability option for decontamination and auto UV light switch off function will be preferable. The system should be antimicrobial coated stainless steel having large work area. The size of the cabinet should be 4 ft.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **39 .Magnetic stirrer with hot plate:**

Two litres capacity with 50 to 1500 rpm, temperature up to 500°C with digital timer, PID control stainless steel housing (7 X 7 inches) with support stand.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **40. Cold room (4°C):**

The chamber with 10 x 8 x 9 ft. dimensions, with 220 V with adjustable 5 racks with maintaining 4°C continuously, to preserve the biological samples for longer periods.

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training** : Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **41. Rapid DNA Analyzer Portable Model:**

1. The system should generate an STR-based DNA profile from a raw sample in a fully automated manner in less than 100 minutes.
2. The system should be one or more up to 5 capillary system.
3. Must use NDIS-approved STR chemistry which includes expanded CODIS Core Loci including Y indel
4. Should be supplied with cartridge and accessories capable to generate 450 DNA profiles.



5. The system should have flexibility to generate profile by using either cartridge or chips.
6. The system should be able to work with Forensic DNA Collection devices which are commonly available in the market.
7. System should be able to work both in the laboratory as well as in the field conditions.
8. User access control should only be through password or biometric identification systems like fingerprint/facial recognition etc.
9. The initialization period should not be more than 3 minutes after connecting power.
10. The system should be rugged, robust, vibration free and shock resistant and can easily be transportable in a vehicle.
11. The manufacturer should provide two years comprehensive warranty after the satisfactory installation of the instrument.
12. Delivery, commissioning and installation of instrument should be at APFSL, Tech Towers, Mangalagiri, Guntur District.
13. The Vendor should quote the cost analysis for 500 samples including all consumables, accessories and spares with validity for two years.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training :** Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company brochure/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **42. GAS CHROMATOGRAPHY SYSTEM WITH FID, NPD AND HEAD SPACE SAMPLER**

##### **G C Main Frame:**

- Gas Chromatography system for the analysis of Alcohols, Pesticides, Narcotic drugs, forensic toxicology samples etc.
- Gas chromatograph with advanced / Electronic flow control for simultaneous Pressure, Temperature and Flow programming.
- The system must be fully automated with programmable pneumatic control (digital control) for injector, detector and purge gas.
- Gas Chromatography system with EPC/AFC/PPC control for carrier/detector zone gases.
- EPC/ PPC/AFC should provide optimum performance with all types of columns and detectors.
- Programmable leak test facility must be available in the instrument
- Gas Chromatograph with **Two Split-Split less Capillary injectors**.
- Graphical user interface with large LCD display

- Digital Pneumatic Control for setting column flow with pressure, flow and linear velocity.
- Split ratio programming with battery protected memory
- Self-diagnostic function
- GLP/GMP support
- Fast data transfer, acquisition speed 250Hz (4ms) - able to "catch" very sharp peaks

#### **Column Oven :**

- Programmable Oven temperature with ramping with Fast oven cooling speed 450 deg to 50 deg within 3 to 4 minutes
- Provision to install four Detectors simultaneously and should be individually temperature controlled
- Temperature range + 5°C to 450°C
- Total Oven Volume : 12.9 L or more
- Temperature accuracy : +/- 1%
- Temperature Deviation : < 2 °C Max
- Temperature programming steps : up to 20
- Total Time for all steps:9999.99minutes max
- System should have the capability to accommodate : Mini Bore to Micro bore capillary Columns i.e. from 0.1 mm i.d to 0.53mm i.d columns.

#### **Inlet configuration :**

- Operating Temperature Range : +5°C to 450°C in 1°C increments
- Injector should be controlled by EPC/PPC/AFC.
- Removable glass liner for trapping non-volatile residues.
- Must be suitable for all types of capillary columns 10 µm to 530 µm.
- Operating Temperature range 50 °C to 450 °C in 1 °C increments
- **Split split less Capillary Injector - 2 Nos.**
- Operating Temperature range 50 °C to 450 °C in 1 °C increments
- PPC pneumatics include automatic control of split vent by split flow or split ratio
- Maximum split ratio should be 6000:1 or more
- Easy adjustment of Split vent
- Septum Purge facility

#### **Detectors :**

All Detectors should be mounted permanently for simultaneous operation.

#### **Flame Ionization Detector (FID) :**

- Operating Temperature Range: upto 450°C or better
- Detection Limit : 1.5 pgC/s (dodecane) or better
- Linear Dynamic Range : >10<sup>7</sup>
- Automatic flame ignition, flame out detection and re-ignition features
- Electronic pressure/flow control
- Sensitivity: > 0.03 coulombs/gC or better
- Data acquisition rate: up to 300 Hz or better

#### **Nitrogen Phosphorus Detector (NPD) :**

- Operating temperature: 400 °C or better

- Minimum detectable quantity: < 0.4 pg N/s, <0.2 pg P/s with azo benzene/malathion/octadecane mixture or Equivalent
- Selectivity: 25,000:1 g (N/g C), 75,000:1g (P/g C) with azo benzene/malathion/octadecane mixture or Equivalent
- Linear Dynamic range: > 10<sup>4</sup>
- Data acquisition rate: up to 300 Hz or better

#### **Auto Injector :**

- Not less than 12 sample vials or more with injection tower and stand alone turret.
- It should be capable of injecting both the injector ports without any manual/physical adjustment.
- The injector should support standard vial size - 2ml
- Waste and wash vial size - 4 ml
- Sampling volume - Capable to inject from 0.1 µl to 50 µl.

#### **Head Space Sampler:**

- Head space sampler is required for injecting Ethanol present in Blood and volatile compounds present in narcotic drugs, forensic samples etc.
- Automated Head-Space Sampler with Intuitive Touch Screen graphical user interface for easy control of the system with minimum 10 vials or more capacity.
- Sampling must be based on pressure balanced time controlled technology or equivalent technology.
- Sample Injection Method: Sulfinert Sample Loop 1 ml.
- Variable Sample Volume Injection facility without any hardware change.
- Vial warming temperature: Room temperature+10 to 200°C in 1°C units with accuracy of ±0.1°C
- Headspace sampler must have automatic leak check, programmable power saving and gas saving facility.

#### **Data Communication:**

- CFR 21 compliant, Single point control of all GC and its modules, customizable reports, GLP features should also have software for data acquisition, control, chromatographic data evaluation, reporting sequencing. IQ, OQ, to be provided by vendor after successful installation.

#### **Complete System Control and Data Acquisition Software**

- Software Compatible with Windows 7 or better
- Software should have has Security ( log-in , User and group )
- Audit trail , System check , Software integrity &
- System Suitability test as standard functions
- System Check: Automatically checks all the system parameters including electronics
- Flexible Report format., i.e, for Method, chromatogram, Peak table , Quantization result  
Calibration curve, Status Log , texts, graphics.
- Ease of Operation Single Point user friendly access through Icons.
- Real time Display of all Chromatograms with Data exchange facilities
- Software has Calibration Facility with Bracketing without Overlap and Bracketing by Grand average

- Built-in weekly Scheduler for automation the system for one complete week in addition daily automation.

1.

2.

#### **Installation Accessories :**

- Suitable Branded - Pentium i-7 Computer, 19" LED monitor, 500 GB HDD, 6 GB RAM, Windows 7 or better with Graphical User Interface, Colour Printer
- 6 KVA Online UPS with 1 hour Battery backup for GC system
- Filled Hydrogen, Nitrogen, Zero Air Cylinders
- Double Stage Gas Regulators for all the above Cylinders
- Gas Panel for GC should include Molecular sieve, Moisture & Oxygen traps with necessary tubing's, Nuts & Ferrules.
- Capillary Columns :
  - DB-ALC 1 or equivalent column for analysis of alcohols in blood- 2 Nos.
  - Suitable column for analysis of pesticides viz., Organophosphate and Organochlorides, carbamate, etc., in forensic toxicology samples.-2 Nos.

**The equipment should be provided with all necessary accessories and spare parts for a fully functional unit. List of consumables and spare parts along with operation and service manuals should be provided along with the instrument.**

#### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of Gas Chromatograph in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

### **43. HIGH PERFORMANCE LIQUID CHROMATOGRAPHY SYSTEM**

## **Specifications:**

### **1. Solvent Delivery System**

- HPLC should have a Quaternary Gradient high precision pump.
- It should have a flow rate resolution of 3nl/min or better
- The flow rate should be set between 0.001 to 10 ml/min from micro to semi-preparative flow rates.
- Flow rate accuracy should be  $\pm 1\%$  or better
- Flow rate precision should be less than 0.1% RSD.
- Pressure setting range should be 1-8500 PSI or more and should be compatible to use 2.5 micron particle size columns.
- It should employ active check valves that allow stable delivery of even non-polar organic solvents such as hexane.
- Reservoir tray with Solvent Bottles (5No's) & Automatic rinsing kit must be supplied.
- System should work in the pH range 2 to 12.
- It must have a leak sensor as safety feature.
- It should have functions for maintenance and validation which are accessible by a dedicated operation button.

### **2. On-Line Degassing Unit 1 No**

- Vacuum degassing (5 channel): The built in online degasser with atleast one channel per solvent and one channel for sample manager wash solvents should be quoted. The degassing has a provision for effectively remove /reduce ghost peaks.
- Maximum operating flow rate upto 20ml/min per flow line.
- It must have a leak sensor as a safety feature.
- Self-cleaning capability that extends vacuum pump life by drawing in air when the pump is running.

### **3. Photo-DiodeArrayDetector: 1 No**

- Wavelength range 190 nm - 790 nm.
- Number of Diode Elements : 1024 or better
- High Resolution & High Sensitivity Mode(1.2nm & 8nm)
- Wavelength accuracy  $\pm 1$  nm.
- Wavelength Precision 0.1nm.
- Drift Less than  $5 \times 10^{-4}$  AU/Hour.
- Noise Level  $\pm 0.6 \times 10^{-5}$  AU.
- Linearity 2.0AU.
- PDA data collection in full range and simultaneously monitor eight wavelengths or more (online-while acquisition is on)
- Peak Purity analysis through Ratio-chromatogram.
- Spectrum view, Wavelength scanning.
- Temperature controlled flow cell.
- A leak sensor and lamp replacement protection system (power to lamp automatically turned OFF) should be provided.
- Low Pressure Hg Lamp for wavelength accuracy check or HO membrane.

### **4. Auto-Sampler with cooler**

- The auto sampler tray should have capacity to hold minimum of 100 Nos. or more of 1.5 ml vials.

- Sample injection volume should be variable between 0.1 µL to 100 µL.
- Injection system should be variable injection volume type with zero sample loss during injection.
- Very fast injection time of 10sec or better/sample for 10µL injection.
- Adequate number of samples to be processed automatically, random access.
- Sample cooler with de-humidifying function under temperature control from 4 to 45°C.
- Flow line rinse capability both before and after sampling should be possible
- Needle aspiration speed should be variable from 0.1 to 15µL /sec
- Rinse aspiration rate should be variable from 1 to 35ul/sec
- Carry over must be within 0.005 % (Naphthalene, Chlorhexidine and Caffeine) or better
- Injection volume accuracy within 1%
- The injection precision should be less than 0.2% of RSD value
- It should have a leak sensor, automatic rack and vial recognition as safety feature.
- 1.5 mL Sample Vials along with cap & Septa . 500 No's to be included with crimper.

#### **5. Data Management System :**

- Operation of the system should be easy and intuitive via a state-of-the-art suitable Branded - Pentium i-5 Computer, 19" LED monitor, 500 GB HDD, 6 GB RAM, Windows 7 or better with Graphical User Interface, HP DeskJet Printer.
- It should cover full digital instrument control with self-diagnosis functionality.
- Method file capability should have all LC analysis parameters, data processing parameters, report format, etc.
- The reporting format should be flexible and easy to use in any desired format
- Software must have its own log files for complete audit trails
- System suitability, System security as well as System check functions must be provided which comply with Good Laboratory Practice (GLP) and Regulatory Conformity
- Software should have a Data Base support either with SQL or Oracle for data security & compliance.
- Security features of software must comply fully with FDA, 21 CFR Part 11 guidelines.
- Reports can be output in PDF format
- Single point control of HPLC and its modules from PC .
- IQ, OQ to be provided by the vendor after successful installation.

#### **Installation Accessories**

- C-18 Column - (250 mm x 4.6 mm i.d x 5 µm) - 2 No.
- C-8 Column - ( 250 mm x 4.6 mm i.d x 5 µm ) - 1 No.
- Branded latest Specifications PC & HP DeskJet Printer
- 5 KVA UPS with 3Hrs. Batter back-up --- 1 No
- Sample & Solvent filtration assembly with Aqueous & Organic Membranes (100 no. each ) along with Vacuum Pump for filtration & degassing of mobile phase & sample.

#### **General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company brochure/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of HPLC in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **44. FT-IR SPECTROPHOTOMETER**

##### **Specifications:**

- Highest Signal to noise ratio of 30,000:1 peak to peak or better in its class of general use instrument
- The FTIR should have a measuring wave number range of 7300  $\text{cm}^{-1}$  to 350  $\text{cm}^{-1}$  with a best spectral resolution of 0.5  $\text{cm}^{-1}$  selectable in steps of 0.5, 1, 2, 4, 8 and 16  $\text{cm}^{-1}$ .
- Automatic moisture protection for the beam splitter
- Sample compartment should have non Hygroscopic window material, preferably KRS-5
- The moving mirror mechanism should be non-contact, frictionless Flexible Joint Support mechanism with electro-magnetic drive to ensure smooth movement of moving mirror.
- Purging with Dry Nitrogen should not be an essential criterion.
- Sealed interferometer with reusable Silica gel desiccant.
- The beam splitter should be Germanium coated KBr with anti- humidity coating. Highly stable interferometer with Dynamic Alignment.
- Mechanism so as to get the spectrum under stabilized and optimum conditions. Also ensures short warming up time
- Sequential display of diagnostic results are monitored continuously by status monitor function so as to ensure and optimized measuring conditions
- Accessories are automatically identified and optimum measurement conditions are to be set
- Small installation space without compromising the sensitivity.
- For general Forensic Science application in built spectral library with approximately 10,000 spectra must be provided.
- Powerful software, completely compliant to GLP with following features.
- Real time Display of spectra.
- Compact measurement menus.

- Simple measurement mode.
- Atmospheric correction mode.
- Continuous measurement mode.
- Standard Data processing functions like Kramers- Kronig, ATR. Correction, Purity / Compare function, Kubelka - MunkConversion, Search Function, Quantitation, Macro programming etc.
- Quantitation software to be provided with single / multi-point calibration, Multi-linear Regression (Multi-Component analysis) capability.
- Software should have built-in Spectral search function with different algorithms. There should be a provision to create user defined database.
- IQ, OQ to be provided by the vendor after successful installation.

**Sampling Accessories to be supplied with instrument:**

- NaCl demountable cell for Mull sample or for Nujol base sample.
- KBr Hydraulic Press (pellet maker), Agate Mortar, Pestle, Press Die, Pellet Holder, Liquid cell, KBr Powder set for Pellet Preparation.
- ATR accessory with single beam diamond crystal

Should be supplied with Branded - Pentium i-7 Computer, 19" LED monitor, 500 GB HDD, 6 GB RAM, Windows 7 or better with Graphical User Interface, Colour Printer, 1KVA UPS with one hour backup.

**General Conditions:**

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument / software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should have at least ten installations of FT-IR in reputed national level scientific research organizations in India and well reputed pharmaceutical/chemical companies in Andhra Pradesh and Telangana. **The performance certificate from at least five users should be submitted along with quotation. Quotations without these documents will be disqualified.**

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**45. Digital pH meter**

**Technical Specifications:**



1. Should have Working range from 0 to 14.
2. Should have resolution 0.1/0.01 pH.
3. Should have Temperature compensation zero to 100 degree C with ATC
4. Should have Automatic calibration facility.
5. Should have data storage facility and record maximum and minimum value.
6. Should have 3 stage calibration.
7. Should have digital display with 0.001 pH unit readability
8. Should supply Tri-combination pH/ATC electrode
9. Should supply Electrode + Standard buffer solution (pH 4.0, 7.0, 9.2) 1 x 50ml for each bottle  
+
- standard electrode holder +Ac /DC Adaptor.
10. Should be provided with an electrode holder/arm with smooth movement.

**46. ADVANCED STEREO MICROSCOPE:**

<b>SPECIFICATIONS</b>	
<b>MICROSCOPE SPECIFICATIONS:</b>	
I.	<b>Zoom ratio</b> : at least 8:1 apochromatic
II.	<b>Viewing angle</b> : at least 35° degrees.
III.	<b>Optical System</b> : Apochromatic corrected with Greenough design
IV.	<b>Magnification range</b> : 6.3X to 50X 1x lens/10 x EP
V.	<b>Objective</b> : 1X or better
VI.	<b>Maximum resolution</b> : 450-500 lp/mm
VII.	<b>Working distance</b> : At least 90 mm or higher
VIII.	<b>Field of view</b> : At least 35 mm or more
IX.	<b>Adjustable Zoom Limits</b> : Click stops 5 or more.
X.	<b>Ergonomic Eyepieces</b> : 10x/23 with dioptic adjustment (Focusable front lens) for both eyepieces and should be suitable to insert graticules.
XI.	<b>Illumination</b> : Built in LED illumination for both transmitted and incident light.
XII.	Microscope, all lenses, Optical System, accessories and digital camera should be from the same Manufacturer.
XIII.	<b>Optional eyepiece</b> : 16x/16 with dioptic adjustment(Focusable front lens) for both eyepieces and should be suitable to insert graticules.
<b>CAMERA SPECIFICATIONS:</b>	
XIV.	<b>Resolution</b> : 2560(H) X 1920(V) Pixel or more
XV.	<b>Type</b> :Detachable Digital Camera (at least 5 megapixel)
XVI.	<b>Sensor</b> :CMOS high definition digital color camera for image and still video capture with software
XVII.	<b>Pixel Size</b> : At least 2.2 µm x 2.2 µm , "Digitization: 3 x 8 bit/pixel Integration time: 10 µs up to 2 s
XVIII.	<b>Exposure time</b> : 0.1 milli sec to 2.0 sec or better
XIX.	<b>Adapter</b> : C-mount
XX.	<b>Software</b> : Image acquisition, transferring and measurement from the same manufacturer along with the microscope.

**XXI. Interfaces:**

- 1x SD card slot (SD and SDHC cards)
- 1x mini USB 2.0 (connection cable included)
- 1x Ethernet RJ45 100 Mbit
- 1x DVI- D (HDMI), 1x IR sensor.

**Computer Specifications:**I-7 or better multicore processor, 8GB ram or more, 1TB hard disc, 32" LED monitor.

**Software:** Windows-10 latest software for image transfer analysis and measurement.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training :** Hands on training ( in two spells of one week each) should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**47. High Temperature Muffle furnace with digital display**

1. Inside Chamber Size : 6" x 6" x 12", approx with swing aside door at the front
2. Furnace construction :
  - (i) Double shell steel case with cooling fan to keep outside case cool
  - (ii) High purity alumina fiber insulation for max.energy saving
3. Heating element : The chamber section should be heated by six to eight Super Kanthal Molybdenum disilicide heating elements (Super 1800 grade MoSi<sub>2</sub>) suspended in a chamber made of high temperature refractory fiber lined with a combination of ceramic fibre blankets.
4. Standard Working Temperature: 1300° C (continuous)
5. Maximum Working Temperature: 1400° C (< 3 hours)
6. Temperature control: The temperature controller should be a PID automatic control power control and programmable with necessary safety features.
7. Heating Rate: The furnace should be of fast heating type with the maximum attainable temperature should reach as a ramp function in less than one hour.
8. Temperature Accuracy: +/- 1.0 °C
9. Thermocouple: Pt. Pt. Rh.Thyristor controller will be provided along with the furnace to measure the temperature with connecting holder complete set.
10. Cooling Fan/ Air Circulation: Attached with Furnace, should provide inside the control unit.

**General Conditions:**

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training**: Hands on trained should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **48. . SPECIFICATIONS OF VIBRATORY SIEVE SHAKER**

1. Measuring range Dry Sieving : 20  $\mu\text{m}$  to 212  $\mu\text{m}$  or better
2. Maximum number of sieves : 10  
per sieve stack
3. Sieve Diameter : 200mm with 50 mm height
4. for sieving with less than 3 sieves it should work without compensation weight
5. frequency controlled amplitude setting
6. Automatic amplitude control
7. easy to fix sieve stack facility
8. CE mark high safety standard
9. Sieving Motion: Vertical
10. Tension belts with knurled knobs / Similar facility
11. Facility of convertible to Vibratory Micro Mill
12. The following accessories should be supplied with vibratory sieve shaker.
  - a) clamping lid Plexiglas for test sieves 200 mm diameter
  - b) interposed sieve pan made of stainless steel 200 mm diameter
  - c) sieve pan made of stainless steel 200 mm dia., 50 mm height
13. Test Sieves: Frame and mesh wire made of stainless steel 200 mm dia and 50 mm height  
ISO 3310-1 - mesh width mm/ $\mu\text{m}$ : 212  $\mu\text{m}$ , 180  $\mu\text{m}$ , 150  $\mu\text{m}$ , 125  $\mu\text{m}$ , 90  $\mu\text{m}$ , 75  $\mu\text{m}$ , 63  $\mu\text{m}$ , 53  $\mu\text{m}$ , 45  $\mu\text{m}$ , 36  $\mu\text{m}$
14. Sieving aids: 5mm to 20mm suitable rubber balls

#### **General Conditions:**

**Warranty** : 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training**: Hands on trained should be given to the staff members during installation at the customer site.

**Service support**: The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note**: Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

#### **49. High resolution Mass Spectrometer with Ultra Pressure Liquid Chromatograph**

A High Resolution bench top LC-MS/MS equipment with Q-TOF/Orbitrap configuration that can perform qualitative and quantitative analysis of small molecules, synthetic organic compounds, compounds of forensic interest and characterization of large molecules such as proteins, peptides, nucleotides with respect to toxicology and forensic applications.

##### **I. Mass Spectrometer**

1. Analyzer: The geometry of the mass spectrometer should consist of quadrupole, collision cell followed by Time-of flight (TOF)/Orbitrap to perform high resolution MS and MS/MS experiments. It should be capable of connecting UHPLC using < 2  $\mu$ m particle size columns for qualitative and quantitative analysis. It must be capable of performing MS and MS/MS experiments automatically in a single analysis.
2. Ion sources: The standard ESI and APCI sources.
3. Syringe pump: A suitable syringe pump to introduce samples directly into the mass spectrometer
4. Mass Range: For Q-TOF m/z 20- 10,000 or better. For Orbitrap m/z 50-6,000 or better.
5. Mass Resolution: TOF must be 30,000 (FWHM) or more
6. Mass accuracy: Should be <1 ppm in MS mode, < 2 ppm in MS/MS mode
7. Sensitivity: The instrument must be sensitive enough for detecting sub ppb/femto mole levels of compounds
8. Linear dynamic Range: At least 4 orders of linear dynamic range or better
9. Automatic negative/positive polarity switching.
10. Vacuum System: A high efficiency vacuum system with suitable turbo molecular pumps with back up of rotary pump(s).
11. Nitrogen generator should be supplied with system to take care of nitrogen gas requirements. Collision gas cylinder and pressure regulator, if needed, should be supplied.
12. A suitable probe for direct analysis of solids using API technique.

##### **II. UPLC**

13. UPLC system capable to run with < 2  $\mu$ m particle size columns
14. Operating pressure of 15,000 psi or more
15. Quaternary/Binary pumps solvent manager
16. Flow rate: 0.01 – 2.00mL/min
17. Flow precision: 0.075 % RSD or better, Flow accuracy: +/- 1.0% or better
18. Injection volume: 0.1  $\mu$ L to 10  $\mu$ L or higher
19. Photodiode array (PDA) detector capable of scanning from 190-700 nm range, flow cell volume should be 3  $\mu$ L or less.
20. Auto sampler capable of holding minimum 98 samples (2 ml vials) or better. Temperature control 4-40°C programmable.
21. UPLC suitable C<sub>18</sub> and C<sub>8</sub> columns two numbers each should be provided.
22. Computer: Latest branded computer with windows 7 or better OS, LED monitor, Laser printer and Computer table.
23. Software: Should be capable of performing all modes of operations of the LC-MS/MS instrument. Both LC and MS must be controlled with single software. Control

software should be incorporated with elemental composition calculator as standard. Software should be capable of screening, component identification and structural elucidation studies. Must be capable to generate simulated isotopic patterns for given formula. Software should be featured with suitable deconvolution tool for determining the molecular weight of large molecules such as peptides, proteins and polysaccharides and biopolymers.

24. All the operation and maintenance manuals of the instrument and software must be supplied as hard copies.
25. Warranty: Three years comprehensive warranty which includes accessories and spares required for the smooth operation of the system.
26. Vibration free bench, for the bench top mass spectrometer
27. A 10 KVA UPS system, SMF batteries, at least 1 hr back up time, built-in isolation transformer suitable for inductive loads to be quoted.
28. Necessary tool kit for routine maintenance should be quoted.
29. A suitable toxicants and metabolites database library for the quoted system should be provided if available.

**Note:**

- a. All the parameters and technological features claimed should be supported with clear technical brochures for our reference and should be demonstrated at the time of demonstration.
- b. On-site training for its operation and maintenance should provided at our site.
- c. Training for two scientific personnel of the laboratory for operation and maintenance should provide at their authorized technical centre. The cost related to travel, boarding and lodging should be provided by the vendor.
- d. The system should have GLP compliance and should strictly meet 21 CFR Part 11 guidelines.
- e. The UHPLC and MS systems quoted should be controlled by single software and should be from the same manufacturers. No refurbished items

**General Conditions:**

**Warranty:** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company brochure/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**50. SPECIFICATIONS FOR STEREO ZOOM MICROSCOPE WITH DIGITAL CAMERA**

**CAMERA SPECIFICATIONS**

S.NO.	SPECIFICATIONS	REMARKS
1	Resolution	1080p or better
2	Type	Digital
3	Sensor	CMOS or better
4	Interfaces	Should have SD card, USB, Ethernet
5	Viewing angle	50 or better
6	Software	Image software for basic image capture and simple annotation
7	Resolution	Measuring 150µm or better
8	Working distance	Applications
9	Field of view	Minimum range from 5.8mm to 25mm diameter or better
10	Illumination	LED lights for Transmitted and Reflected light sources with auto shutoff

**Note:-**  
with

**Vendors**  
**above**

specifications or better can participate.

**Warranty :** 3 years comprehensive warranty from the date of installation i.e. spares, service, supported software update and calibration/validation etc.

**Training:** Hands on trained should be given to the staff members during installation at the customer site.

**Service support:** The maintenance service of the instrument /software should be done by qualified & trained service engineers and breakdown of the instrument/software should be attended within 48 hours of registering the complaint.

Vendor should also ensure spares and service support, at least for 5 years after the completion of the warranty period.

**Note:** Compliance Statement: The vendor should give a compliance statement for each specification and should also enclose relevant supporting literature in the form of company broacher/printed matter highlighting & marking the technical specifications.

The vendor should be ready to provide demo as & when required by the technical committee at the time of technical evaluation.

**The camera and Microscope should be of reputed company.**