



HEAD OF THE DEPARTMENT
DEPARTMENT OF PHYSICS
Gauhati University

Gauhati University
Assam 781014, India

www.gauhati.ac.in

Ref. : PHY/MPB/2018/1512 dated 03-01-2018

Notice Inviting Quotations

Sealed quotations from reputed manufacturers/dealers/suppliers are invited for **Seventeen** (17) numbers of **Sets of Scientific Equipments**, to be procured by the Physics Department, Gauhati University under then **FIST Grant** (Fund for Improvement in S&T Infrastructure) of DST, Govt of India [FIST Grant No. SR/FST/PSI-213/2016(C)]. This NIQ has the approval of the DAC, Physics vide Resolution No. PHY/DAC/2017/08 dated 19 December, 2017.

The quotations should be addressed to **The Head of the Department, Department of Physics, GU** and must reach the Department of Physics, Gauhati University by **Wednesday, 31st January, 2018**.

The received quotations will be opened on **Thursday, 1st February, 2018** at the Office of the Department of Physics, GU at **11:00 AM**.

All prospective suppliers are requested to go through the Specifications of the items and Terms & Conditions mentioned in the following page.

Dr Madhuriya P Bora
Head of the Department of Physics, GU



Physics Department | Gauhati University

+91-361-2570531 | physics@gauhati.ac.in

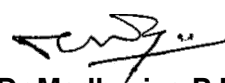
gauhati.ac.in/physics.php | web.gauhati.ac.in/physics

Physics Department, Gauhati University, Assam 781014, India

Terms & Conditions

1. A single supplier/dealer/manufacturee may quote for all the 17 (Seventeen) Sets of Scientific Experiments or for different numbers of Sets. However, any quotation for any of the Sets **MUST** include all the items and their specified mentioned quantities included in a particular set.
2. The quotation **MUST** be complete in terms of quantities of various items, required accessories etc., mentioned under a particular set of experiment. No part-quotation will be accepted which does not include all the items mentioned under the set.
3. The selection of the quotations will be based on feasibility, completeness, and cost of the proposal, which is best suited for the department.
4. Gauhati University (GU) reserves the right to modify/cancel the requirements without any further notice.
5. All quotations will be treated as per GU rules and regulations.
6. Quoted rates should be preferably valid for 90 days.
7. All quotes **MUST** be made in Indian Rupee unless the supplier/dealer/manufacturee is from outside India, and **MUST** mention Tax/Installation charges separately, wherever applicable.
8. All suppliers **MUST** produce an “**OEM Authorisation Certificate**” for the quoted items and manufacturee’s price lists wherever applicable.

For specifications, please see the next page.



Dr Madhurjya P Bora
Head of the Department of Physics, GU

Specifications of Various Items

Sl No.	Instrument / Item	Quantity (No of Sets)
1.	<p>6-inch Refractor (Astronomical Telescope)</p> <p>Specifications of Instruments</p> <p>6-inch, f/8 Astronomical Telescope (Achromatic Refractor) on motorised equatorial mount with at least 2 dos of Plössl eyepieces, and mounted finderscope.</p>	01
2.	<p>Common Detector Testing & Data Acquisition System</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Si-Photomultiplier or MPPC (3 x 3 mm², 25 and 50 micron), Two Pieces each • BC-422 Series (3 mm x 3 mm x 5 mm) and Aluminium Reflecting Foil, One each • Preamplifier (Photonics made), Four Pieces • Amplifier (AMP-0611 and AMP-0604), Four Pieces each • Power Supply : Pico-Ammeter (HM 8112-3), Two each • Programmable DC Power Supply (Hamag HM 8143), One Piece and Voltcraft PSP 1803, 200 W, Two Each • Constant Fractional Differentiator (CFD) : One Piece • Gate and Delay Generator (GDG) : One Piece • Time-to-Amplitude Converter (TAC) : One Piece • Nim-Bin Power Supply with accessories (Two Channel) : One Piece • Two-Channel MCA : One Piece • Delay Cable, Counter : One each 	01
3.	<p>Top-Down Synthesis of Nanomaterials</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Mini Ball Mill with Single Bowl Holder <ol style="list-style-type: none"> 1. Disk Rotation of 300 RPM or more 2. Hardened Steel Bowl - 80 ml with lid having gas purging facility 3. 100 nos of Hardened steel ball of 6 mm Diameter 	01
4.	<p>Top-Down Synthesis of Nanomaterials</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Digital Balance (4 Digit Balance) with <ol style="list-style-type: none"> 1. Auto Internal Calibration 2. Overload Protection 3. Capacity of 220 gm or higher 4. Readability : 0.1 mg 5. Linearity : 0.2 mg 6. Repeatability : 0.08 mg 7. Resolution : 0.1 mg or better 8. Pan Diameter : at least 90 mm 9. Solid Metal Base and Reinforced Body 	
<p>This page contains items with Sl No. 1 to 4</p>		

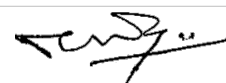


SI No.	Instrument / Item	Quantity (No of Sets)
5.	<p>Deposition and Characterisation of Thin Films</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • <i>Magnetic Stirrer with Heater</i> • <i>Digital Balance</i> • <i>Heater</i> • <i>Sodium Vapour Lamp</i> • <i>Travelling Microscope</i> • <i>Digital DC Nano-Ammeter</i> • <i>Spin Coater with Rotary Pump</i> • <i>Sonicator</i> 	01
6.	<p>Production and Measurement of Low Pressure</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Vacuum Pumping System including <ol style="list-style-type: none"> 1. <i>Rotary Pump</i> 2. <i>Oil Diffusion Pump with Air or Water Cooling Facility</i> 3. <i>Pirani Gauge (preferably Analog) with two Gauge heads for Foreline and Rough Vacuum</i> 4. <i>Penning Gauge with Head (preferably Analog), Foreline and Rough Valve or Combination Valve</i> 5. <i>Gate Valve or Butterfly Valve</i> 6. <i>SS Chamber or Collar with Provision for Mounting Penning Gauge, and Vent Option</i> 7. <i>Bellows</i> 8. <i>KF25 and Other Accessories for creating vacuum in external system</i> 5. <i>Support Stand and Other necessary accessories</i> 	01
7.	<p>Cosmic Ray Experiments using FPGA</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • <i>Spartan-6 FPGA Embedded Kit</i> • <i>Xilinx Kintek-7 FPGA KC 705 Evaluation Kit (Part No. EK-K7-KC705-G)</i> • <i>GPS Receiver-Antenna Module containing MediaTek MT3339 Chipset</i> 	01
8.	<p>Silicon Surface Barrier Detector Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • <i>Si-SBD : BU-019-300-AS - ULTRA-AS Ion-Impacted Detector (100 μm), One Piece with B-Mount and Micro-Dat Cables (4 Nos) : Vacuum Tight for Alphas</i> • <i>Detector Bias Supply for Si-SBD (0-500 Volts with good precision)</i> • <i>Rotary Pump, Hose Pipes (at least 1.5 m long, Dia : 4 cm in one side and 3 cm in other side)</i> • <i>Hose Pipe</i> • <i>Couplings</i> • <i>Adapter : 4 cm to 3 cm, Blank Off, KF, MDC driver etc.</i> 	01
9.	<p>Gamma-Ray Spectroscopy Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • <i>Nal (Detector)</i> • <i>Nim-Bin with Bias Supply and Readout</i> • <i>Single Channel Analyser</i> • <i>Amplifier</i> • <i>Cables,</i> • <i>Oscilloscopes</i> 	01

This page contains items with SI No. 5 to 9



SI No.	Instrument / Item	Quantity (No of Sets)
10.	<p>Determination of Conversion Efficiency of Crystal - Second Harmonic Generation Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Helium-Neon Laser (100 mW) • KDP Crystal • Urea Crystal • Notebook Computer • Visible Spectrometer • Associated Optical Instruments <ol style="list-style-type: none"> 1. Objective 2. Neutral Density Filter 3. UV Transmitting Filter 4. Interference Filter 5. Step-up Motor 	01
11.	<p>Zeeman Effect Experiment Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • IR Filter with Mount • Green Filter with Mount • Polariser with Variable Aperture • Fabry-Perot Etalon • Camera Lens Assembly • CCD Camera • Electromagnet with Power Supply • Digital Gauss Meter • Mercury Vapour Lamp with Power Supply and accessories 	01
12.	<p>Absorption Spectrophotometer</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • Single or Dual Beam • Wavelength Range : 190-1000 nm or wider • Wavelength Accuracy : ± 1 nm • Repeatability : 0.5 nm • Auto Wavelength Setting • Wide Absorbance and Transmitting Range with Photometric Accuracy of $\pm 0.5\%$ T or better • Combination of Tungsten Halogen and Deuterium Lamps or Xenon Lamp • Computer for Data Acquisition and Storage • Auto Setting and Auto Scan for both Solution and Thin Film samples • 1-Pair of Quartz Cuvette and Other Common Accessories 	01
This page contains items with SI No. 10 to 12		



SI No.	Instrument / Item	Quantity (No of Sets)
13.	<p>Electronic System, testing, and Design Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • 200 MHz Mixed Signal Oscilloscope <ol style="list-style-type: none"> 1. Analog Channel : 04, Digital Channel : 8 2. Max. Sampling Rate : 2GS/a 3. Rise Time: ≤ 2.5 ns 4. Vertical Sensitivity : 1 mV/div to 5 V/div 5. Time Base Range : 2 ns to 250 s/div 6. Memory Depth : 1 Mpts 7. Waveform Update Rate : > 50,000 wfm/s 8. Cursor Measurement : Amplitude, Time, Frequency (FFT), Manual, tracking, Binary, Hex 9. Mode : Normal, XY, Roll 10. Trigger Types : <ol style="list-style-type: none"> (i) Standard : Edge, Pulse Width, Pattern, Video (ii) Optional : I2C, SPI, CAN ,LIN, RS232/422/485/UART 11. Channel to Channel Isolation : ≥ 40 dB from DC to Max Bandwidth Should have integrated digital voltmeter, 5 digit counter and optional inbuilt 20 MHz Function Generator with AM, FM and FSK facility. 12. Should have mask testing and segmented memory option 13. Display: 8.5 inch WVGA, 800 x 480. 14 Warranty : at least 5 Years. • Multisim Education Single Set • Ultiboard Education Single Set 	01
This page contains items with SI No. 13		



SI No.	Instrument / Item	Quantity (No of Sets)
14.	<p>Network Analysis Setup</p> <p>Specifications of Instruments</p> <p>• Vector Network Analyzer and Accessories</p> <ol style="list-style-type: none"> 1. Handheld 2. Instrument should be combination of standard Vector Network Analyzer & optional Cable and antenna tester, distance-to fault, return loss, cable loss, Power Meter with USB Sensor, Vector volt meter. 2. Calibration Kit & Cables MUST be provided 3. Full 2 Port Network Analyzer and VNA Time Domain Analysis 4. Optional Time domain Analysis feature should be available 5. Should have inbuilt capability of RF power measurement, distance to fault, return loss and vector voltmeter. 6. Frequency Range : 2 MHz – 4 GHz 7. Accuracy: ± 2 ppm 8. Aging rate: ± 1 ppm/yr 9. Measurement : S11, S21 magnitude and phase, S22, S12 magnitude and phase 10. Data Points : 101, 201, 401, 601, 801, 1001, 1601, 4001, 10,001 11. Formats : Log magnitude, linear magnitude, VSWR, phase, Smith Chart, polar, group delay, unwrapped phase, real, imaginary 12. System Dynamic Range (IF BW 300 Hz) : 100 dB 13. Receiver Dynamic Range (IF BW 300 Hz) : 104 dB 14. Test Port output power : Minimum: - 40 dBm. Maximum: + 5 dBm 15. Display Range : <ol style="list-style-type: none"> a) Log Magnitude S11 or S22 : - 1000 to 1000 dB b) Log Magnitude S11 or S2 : - 1000 to 1000 dB 16. VSWR: 1.01 to 1000, Resolution: 0.01 17. Directivity: 42 dB 18. Source Match: 36 dB 19. Display : 6.5-inch TFT Colour VGA, LED Backlit 640 x 480 with anti-glare coating 20. Power : Battery & Main powered. Without battery instrument should work with only main power 21. Connector : Type N, Female 22. Damage Level : > + 23 dBm 23. Data Storage: 16 MB Internal 24. Interface: USB 2.0, Mini USB, LAN-100 Base T 25. RF Power sensor should be capable to display power measurements on a PC or instruments itself, dynamic range of -60 to +20 dBm, measurement speed of up to 50 readings/second. 26. Accessories : Power Cord, Power Adaptor, RF Cable, Carrying Bag, Calibration Certificate. 	01
This page contains items with SI No. 14		



SI No.	Instrument / Item	Quantity (No of Sets)
15.	<p>Microprocessor and Microcontroller Setup</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • 8085 Advanced Microprocessor Training and Development Kit with <ol style="list-style-type: none"> 1. High performance 8 bit 8085A CPU@3MHz 2. On board 40x2/16x2/20x4 LCD Interface options 3. On board USB Interface hardware 4. 16 powerful monitors FIRMWARE including all standard commands and codes functions and utility subroutines, assembler and dissembler, 4K used in FIRMWARE 5. 8 K user RAM 6264 with battery backup for sockets using 3.6V Ni-Cd Battery 6. Three 28 pin sockets provided for memory expansion upto a maximum of 56 K 7. Versatile Keyboard/Display controller using 8279 brought out to separate FRC Connector 8. 24 Parallel I/O lines 8255 brought out to separate FRC connector 9. 22 Parallel I/O lines 8155 brought out to separate connector 10. 2 K bit static RAM (256) and with available timer 11. On board 40x2 LCD Display and connector for 104 key standard PC compatible keyboard 12. Three 16 bit Timer/Counter channels onboard 13. Serial I/O through auto adjusting type RS232 channel 14. Built in audio cassette interface 15. Switch mode Power Supply +5V 1A, +12V 1A, -12V 0.5A 16. Cable and Connector 17. User Manuals • 8051 Development Kit 	01
This page contains items with SI No. 15		



SI No.	Instrument / Item	Quantity (No of Sets)
	<p>Power Consumption : 4 VA approximately Test Points : 45 nos. Interconnections : 2 mm socket Power Supply : 110-220 V \pm10%, 50/60 Hz</p> <p>6. Differential Pulse Code Modulation (DPCM) Signal generator block Functions : Sine and Square O/P frequency range : 300 Hz to 3.4 KHz Audio blocks : Audio I/P and O/P processing circuits Control signals : R/W for ADC, reset, Latch enables, OEs Sampling frequency : 8 KHz Bits per sample : 5 bits including sign bit Bandwidth improvement Compared to 8 bit PCM : 3 bits per sample Interconnections : 2 mm socket DC Supply : \pm 5V, \pm 12V DC, 200 mA</p> <p>7. PN Sequence Generator On board four selectable clock frequencies & six selectable data sequence, External clock upto 1 MHz Functional blocks indicated on board mimic along with a 20 MHz Signal Generator to generate Sine, Square, Ramp, Pulse, Triangle, Gussian Noise, PRBS, DC, Cardiac, Exponential Fall, Exponential Fall, Gussian pulse, Haversine, Lorentz, D- Lorentz, Negative Ramp, Sinc. And should support modulation types like: AM, FM, PM, FSK, BPSK, PWM, Sum (Carrier+ Modulation)</p> <p>8. PAM, PWM, PPM trainer</p> <p>9. ASK,FSK PSK trainer</p> <ul style="list-style-type: none"> • Lock-in Amplifier • Data Acquisition Software Labview (Full Development System) - Single Set • Data Acquisition Card Data acquisition card 8AI(20kS/s, 14 bit), 2AO(5kS/s/ch), 13DIO, Multifunction I/O, USB, 32 bit counter 	
17.	<p>System Design using Field Programmable Logic Devices</p> <p>Specifications of Instruments</p> <ul style="list-style-type: none"> • FPGA Board and Software <ol style="list-style-type: none"> 1. Artrix-7 FPGA 2. Zynq7000 All programmable Soc Zc706 3. Zynq 7000 Zedboard • PC for Instrument Control (2 Nos.) <ol style="list-style-type: none"> 1. Desktop, Core I 3 processor, 4GB/8GB RAM, 1Tb HDD, Keyboard and mouse, DVD Rw, 18.5 in monitor , windows preinstalled (All in one) 2. Desktop , i7 processor, 8GB RAM, 23 inch monitor, 1Tb, windows preinstalled (All in one) 3. Laptop, i7 processor, 8GB RAM, 15.6 inch monitor, 1Tb HDD, windows preinstalled 4. Laptop, i3 processor, 8GB RAM, 15.6 inch monitor, 1Tb HDD, windows preinstalled 5. Accessories: Laser Printer upto 20 ppm 6. Accessories: Multifunction laser printer upto 20 ppm 7. Data acquisition card a8AI(20kS/s, 14 bit), 2AO(5kS/s/ch), 13DIO, Multifunction I/O, USB, 32 bit counter 	01
<p>This page contains items with SI No. 16 (contd) and 17</p>		

