

10/QA/State Lab Up-gradation/Tender/FSSAI/2016

Food Safety and Standards Authority of India

(Ministry of Health and Family Welfare)

Subject: Summary record of the Meeting of the Pre-bid meeting held on 22.11.2016 with Original Equipment manufacturers/Authorized suppliers for finalising rate contract for supply of equipment for Up-gradation of State Food Testing Laboratories.

A pre-bid meeting with Original Equipment manufacturers/Authorized suppliers for finalising rate contract for supply of following equipment for Up-gradation of State Food Testing Laboratories was held on 22nd November, 2016 under the chairmanship of CEO, FSSAI. List of participants is at Annexure.

- (i) Inductively Coupled Plasma Mass Spectrometer (ICP-MS)
- (ii) Gas Chromatograph Tandem Mass Spectrometer (GC-MS/MS)
- (iii) Liquid Chromatograph Tandem Mass Spectrometer (LC-MS/MS)
- (iv) Microbiological Laboratory Equipment

Discussions with the manufacturers/suppliers were held separately for each equipment. Clarifications were sought by the prospective bidders with regards to the specifications and commercial terms and conditions. Based on the discussions certain specifications were revised/clarified and details were provided for each equipment, as under:

Inductively Coupled Plasma Mass Spectrometer (ICP-MS) Along With All Accessories And Sample Preparation Facility:

S. No.	Main Heads/Components	Prescribed Specification	Revised Specification
3	Plasma	<ul style="list-style-type: none">• Plasma Gas Control: Should have at least 4 Active Mass Flow Controllers (AMFC) for control plasma, auxiliary makeup, carrier gases. Gases used should be controlled with mass flow controller and fully computer controlled.• Argon gas dehumidifier must be quoted along with the main instrument.	<ul style="list-style-type: none">• Plasma Gas Control: Should have at least 3 Mass Flow Controllers (AMFC) or equivalent PC Controller for control plasma, auxiliary makeup, carrier gases. Gases used should be controlled with mass flow controller and fully computer controlled.• Argon gas dilutor or equivalent technology must be quoted along with the main instrument.
4.	Ion Extraction Interface	<ul style="list-style-type: none">• Scope of supply of standard and optional Nickel/Platinum cones should be clearly specified.	<ul style="list-style-type: none">• Scope of supply of standard (Nickel) and optional (Platinum) cones should be clearly specified. (for any alternate material, bidder would need to prove sensitivity)
5.	Ion Focusing System	<ul style="list-style-type: none">• Switching of reaction and collision gases will be through	<ul style="list-style-type: none">• Switching of reaction and collision gases will be through

		<p>software and automated. Unit will have the flexibility of applying both (collision, and reaction) gases using single method for removal of interferences. Mass Cut off facility should be there to remove unwanted polyatomic interferences formed due to free atoms.</p> <ul style="list-style-type: none"> • Vendor should attach application notes for Arsenic analysis where O₂ is used to remove interference for ArCl which demonstrates mass shift mode. 	<p>software and automated. Unit will have the flexibility of applying both (collision, and reaction) gases using single method for removal of interferences. Mass Cut off facility or equivalent technology should be there to remove unwanted polyatomic interferences formed due to free atoms.</p> <ul style="list-style-type: none"> • Vendor should attach application notes for Arsenic analysis as per FSSR where O₂ or any other suitable gas is used to remove interference for ArCl which demonstrates mass shift mode.
6.	Quadrupole Assembly	<ul style="list-style-type: none"> • Resolution: Variable from 0.3 u to 1.0 u, user definable 	<ul style="list-style-type: none"> • Resolution: Variable from 0.5 u to 1.0 u or better, user definable
7.	Ion Detector Assembly	<p>The system should have</p> <ul style="list-style-type: none"> • Solid State dual stage dynode discrete over 10 orders of 10 orders or more magnitude of linear dynamic range. • Minimum dwell time 100 μs (in both pulse count and analog modes). 	<p>The system should have</p> <ul style="list-style-type: none"> • Solid State dual stage dynode discrete over 9 orders of 10 orders or more magnitude of linear dynamic range. • Minimum dwell time / integration time of 100 μs (in both pulse count and analog modes).
8.	Vacuum System	<ul style="list-style-type: none"> • In the event of vacuum failure, the entire vacuum system is to be automatically back-filled by inert gas to preserve the cleanliness of the system. 	<ul style="list-style-type: none"> • In the event of vacuum failure, the entire vacuum system is to be automatically back-filled by inert gas to preserve the cleanliness of the system or an alternate system.
12.	System Controller and Operating System	<ul style="list-style-type: none"> • Data Validation 	Data Validation (IQ/OQ/PQ for Software)
17.	Power Supply	The system should have UPS (minimum 10 KVA) of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment.	The system should have UPS (minimum 20 KVA) of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment.
18.	Accessories	<ul style="list-style-type: none"> • Gas cylinder for Reaction cell gases -Oxygen, Hydrogen & Ammonia (1Each), whichever is applicable for individual system for elimination of interference species along with 2 stage Gas pressure regulators for each cylinder. 	<ul style="list-style-type: none"> • Gas cylinder for Reaction cell gases -Oxygen, Hydrogen & Ammonia (>99.99 % mixed or pure as per system requirement), whichever is applicable for individual system for elimination of interference species along with 3 stage Gas pressure regulators for each cylinder

19	Additional items	<ul style="list-style-type: none"> • Consumables for seven years operation of the system for main unit are required to be quoted for analysis in multiple of 100 samples. • Air conditioner to be quoted for required for maintaining the temperature of the room installed with ICP- MS. 	<ul style="list-style-type: none"> • Bidders should quote a startup package for 100 samples. In addition, the bidders should give a list of recommended consumables along with their source and budgetary prices. • Deleted
20	Operation and maintenance Training Component	<ul style="list-style-type: none"> • One trained personnel should be provided by instrument suppliers for three years who will be responsible for the working of the instrument i.e. sample preparation, method validation, operation of instrument and data interpretation. The personnel will not claim to be an employee of FSSAI/ state Laboratory. The personnel will work under state laboratory head. He will also be responsible for providing training of the instrument to the laboratory staff. 	<ul style="list-style-type: none"> • One trained personnel should be provided by instrument suppliers for seven years who will be responsible for the working of the instrument i.e. sample preparation, method validation, operation of instrument and data interpretation. The personnel will not claim to be an employee of FSSAI/ state Laboratory. The personnel will work under state laboratory head. He will also be responsible for providing training of the instrument to the laboratory staff.

2. Gas Chromatograph Tandem Mass Spectrometer (GC-MS/MS) Along With All Accessories And Sample Preparation Facility:

S. No.	Main Heads/ Components	Prescribed Specification	Revised Specification
1.	GC system	A compact high sensitive GC-MSMS system suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs and VOCs in food products and water at 1ppt level with user friendly software. The system should have a quadrupole – Time of Flight geometry, capable of carrying out MS and MS/MS experiments.	A compact high sensitive GC-MSMS system suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs and VOCs in food products and water at <1 ppb level with user friendly software. The system should have a Triple Quadrupole geometry, capable of carrying out MS and MS/MS experiments.
1.2	Column	All Capillary columns suitable for the analysis of polycyclic aromatic hydrocarbons, pesticides, volatile organic compounds, polychlorinated bi-phenyls, etc. should be quoted along with their application.	Detailed Specification of columns along with Quantity required would be given in the revised Tender document.
1.3	Inlet	<p>The system should have</p> <p>a. Capillary Port (Split / Splitless)</p> <ul style="list-style-type: none"> • Facility to fit 50 µm to 530 µm columns. • Pressure range : 140psi or more • Maximum temperature: 400 °C or more • Separate heating zone • Digital display of gas flow, temperature etc • Electronic pneumatic control (EPC)/ (EFC)/Advance Flow Controller (AFC). • Temperature setting through computer software. • Split ratio range 1:1 to 7000:1 <p>b. Programmable Temperature Vaporizer (PTV)</p> <ul style="list-style-type: none"> • Temperature ramped split / split less and large volume injection modes. • Electronic pressure/ flow control. • Pressure setting range 0 to 100psi or more 	<p>The system should have</p> <p>Deleted</p> <p>Programmable Temperature Vaporizer (PTV)</p> <ul style="list-style-type: none"> • Temperature ramped split / splitless and large volume injection modes. • Electronic pressure/ flow control. • Pressure setting range 0 to 100psi or more
1.4	Auto Sampler	<p>The system should have</p> <ul style="list-style-type: none"> • Dual and duplicate mode • Internal standard addition • Auto injector / sampler for Liquid injector and HS both with minimum 100 sample vials 	<p>The system should have</p> <ul style="list-style-type: none"> • Internal standard addition • Auto injector / sampler for Liquid injector (minimum 100 vials) and HS with minimum 60 sample vials capacity.

		<ul style="list-style-type: none"> • Capable of handling large volume injection with syringe size from 0.5 to 250 µl. • Access two injection ports without requiring any additional tower. • Completely programmable from software. 	<ul style="list-style-type: none"> • Capable of handling large volume injection with syringe size from 0.5 to 250 µl. • Completely programmable from software.
1.5	Backflush	The system should have column end or mid column backflush to remove unwanted components/contaminants/high boilers.	The system should have pre or post column backflush to remove unwanted components/contaminants/high boilers.
2.	MS/MS System	<ul style="list-style-type: none"> • Ionization modes: EI (Electron ionization) and CI (Chemical ionization) modes with isolation valve must be fitted to allow change of ionization mode. Ion source should have heating capacity of 350°C or more. • CI: must be capable to operate with different reagent gasses & electronic flow control for reagent gasses. • Collision cell gas pressure must be electronically controllable. • • Scan Modes: <ol style="list-style-type: none"> ii. SRM/MRM Speed: minimum of 300 MRM/sec iii. Minimum MRM dwell time of 1 milliseconds. • Installation checkout sensitivity must be better than – • Instrument detection limit: 12 fg or less octafluoronaphthalene (OFN) • EI Scan sensitivity : 1 µl of 1 pg/µl Octafluoronaphthalene (OFN) should give S/N greater than 1000:1 in scan mode 1 µl injection from m/z 50 to 300 for m/z 272. • EI MRM Sensitivity : 1 µL of 100 fg/µL Octafluoronaphthalene (OFN) should produce the following minimum signal-to-noise for the transition from m/z 272 to m/z 222: 6,000:1 • The instrument supplier has to demonstrate that the machine is suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs and 	<ul style="list-style-type: none"> • Ionization modes: EI (Electron ionization) and CI (Chemical ionization) modes. Ion source should have heating capacity of 350°C or more. • CI: must be capable to operate with different reagent gasses & electronic flow control for reagent gasses. • Collision cell gas pressure must be electronically/Software controllable. • Scan Modes: <ol style="list-style-type: none"> ii. SRM/MRM Speed: minimum of 800 MRM/sec iii. Minimum MRM dwell time of 0.5 milliseconds or better. • Installation checkout sensitivity must be better than – • Instrument detection limit: 4 fg or less octafluoronaphthalene (OFN) • EI Scan sensitivity : 1 µl of 1 pg/µl Octafluoronaphthalene (OFN) should give S/N greater than 1000:1 in scan mode 1 µl injection from m/z 50 to 300 for m/z 272. • EI MRM Sensitivity : 1 µL of 100 fg/µL Octafluoronaphthalene (OFN) should produce the following minimum signal-to-noise for the transition from m/z 272 to m/z 222: 6,000:1 or better on 30 mt. column. • The instrument supplier has to demonstrate that the machine is suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs and VOCs in

		VOCs in Fish, vegetables and water at 1ppt level.	Fish, vegetables and water at < 1ppb level.
4.	System Controller and Operating system	<ul style="list-style-type: none"> Library searching facility with NIST Library. Pesticides and endocrine disruptors, PCB's, VOC's, Fatty Acid Methyl Esters, and artificial flavors. MRM Database for maximum number of GC molecules of over 5000 optimized ion transition. 	<ul style="list-style-type: none"> Library searching facility with licensed NIST Library on CD/ROM). Pesticides and endocrine disruptors, PCB's, VOC's, Fatty Acid Methyl Esters, and artificial flavors. MRM Database for minimum 800 GC molecules.
6.	Start up Kit	<ul style="list-style-type: none"> Installation kit must be included. Required gas cylinders (with requisite certificate) for Nitrogen and Zero gas (3 each), Hydrogen, Helium, Argon or Equivalent (2 each) should be provided with accessories like Gas regulators and gas purification system etc., 	<ul style="list-style-type: none"> Installation kit must be included. Required gas cylinders (with requisite certificate) for Helium and Argon or Equivalent (3 each) should be provided with accessories like Gas regulators and gas purification system etc.,
8.	Calibration Standards with a minimum expiry period of two years	<ul style="list-style-type: none"> Two sets each EPA standards for Volatile organic compounds, pesticide mix (organochloro and organophosphorous, poly cyclic aromatic hydrocarbons, poly chlorinated biphenyls, TCLP acid mix and basic-neutral mix, aldehyde/ketones, Halogenated volatile compounds, Herbicide mix, etc. Individual standards for benzene and benzo (a) pyrene – two sets. 	Pesticide standards with 1 year expiry date to be supplied for 7 years <ul style="list-style-type: none"> Organochloro pesticides mix (1 ml * 2 No. with 1 or 100 ppm conc.) Organophosphorous (1 ml * 2 No. with 1 or 100 ppm conc.) Pyrethroids (1 ml * 2 No. with 1 or 100 ppm conc.) Herbicides (1 ml * 2 No. with 1 or 100 ppm conc.) * Must cover the range of pesticides as per FSSR. (list to be added)
9.	Accessories and consumables	<ul style="list-style-type: none"> FID Jet 	<ul style="list-style-type: none"> Deleted

3. Liquid Chromatograph Tandem Mass Spectrometer (LC-MS/MS) Along With All Accessories and Sample Preparation Facility

S. No.	Main Heads/ Components	Prescribed Specification	Please specify whether the quoted model meets the specification (Yes/No)
1.6	Ionization	<ul style="list-style-type: none"> Multimode Ionization: ESI / APCI combined source: A combined ESI/APCI source must be provided as standard with the instrument. ESI and APCI ionization must be achieved using a single probe. It should be able to perform both ESI and APCI in a single run with 25 ms or better switching capability. 	<ul style="list-style-type: none"> Multimode Ionization: ESI / APCI combined source: A combined ESI/APCI source must be provided as standard with the instrument. ESI and APCI ionization must be achieved using a single probe. It should be able to perform both ESI and APCI.
1.8	Integrated Fluidic Device(to minimize space and tubing)	<ul style="list-style-type: none"> An infusion device must be integral to the instrument and must be controllable from the instrument software. At least 2 user-changeable sample vials should be built into the system to allow tuning and calibration solutions to be infused into the probe via the switching valve. 	<ul style="list-style-type: none"> An infusion device must be integral to the instrument or equivalent and must be controllable from the instrument software. At least 2 user-changeable sample vials should be built into the system to allow tuning and calibration solutions to be infused into the probe via the switching valve.
1.9	Polarity switching time	<ul style="list-style-type: none"> +ve / -ve polarity switching time between alternate MRM scans should be 20 msec or better with supporting documents 	<ul style="list-style-type: none"> +ve / -ve polarity switching time between alternate MRM scans should be 50 msec or better with supporting documents
1.15	Operating modes	<ul style="list-style-type: none"> MS and MS/MS in a single injection with matrix background monitoring. (Proof document /application note to be enclosed along with technical tender document with onsite verification) Simultaneous full scan and MRM or better 	<ul style="list-style-type: none"> MS and MS/MS in a single injection with matrix background monitoring or equivalent. (Proof document /application note to be enclosed along with technical tender document with onsite verification) Simultaneous full scan and MRM or better (Optional)
2.	High Performance Liquid Chromatography System	<ul style="list-style-type: none"> Binary solvent system with vacuum degasser, Auto sampler, Column oven C18, C8, normal phase (Silica) and suitable guard column. Autosampler: with 1 to 10 ul/min injection, minimum of 100 samples capacity. Capability to handle pressure range of 18000 psi or better. Column Oven: 10°C below ambient to 90°C, capability to accommodate a minimum of 2 columns of 25-30 cm each. 	<ul style="list-style-type: none"> Detailed Specification of columns along with Quantity required would be given in the revised Tender document. Autosampler: with 1 to 10 ul/min injection, minimum of 100 samples capacity. Capability to handle pressure range of 15000 psi or better. Column Oven: 30°C to 80°C, capability to accommodate a minimum of 1 or more columns of ≥ 15 cm. Temperature

		<p>Temperature Stability: $\pm 0.1^{\circ}\text{C}$ Temp. Accuracy: $\pm 0.5^{\circ}\text{C}$</p> <ul style="list-style-type: none"> DAD/PDA Detector: 190-800 nm, 80 Hz, Standard flow cell with flow cell of 0.5 ul or better 	<p>Stability: $\pm 0.1^{\circ}\text{C}$ Temp. Accuracy: $\pm 0.5^{\circ}\text{C}$</p> <ul style="list-style-type: none"> DAD/PDA Detector: 190-700 nm, 80 Hz, Standard flow cell with flow cell of 1.0 ul or better
5.	<p>Calibration Standards with a minimum expiry period of two years</p>	<ul style="list-style-type: none"> Two sets each NIST or other traceable standards for all the Pesticides, Mycotoxins, antibiotics as per FSSAI requirement. 	<ul style="list-style-type: none"> Two sets each NIST or other traceable standards for all the Pesticides, Mycotoxins, antibiotics as per FSSAI requirement with a minimum expiry period of two years for seven years Or supply of NIST or other traceable standards every year with a validity of one year upto 7 years
8.	<p>Additional items</p>	<ul style="list-style-type: none"> Methods library for all food matrixes, related software's and user manuals to be provided. 	<ul style="list-style-type: none"> Complete methods library with MRMs of Mycotoxins, Veterinary drugs, Pesticides, antibiotics with instrument method details and SOPs, related software's and user manuals to be provided.

4. Microbiological Laboratory Equipment

1. Page numbers for Indexing of microbiological lab equipments on page 12 of tender documents may be corrected.
2. **Vertical autoclave on page 18;** Capacity may be kept as approx. 120 Litre instead of dimensions because that may vary from manufacturer to manufacturer.
3. **Ultra Low Temperature Deep Freezer:**
 - a. Capacity may be kept in the range of 400-500 litres instead of a fixed 460 Litres as it may favour a particular vendor.
 - b. Temperature range from (-)10 to (-)40 °C is very high and not required for microbiological testing of food and temperature range of up to (-) 20 °C. would meet the requirements. Further, Vertical type deep freezer would be preferred over the Horizontal type, as it would save space also easy to handle.
4. **UV-VIS Spectrophotometer :**
 - a. Instead of a fixed Spectral Bandwidth of 1nm, variable bandwidth from 0.2nm – 5.0 nm is better.
 - b. Wavelength Range 180-1100 nm may be revised to 190-900 nm, which is sufficient to meet the requirements.
 - c. Photometric Range: Absorbance may be revised from (-)4.5 - 4.5 to (-)4.0 to 4.0.
 - d. Accessories: (i) Quartz cell 10 mm Rectangular Path Length (5pairs)
(ii) Quartz Cell 50mm Rectangular Path Length (2 Pairs)
(iii) Quartz cell 100 mm rectangular Path Length (2 pairs).
5. **Cooling Centrifuge** should be European CE/USFDA approved and should be fitted with certified aerosol type cap on the rotor to avoid any accident due to breakage of sample tubes.
6. **General Issues:**
 - (i) The supplier would facilitate the State labs to obtain the IVL for ICPMS.
 - (ii) The State labs would have to ensure that the site for installation is ready. Before issue of the Purchase Order for all the equipment.
 - (iii) Equipment delivery time for GCMSMS, LCMSMS and Microbiological lab equipment will be 90 days from the date of issue of Purchase order
 - (iv) In respect of ICP-MS the delivery time will be 60 days from the date of receipt of IVL certificate but not more than 6 months from date of issue of Purchase Order.
 - (v) Payment terms will be as per the standard GOI T&C. In this context, the payment terms as specified by EIC in their recent tender for procurement of similar equipment

facilities could be adopted. Accordingly, the following payment terms would be applicable for all the four tenders:

- a. Seventy percent (70%) of the cost of equipment / item shall be released within fifteen (15) days of receipt of such a request in writing from the Supplier, accompanied by a certificate from the Food Safety Commissioner/ laboratory In – charge to the effect that the quantities ordered have been received and that the equipment / item has been installed & commissioned satisfactorily.
 - b. Balance thirty percent (30%) of the cost of equipment / item shall be released within fifteen (15) days of receipt of such a request in writing from the Supplier, accompanied by a certificate from the Food Safety Commissioner / laboratory In – charge to the effect that the required training and validation (wherever applicable) has been imparted satisfactorily.
- (vi) The supplier of ICP-MS, GC-MS/MS and LC-MS/MS shall provide one full time trained personnel separately for each of the three equipment for seven years, who will be responsible for the working of the instrument i.e. sample preparation, method validation, operation of instrument and data interpretation. The personnel will not claim to be an employee of FSSAI/ state Laboratory. The person will work under the supervision of state laboratory head and carry out the required analysis of various samples received in the lab. He will also be responsible for providing training on the instrument to the laboratory staff.
 - (vii) The bidders should enclose with the technical bid a list of at least 5 Installations of the quoted model or a comparable model of equivalent sensitivity in the country, preferably in Food sector along with the Contact Name, contact no, mail ID and complete address.
 - (viii) The bidders shall also provide along with the technical bid at least two Performance certificate from the organizations (at least one from the Government sector), where the quoted model/ or any other model of equivalent sensitivity has already been installed, indicating LOD/LOQ of at least 10 parameters relevant to food sector. In case he bidders are unable to obtain such a certificate, they may provide the full contact details of the users to enable FSSAI to get the certificates.
 - (ix) Prices to be quoted in INR excluding all taxes and duties, FOR destination anywhere in India.
 - (x) It was also decided that based on the above discussions, tender documents would be revised and uploaded on the FSSAI website.
 - (xi) The last date for submission of tenders will be extended to 16th December, 2016.

LIST OF PARTICIPANTS:

- 1) Mr. Pawan Agarwal, CEO, FSSAI
- 2) Dr. Lalitha R. Gowda, Former Chief Scientist, CSIR-CFTRI, Mysore – Technical Expert
- 3) Dr. Deepa Bhajeker, d Technology - Technical Expert
- 4) Mr. Sabeerali (EIC) - Technical Expert
- 5) Mr. R.K. Gupta, Head (QA), FSSAI
- 6) Mr. Umesh Kumar Jain, Joint Director (QA/Lab)
- 7) Ms. Kavitha. M, Scientist –II, (QA/Lab)
- 8) Ms. Aruna Bandil, Assistant Director (QA/Lab)
- 9) Ms. Jyotsana Singh, Scientist –I, (QA/Lab)

Inductively Coupled Plasma Mass Spectrometer (ICP-MS)

- 1) Mr. Amit Sharma - Analytik Jena
- 2) Dr. Vinay Jain – Agilent technology
- 3) Mr. Sanjeev Khandelwal - Agilent technology
- 4) Mr. Sameer Vyas - Agilent technology
- 5) Mr. Piyush Shukla - Agilent technology
- 6) Mr. Jagadish Naidu – Perkin Elmer
- 7) Mr. Sharad Tripathi – Perkin Elmer
- 8) Mr. Dhiraj Sinha – Perkin Elmer
- 9) Mr. Sunil Kumar – Thermofisher Scientific
- 10) Mr. Dinesh Saini – Thermofisher Scientific
- 11) Mr. Nidhi Yadav – Thermofisher Scientific
- 12) Mr. Yogesh Baldev – Toshvin Analytical
- 13) Dr. Jitendra Kakkar – Shimadzu Analytical

Gas Chromatograph Tandem Mass Spectrometer (GC-MS/MS)

- 1) Mr. Sanjeev Khandelwal - Agilent technology
- 2) Mr. Sameer Vyas - Agilent technology
- 3) Mr. Upendra Khurana - Agilent technology
- 4) Mr. Satish Ahuja – LECO
- 5) Mr. Sunil Kumar – Thermofisher Scientific
- 6) Mr. Dinesh Saini – Thermofisher Scientific
- 7) Dr. A K Dutta – Toshvin Analytical (Shimadzu, Japan)
- 8) Mr. Santosh Dehana – Toshvin Analytical (Shimadzu, Japan)
- 9) Mr. Varun Jugrana – Toshvin Analytical (Shimadzu, Japan)
- 10) Mr. Neeraj – Mygene Life Solution

Liquid Chromatograph Tandem Mass Spectrometer (LC-MS/MS)

- 1) Ms Rakhi Koelkar– Shimadzu Analytical
- 2) Mr. A Shankar – SPINCO Biotech
- 3) Mr. Sharad Mishra – Thermofisher Scientific
- 4) Mr. Sunil Kumar – Thermofisher Scientific
- 5) Mr. Shrinivas Joshi – Waters
- 6) Mr. Vikas Vohra - Waters
- 7) Mr. Bhavya Shukla - Agilent technology
- 8) Mr. Piyush Shukla - Agilent technology
- 9) Mr. Umesh Takkar – Perkin Elmer
- 10) Mr. Ashish – Perkin Elmer
- 11) Mr. Neeraj Gaur – Mygene Life Solution
- 12) Mr. Brijesh Pandey – SCIEX