INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Ref. PR No. 1000049067 Rfx. No. 6100002338

Item Description – **High Performance Liquid Chromatography System (Qty – 1 No.)**

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1.	**General system specification**	The system should be an automatic computer controlled Quaternary High Performance liquid chromatograph system with suitable software equipped with a suitable pump that can handle four solvents with auto sampler, Column Compartment with heating and cooling and Photodiode array Detector capable of working in both isocratic & gradient operations. Should have the provision for complete upgradation capability (module wise and system wise) in future.		
2.	**Graphical User Interface / Touch Screen**	a) Should be able to perform and schedule automated task like auto-startup and auto-shutdown without logging in to software. b) Should have basic hardware maintenance guide in the screen. c) Should have basic chromatographic troubleshooting guide like pressure, peak shape, baseline and retention time related problems. d) Should have instrument consumable trends. Should have solvent consumption and injection trends.		

3.	**Quaternary pump**	a) Pump should provide error-free programming of pump parameters including flow rates, operating pressure limits, compressibility compensation, calibration and diagnostics. b) The Solvent Delivery Unit (Pump) should be capable of operating with 2 or more Solvents at a time during gradient operation limits, compressibility compensation, calibration and diagnostics. c) Pump mechanism should be hydraulic system with Dual piston in series pump with servo-controlled variable stroke drive, power transmission by gears and ball screws, floating pistons. d) Number of solvent channels should be four. e) Settable flow rate range should be from 0.001 – 10 mL/min, in 0.001 mL/min increments. f) Flow accuracy should be ± 1 %. g) Flow rate Precision should be ≤0.07 % RSD. h) Must have an operation pressure range of 0 – 5802 psi (0-400 bar) or better. i) Should have a pH range 1.0 — 12.5. j) Inbuilt degassing unit with internal degassing volume not less than 1.5mL for each channel should be available for 4 channels. k) Composition range should be settable: 0 – 100 % in 0.1 % increments l) Electronically controlled Inlet valve for higher organic mobile phases and high strength buffers. m) Should have leak sensor.		
4.	**Auto Sampler**	a) The Auto sampler must have a capacity to hold 132 samples in 2 mL vials, or better b) Must have an operation pressure range of 0 – 8702 psi or better.		

		c) Injection range should be 0.1 to 100 µL. d) Injection Precision should be <0.25 % RSD. e) Sample viscosity range should be 0.2 – 5.0 cP f) Injection cycle time should be 20 s or better. g) Should have advanced features like auto addition, auto derivatization, auto dilution, premixing and needle rinsing programs. h) Should have leak sensor i) Sample cooler with Ambient operating temperature of 4 – 40 °C		
5.	**Column compartment**	a) The Column heater should have Temperature range of 10 °C below ambient to 85 °C b) Operating principle should be thermo-statted column compartment with dual, independent Peltier-element c) Temperature accuracy should be ±0.5°C. d) Temperature stability should be ±0.1 °C. e) Temperature precision should be ±0.05°C. f) There should be 2 independent temperature zones in a single device.		
6.	**DAD detector**	a) Wavelength range: 190-950 nm or better. b) Wavelength accuracy: ± 1 nm or better. c) Slit width: Programmable for 1, 4 , 8 nm or better d) Noise: +/- 0.7 x 10-5 AU at 254 nm or better. e) Detector Type: 1024 element Diode Array f) Data Rate: 120 Hz or better. g) Light Source: Deuterium lamp and tungsten lamp h) Standard flow cell for Analytical Workflow.		

		i) Should have leak sensor. j) Second generation of Electronic temperature control (ETC) for the complete optical unit should be available.		
7.	**RID detector**	a) Refractive index range: 1.00 – 1.75 RIU b) Measurement range ±500 X 10-6 RIU c) Optics temperature control should be available from 5 °C above ambient to 55 °C d) Short term noise: <±1.25 X 10-9 RIU e) Drift: <200 X 10-9 RIU/hr		
8.	**Chromatography Data Software**	Chromatography Data system should have 32/64-bit design for windows 10/11 or compatible software. Real time triggers to react the condition i.e. to take action on Fault, Stop, Start, wavelength switching, injection etc. The software should be genuine & original**.**		
9.	**Warranty**	Instrument Should be supplied with 1 Year Standard Warranty		