

CONDITIONS OF CONTRACT FOR QUOTATIONS

1. DEFINITIONS

- 1.1 In these Conditions, unless the context otherwise requires:
- (a) **"Conditions"** means these terms and conditions in this Conditions of Contract for Quotations.
- (b) **"Confidential Information"** means any and all information at any time disclosed to the Contractor by or on behalf of the University in writing or orally, in drawings or in any other form, or acquired by the Contractor from the University, and all data derived therefrom, relating to the Contract, the University, any clients or business partners of the University, its students, staff, alumni, and donors, and whether of a scientific, commercial, technical, procedural nature or otherwise except to the extent that such knowledge or information:
- (i) is or becomes part of public knowledge or literature as evidenced by printed publication or otherwise provided such public disclosure is not through a breach of the confidentiality obligations of the Contractor hereunder; or
- (ii) is or has been lawfully disclosed, furnished or made known to the Contractor by any third party who is not under an obligation of confidentiality to the University.
- (c) **"Contract"** includes the University's Invitation To Quote issued through the EPS or other means, the Contractor's Quotation (defined below) or offer (submitted through the EPS or other means), these Conditions, the specifications and samples, letter of acceptance, order message or any purchase orders issued by the University to the Contractor, for the supply of the Goods and/or performance of Services.
- (d) **"Contract Price"** means the price exclusive of the Singapore Goods and Services Tax payable to the Contractor for the full and proper performance by the Contractor of his part of the Contract as determined under the provisions of the Contract and in law.
- (e) **"Contractor"** means the successful supplier who has been awarded the Contract by the University.
- (f) **"EPS"** means the eProcurement system or portal used by the University to carry out the procurement of Goods and/or Services electronically.
- (g) **"EPS T&C"** means the terms and conditions of the EPS provider governing the use of the EPS.
- (h) **"Goods"** means all goods, including parts or units thereof, which the Contractor is required to supply under the Contract.
- (i) **"Services"** means the work that the Contractor is required to perform under the Contract.
- (j) **"University"** means National University of Singapore, acting through its faculty, department or research institute calling the ITQ, and includes any officer authorised by the University to act on its behalf.

2. INVITATION AND ACCEPTANCE OF QUOTATION

- 2.1 By submitting a quotation (**"Quotation"**) to an Invitation To Quote (**"ITQ"**) issued by the University, the Contractor is deemed to have agreed to these Conditions, and any Quotation that attempts to vary these Conditions is liable to be rejected. In the event of any conflict or inconsistency between these Conditions and the Quotation, these Conditions shall prevail.
- 2.1A The University may conduct negotiations for the ITQ. Any elimination of suppliers from participating in the negotiations will be carried out in accordance with the evaluation criteria set out in the ITQ. When negotiations are concluded, a common deadline will be provided for the remaining participating suppliers to submit any new or revised Quotations.
- 2.2 The Quotation shall constitute an offer by the Contractor to supply the Goods and/or perform the Services.
- 2.3 The issue by the University of a letter of acceptance or order, accepting the Quotation or part of the Quotation shall create a binding contract on the part of the Contractor to supply to the University the Goods and/or the Services (or such part thereof that is the subject of the acceptance) at the price/s stated in the

Quotation. For the avoidance of doubt, until the University issues a Letter of Acceptance, an order message, or purchase order, this document (i) is not a contract and shall in no way be construed as creating any legally binding obligation to purchase any Goods and/or Services from any supplier; and (ii) shall not be construed as providing or implying that a contract will be entered into with any supplier.

- 2.4 Upon the acceptance by the University of the Quotation, these Conditions shall govern the Contract between the University and the Contractor. In the event of any conflict or inconsistency between these Conditions and the EPS T&C, these Conditions shall prevail.
- 2.5 The University reserves the right to award the Quotation in whole, in part, or not to accept the Quotation at all. The University is not obliged to accept the lowest or any Quotation, nor is the University obliged to provide any reasons for non-acceptance of a Quotation.
- 2.6 The University reserves the right to amend any terms in, or to issue supplementary terms to the ITQ at any time prior to the closing date of the ITQ.

3. SCOPE OF CONTRACT

- 3.1 The Contractor shall carry out and complete the supply of all items of Goods and/or perform the Services in accordance with the Contract, to the exclusion of any other terms and conditions on which any Quotation has been given. Unless otherwise stated in the Contract, all Goods shall be new and unused.
- 3.2 Without limiting the generality of clause 3.1, the Contractor shall:-
- (a) supply and do all things including but not limited to provision of equipment, materials, personnel and transportation required for the proper performance and completion of the Contract that are necessary or reasonably to be inferred from the Contract, whether or not particularly described in the Contract, or which may contingently become necessary to overcome difficulties before completion;
- (b) carry out and complete the supply of Goods and/or the performance of the Services with due diligence, efficiency, skill and workmanship expected of a supplier supplying similar goods and services;
- (c) comply with the practices and standards of the industry of the Contractor; and
- (d) comply with all applicable laws and regulations.

4. DELIVERY

- 4.1 The Contractor shall deliver the Goods and perform the Services by the delivery and/or performance date (if any, specified in the ITQ or the Contract) and in the manner specified in the Contract.
- 4.2 Time shall be of the essence in the Contract for delivery of the Goods and/or the performance of the Services.
- 4.3 If the Contractor fails to deliver or perform by the date specified in the Contract, the University reserves the right to cancel all or any such items of Goods and/or Services from the Contract without compensation and purchase from other sources, and any additional costs incurred shall be deducted from any moneys due or to become due to the Contractor or shall be recoverable from the Contractor as damages.
- 4.4 The University is entitled to reject any goods or services not delivered or performed according to the requirements stated in the University's ITQ (including without limitation, in description, quantity or quality) without incurring any liability to the Contractor.
- 4.5 The Contractor shall at his own cost and when notified in writing by the University, remove and replace the Goods that are found on delivery to be damaged, defective or in any way inferior to approved samples, or not in accordance with the Contract, failing which the University shall have the right to purchase replacements elsewhere or to make good any damage in any manner it deems necessary and all costs thereby incurred shall be recoverable from the Contractor by deduction from any money due to the Contractor under the Contract. The receipt of the Goods or Service shall in no way relieve the Contractor from his responsibility for replacing defective or damaged Goods or for rectifying deficient Services.
- 4.6 Title to the Goods shall pass from the Contractor to the University upon successful completion of any acceptance testing, or if there is

no acceptance testing, upon delivery to the University at the location specified in the Contract. The risk of loss and damage to the Goods shall only pass from the Contractor to the University after the Goods have been received by the University in Singapore. Where Goods are received by the Contractor for the purpose of modification, replacement, repair or rectification, the risk of loss or damage to the Goods shall be borne by the Contractor until the Goods are re-delivered and received by the University.

5. WARRANTY

5.1 Unless otherwise agreed in the Contract, the warranty period shall commence on the date of receipt of the Goods and on the date of acceptance of the Services in Singapore. The length of the warranty period shall be twelve (12) months or such period as agreed in writing.

5.2 During the warranty period, if any Good(s) is found:

- (a) to be defective in design, materials or workmanship; or
- (b) not to be in accordance with the Contract or any specifications incorporated in the Contract by written agreement or by reference or otherwise; or
- (c) having been installed, operated, stored and maintained in accordance with the written instructions of the Contractor, to have failed to function properly or failed to meet any performance guarantees or specifications published or otherwise provided by the Contractor as applicable to the Good(s);

then unless it is shown that the foregoing is caused solely by improper use or mishandling by the University, the Contractor shall, at its own expense (including transportation costs), at the written notification of the University, replace, rectify or completely repair the damaged or defective Good(s), within thirty (30) days of the date of the written notification or within such time as may be agreed between the Contractor and the University. The warranty period for the replacement or repaired Goods shall be extended by a period equivalent to the period commencing from the date of the notification to the date of acceptance of the repaired or replaced Goods by the University in Singapore. In the event that the warranty period (after such extension) outstanding at the date of acceptance is less than one month, the warranty period shall be extended by a further period of one month.

5.3 During the Warranty Period, if any Service performed is found to be deficient, the Contractor shall at the written notification of the University, re-perform the same, at the expense of the Contractor within thirty (30) days of receipt of the University's written notification or within such time as mutually agreed in writing between parties. The warranty period for the re-performed Service shall be extended by a period equivalent to the period commencing from the date of the notification to the date of completion of the re-performed Service. In the event that the warranty period (after such extension) outstanding at the date of completion is less than one month, the warranty period shall be extended by a further period of one month.

6. PAYMENT

6.1 Within thirty (30) days from the date of receipt of the Contractor's invoice in respect of any Goods delivered and Services performed in accordance with Clause 4 of these Conditions, provided the invoice has been issued in accordance with the manner and in such format as may be specified by the University, and provided further that no part of the invoice is in dispute, the University will make payment to the Contractor of the Contract Price of the Goods so delivered and Services so performed provided that no payment shall be considered as evidence of the quality of any Goods and Services to which such payments relate nor shall it relieve the Contractor from his responsibilities under the Contract.

6.2 Where the University and the Contractor have agreed in writing to delivery of the Goods or Services in parts, payment will be made in respect of each such partial delivery in accordance with Clause 6.1.

7. TERMINATION

7.1 Either party may terminate this Contract immediately by written notice to the other if the other is unable to pay its debts or enters into compulsory or voluntary liquidation or compounds with or convenes a meeting of its creditors or has a receiver or manager or an administrator appointed or ceases for any reason to carry on business or takes or suffers any similar action which in the opinion

of the party giving notice means that the other may be unable to pay its debts or perform this Contract satisfactorily.

7.2 The University may terminate this Contract by giving at least seven (7) days' notice in writing to the Contractor where the Contractor has breached or failed to observe any term of this Contract or generally failed to perform his obligations in the manner contemplated under this Contract, and has failed to remedy the failure or default within a period of fourteen (14) days from the receipt of notice in writing by the University requiring the Contractor to do so.

7.3 Notwithstanding sub-clauses (1) and (2) above, the University may terminate this Contract without assigning any reason by giving the Contractor not less than fourteen (14) days prior written notice and in the event of any such termination, the Contractor shall be paid a pro-rated amount based on the Services completed or Goods delivered as at the effective date of termination and the Contractor shall thereafter be entitled to no further compensation.

7.4 Upon the expiry or termination of the Contract for any reason, the Contractor shall immediately cease the use of any materials and/or information provided by the University and shall return the same to the University unless notified in writing to the contrary by the University.

8 CONFIDENTIALITY

8.1 The Contractor shall hold and keep in strictest confidence any and all Confidential Information, and shall not disclose the Confidential Information to any person except as permitted under these Conditions or with the prior written consent of the University. The Contractor undertakes to use the Confidential Information only for the purposes of performing the Contract.

8.2 The Contractor shall only disclose the Confidential Information to those of its employees or contractors who are directly involved in and who have a need to know for the purposes of performing the Contract, and provided that each of these employees or contractors are made aware of the confidentiality obligations in respect of the Confidential Information and have given a written undertaking to strictly observe the confidentiality obligations under this Contract as if those obligations were imposed on him or her directly. In any event, the Contractor shall be responsible for any breach of the confidentiality obligations hereunder by its employees or contractors and shall take all measures (including but not limited to court proceedings) to restrain such employees or contractors from prohibited or unauthorised disclosure or use of the Confidential Information.

8.3 The Contractor shall not copy or reproduce the Confidential Information in any form whatsoever except to the extent necessary for the purposes of performing the Contract.

8.4 At the University's request, the Contractor agrees to promptly return to the University any and all Confidential Information or destroy such Confidential Information.

8.5 The Contractor shall not publish any news releases, publicity or marketing materials or make references, statements, or announcements concerning the Contract or the University, including without limitation, the existence of the Contract, without the prior written consent of the University.

8.6 The Contractor shall immediately advise the University of any unauthorised disclosure, misappropriation or misuse by any person of any Confidential Information, upon the Contractor having knowledge of the same.

8.7 The provisions under this Clause 8 shall survive the termination or expiration of the Contract and remain in full force and effect.

9. INTELLECTUAL PROPERTY

9.1 Unless expressly agreed in writing by the University, the Contractor shall not be entitled to use any licence, patent, copyright, trade secrets or any other industrial or intellectual property right ("**Intellectual Property (IP)**") owned or used by the University, which shall remain vested in and the absolute property of the University.

- 9.2 Unless otherwise expressly agreed in writing by the University all right, title and interests in any IP which result from or are generated pursuant to or created for the purposes of this Contract shall vest in the University. The Contractor shall assign or do all things necessary to procure the assignment of such IP to the University absolutely.
- 9.3 For the avoidance of doubt, any IP in any results, report, data or information generated or produced by the University or another person on behalf of the University as a result of this Contract shall be owned by the University.
- 10. GIFTS, INDUCEMENTS AND REWARDS**
- 10.1 The University may terminate the Contract and recover from the Contractor the amount of any loss resulting from such termination, if the Contractor shall have offered or given or agreed to give to any person any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of the Contract with the University or for showing or forbearing to show favour to any person in relation to any Contract with the University, or if the like acts shall have been done by any person employed by the Contractor or acting on his behalf (whether with or without the knowledge of the Contractor) or if in relation to any Contract with the University the Contractor or any person employed by him or acting on his behalf shall have committed any offence under Chapter IX of the *Penal Code* or *Prevention of Corruption Act* or shall have abetted or attempted to commit such an offence or shall have given any fee or reward the receipt of which is an offence under Chapter IX of the *Penal Code* or the *Prevention of Corruption Act*.
- 11. INDEMNITY**
- 11.1 The Contractor agrees to indemnify, defend and hold the University harmless from and against any and all liabilities, damages, losses, claims, suits or judgments, and expenses (including reasonable legal fees) that the University may incur for injury or death of persons and damage to the University's property, equipment or facilities or the property of any other person in any manner arising out of the Contractor's provision of the Goods and/or Services, as applicable.
- 12. GENERAL**
- 12.1 Rights of Third Parties.
- A person who is not a party to this Contract shall have no right under the Contracts (Rights of Third Parties) Act to enforce any of its terms.
- 12.2 Sub-contracting and Assignment.
- (a) The Contractor shall not sub-contract or assign the Contract without the prior written consent of the University. The University shall be entitled to assign and/ or transfer its rights and obligations under this Contract to any of its related or associated companies without the prior written consent by the Contractor.
- (b) Notwithstanding any permitted sub-contracting or assignment or transfer of the Contract, the Contractor shall remain solely responsible for the performance and completion of its obligations under the Contract. Any act, omission, breach or non-compliance of the Contract by the subcontractors shall be deemed to be the act, omission, breach or non-compliance, as the case may be, of the Contractor whether or not authorised by the Contractor.
- 12.3 Variation.
- No variation whether oral or otherwise in the terms of this Contract shall apply unless such variation shall have first been expressly accepted in writing by the Contractor and the authorised contract signatory of the University.
- 12.4 Governing Law and Jurisdiction.
- The Contract shall be subject to, governed by and interpreted in accordance with the laws of the Republic of Singapore for every purpose. The Contractor submits to the exclusive jurisdiction of the courts of the Republic of Singapore.
- 12.5 Waiver.
- No failure or delay on the part of the University to exercise any right or remedy under this Contract shall be construed or operate as a waiver thereof nor shall any single or partial exercise of any right or remedy as the case may be.
- 13. INCOTERMS**
- 13.1 When used in the Contract, 'Incoterms' means INCOTERMS® 2010 published by the International Chamber of Commerce, which shall be deemed to be incorporated into and form an integral part of the Contract. Unless the context otherwise requires, any term or expression which is defined in or given a particular meaning by the provisions of Incoterms shall have the same meaning in the Contract, but if there is any conflict between the provisions of Incoterms and the Contract, the latter shall prevail.
- 14. PERSONAL DATA PROTECTION**
- 14.1 The Contractor shall comply with the Personal Data Protection Act 2012 of Singapore ("PDPA") and all subsidiary legislation related thereto (collectively "**Data Protection Legislation**") with regard to any and all personal data (as defined in the PDPA) that it receives from the University.
- 14.2 The Contractor agrees that when dealing with personal data received from the University, it shall:
- (a) only use personal data in accordance with the purposes for which the University has disclosed the personal data, in accordance with the instructions of the University or as is necessary for the University to fulfill its obligations under the Data Protection Legislation;
- (b) take appropriate technical and organisational measures to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorised disclosure or access and against all other unlawful forms of processing. Such measures shall ensure a level of security appropriate to the risks represented by the processing and the nature of the data to be protected, having regard to the state of the art and the cost of implementation;
- (c) give the University notice in writing as soon as reasonably practicable should it be aware of, or reasonably suspect, that any of the events referred to in Clause 14.2(b) has occurred and shall promptly take all steps necessary to remedy the event and prevent its re-occurrence;
- (d) not retain personal data for any longer than is necessary for the purposes for which the University disclosed the personal data;
- (e) limit disclosure of such personal data to its employees on a need to know basis and only for the purposes of processing for which such personal data was disclosed by the University;
- (f) not to disclose or transfer any personal data received from the University to any third party without the prior written approval of the University, and upon such additional terms and conditions which the University may impose on it for such disclosure or transfer; and
- (g) where the personal data is to be transferred to another country, to not do so unless the consent of the individual whose personal data is to be transferred to another country has been obtained except where an exception to such consent under the PDPA applies. Further, where the personal data is to be transferred to another country, to take any such additional measures as are necessary to secure that personal data is transferred in accordance with the requirements of the Data Protection Legislation.
- 14.3 Notwithstanding anything to the contrary, the Contractor shall indemnify and at all times hereafter to keep the University indemnified against any and all losses, damages, actions, proceedings, costs, claims, demands, liabilities (including full legal costs on a solicitor and own client basis) which may be suffered or incurred by the University or asserted against the University by any person, party or entity whatsoever, in respect of any matter or event whatsoever arising out of, in the course of, by reason of or in respect of any breach of any of the provisions in this Clause.

Annex A

REQUIREMENT SPECIFICATION

1. Scope of Quotation

Supply, Delivery and commissioning of one-unit High Performance Liquid Chromatography (HPLC), for the Department of Chemical & Biomolecular Engineering, Faculty of Engineering, National University of Singapore.

2. Technical Specifications List

2.1	Features	
2.1a	Modules is connected via fibre optic noise resistant high-speed transmission technology to enhance the reliability and sensitivity of a connected mass spectroscopy detector for a LCMS setup	
2.2	Specification	
2.2a	Auto sampler injector	
	i.	Injection Volume (µl): 0.1 to 50
	ii.	Injection time (sec/sample): < 10
	iii.	Maximum operating pressure : 70 MPa
	iv	Flow line rinse capability before and after sampling
	v.	Sample processing volume (at least): 160 x1.5 mL vials
	vi.	It is designed to handle 96-well microtiter plate and 384-well microtiter plate
	vii	Temperature range °C: 4 to 45
	viii	Temperature accuracy °C: ±2
	Ix	The carry-over without rinse: < 0.005 %
	x	Operating pH range: 1 to 14
	xi	It is capable of standalone operation with digital touch-screen operating keys
2.2b	Column oven	
	i.	Temperature range °C: -5 to 60
	ii.	Temperature accuracy °C: ± 2
	iii.	Forced air circulation

	iv	Compartment (at least): 3x300 mm columns, or 6x100 mm columns	
	v.	It has built-in slots for valve control functions	
2.2c	Data management system		
	i.	OS (at least): Genuine MS Windows 8	
	ii.	Minimum software needs	
		▪	automatic execution of system checks, auto-purge and baseline checks
		▪	display the online status of instruments
		▪	one-point digital instrument control, qualitative and quantitative processing, report creation and self-diagnosis
		▪	real-time editing (sample addition, deletion and modification) during the batch run
▪	register all events (log files) audit trails for data, method, batch, report and user administration		
2.2d	Degassing unit		
	i.	Membrane degassing unit (at least) : 2 solvents	
	ii.	Internal capacity (at least): 400 µl per flow line	
2.2e	Photo diode array detector		
	i.	The detector allows 3-way temperature control on lamp, flow cell and spectrometer for maximized baseline stabilisation	
	ii.	The detector has built-in UV cut-off filter to prevent photo-degradation on photo-sensitive chemicals	
	iii.	The wavelength range: 200 nm-800 nm	
	iv	At least 1024 elements with an element resolution of 0.6 nm/element	
	v.	2 modes of operation using a variable slit	
		▪	High Resolution mode at a slit width of 1 nm
		▪	High Sensitivity mode at a slit width of 8nm
	vi	A flow cell	
		▪	volume: 1.0 µL
		▪	cell path length: 10 mm
		▪	maximum pressure: 8 MPa
	vii	wavelength accuracy: ±1 nm	

	viii	wavelength reproducibility: $\pm 0.1\text{nm}$
	ix	Drift: $< 0.4 \times 10^{-3} \text{ AU/H}$
	x	Linearity $\geq 2.5 \text{ AU}$
	xi	Buffering function to collect up to 20 min of data for all wavelength regions in case of PC malfunctions
	xii	The detector capable to automatically recognize the flow cell
2.2f	Solvent delivery system	
	i.	It is capable to configure to run isocratic, high pressure gradient modes.
	ii.	It is able to run in both reverse and normal phase conditions without need of changing any part.
	iii.	The flow rate ml/min: 0.2 to 10
	iv	Flow rate accuracy: $< \pm 0.06\%$ at 1mL/min.
	v.	The pumping mechanism is parallel-type plunger with 10 μL /stroke
	vi	The maximum pressure setting range (at least): 70 MPa at $< 3 \text{ ml/min}$ flowrate.
2.2g	System control	
	i.	Direction system controller from touch screen keypad operation
	ii.	It is able to acquire up to 24 hours for one analysis, at 500ms sampling rate
	iii.	The system is controllable from a web-based interface via a network, and allows it to be controlled, monitored and maintained via web browser and cell-phone app.
2.3	Others	
2.3a	Power requirements must be compatible with Singapore power supply	
2.3b	1 year + extended 2 years warranty inclusive of all parts, transport and on-site labour from the date of commissioning.	
2.3c	Provide track records and reference of similar project/capacity for the past 3 years	

3. Other Requirements

- 3.1 Supplier should deliver within 12 weeks after PO issued.
- 3.2 Delivery: Delivered Duty Paid (DDP: Incoterms 2010) to National University of Singapore:
Address: National University of Singapore
Faculty of Engineering
Department of Chemical and Biomolecular Engineering
5A Engineering Drive 1 T-Lab #03-01A Singapore 117411

4. Instructions to Suppliers

- 4.1 Please submit the following documents
 - (a) Your Quotation and technical brochures
 - (b) Annex B - Contract Price
 - (c) Annex C - Compliance Table
- 4.2 Delivery and Commissioning of one-unit High Performance Liquid Chromatography (HPLC) must be carried out on normal working hours.
Monday to Thursday: 8:30 am to 6.00 pm
Friday: 8:30 am to 5.30 pm
Saturday, Sunday & Public Holiday: Closed
- 4.3 For clarifications please contact
Dr. Liu Ji
Email: liu.ji@nus.edu.sg
Tel: 8264 0307

5. Evaluation Criteria

The following criteria will be used in the evaluation of the Quotation.

5.1 Critical Criteria*

Compliance with all Specifications Listed in **Annex A, Clauses 2.1 to 3.0**

****Quotation offers that do not meet the critical criteria set out above is liable for disqualification****

5.2 Other Criteria

Price Competitiveness (100%)

Annex B - Contract Price (excluding Singapore Goods and Services Tax)

S/N	Item Description	Unit of Measurement	Quantity	Currency	Unit Price	Total Price	Remarks
1.	one-unit High Performance Liquid Chromatography (LC)	EA	1				

Company Name:

Company Stamp:

Annex C - Compliance Table

S/N	Descriptions	Compliance (Y) / (N)	Remarks
2.1	Features		
2.1a	Modules is connected via fibre optic noise resistant high-speed transmission technology to enhance the reliability and sensitivity of a connected mass spectroscopy detector for a LCMS setup		
2.2	Specifications		
2.2a	Auto sampler injector		
i.	Injection Volume (µl): 0.1 to 50		
ii.	Injection time (sec/sample): < 10		
iii.	Maximum operating pressure (at least): 70MPa		
iv	Flow line rinse capability before and after sampling		
v.	Sample processing volume (at least): 160 x1.5 mL vials		
vi.	It is designed to handle 96-well microtiter plate and 384-well microtiter plate		
vii	Temperature range °C: 4 to 45		

S/N	Descriptions		Compliance (Y) / (N)	Remarks
	viii	Temperature accuracy °C: ±2		
	ix	The carry-over without rinse: < 0.005 %		
	x	Operating pH range: 1 to 14		
	xi	It is capable of standalone operation with digital touch-screen operating keys		
2.2b	Column oven			
	i.	Temperature range °C: -5 to 60		
	ii.	Temperature accuracy °C: ± 2		
	iii.	Forced air circulation		
	iv	Compartment (at least): 3x300 mm columns, or 6x100 mm columns		
	v.	It has built-in slots for valve control functions		
2.2c	Data management system			
	i.	OS (at least): Genuine MS Windows 8		
	ii.	Minimum software needs		
		automatic execution of system checks, auto-purge and baseline checks		

S/N	Descriptions		Compliance (Y) / (N)	Remarks
		▪ display the online status of instruments		
		▪ one-point digital instrument control, qualitative and quantitative processing, report creation and self-diagnosis		
		▪ real-time editing (sample addition, deletion and modification) during the batch run		
		▪ register all events (log files) audit trails for data, method, batch, report and user administration		
2.2d	Degassing unit			
	i.	Membrane degassing unit (at least) : 2 solvents		
	ii.	Internal capacity (at least): 400 µl per flow line		
2.2e	Photo diode array detector			
	i.	The detector allows 3-way temperature control on lamp, flow cell and spectrometer for maximized baseline stabilisation		
	ii.	The detector has built-in UV cut-off filter to prevent photo-degradation on photo-sensitive chemicals		
	iii.	The wavelength range: 200 nm-800 nm		

S/N	Descriptions		Compliance (Y) / (N)	Remarks
	lv	At least 1024 elements with an element resolution of 0.6 nm/element		
	v.	2 modes of operation using a variable slit		
		▪ High Resolution mode at a slit width of 1 nm		
		▪ High Sensitivity mode at a slit width of 8nm		
	vi	A flow cell		
		▪ volume: 1.0 µL		
		▪ cell path length: 10 mm		
		▪ maximum pressure: 8 MPa		
	vii	wavelength accuracy: ± 1 nm		
	viii	wavelength reproducibility: ± 0.1 nm		
	ix	Drift: $< 0.4 \times 10^{-3}$ AU/H		
	x	Linearity ≥ 2.5 AU		
	xi	Buffering function to collect up to 20 min of data for all wavelength regions in case of PC malfunctions		
	xii	The detector capable to automatically recognize the flow cell		

S/N	Descriptions		Compliance (Y) / (N)	Remarks
2.2f	Solvent delivery system			
	i.	It is capable to configure to run isocratic, high pressure gradient modes.		
	ii.	It is able to run in both reverse and normal phase conditions without need of changing any part.		
	iii.	The flow rate ml/min: 0.2 to 10		
	iv	Flow rate accuracy: < ±0.06% at 1mL/min.		
	v.	The pumping mechanism is parallel-type plunger with 10 µL/stroke		
	vi	The maximum pressure setting range (at least): 70 MPa at <3 ml/min flowrate.		
2.2g	System control			
	i.	Direction system controller from touch screen keypad operation		
	ii.	It is able to acquire up to 24 hours for one analysis, at 500ms sampling rate		
	iii.	The system is controllable from a web-based interface via a network, and allows it to be controlled, monitored and maintained via web browser and cell-phone app.		

S/N	Descriptions	Compliance (Y) / (N)	Remarks
2.3	Others		
2.3a	Power requirements must be compatible with Singapore power supply		
2.3b	1 year + extended 2 years warranty inclusive of all parts, transport and on-site labour from the date of commissioning.		
2.3c	Provide track records and reference of similar project/capacity for the past 3 years		
3	Other requirements		
3.1	Supplier should deliver within 12 weeks after PO issued		
3.2	Delivery: Delivered Duty Paid (DDP: Incoterms 2010) to National University of Singapore: Address: National University of Singapore Faculty of Engineering Department of Chemical and Biomolecular Engineering 5A Engineering Drive 1 T-Lab #03-01A Singapore 117411		