The Government
Sadiq College Women
University Bahawalpur Pakistan

Technical Evaluation Report of Physics Lab Equipment Tender #16/2019-2020

The Tender opening was held on 27-01-2020 in ORIC Office by SMPC. One (01) Bidder Participated

1. Pakistan Analytics Supply

The Requested items along with specification are given below

Sr. No	Item Required	Qty.	Pakistan Analytics Supply	Technically Qualified	Technically Disqualified
1	Measurement of speed of light. Specifications: Complete Speed of Light Apparatus: 0.5 mW He-Ne Laser High Speed Rotating Mirror Assembly One-Meter Optics Bench Fixed Mirror Laser Alignment Bench Measuring Microscope Optics Bench Couplers Lens (48 mm FL) Lens (252 mm FL) Calibrated Polarizers (2) Component Holders (3) Laser Adapter Kit Alignment Jigs (2)	1	Apparatus for the Measurement of speed of light 1 Laser cum receiver module, 2 right angle mirror with stands, 1 lens, 1 lens holder, 1 manual. Made in Pakistan ii. Oscilloscope Dual channel 6-inch rectangular screen, Bandwidth DC to 20 MHZ high sensitivity 1mv/Div Vertical deflection Magnification X5 Sweep magnification X10, alternate Triggering, X-Y mode operation, Z-Axis Intensity modulation, Horizontal Deflection, Trigger Modes, Z-Axis, Calibration output voltage 2V P-P, complete with Two leads operated on 220volts. Best quality Made in China. Complete set as above.	Pakistan Analytics Supply	NA
2	Determination of Rydberg's constant.	1	Apparatus for the Determination of Rydberg's constant.		NA

	Specifications: Hydrogen-Deuterium Lamp Wavelengths: 410, 434, 486, 656 nm Digital Protractor Resolution: 0.1° Condensing Lens f = 50 mm Collimating Lens f = 100 mm Transmissive Grating 600 lines/mm Telescope Magnification: 8 x; diameter of objective lens: 21 mm with internal reference line Optical Rail Length: 74 cm; aluminum		Hydrogen Discharge tube or Neon Discharge tube or Helium Discharge tube or Oxygen Discharge tube Aragon Discharge tube or Nitrogen Discharge tube Mercury Discharge tube with 3KV HT power supply for spectrum Griffin type 220volts.set with any one tube With power supply Made in Pakistan ii. Spectrometer: Features: Spectrometer is an optical experiment instrument for measuring The angular deflections of light rays about a single axis The eye piece is illuminated by a light-emitti diode emitting Green light, which can be used for 100,00 times much more Than the incandescent On both the telescope and the collimator, pinin focusing Easier and more precise Technical Specification: The objectives of Collimator and Telescope: Focal length: 168mm Aperture: 22mm Field range: 3°22' The focal length of the eye piece: 24.3mm Magnification of the eye piece: 7' Separation-collimator and telescope Objectives: 100mm Adjustable range of the slit width: 0-2mm continuously adjustable Adjustable range of eye piece diopter: >±5 Prism table: Diameter: Φ70mm Rotatable range: 360° Range of vertical motion: 0-20mm Specification of the divided circle: Diameter: Φ174mm Range: 0° - 360° Small Div: 0.5° Vernier: Reads to 1'	Pakistan Analytics Supply	

			Complete unit, Made in China. iii. Diffraction grating 15000 lines per/ mm (600 lines/mı (Protected in glass plates) type Hilger and watts U.K.typ		
3	Determination of e/m of electron using fine beam tube. Specifications: Accelerating voltage : 0 - 250 V DC Coil current : 0.5 - 2.5 A, reversible Deflection plate voltage : 50-250 V, Reversible Display : Two row LCD display Power input : 230 VAC 50 Hz	1	**Apparatus for the Determination of e/m of electron using fine beam tube** E/M/Lorentz Force apparatus Demonstrator: Features: The Lorentz force demonstrator is useful for testing the Electron charge mass ratio. The Lorenz force exerted by magnetic field on moving electrons and deflection of moving electrons within an electric field. Technical Specification: Acceleration electrode voltage: 0-250V continuously adjustable Error of the voltmeter on panel ≤0.25% Magnetizing current: Current range 0-0.25A continuously adjustable Error of the ammeter on pan ≤0.25% Current direction 3 ways Clockwise, off, anticlockwise - Deflection plate voltag Continuously adjustable Voltage direction 3 ways Positive in up-plate, off, positive in down-plate Complete unit, Made in China.	Pakistan Analytics Supply	NA

4	Solar cell experiments. Specification: • Voltmeter • Ammeter • Solar plate • Wooden box with slider source	1	**Apparatus for Solar cell experiments.** 1 solar PV panel, 1 voltmeter/ammeter set, 1 resistance box, 1 focus lamp, connecting wires, 1 manual **Made in Pakistan**	Pakistan Analytics Supply	NA
5	Measurement of charge of electron by Millikan's oil drop method Specifications: Power supply : 230V AC, 50 Hz Power cord : 3 core 3 pin Operating voltage : 0 - 2 KV Video system : High performance CCD sensor Camera lens magnification : 30 X Lighting : High bright LED lighting mechanism Optical power : 1 W Dimension : 590 x 490 x 760 mm 3 Chamber Level Positions: Droplet Viewing Chamber Viewing Scope 30X Reticle Focus Plate Voltage Connectors Plate Charging Switch Bright 5-watt LED Lamp	1	Apparatus for Measurement of charge of electron by Millikan's oil drop method Millikan Oil Drop **Apparatus:** Technical Specification: Rated voltage: AC220V Rated frequency:50Hz Rated output power: 5W DC operating voltage between upper And lower polar plates: 0 ~ 450V Distance between polar plates: 5±0.2mm Total magnification of measuring Microscope: 30X Linear field of vision: ≥3mm Total division of division scale: 2±0.01mm Resolution of objective lens: 100 lines / mm Complete unit, Made in China.	Pakistan Analytics Supply	NA

6	Measurement of excitation potential of mercury (Frank-Hertz Experiment) Specifications: Franck - Hertz Tube : Argon Filled Tetrode **Power Supply Unit** V_{G1K} : 1.20 – 5.00 V (continuously variable) V_{G2K} : 0.00 – 95.00 V (continuously variable) V_{G2A} : 1.30 - 14.50 V (continuously variable) Filament Voltage : 2.8 - 3.40V (continuously variable) **Saw tooth waveform for CRO display** Scanning Voltage : 0 - 90 V Scanning Frequency : 18 ± 2 Hz Input Power : 230 V / 50 Hz Filling gas argon Filament voltage ≤ 6.3 VDC Accelerating voltage ≤ 100 VDC Wave crest (or trough) number 6 Argon tube lifespan ≤ 3000 hrs	1	Apparatus for Measurement of excitation potential of mercury (Frank-Hertz Experiment) FRANK-HERTZ Experiment Simple with built in Volt and MA Meters: Features: This instrument is used for proving Bohr's theory of atomic Energy level It can be done under normal temperature, demanding no heating or temperature keeping. It can also observed directly on the screen of oscilloscope. Technical Specification: F-H tube: Fill with argon gas Preheating time: <5min Micro-current measuring range:10-9 – 10-6 A Numbers of spectrum amplitude by > 5 Point-measuring: Numbers of spectrum amplitude by > 3 Oscilloscope: Complete unit as above, Made in china.		NA
7	B-H curve for different materials. Specification: • Instrument comprises of ac power supply 10-30 vac, • output selectable using band switch, • circuit diagram for bh curve printed, components connected behind the front panel, • Input & output connections brought out at sockets. • High performance	1	Apparatus for B-H curve for different materials. 1 solenoid, 2 samples, 1 power supply, 1 ammeter, 1 magnetometer with Hall probe, 1 rever connecting wired, 1 manual. **Made in Pakistan**		NA

	• Easy to use • Requires low maintenance				
8	Determination of dielectric constant of a liquid or Solid • Main Unit having audio oscillator (1 KHz), digital voltmeter (0 – 9.99 V dc), • Standard capacitance and electronic circuitry. • Dielectric Cells: 75 mm Gold plated brass discs (1 set) and 25 mm Gold plated brass discs (1 set). • Samples: Low Range: • Glass, • Bakelite • Hi Range: PZT DISC	1	Apparatus for Determination of dielectric constant of a liquid or Solid 1 Parallel plate capacitor 25cmx25cm, 1 specimen glass/plastic plate, 1 inductor, 1 HF milliammeter, 1 plastic wooden base, 1 set connecting wires, 1manual. **Made in Pakistan**		NA
9	LASER Studies Experiment apparatus Specification: • Wavelength 10P20 • Pulse width GSWSP 100ns:4us • Peak Power 1MW • Energy 500mJ • Detectors Rofin photon drag model • Responsivity 0.12 V/MW • Response time <1nS • Resolution 8 bit • Band width 500Mhz • Diameter 2.5mm • Focal Length 50nm Different Glass and Other material	1	Not Quoted		
10	Calibration of thermocouples	1	Apparatus for Calibration of thermocouples and		NA

	and measure of melting point of given solid Specification: • Melting Point of material used in chemical, pharmaceutical and food industry. • Determine the melting point of any substance. • Consists of an aluminum cylindrical block for heating, radial holes admit a thermometer and glass capillary. • energy regulator Temperature controlled • Regulator fitted low heat switch		measure of melting point of given solid Study of variation of thermo-emf using Cu-Fe thermocouple, potentio meter method. 1 cu-Fe thermocouple, 1 support rod, 1 iron stand, 2 1 thermometer 0-110oC, 1 0-250oC thermometer, 1 DMM, 1 beaker 300 ml, 1 sand bath, 1 wire set, 1 manual, 1 potentio meter, 1 resistance box, 1 pow VDC, 1 jokey, Made **in Pakistan**		

It is verified that items included have requisite specifications.

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