GENERAL INSTRUCTIONS

1. Quote separately for the basic unit and all add-ons or accessories as well as minimum spare parts. Taxes, duties etc. should be mentioned separately. Your tender should be in two separate envelopes as Technical and commercial bid.

2. Provide a list of clients and after sales service reports from a few reputed clients.

3. The validity of the tenders should be for minimum of 90 days from the date of submission.

4. In case vendor wants to submit tender document for multiple items, please make separate tender sets each accompanied with the required tender document fees & Bank Guarantee.

5. The various taxes and duty concessions for the ICT are as follows:
   - Octroi - Nil
   - Excise - Nil
   - Add. Custom Duty - as applicable (9.36%)
     (against Custom Duty Exemption certificate of DSIR issued to ICT) Form of Certificate Concession for Central Sales Tax (CST) only out of Maharashtra.

6. Indicate custom clearance charges and transport charges separately. We will provide the necessary documents and custom duty as given in 5 above. We may require your services to clear the goods from customs.

7. A demand draft drawn in favor of “Institute of Chemical Technology, Mumbai.” Tender document fees as per the table given below must be attached with the tender. Please mention Sr.No. and name of the equipment with name of the Company and full address of the Company behind the demand draft.

8. Separate Bank Guarantee drawn in favor of “Institute of Chemical Technology, Mumbai.” along with your quotation. The following are the charges.

<table>
<thead>
<tr>
<th>No.</th>
<th>Cost of Item (Rs)</th>
<th>Tender document fee (in Rs.) (Non-refundable)</th>
<th>Bank Guarantee (% of the Estimated Cost of item) (Refundable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3,00,000 or more but less 10,00,000</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>10,00,000 or more but less than 50,00,000</td>
<td>2000/-</td>
<td>2.5</td>
</tr>
<tr>
<td>3</td>
<td>50,00,000 or more</td>
<td>2000/-</td>
<td>4</td>
</tr>
</tbody>
</table>

9. Tenders must seal before submission in the Administration department. The envelope must indicate on the top item serial number, name of the instrument, technical/ commercial bid and tender due date. This will enable us easy identification and sorting.

10. Tenders without separate Bank Guarantee and tender document fees will be rejected.

11. For any clarification, contact Superintendent, Stores (ICT) Tel.No. 022- 33611301/ (Ext. 1301).
12. Vendor to do installation and commissioning of the instrument and training free of cost. We may required installation report.

13. It is also desired that the company to quote for the warrantee and post warrantee terms neatly and very clearly in the form of service contract.

14. Vendor must be prepared to undertake the site preparation job in case required.

15. The quotations/tenders should be submitted by the actual manufacturers or their authorized agents with necessary documentation.

16. The Vice-Chancellor, ICT reserves the right to order in part full quantity or withdraw the requirement in part or in full without assigning any reason.

17. The tender shall be accompanied by registration document, income tax clearance certificate and details of similar works executed.

18. We reserve the right to reject any offer without assigning any reason.

19. No enquiries will be entertained after submission of the quotation.

20. Quotation received after the due date will not be considered.

21. The Vice-Chancellor, ICT takes no responsibility for delays/loss in post or non receipt of tender Documents/tenders.

22. Sealed tenders must be submitted on or before **25th September, 2014** up to 5.00 p.m. in the Information Department.

**Advertisement in Times of India on 11th September, 2014.**

**Ag.Registrar, ICT, Matunga, Mumbai-400 019.**
**Item No. 1**

**UV/Vis/NIR Spectrophotometer Specifications**

We are in the process of procuring UV/Vis/NIR (Ultraviolet/Visible/Near Infrared) spectrophotometer capable of measuring the absorptance/transmittance/reflectance of the samples. Reflectivity at different angles of incidence and diffused reflectance, or total transmission, thermal emissivity measurements should come as standard. The system must be provided with all necessary accessories to make it operational.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Optical System Details</td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>General:</td>
<td></td>
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<tr>
<td></td>
<td>• Monochromator must have 1400 lines/mm or more.</td>
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<tr>
<td></td>
<td>• Instrument must have a gridless PMT (for UV-Vis range) and Peltier cooled PbS detector (for NIR range)</td>
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<td></td>
<td>• Instrument must have a modular, removable detector compartment; allowing different detector configurations to be user installed including 100 mm integrating sphere, Variable angle reflectance accessories. We will be making both specular as well as diffused measurement on this instrument.</td>
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<td></td>
<td>• Instrument must have a four segment chopper design; which is able to provide individual reading for sample and reference, increasing measurement accuracy.</td>
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<td></td>
<td>• Instrument must include software controlled, motorized 1% and 0.1% reference beam attenuators. (Reference beam attenuators are need when one is measuring high absorbance samples.)</td>
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<td></td>
<td>• An internal common beam depolarizer, polarizer must be available in order to eliminate inherent polarizations, allowing accurate measurements of birefringent samples. Polarization causes spectral artifacts in our samples and must be eliminated.</td>
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<td>b.</td>
<td>Optical performance:</td>
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<td></td>
<td>• Wavelength range: 175-3300 nm or more</td>
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<td></td>
<td>• Stray light: ≤ 0.00007 %T</td>
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<td></td>
<td>• Resolution: 0.05 nm or better (UV/Vis range) and 0.2 nm or better (NIR range)</td>
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<tr>
<td></td>
<td>• Wavelength Accuracy: ± 0.08 nm UV/VIS, ± 0.30 nm NIR</td>
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<tr>
<td></td>
<td>• Wavelength Reproducibility: Deuterium lamp lines ≤ 0.02 nm (UV/Vis), ≤ 0.080 (NIR)</td>
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<td></td>
<td>• Photometric accuracy: ≥0.0003A or better</td>
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<td></td>
<td>• Bandpass: 0.05 nm- 5.00 nm in 0.01 increment or better (UV range), 0.2 nm-20nm in 0.04 nm increment or better(NIR range)</td>
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<td></td>
<td>• Photometric linearity: ±0.006 A or better</td>
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<td></td>
<td>• Photometric range: at least 8A or more (UV/Vis range), 6A or more(NIR range)</td>
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<td></td>
<td>• Photometric display should be unlimited</td>
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<td></td>
<td>• Photometric stability: ≤ 0.0002 A/h</td>
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<td></td>
<td>• Baseline flatness (RMS): 0.00008A or better</td>
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<td></td>
<td>• Photometric noise: ≤ 0.00005 A or better (UV/Vis range), ≤ 0.00004 A</td>
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<tr>
<td>2.</td>
<td>Software</td>
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<td></td>
<td>• All software supplied by the vendor must be true Microsoft Windows applications, compatible with Windows7 operating systems and will support older XP configurations</td>
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</table>
as well. Instrument or application software provided by the vendor that was written in other operating systems is unacceptable

- Standard software should be capable of the organization of data and methods. It should include Fully integrated Scan, Timedrive, and Wavelength Program data collection modes with real-time spectral display and live instrument and accessory status bar. Quant and Scanning Quant applications, optimization of calibration curves, calibration lifetime and calibration acceptance criteria.
- Software to enable the thermal emittance, reflectance and transmittance properties of thin-film coatings/paint applied to glass to be evaluated. Included are ISO, DIN and ASTM methods for light, solar and UV, UVA and UVB and normal, double and triple glazing Working under Windows XP/7.

3. **Integrating sphere:**

   Instrument must have available an UV/Vis/NIR Integrating Sphere – 100 mm Module. Sphere must not occupy standard sample compartment area. Features include:
   - 100 mm diameter
   - It should not external reference beam port to increase dynamic range of measurement
   - Port Fraction area should be less than 3%
   - It should have 0° and 8° reflectance capability for specular included/excluded measurements
   - Wavelength range: 200 to 2500 nm or more
   - It must have PMT / PbS detector
   - Must have small spot %T, %R option available

4. **Praying mantis:**

   Praying mantis diffused reflectance measuring accessory along with High temperature cell should be provided for measuring samples at least up to 700°C.

5. **Absolute Reflectance accessory**

   An accessory enabling high-sensitivity, absolute reflectance measurements at multiple angles in the UV-Vis-NIR region of the spectrum is required with minimum following specifications:
   - It should have automatic and reproducible changes of angle with no adjustment to sample or optics required.
   - Sample angles should be selected by single mouse click
   - Multi-angle analysis should be achieved with single accessory
   - In this accessory sample should be horizontally mounted removing the inconvenience and risk of damage associated with vertical clamping
   - The module should snap into the spectrometer and is ready to be used without any adjustment
   - Wavelength range 185-3100 nm or more
   - Adjustable in angles 8-65°, step 0.5° or better

6. **Other accessories, Computer and Printer**
   - A common beam depolarizer, polarizer set must be provided alongwith suitable drive in all the above wavelength range mentioned above.
   - A pair of Quartz cuvette for entire spectral range of instrument must be quoted
   - Latest branded computer must be provided alongwith instrument
   - Latest printer must be provided with instrument
Item No. 2

50 L Skid mounted Fermenter (Stainless Steel) System (1 No)

Specifications:

I. Design, MOC & Layout:

1. The system should be skid mounted bioreactor 50 L (working volume 10L to 37L) designed for growth of mammalian cells, fungi, bacteria.
2. The vessels should be made of Stainless Steel double mirror finish (SS 316) with suitable adapters
3. The system should have height adjustable six blade stirrer driven by a top provided glandless magnetic drive or double mechanical seal.
4. The system should have ports for sensor like pH, pO2, temperature, level/foam, biomass (OD) and redox.
5. System with high quality and robust (makes to be specified) pH sensor/meter; DO sensor/meter; level sensor/meter; OD sensor/meter; and REDOX sensor/meter of suitable dimensions in accordance with the vessel size and nozzles provided.
6. The system should be equipped with sterilizable Sampling valve assembly, Harvesting valve assembly (with small pumps as suitable), Feeding line, Inoculum septum kit, Adapters, Blind-plugs
7. The system should be capable of in-situ sterilization and also provided with filters for inlet and outlet sterile gas/air
8. System to be provided with attached (same skid mount) (a) steam generator (electrical); (b) cooling/heating system for temperature control; and (c) air compressor with air flow control – All mounted and connected with sterilizable SS piping with the fermenter on the common skid.
9. System to be provided with pH control, temperature control, flow (gas) control, level control, and flow controllers, all through suitable SCADA system working through a touch screen HMI.
II. Accessories

10. The system should have controllable positive pumps for acid, base, anti-foam, feed 1, and feed 2.
11. The system should have noise free & oil free air compressor.
12. The system should have noise free Chiller/ heater (temperature range: 10º C to 65ºC)
13. The system should have SIP- CIP with integrated steam generation facility for sampling line, harvesting line, feeding line and for reactor.
14. All piping and system fabrication in conformation with the highest quality standards
15. Warranty: 3 years

Also to be provided

a. Client list and list of fermenters made and supplied
b. Possibility of arranging a visit to an installed system by the vendor

Instruments & Control

16. The system should have temperature probe with thermowell with Temperature Range & Control: 5º C to 80º C.
17. The master station control should be capable of automation with control capability of Temperature, pH, pO₂, agitation speed, Foam, Level, vessel weight, pressure, substrate feeding, gas composition and aeration rate via optional MFC
18. The system should be equipped with Touch Panel Interface of minimum 12”.
19. Gas mixing available from 1 – 4 rota meters via 4 solenoid valves for Air/O2/CO2/N2 including interface for Industrial PLC data configuration and management
20. The Agitation range and control should be 50-1000 RPM for fermentation
21. The system should be PID with manual and automatic settings with appropriate software controls and with Windows8 branded all in one PC
**Item No. 3**

**Automated Liquid Handling Robotics System (Part A) (1 No.)**

Automated open architectural (modular) robotic liquid handling system to allow integration for a wide variety of applications like: enzymatic screening, PCR setup with integration of PCR/RTPCR, ELISA screening, biomass reaction setup, library preparation, cherry/hit picking, genomic DNA/RNA/plasmid extraction with both vacuum & magnetic bead based technique, quantitation, dilution and normalization of DNA/RNA for downstream applications, growth kinetic assays, molecular biology screening setup and microarray.

The system should generally comprise:

1. **A robotic platform of 1.5 meter length or higher configured with 3 independent arms** including 8 channel pipetting arm, multichannel 96 head (upgradable to 384) and an external robotic gripper arm and should be supplied with Laminar Flow (HEPA Filter with UV protection) for sterile operation

   1a. The 8 channel pipetting arm to work independent of the other two and should be configured with both stainless steel washable /disposable tips with adequate sensors with broad pipetting range of volume from 100 nl to 2 ml.

   1b. Multichannel 96 head capable of picking from more than one location on the deck and to pick partial tips, individual rows /columns of tips or single tip without any need of pre-configured tip boxes and manual intervention.

   1c. The external robotic gripper arm with movement along X, Y and Z axis for off-deck integration with multiple instruments such as washer, reader, thermocyclers, incubators etc and future scalability to include other instruments.

   1d. The three robotic arms programmable to work simultaneously and independently for different parallel work flows.

2. **Multimode plate reader with capabilities to read absorbance (UV-Vis), fluorescence intensity top, fluorescence intensity bottom, time resolved fluorescence (TRF), luminescence, and capable of endpoint, kinetic and spectral scanning and should be capable of upgradation in future**

3. **Incubator, with shaking and/or static facility, with operating temperature from + 8 to 50 ºC, plate capacity of around 40-45 standard plates and 10-12 deep well plates and ELISA incubator with shaking & dark facility, 37 degree for minimum of 6 plates**

4. A standard height/deep well, 96 head plate washer (upgradable to 384 head), with a minimum of 4 channel wash buffer container and a single channel waste container, capable of operating in integrated as well as in standalone mode.
5. A minimum of two robotic compatible integrated PCR systems supplied with 96/384 well PCR block. Integration of PCR system preferably should not occupy the active deck space and should be installed alongside with the system. The PCR machine should be able to run in integrated as well as in standalone mode.

6. On deck E-Gel base system for automated loading and electrophoretic running of DNA samples.

7. An automated thermal plate sealer for micro and deep well plates capable of integrated and standalone plate sealing.

8. A single position on deck shaker with RPM ranging from 50-1000 RPM and accessible with all the 3 arms (8 Channel, 96 head and the robotic arm).

9. Vacuum/magnetic bead based DNA/RNA extraction and purification system along with quantitation and normalization.

10. An integrated barcode reader.

11. A standalone automated colony picker with an operational capability of atleast 1000 colonies/hr from bioassay trays, petri dishes, omni trays, 6-48-96 well culture plates with automated destination stacker and appropriate computer hardware and software.

11a. Colorimetric colony selection and fluorescent imaging along with organism specific pin heads.

11b. A customized laminar flow & UV protection for sterile operations.

12. Latest suitable computer configuration.

13. Licensed software for multitasking capabilities and compatibility with all integrated devices along with offline simulation feature.

14. A warranty (parts and labour) for a minimum of two years including third party components. Wherever the third party installation and, accessories are involved they should be validated & certified. Service support confirmation for the third party device from the manufacturer/Agents

15. Onsite installation of robotic liquid handling system, components, accessories, and integration of all peripheral equipments including successful demo run of workflows at the time of installation. Adequate on-site training sessions and “hand-holding” practice runs.

Note: All additional accessories/consumables to run the standard workflows for a minimum period of 3-6 months.

Additional details for robotic platform (Point 1): Should have-

Eppendorf tube carrier and plate carrier for 16-20 positions for use of reagents and plate preparations
Minimum of 8–disposable tips boxes for 8 channel pipetting arm and Minimum of 24 Tip boxes for 96 head to be either fed or on deck placement

15-20 MTP storage device

A minimum of 3 position temperature controlled carrier with temperature range from 0 to ambient worktable layout with all quoted accessories and third party device integration details
**Item No. 4**

**Basic and Detailed Engineering Package for Pilot Plant**

Preparation of a complete **BEPD (Basic Engineering Packaged Design)** package (incl. MEB, PFDs; PIDs; Equipment sizing, PDS, Instrumentation Documents);

Detail Engineering (incl. MDS, GA, Loading, Layout and piping drawings, MTO; Local and Global Control strategies (if any);

Civil Structure design to suit the site; Piping and Cabling schedules and rack designs) for an approx. INR 500 lakh chemical pilot plant designed from a laboratory developed process.
Item No. 5

Microbrewery Wine Plant

Capacity : 500 L per batch Wine Production

Quotations are required for complete supply, including testing and commissioning of Microbrewery Plant suitable for production of “tropical fruit wines”.

(Please note that juice of various fruits such as kokum, jamun, jackfruit, banana and mixtures will be used as substrate and no skin of the fruit will be fed in the fermentor. These fruits are seasonal and hence sterilized bottles or cold storage juice will be used during the year.)

The plant will have the following equipment / machinery and suitable piping etc. along with boiler for pasteurization of substrate and also wine, suitable cooling arrangement for temperature control and also for wine.

All contacts surfaces, valves, joints etc. of SS 304 or inert polymers / glass to sustain 3.0 pH of kokum juice. Other metals such as brass, copper, iron will lead to poisonous and bitter taste reaction. Welding also needs to be 100 % SS and other metals are not acceptable.

1. Wine Fermentation Tanks – 500 L working volume – with provision for in situ pasteurization. (jacketed / limpet coil), using low pressure steam, with temperature sensor, control, CO 2 vent, drain, sample port etc. – 1 No.
2. Wine Fermentation Tanks – 100 L working volume - with provision for in situ pasteurization. (jacketed / limpet coil), using low pressure steam, with temperature sensor, control, CO 2 vent, drain, sample port etc. – 1 No.
3. Upstream machinery – (a) basket press, (b) juice collection bin with lid (c) centrifugal pump (as required), suitable capacity – SS 304. Any other small equipment as required.
4. Downstream machinery – (a) cold stabilization tank (agitated, insulated), SS 304, 500 L working volume (b) Wine pasteurization tank – 500 L working volume - electrical or steam based.
5. Filters – (a) Plate and frame filter: pore size 20-0.5 μ, (b) Cartridge type: pore size - 0.4-0.45μ. Material SS 304, Capacity – 500 L/hr
7. Utilities – (a) Portable hot water generator -- (b) Heat exchanger for cooling juice (c) Chilling system

8. Miscellaneous – Trolley mounted N2, CO2 gas cylinders with regulators, food grade hose pipe SS 304, pipe line etc.

9. Boiler – Biomass / Diesel, 100 kg/hr low pressure steam generation capacity
   (quote separately)
   Please submit your technical and financial bid separately.
   Technical bid should contain a flow sheet showing all the machinery supply with item wise detailed specification from your side and schematic drawing wherever applicable. Instrumentation and process control details to be specified by you.

Terms & conditions:

1. Plant and machinery has to be supplied, installed and commissioned at Dr. HedgewarSmrutiSevaParkalpa, Mangaon, Sawantwadi, Dist. Sindhudurga 416519.

2. Expected delivery period – not more than 4 months – ICT may put penalty clause if the project gets delayed from the vendors side.

3. Attach list of customers whom similar / other wine plants are supplied by you.