



## College of Engineering Pune,

Wellesley Rd, Shivajinagar, Pune-411 005. Maharashtra, INDIA.

### Details of Shopping Items to be purchased under

#### TEQIP-III

Sr no	PMSS Package Name & Code	Item Name (Quantity)	Department	Brief Specifications	Dept Coordinator
1	TEQIP-III/2019/MH/coep/74	Combined Set-up for Surface Free Energy Measurement	Civil	<p>Rotary evaporator:</p> <ul style="list-style-type: none"><li>• Manual control of heating bath, vacuum pump, chiller and drive rotation speed</li><li>• DC brushless motor drive with speed range of 20-280 rpm</li><li>• 1500 sqcm or larger cooling surface area for better recovery rate</li><li>• Manual lift with safety stop function</li><li>• Heating temperature range of RT to 180°C for water and oil bath application</li><li>• Bath capacity of 4 litres or more; bath with lower volume heat faster, saves time and energy</li><li>• Heating bath can accommodate up to 3 litres of evaporation and receiving flask</li><li>• Heating bath should have heat control accuracy of <math>\pm 1</math> K or less</li><li>• Safety temperature circuit and Dry Run protection of heating bath</li></ul>	Dr.M.S.Randive 02025507061

				<ul style="list-style-type: none"> <li>• Locking function of heating bath for avoiding accidental changes of settings</li> <li>• Heating bath can be used as standalone unit for different applications</li> </ul> <p><b>Chiller:</b></p> <ul style="list-style-type: none"> <li>• Temp. Range : -20 to 100°C</li> <li>• Bath capacity : 5 litres or More</li> <li>• Heater : 1000 watt</li> <li>• Flow Rate (Max.) : More than 11 lit / min</li> <li>• Temperature Accuracy : +/-0.1°C</li> <li>• Refrigerant : CFC free</li> <li>• Cooling Capacity @20°C: 300 watt</li> <li>• Bath Material: Tank - S. S.</li> <li>• Outer Body Powder Coated M.S.</li> <li>• Microprocessor PID Controller</li> <li>• Digital Display</li> <li>• Built in pump</li> <li>• alarm for sensor break</li> <li>• Set for external circulation</li> </ul> <p><b>Vacuum Pump:</b></p> <ul style="list-style-type: none"> <li>• Integrated vacuum controller for controlling process parameters and removable display</li> <li>• Speed controlled vacuum pump with Manual and Automatic mode and cleaning function</li> <li>• Speed of vacuum pump should be adjustable with</li> </ul>	
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				<p>digital display.</p> <ul style="list-style-type: none"> <li>• Vacuum pump should have suction capacity of 1.3m<sup>3</sup>/h or more and ultimate vacuum level up to 7 mBar or less</li> <li>• Vacuum pump should have auto-cleaning function and should come with mechanical silencer.</li> <li>• Vacuum pump should display speed of the pump.</li> <li>• For safety must have downstream vacuum safety emission condenser supplied with vacuum pump.</li> </ul> <p><b>Specifications of Contact Angle Instrument:</b></p> <ul style="list-style-type: none"> <li>• Contact angle measuring range- 0°-180°</li> <li>• Contact angle accuracy - ±0.1°</li> <li>• Zoom – min 5x</li> <li>• Resolution : 640 x480</li> <li>• Exact drop volume calculator</li> <li>• Calculation type – automatic</li> <li>• PC required</li> <li>• PC connectivity- USB 2/3</li> <li>• Camera speed- 70 fps</li> <li>• Surface tension of liquid calculation, work of adhesion and cohesion calculation by sessile drop method and pendant drop method.</li> <li>• PC controlled auto dispensing module with interface control module.</li> <li>• Surface free energy calculation of solid substrates by different methods like contact angle <ol style="list-style-type: none"> <li>1) Girifalco –Goods-Fowkes –Young (GGFY)</li> <li>2) Contact angle Hysteresis Method</li> <li>3) Zisman Method</li> <li>4) Wu Harmonic mean Owens /Wendt Geometric.</li> </ol> </li> </ul>	
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2	TEQIP-III/2019/MH/coep/75	Battery pack	Mechanical	<ul style="list-style-type: none"> <li>• Separate cells to be provided in packs for any of all or available from below varieties. The individual cells of the packs should be easily separable.</li> <li>• A123's patented Nanophosphate chemistry or equivalent cells Each 20 Ah or lower capacity, Each cell nominal voltage 3.3 V. Quantity 20 cells.</li> <li>• Samsung ICR18650-26F or equivalent cells, Each 2600 mAh nominal capacity or equivalent capacity, Each cell 3.6 V nominal voltage. Quantity 20 cells</li> <li>• Samsung ICR18650-22F or equivalent cells, Each 2200 mAh nominal capacity or equivalent capacity, Each cell 3.6 V nominal voltage. Quantity 20 cells</li> <li>• Samsung INR18650-25R or equivalent cells, Each 2500mAh nominal capacity or equivalent capacity, Each cell 3.6 V nominal voltage. Quantity 20 cells</li> <li>• SINR18650-25R or equivalent cells, Each 2500mAh nominal capacity or equivalent capacity.</li> </ul>	Dr.M.R. Nandgaonkar 02025507221
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3	TEQIP-III/2019/MH/coep/76	Battery Tester for battery internal resistance measurement 150 $\mu\Omega$ to 3000 $\Omega$	Mechanical	<ul style="list-style-type: none"> <li>i) Voltage measurement 10<math>\mu</math>V to 300 V</li> <li>ii) Internal resistance measurement 150 <math>\mu\Omega</math> to 3000 <math>\Omega</math>.</li> <li>iii) For carrying out high voltage battery pack tests on lithium ion battery</li> <li>iv) For measurement of internal resistance of cells/ battery</li> <li>v) Statistics calculation and data storage function.</li> <li>vi) Up to125 measurements/s.</li> <li>vii) 4.3 inch LCD colour display.</li> <li>viii) Built-in GPIB, USB, LAN interfaces with SCPI support</li> <li>ix) 4-terminal AC measurement</li> <li>x) Measuring result alarm function</li> <li>xi) Accuracy in resistance <math>\pm 0.4\% \pm 0.05\%</math> FS</li> <li>xii) Accuracy in voltage <math>\pm 0.01\% \pm 0.01\%</math> FS</li> <li>xiii) Resolution 10 <math>\mu\Omega</math>, 10 <math>\mu</math>V</li> <li>xiv) Zero adjustment function</li> </ul> Probes Large clip type.	Dr.M.R. Nandgaonkar 02025507221
4	TEQIP-III/2019/MH/coep/77	1)Energy Meter	Mechanical	<b>Energy Meter</b> <ul style="list-style-type: none"> <li>i) Display: 7" Multi-touch, 800 X 480 Pixel, 24 bit RGB background illuminated</li> <li>ii) Accuracy: 1%, 5% in most sensitive range</li> <li>iii) Max. repetition rate: 2500 Hz</li> <li>iv) External power supply: 5 V DC/2.5 A</li> <li>v) User adjustment: 1 .... 100 %</li> <li>vi) Averaging: Over 2 ..... 10k pulses</li> <li>vii) Connector: E-connector for detector Micro-USB for power supply Mini-USB for</li> </ul>	Dr.M.R. Nandgaonkar 02025507221

		<p><b>2)Light Source</b></p>		<p>communication and remote control  USB-Type A for USB flash drive  BNC for analogue output</p> <p>vii) Dimension (L x W x H): 190 mm X 240 mm X 55 mm.</p> <p>Weight: ca. 1.5 Kg</p> <p><b>Light Source</b></p> <p>i) Power: 300 Watt, High brightness comparable to xenon light source.</p> <p>ii) Can be use with 1 chip, 3 chip and Full HD Cameras (2000 FPS or more).</p> <p>iii) Remote control: Intensity adjustable with sterile remote control</p> <p>iv) LED provides a consistent color temperature even after a very long time</p> <p>v) To get a consistent visual effect (camera white balance is not disturbed)</p> <p>vi) Does not emit light in UV or IR.</p> <p><b>Non-polarizing beam splitter:</b></p> <p>i) Ø1"; 50:50 Laser Line Plate Beam splitter, Coating:1064 nm, thickness (t): 5.0 mm</p> <p>ii) Damage Threshold: 3 J/cm<sup>2</sup></p> <p>iii) Beam splitter Coating on Front Surface for Nd: YAG Laser Wavelengths  Fundamental: 1064 nm</p> <p>iv) Optimized for 50:50 Beam splitting for a 45° Angle of Incidence (AOI)</p> <p>v) Antireflection (AR) Coating Applied to Back Surface</p> <p>vi) UV Fused Silica Substrate</p>	
		<p><b>3)Non-polarizing beam splitter</b></p>			

		<p><b>4) Reflecting Mirrors:</b></p>		<p><b>Beam splitter mount:</b>          Beam Splitter Mount          (Kinematic) for <math>\varnothing</math> 1" 50:50          Laser Line Plate Beam splitter</p> <p><b>Reflecting Mirrors:</b></p> <ul style="list-style-type: none"> <li>i) <math>\varnothing</math>1"; Nd:YAG Mirror,          1047 - 1064 nm, 0° to 45°          AOI</li> <li>ii) Wavelength Range: 1047          - 1064 nm</li> <li>iii) <math>R_{avg} &gt; 99.5\%</math> for S and P -          Polarization</li> <li>iv) Designed for use from 0°          to 45° AOI</li> <li>v) Damage Threshold:          Pulse: 25 J/cm<sup>2</sup> @ 1064          nm, <math>\varnothing</math> 0.552 mm, 10 ns,          10 Hz</li> <li>vi) CW Certification          Measurement: 20 kW/cm          @ 1070 nm, <math>\varnothing</math> 0.974 mm</li> </ul>	
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