

TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP – II)
INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR
(Formerly Bengal Engineering and Science University, Shibpur)
P.O. Botanic Garden, Howrah – 711 103, West Bengal, INDIA.
(Tel: 91-33-2668 4561 Extn 456; Telefax: 91-33-2668 5186, E-mail: besu.teqip@gmail.com)

Details of Equipment Purchase under National Competitive Bidding (NCB)

NCB Package No.	Equipment with Specification	Parties participated with quoted price (Rs.)	Parties disqualified, if any	Order placed to with amount (Rs.)
44	<p>(A) Desktop Computer – 56 Nos. Processor: Intel® Core i5-3550 Processor (6 MB cache up to 3.70 GHz, w/Integrated, HD2500 Graphics – vPRO iAMT 8.0) Chipset: Intel Q77 Express Chipset Motherboard: Motherboard make from the same OEM (PC manufacture) Memory: 4 GB (2x2GB) Non-ECC DDR3 1600MHz SDRAM Memory Expandable to: Memory expandable up to 32 GB DDR3-1600 MHz or higher up to 4 DIMM slots. Hard Disk: 500 GB 7200 RPM SATA Hard Drive Monitor: 19” or higher TFT Monitor (Same OEM make/brand as system) Ethernet: Integrated Gigabit (10/100/1000) Mouse: 2 Button USB Optical Scroll Mouse (Same OEM make/brand as system) Keyboard: 104 Keys USB keyboard (Same OEM make/brand as system) Optical Drive: Internal SATA DVD R/W Drive Graphics: Integrated HD Graphics Audio: Internal audio connector. I/O Ports: (a) 1 Serial (9 PIN); (b) 8 or more USB 2.0 (at least 2 in front); (c) 1 Ethernet (RJ45); (d) 1 VGA out; (e) 1 Stereo line in/out; (f) 1 Microphone Line in; (g) 1 Headphone (front) Expansion Slots: (i) Minimum: 1 full height PCIe x 16; (ii) 1 or more full height PCI. Security: (i) Memory Change Alert through BIOS in Windows environment and or Management Console; (ii) Serial, USB & Network Enable/Disable Port Control; (iii) Power-on Password; (iv) Security cable-lock option to lock both PC and Monitor. Trusted Platform Module (TPM) 1.2 or Higher, BTX Chassis with Chassis Intrusion Switch. Power Supply: 200-280 Watt min 90% or higher efficient power supply with Energy Star 5.2 compliant Bays: Min 1 internal 3.5" and 1 external 5.25" Cabinet: BTX Cabinet Operating System : Windows 7 Professional Certification Compliance / Certification: For OEM: ISO 9001 and 14001. For quoted model: UL/FCC, EPEAT GOLD & ENERGY STAR 5.2 Warranty: 3 years on-site comprehensive OEM Warranty</p>	<p>a) M/s. Trisita Marketing Pvt. Ltd. 137, S.P.Mukherjee Road, 1st Floor, Kolkata – 700026 Total Quoted Price: Rs. 22,33,504/- (inclusive of all)</p> <p>b) M/s. Smart Planet IT Solutions Pvt. Ltd. 106/C, Selimpur Road, Kolkata – 700031 Total Quoted Price: Rs. 24,08,000/- (inclusive of all)</p> <p>c) M/s. Nexus Infotech 40, College Road, Howrah – 711103 Total Quoted Price: Rs. 25,04,320/- (inclusive of all)</p>		<p>M/s. Trisita Marketing Pvt. Ltd. 137, S.P.Mukherjee Road, 1st Floor, Kolkata – 700026 Total order value: Rs. 30,31,741/- (inclusive of all)</p>

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<p>(B) Laptop – 01 No. Make: Reputed Manufacturer. Processor: 2nd generation Intel® Core™ i7-2670QM processor 2.20 GHz with Turbo Boost up to 3.10 GHz Memory: 4GB 1333MHz DDR3 SDRAM (1 x 4GB) or higher Hard Drive: 750GB 7200RPM Hard Drive Display: 15.6" (39.6cm) HD (1366x768) WLED display with TrueLife™ Video Card: 1GB NVIDIA® GeForce® GT 525M graphics with Optimus Optical Drive: Tray Load 8X DVD+/-RW Drive with DVD+R double layer write capability Wireless: Intel® Centrino® Advanced-N 6230 with Bluetooth v3.0+HS Operating System: Genuine Windows® 7 Home Premium SP1 64bit (English) Security Software: McAfee(R) Security Center -1 year ersion Primary Battery: 6 Cell Primary Battery Warranty: 1-year XPS Premier Service with 1-year Complete Cover</p>	<p>a) M/s. Trisita Marketing Pvt. Ltd. 137, S.P.Mukherjee Road, 1st Floor, Kolkata – 700026 Total Quoted Price: Rs. 58,240/- (inclusive of all)</p> <p>b) M/s. Smart Planet IT Solutions Pvt. Ltd. 106/C, Selimpur Road, Kolkata – 700031 Total Quoted Price: Rs. 62,000/- (inclusive of all)</p> <p>c) M/s. Nexus Infotech 40, College Road, Howrah – 711103 Total Quoted Price: Rs. 64,480/- (inclusive of all)</p>		
<p>(C) 1U/2U Rack-mount Intel Xeon Server - 03 Nos. Processor Socket: 2nos for Intel Xeon Processor E52620 or higher Processor – 1 No Intel Xeon Processor E52620 or higher Memory Socket: 16 or more DDR3 240-pin DIMM sockets supporting 512GB or more supporting 1.5V standard memory voltage & 1.35V Low memory voltage Memory: 4GB x 1 DIMM (unbuffered/registered ECC) HDD Bay: 12x 3.5" drive bays with HDD hot-swap trays HDD: 1TB Enterprise SATA LAN: 4x GbE USB Ports: 4x2.0 Series port A Storage Controller - SATA3 6.0 Gb/s Integrated Baseboard Management Controller (Integrated BMC), IPMI 2.0 compliant & Remote Management Module for IPMI remote control support. Matrox G200 2D Video Controller or equivalent or higher with 1x D-Sub 15-pin VGA connector Riser Card for PCIe 3.0, PCIe 3.0, PCIe 2.0 Slots Power Supply: 750W (1+1) redundant power supply with embedded fan 80 Plus Platinum or higher Hardware RAID Support 0, 1, 10, 5 or higher on Enterprise SATA HDD to be quoted as optional item if not integrated Supported Operating System: Linux</p>	<p>a) M/s. Trisita Marketing Pvt. Ltd. 137, S.P.Mukherjee Road, 1st Floor, Kolkata – 700026 Total Quoted Price: Rs. 6,44,316/- (inclusive of all)</p> <p>b) M/s. Smart Planet IT Solutions Pvt. Ltd. 106/C, Selimpur Road, Kolkata – 700031 Total Quoted Price: Rs. 5,49,000/- (inclusive of all)</p> <p>c) M/s. Nexus Infotech 40, College Road, Howrah – 711103 Total Quoted Price: Rs. 5,70,960/- (inclusive of all)</p>		

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	Warranty: 3-years			
	<p>(D) Workstation 01No. Processor: Intel Core i7-870 (2.93GHz,8MB) Processor Mother Board: Intel 57 chipset Motherboard Memory: 16GB, DDR3 non-ECC SDRAM Memory1066MHz Hard Disk Drive: 2x1TB SATA (7200RPM) Hard Disk Drive Graphics: 1GB ATI FirePro V4800, DUAL MON, 2 DP & 1 DVI Graphics Card Monitor: Professional 22" Widescreen Flat Panel Monitor Optical Drive:16X max SATA DVD + /-RW with Dual Layer Write Capabilities Ethernet: Integrated Broadcom 57780 Gigabit Ethernet controller Audio: Integrated High Definition Audio Operating System: Genuine Windows(R) 7 Professional 64bit Driver CD: One Set Power Supply: 350W Power Factor Correcting (PFC) power supply, 95W heat sink Keyboard & Mouse: Quiet Key Keyboard & Optical USB Mouse with Uninterrupted Power Supply system: 600VA or more with 30 mins. The workstation will be of reputed manufacturer, with above or higher then above configuration</p>	<p>a) M/s. Trisita Marketing Pvt. Ltd. 137, S.P.Mukherjee Road, 1st Floor, Kolkata – 700026 Total Quoted Price: Rs. 95,680/- (inclusive of all)</p> <p>b) M/s. Smart Planet IT Solutions Pvt. Ltd. 106/C, Selimpur Road, Kolkata – 700031 Total Quoted Price: Rs. 92,000/- (inclusive of all)</p> <p>c) M/s. Nexus Infotech 40, College Road, Howrah – 711103 Total Quoted Price: Rs. 99,840/- (inclusive of all)</p>		
45	<p>Tablet PC :</p> <ol style="list-style-type: none"> 1. Main Processor Type : Dual Core 2. Processor Speed : 1 GHz or more 3. Graphics Processor Type : Quad Core 4. Capacity : 32 GB 5. Display and Screen : Screen Size - Minimum 9.7 inch (diagonal) Display Resolution – 2048 x 1536 at 264 pixels per inch or better LED-backlit glossy widescreen Multi-touch display with IPS technology 6. Photo and Video geo-tagging : Video output to additional display Touch Screen Technology – Multi-touch 7. Digital Camera: Rear Camera Resolution – 5 mega pixel or above Front Camera Resolution – VGA front used for HD video calling 8. Connectivity and Expandability: Wireless capabilities – Bluetooth 4.0, Wi-Fi (802.11a/b/g/n) <p style="text-align: right;">Cellular – 4G Audio Input – Microphone Audio Output – Speaker(s)</p>	<p>M/s. Macintel Solutions 190C Rashbehari Avenue, Kolkata – 700 029 Total Quoted Price: Rs. 20,36,580/-(inclusive of all)</p>		<p>M/s. Macintel Solutions 190C Rashbehari Avenue, Kolkata – 700 029</p> <p>Total order value: Rs. 20,36,580/- (inclusive of all)</p>

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	<p>9. Battery : Battery run up time – up to 10 hours of surfing the web, watching video or listening to music up to 9 hours of web use on a cellular data network or better</p> <p>10. Input Method : Touch-Screen</p> <p>11. Sensor : Accelerometer, Ambient light sensor, Gyroscope</p> <p>12. Output Method : Additional display to LCD projector by direct connection</p> <p>13. Cover</p>			
41	<p>Automated Basic Universal Testing Machine</p> <ol style="list-style-type: none"> 1. Typical tests: Tensile/ Compression/ Bend/ Flexure test on different materials such as Metals, Rubbers, Cables, Fabrics, Tapes, Thread, Plastic, Geo-synthetic (Geotextile, Geomembrane, Geogrid, Geonet etc.) etc. conforming to testing procedure laid down in ASTM, BS, EN, ISO standards. 2. Machine Capacity: 100kN 3. Load Frame: Stable dual column floor standing, having high stiffness and low deflection characteristics, consists of two ball screws coupled to a highly sensitive servo motor. <ol style="list-style-type: none"> a) Horizontal Clearance: 600mm b) Vertical Clearance: 1200mm c) Max. Test Speed: 500mm/min. d) Min. Test Speed: 0.01mm/min. e) Return Speed: 500mm/min. f) Speed Accuracy: <0.5% g) Max. force at full speed: 100kN h) Max. speed at full load: 250 mm/min. 4. <ol style="list-style-type: none"> a) Load Ranges: Through 3 Load cells (0-1kN, 0-10kN & 0-100kN) b) Load Resolution: (i) 0.0001kN for 0-1kN range; (ii) 0.001kN for 0-10kN range (iii) 0.01kN for 0-100kN range a) Load Accuracy: < +/-0.5% of the Indicated value of load 	<p>a) Hydraulic & Engineering Instruments A-13, Naraina Industrial Area, Phase – II, New Delhi - 110 028 Total Quoted Price: Rs. 22,67,438/- (inclusive of all)</p> <p>b) S P Engineers 101, Rushabh Heritage Left Bhushan Colony , Pune - 411038 Total Quoted Price: Rs. 25,38,755/- (inclusive of all)</p> <p>c) Blue Star Ltd. No. 7, Hare Street, Kolkata - 700001. Total Quoted Price: Rs. 26,20,800/- (inclusive of all)</p> <p>d) M/s. Complete Instrumentation Solutions Pvt. Ltd. Suite 511, Suncity Towers, Golf Course Rd. Sector 54 Gurgaon – 1220033 Total Quoted Price: Rs. 56,72,206/- (inclusive of all)</p>		<p>Hydraulic & Engineering Instruments A-13, Naraina Industrial Area, Phase – II, New Delhi 110 028</p> <p>Total order value: Rs. 22,67,438/- (inclusive of all)</p>

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	<p>5. a) Total Crosshead travel: 1100mm b) Displacement Measurement: Through Optical Encoder c) Displacement Resolution: 0.001mm</p> <p>6. Motion Drive: Through highly precise Servo Motor</p> <p>7. Control Mechanism: Fully Computer controlled operation through RS232/USB/ Ethernet with Data Acquisition Card and dedicated software.</p> <p>8. (i) PC Configuration: To be supplied with machine as standard make i.e. DELL/HP/EQV 2nd generation Intel ® Core™ i7-2670QM processor 2.20 GHz with Turbo Boost up to 3.10 GHz 4GB 1333MHz DDR3 SDRAM (1 x 4GB) 500GB 7200RPM Hard Drive 17” TFT Screen, Key Board, Optical Mouse, 6USB Ports (ii) Deskjet Colored Printer (HP or Eqv.) Up to 21 ppm colour, Print quality black (best) Up to 600 dpi, Up to 3000 pages Print quality color (best) Upto 4800 x 1200 dpi Memory, standard 64 MB (iii) UPS 500VA</p> <p>9. Software for Controlling & Analysis: Controlling and On line Data Acquisition to PC through user friendly software and Statistical Analysis of the results obtained.</p> <ul style="list-style-type: none"> • Latest Windows based user friendly software with easy user interface • Facility to select and Control test-Tension/Compression/Bending/Shear etc. • Programmable Test Speed (0.01mm/min-500mm/min.) with automatic control of rate of loading during test • Programmable Sample input parameters such as Identification code, shape, Dimension, Area, date, test 			
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	<p>speed, preload in kN, etc.</p> <ul style="list-style-type: none"> • Facility to create Test Set ups or Test Profiles • Single key operation to Preload, Start test, Stop and Return operation through computer • Automatic Stop or Return to Home position after sample failure • Independent Taring or Auto taring of each channel at predefined load • Online display of numerical values of Load, Displacement and Extensometer • Online plotting of data of Load v/s Time, Displacement v/s time, Load v/s Extensometer and Load v/s Displacement graphs • Auto scaling of the graphs in real time • Auto shutdown on failure or over limit values during testing • Real time clock for tracking date, time and runs • Facility to save test data along with order information about the specimen such as age, specimen no., size, dimensions etc. in user defined file/directory <p>Analysis Software:- Plotting of following graphs-</p> <ol style="list-style-type: none"> a) Load v/s Time b) Displacement v/s Time c) Load v/s Displacement d) Load v/s Extensometer e) Stress v/s Strain <p>Calculation of various parameters depending upon the test conducted – Peak Load, Tensile Strength, Maximum deformation at peak load, Compressive Strength, Modulus of Elasticity, Flexural Strength, etc.</p> <ul style="list-style-type: none"> • Facility to plot the data for a selected run 		
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	<ul style="list-style-type: none"> • Comparative analysis using multi graphs • Statistical analysis of the test results • Batch Summary Report • Detailed Summary Report • Advance Statistical Analysis • Facility to print Test Reports • Facility to Export Data to MS Excel <p>10. Safety Features: It should include Over Load protection, Over Travel protection (Upper & Lower limit of crosshead), Over Voltage Protection, Emergency Switch etc.</p> <p>11. Power Supply: 440VAC, 3Phase, 50Hz</p> <p>OPTIONAL ACCESSORIES TO BE QUOTED SEPARATELY</p> <p>A. Extensometer: Highly precise axial extensometer to be used to measure extension on both round and flat specimens. Round Specimen of diameter: 5-25mm Flat Specimen of thickness:0-25mm Gauge length :50, 100, 200 mm Measuring Range: 2mm Resolution: 0.001mm</p> <p>B. Grips/ Fixtures :</p> <ol style="list-style-type: none"> 1. Tensile Test: A set of Wedge Action Grips with suitable fittings for testing of dumbbell specimen of rubber, plastic and composite material <ol style="list-style-type: none"> (a) For Round Specimen dia.- 5-25mm (b) For Flat Specimen thickness.- 0-25mm 2. Compression Test: A pair of plates of diameter 200mm (Capacity-100kN) 3. Flexure/Bend Test: Attachment conforming to ISO, ASTM, DIN and other standards is supplied with three point loading fixture complete with 			
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	<p style="text-align: center;">bottom plate carrying adjustable rollers Adjustable Length: 10-400mm Diameter of the Rollers: 10mm Specimen Width: 0-70mm</p> <p>C. Grips/Fixtures for Geotextile testing quote for each set</p> <ol style="list-style-type: none"> 1. Hydraulic-Pneumatic operated/Mechanical Grips with complete hydraulic & Pneumatic controls for Wide width (200mm)Tensile Strength Test as per ASTM D4595 & ISO 10319 for Geo-textile. 2. Grips suitable for Grab Test as per ASTM D4632 3. Grips for Trapezoidal Tearing Strength Test as per ASTM D4533 4. Puncture Test Attachment as per ASTM D4833 5. CBR Puncture Test Attachment as per ISO 12236 			
62	<p>Atomic Absorption Spectrophotometer</p> <ol style="list-style-type: none"> a) Fully automatic computer controlled, 4-lamp turret, Air acetylene flame with (As, Fe, Ca, Cu, Cr, Al HCLs) b) 100% PC based c) Flame analysis technique adopting oxygen rich air acetylene flame as the substitution of nitrous oxide acetylene flame for high temperature element analysis d) Detector: R928 Photomultiplier with high sensitivity and wide spectral range. e) Monochromator: Czerny turner with grating 18001/mm. f) Software: Windows 7 compatible. g) Titanium burner & explosion proof stopper for flame analysis, alarm & protection function for argon pressure deficiency. h) Auto ignition, automatic spectral bandwidth selection. i) Background correction: D2 background correction. j) Vapor Generator Assembly & Graphite Furnace 	<p>a) M/s. Thermo Fisher Scientific India Pvt. Ltd. Macmet House, 6th Floor 10-B, O.C. Ganguly Sarani Kolkata – 700020 Total Quoted Price: Rs. 12,89,750/- (inclusive of all)</p> <p>b) M/s. Systronics (India) Limited 10, Princep Street Kolkata – 700072 Total Quoted Price: Rs. 11,97,000/- (inclusive of all)</p>		<p>M/s. Systronics (India) Limited 10 Princep Street Kolkata – 700072 Total Order Value : Rs. 11,97,000/- (inclusive of all)</p>

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	k) Should be capable to select the best fit regression line from multi option regression curves in one-time standard analysis.			
43	<p>Spectral Analysis of Surface Wave System :</p> <p>(i) 1 off USB Packaged control and data acquisition system 6-channel 225 kHz, 16- bit simultaneously sampled data acquisition system, control signal generation system, geophone amplifiers and cable terminations for connection to users laptop with USB interface. Includes 1 off 110/240V AC to 12V DC power adaptor. The unit should be supplied for use directly.</p> <p>(ii) 1 off SASW software in Windows with option of user selection of trigger type and method of application (single shot, repeat, stack), acquire frequency and phase angle data for Rayleigh waves, derive phase velocity-wave length (l) dispersion curve by elastic theory, produce on-line modulus v. depth profile (depth = 1/3) and save data for further analysis.</p> <p>(iii) Hammer and Strike Plate, 12lb Hammer, strike plate and cable, 1 off 6 channel geophone cable, 1 off 4.5 Hz geophone with option for 2 Hz geophones.</p> <p style="text-align: center;">OR</p> <p>1 off 489N/600Hz inertial vibrator, amplifier unit and cables Powered by 110V generator only 1 off CSWS Software presented in Windows to control the vibrator to set frequencies, acquire frequency and phase angle data for Rayleigh waves, derive phase velocity-wave length (l) dispersion curve by elastic theory, produce on-line modulus v. depth profile (depth = 1/3) and save data for further analysis. 1 off 2Hz geophone option for 4.5Hz geophones.</p>	<p>M/s. Aimil Ltd. Shrachi Tower, 6th Fl., C&D block, 686 Anandapur, Kolkata – 107 Total Quoted Price : Rs. 18,44,375/- (inclusive of all)</p>		<p>M/s. Aimil Ltd. Shrachi Tower, 6th Fl., C&D block, 686 Anandapur, Kolkata – 107</p> <p>Order Value : Rs. 18,44,375/- (inclusive of all)</p>
01	<p>Xray Diffractometer with texture Gonimeter:</p> <p>a) Tenders are invited from the reputed vendor for the procurement of X-ray diffractometer required for Phase analysis, Structure Analysis, Texture, Residual Stress and GISAXS etc. Vendors might choose to quote configuration to suit the above applications, with minimum alignment to changeover from various configurations. High temperature and SAXS applications must also be offered as an optional item.</p> <p>b) Full Radiation protection chamber as per radiation safety norms. The XRD</p>	<p>a) I.R .Technology Services Pvt. Ltd. Flat No. 12, 1st Floor, 22, Ashutosh Chowdhury Avenue, Kolkata – 700 019 Total Quoted Price : Rs. 1,04,42,000/- (inclusive of all)</p>	<p>M/s. I.R. Technology Services Pvt. Ltd. (Technically non responsive- In respect of Voltage,</p>	<p>M/s. BRUKER AXS Analytical Instruments Pvt. Ltd. Aakash Tower, Flat – 6B(2), 6th Floor, 781, Anandapur, Kolkata – 700 107. Total order value:</p>

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	<p>system should be equipped with automatic component recognition features for X-ray tube, optics in both primary and secondary side including the detector to be used.</p> <p>c) X-RAY GENERATOR: Compact, 3kV or above rating, 60 kV or above and 60 mA or better, Stability: $\leq 0.05\%$ for current and voltage for variation of main supply 10% kV, mA stability. The generator should allow kV, mA settings to be done through the system computer in step of 1kV & 1 mA. Operating power supply: 220V (+/- 10%), 50 Hz.</p> <p>d) X-RAY TUBE: 2.2 kW, Cu anode, long fine focus, Ceramic insulated. Optionally Co Tube to be offered.</p> <p>e) OPTICS: Programmable divergent and anti-scatter slit to cater the need for low-angle XRD. Facility to operate both in conventional Bragg-Brentano and parallel beam geometry is essential. Advanced parallel beam optics with multilayer mirror should be provided. Suitable optics for stress, texture and thin film analysis must be offered.</p> <p>f) Ni-FILTER: Ni K-beta filter to be offered for the X-ray Tube. Suitable K-beta Filter to be quoted for all the X-Ray tubes.</p> <p>g) SAMPLES STAGES: Standard sample stage should be offered with the basic system. Rotational transmission sample stage with variable speed should be offered in option. The compact Eulerian Cradle with Chi and Phi rotations and Z translations(all motorized) for TEXTURE or RESIDUAL STRESS samples, powder samples, as well as thin films to be offered. 5" ROTABLE VACUUM CHUCK for fixing flat polished samples to be offered. XY-STAGE for adjustment of thin samples in X- and Y- direction when mounted to the compact Eulerian cradle to be offered. TILT STAGE with knife edge collimator and motorized ZETA / XI to allow tilting of a sample around two axes Zeta and Xi and to limit the illuminated area on the sample for in-plane grazing incidence diffraction (GID) measurements to be offered optionally. Capillary sample stage with alignment microscope should be offered as optional items for SAXS application. High temperature attachment (from room temperature to 1500° C or above) to be offered with all necessary accessories to be offered under optional items.</p> <p>h) GONIOMETER:</p> <ol style="list-style-type: none"> 1. High Precision Goniometer with theta-theta configurations with a minimum diameter of 450 mm or above. Variable goniometer radius without major alignment procedure will be preferred for better 	<p>b) M/s. BRUKER AXS Analytical Instruments Pvt. Ltd. Aakash Tower, Flat – 6B(2), 6th Floor, 781, Anandapur, Kolkata – 700 107. Total Quoted Price : Rs. 1,17,63,109/- (inclusive of all)</p> <p>c) M/s. Spectris Technologies Pvt. Ltd. 50-A, Sarat Bose Road, 3rd Floor, Kolkata – 700 025 Total Quoted Price : Incomplete (Prices of some required items as per specification have not been quoted.)</p>	<p>compact Eulerian Cradle, Angular range, NIST Sample.)</p> <p>M/s. Spectris Technologies Pvt. Ltd. (Details specification of parabolic or multilayer mirror and price of computer, printer, UPS and parabolic or multilayer mirror</p>	<p>Rs. 1,17,63,109/- (inclusive of all)</p>
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	<p>resolution. Options for conversion from theta-2theta to theta-theta or vice versa should be available.</p> <ol style="list-style-type: none"> 2. Smallest addressable step size (Theta/2Theta): 0.0001° 3. Angular range (2Theta): -5° to 165° 4. Fast step scan facility should be available. 5. Movements of theta-2theta arms should be with Optical Encoders for precise angular positioning. 6. The Goniometer should be equipped with suitable sit assembled both on the primary and secondary sides to enhance overall performance. The vertical goniometer should be able to accept attachment for non ambient analysis for future applications needs. 7. The Goniometer motor should be driven through Stepper motor or equivalent for better accuracy and fast step scan. <p>i) DETECTOR: Vendor should offer fault free 1-dimensional fast detector. It must be able to work in both 0 dimensional and 1 dimensional mode, it must not use any gas in its operation. The detector must be able to operate in both fixed and scanning mode. Necessary hardware or software must be in-built to reduce the fluorescence. Necessary application note/product details must be enclosed with the offer to support the above requested facility.</p> <p>j) SOFTWARE: PC based software packages to control all instrument parameters and should provide best algorithms for solving analytical tasks.</p> <ul style="list-style-type: none"> ❖ Complete search/match program with background subtracted data. ❖ Peak search, integrated intensity, K-alpha 1 and K-alpha 2 separation. ❖ calculation of profile parameters such as line position, center of gravity, integrated area, half width and many more ❖ Qualitative and Quantitative Phase analysis ❖ Fully automated quantitative analysis of crystalline and amorphous phase amounts. ❖ ICDD database needs to be quoted in option. ❖ Easy simulation and automatic refinement / smoothening of measured data. Rietveld based standard less quantification, refinement package with ab initio structure analysis, profile fitting, structure viewer software package should be offered. ❖ Software for Stress, Texture application should be offered. ❖ SAXS application software should be offered in option. 			
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	<p>k) Computer & Printer: Suitable computer [CPU (Intel Core) 4GB RAM, 160GB HDD, Mouse, Keyboard, DVD (RW), 19" TFT Monitor, Network Adapter with Laser jet colour printer. Computer should be supplied by manufacturer of the XRD with preloaded software. Backup of software should be provide.</p> <p>l) WATER CHILLER: Suitable water chiller for the system should be quoted.</p> <p>m) UPS: Suitable UPS should be offered with minimum 15 minutes backup time on full power load.</p> <p>n) SPARES: Commitments to supply spares for at least 10 years to be ensured. Separate Spare kits for the Diffractometer should be quoted as optional items.</p> <p>o) QUALIFICATION CRITERIA: The vendor must provide from the manufacturer the data quality Guarantee on the Angular Position and Intensity ratio to be carried out on NIST Sample. The same NIST standard sample should be in the scope of supply for evaluation.</p> <p>p) INSTALLATION AND COMMISSIONING: The instrument to be installed tested and commissioned by representative of supplier in India at premises to the satisfaction of user.</p> <p>q) AFTER SALES SERVICE:</p> <ol style="list-style-type: none"> 1. Product support for period of minimum five years after warranty period, to be ensured by vendor/supplier. 2. Relevant software/hardware information in case of updating of the model of the supplied system should be provided. 3. Minimum three years warranty should be offered. <p>r) TRAINING: The supplier should provide free training on the site of installation.</p> <p>s) Compliance: Vendor should take all necessary responsibility to quote for configuration to suit all the above applications. Vendor should supply list of Indian Customers (with detailed communication address and installation certificate) where such instruments have been supplied successfully. The system should be upgradable for future different applications.</p>			
18	<p>Electron beam evaporation system with digital thickness monitor, substrate heater and chiller : The system includes-</p> <ol style="list-style-type: none"> 1] Deposition chamber for 4" wafers. 2] Vacuum pumps, 3] Valves and Gauges, 4] Electron gun, 	<p>a) M/s. Hind High Vacuum Company Pvt. Ltd. Kolkata Branch office, No. 34,, Kabir Road, Southern Avenue, Kolkata – 700 026. Total Quoted Price: Rs. 15,28,147/- (inclusive of all)</p>		<p>M/s. Vacuum Techniques Pvt. Ltd. No. 2/3, Phase-I, Industrial area, Bangalore, Karnataka-560058. Total order value: Rs. 13,82,855/- (inclusive</p>

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<p>5] Power supplies, 6] Substrate fixture with heating mechanism, 7] Shutters and gas flow control system, 8] Instrumentation and all necessary controls.</p> <p>The functional requirements, specifications and details of sub-systems are described in this document.</p> <p>(a) Vacuum Pumping System Rotary Pump Free Air displacement capacity : >500 lit/min Ultimate Vacuum at the intake With Mcleod Gauge (With gas ballast closed) : $\leq 1 \times 10^{-3}$ mbar Vacuum Connection : KF-50 Motor H.P. : ≥ 1.5 H.P. Three phase with thermal protection. Cooling : Forced air cooling Pump rotation speed : ≥ 1400 RPM Vacuum with gas ballast open : $\leq 6 \times 10^{-2}$ mbar</p> <p>Diffusion Pump : Pumping speed : ≥ 1000 lit/sec (unbaffled pumping) No. of stages : 3 Jet (S.S) : Fractionating type Pumping fluid displacement : ≥ 300 ml. Backing pump displacement : ≥ 200 lit/min 585 lit/min. Warm up time (min) : ≤ 35 mins. Cool down time (min) : ≤ 25 mins. Heater rating : ≤ 1000 watts Operating Voltage : 230V, AC 50 Hz.</p> <p>(b) Vacuum Measurement: Pirani Gauge : Range of Vacuum : 0.5 to 10^{-3} mb. Principle of operation : Thermal conductivity/constant voltage. No. of ranges : Single. No. of gauge heads : (Two (selectable by a front panel switch) Two pirani gauge head and 1 penning gauge head.</p>	<p>b) M/s. Vacuum Techniques Pvt. Ltd. No. 2/3, Phase-I, Industrial area, Bangalore, Karnataka-560058. Kolkata Office : 15/1, F. North Road., Jadavpur, Kolkata-700032 Total Quoted Price: Rs. 13,82,855/- (inclusive of all)</p>	<p>of all)</p>
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<p>Analog output : 100 mv. Material of construction : Aluminium, tungsten, glass to metal seal.</p> <p>Penning Gauge : Range : 10(-3) to 10(-6) mb. Principle : Cold cathode discharge. No. of range: Two. No. of gauge head: Single. Material of construction : Aluminium, tungsten, G.M. Seal. Type of coupling : KF 25 (Quick clamp type)</p> <p>(c) Valves</p> <ul style="list-style-type: none"> · High vacuum isolation valve <ul style="list-style-type: none"> • The valve will be electro-pneumatically operated. • Facility to automatically throttle the pumping system by 'cracking' the high vacuum valve, for plasma processes such as sputter coating and glow discharge cleaning. • Roughing/ Backing Valve • To be connected to the pumping manifold for roughing and backing purposes. · Vent valve <ul style="list-style-type: none"> • A manually operated vacuum valve for venting dry nitrogen / air to the chamber. <p>(d) Vacuum Chamber</p> <ul style="list-style-type: none"> · Water cooled, stainless steel, front loading high vacuum D- type chamber ≥ 400mm diameter, ≥ 500mm high. · View port in chamber doors. · Set of easily removable stainless steel chamber liners for the front loading chamber. · Stainless steel base-plate with holes for fitting accessories. Unused holes are 'blanked-off'. · Chamber is RF shielded for operator safety. <p>(e) Evaporation Source</p>			
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<p>Specifications of 3 KW Power Supply:</p> <p>Power : Variable from 200 watts to 3,000 watts, Regulation : Regulated to 2% in the normal condition without transients. Voltage : 6KV fixed (adjustable from 4.5 to 6.0KV) Beam current : ≥ 500 mA Beam current can be varied. Filament power : 10 Volts, 60 Amps, Safety Protections : Micro break circuit breaker for fast tripping. Fuses. Voltage drop in case of higher current Interlocks for water & Vacuum. Attainable temperature : Approximately 3,000 degree C. at full Power which can be sufficient to Evaporate any material. Mains supply : VT-3 KW-4 operates on 230 volts AC 15 Amps And 50 Hz. Suggested to have a good grounding. Physical dimensions (approx) : 750 x 500 x 400mm</p> <p>Specification of Four Source E.B.Gun:</p> <p>Angle deflection : 180 degree Size of the beam : 1mm Number of Crucibles : Four (4), Water cooled Size of the Crucible : ≥ 8mm (in single source) Volume of the crucible : ≥ 0.5 CC Focusing : Magnetic type using permanent of alnico material Cooling : Crucible is cooled with continuous water circulation. Filament : Tungsten Focusing Electrodes : Molybdenum</p> <p>(f) Film Thickness Measurements (Standard make like Sigma (INFICON) /Telemark / Maxtek etc.): · Quartz crystal digital thickness controller</p>			
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	<ul style="list-style-type: none"> · LCD display · 0.1 Angstroms/sec rate resolution · Thickness accuracy of 0.5-1nm · RS232 and USB connectivity with Windows software for operation with a user-supplied PC. <p>(g) Substrate Heater Temperature range: 500 ° C With SSR/Temp.PID controller</p> <p>(h) Compatible Chiller for the above systems</p> <p>(i) Optional accessories Thermal evaporation chamber with filament, substrate heater and thickness monitor on the same system (using same pumps)</p>			
50	<p>Inverted phase contrast cum fluorescence microscope :</p> <p>Technical Specification of Inverted Phase Contrast cum Fluorescence Microscope:- Microscope:</p> <ul style="list-style-type: none"> • Inverted microscope stand with 2/3-position magnification changer, RS 232/USB/TCP/IP interfaces, light manager, trigger socket for shutter, connecting socket for external shutter and 100-240V stabilized power supply (approx.). • Minimum 6-position coded objective nosepiece. Side port for camera attachment with atleast 3 switching positions and standard mounting frame. • Motorized focus (fine/coarse) with rotary encoder • X-Y scanning motorized stage with minimum travel range 130 mm x 85 mm (approx), max. Speed 100 mm /s, resolution: 0.1 µm (approx), reproducibility: 	<p>a) M/s. Towa Optics (India) Pvt. Ltd. 223, Okhla Industrial Estate, New Delhi – 110020, India. Kolkata Address : 30, Gold Park, Raj Danga, Naba Pally, Kolkata-700 107 Total Quoted Price: Rs. 25,05,350/- +entry tax</p> <p>b) M/s. Carl Zeiss (India) Pvt. Ltd. Jasmine Tower, 4th floor, Unit no. 403A & 403 B. 31, Shakespeare, Kolkata – 700017 Total Quoted Price : Rs. 30,04,208/- (inclusive of all)</p>		<p>M/s. Towa Optics (India) Pvt. Ltd. 223, Okhla Industrial Estate, New Delhi – 110020, India.</p> <p>Total Order Value: Rs. 25,30,403/- (inclusive of all)</p>

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	<p>+/- 1 μm, absolute accuracy: +/- 5 μm. Joystick with 2 speeds range selectable (approx.).</p> <ul style="list-style-type: none"> • Binocular Tube with minimum 23 mm FOV (approx.). • Around 12 V 100W transmitted illumination with LCD display for microscope setting. • Set of filters with green filter for transmitted light and basic fluorescence filters for GFP, Cy3 & DAPI. • Reflector turret to accommodate minimum 6 fluorescence filters • Light distribution with Motorized changer. • Multi-port design microscope body with infinity optical corrected optical system <p>Objectives:</p> <ul style="list-style-type: none"> • For bright field, phase contrast and DIC – LD Condenser • Objectives 10x (LD), 20x (LD), 40x (LD) and 40x (oil), 63/60x (oil) for observation under bright field, phase contrast & DIC and with additional correction collar (preferably). • Eyepiece with eyecup (10x), Additional attachment for DIC for 20 x (preferably). <p>Digital Photomicrography:</p> <ul style="list-style-type: none"> • Cool CCD monochrome camera with minimum resolution around 1388x1040, minimum chip size around $\frac{2}{3}$", minimum pixel size around 6.45 μm x 6.45 μm with fire wire connection. • 2nd CCD camera for color imaging with minimum resolution 2560 (H) x 1920 	<p>c) M/s. DSS Imagetech Pvt. Ltd. “Ratna Prabha”, P-107, Lake Terrace, 1st Floor, Kolkata – 700 029 Total Quoted Price: Rs. 25,98,750/- (inclusive of all)</p>		
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	<p>(V).</p> <ul style="list-style-type: none"> • Binning facility - 1x1 to 5x5 (approx.). • Suitable desktop PC with 19" TFT monitor licensed OS & UPS for digital photomicrography and image analysis. <p>Image Analysis Software:</p> <ul style="list-style-type: none"> • Software for basic image acquisition, management & processing. • Histogram measurement and profile management. Fixed configuration as well as adjustable configuration of menu bars. μ bar scaling and text annotation. • Fully automated acquisition and device control, time lapse imaging, Z-Stack (preferably) • Image gallery view, report generation and facility for movie recorder • Dyes (including wavelength information) should be selected from standard database. Fluorescent proteins and transmitted light contrast techniques supported by acquisition system (e.g. brightfield, phase contrast, DIC, darkfield etc.). • Independent exposure time and microscope setting can be assigned to each channel. Generating and calculating images with no limitation of depth of field. Extraction of sharp details from individual images at various focus positions and combination into an image with high depth of field. <p>Wavelet algorithm, Time interval function for addition of intermediate images.</p>			
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