

# College of Engineering, Shivajinagar, Pune

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## Details of Shopping Items to be purchased under TEQIP-II Extension Phase

Sr. No.	PMSS Package Code	Item Name	Dept	Brief Specifications
1	<b>T2Ext Civil-3 (TEQIP-II/MH/MH2G02/167)</b>	Civil-3 (Servo Hydraulic Dynamic Actuator (100kN))	Civil	(Servo Hydraulic Dynamic Actuator (100kN))
2	<b>T2Ext COMP-1 (TEQIP-II/MH/MH2G02/168)</b>	COMP-1 (Wireless Networking Lab Equipment and Software)	Computer	Various wireless access points and Wireless Controller System , Mobility Services Engine Appliance (MSE ), 8 Port PoE Switch, Access Control System Server,Laptop, Server, Firewall
3	<b>T2Ext Elec-1 (TEQIP-II/MH/MH2G02/187)</b>	Elec-1 (Real Time Digital Simulator for Power System-Basic Model) with PV Inverter	Electrical	The system should be able to simulate at least four generators, 10 transmission lines, transformers and other components of power systems and power electronic systems.
4	<b>T2Ext Mech-2 (TEQIP-II/MH/MH2G02/176)</b>	Mech-2 (Data Acquisition System)	Mechanical	<b>Universal Analog Input card</b> Input Characteristics Number of channels 4 analog input channels <b>ADC resolution 24 bits</b> Type of ADC Delta-sigma (with analog pre-filtering) <b>Sampling mode Simultaneous</b> Type of TEDS supported IEEE 1451.4 TEDS Class II (Interface) input ranges <b>Voltage <math>\pm 60</math> V, <math>\pm 15</math> V, <math>\pm 4</math> V, <math>\pm 1</math> V, <math>\pm 125</math> mV</b> <b>Current <math>\pm 25</math> mA</b> 4-Wire and 2-Wire Resistance 10 k $\Omega$ , 1 k $\Omega$ 10.5 k $\Omega$ , 1.05 k $\Omega$ <b>Thermocouple <math>\pm 125</math> mV</b> <b>Digital IO card</b> Number of channels 8 DIO channels Input/output type TTL, Input Voltage 5.25 V maximum High, VIH 2 V minimum Low, VIL 0.8 V maximum Output High, VOH (5.25 V maximum) Sourcing 100 $\mu$ A 4.7 V minimum Sourcing 2 mA 4.3 V minimum

5	<b>T2Ext Mech-3 (TEQIP-II/MH/MH2G02/177)</b>	Mech-3 (Crack opening displacement (COD) Gage)	Mechanical	<ul style="list-style-type: none"> <li>• Measuring capacity: 1 to 9 mm</li> <li>• Rated output: 2.5 mV/V (5000x10<sup>-6</sup> strain</li> <li>• Sensitivity: 1000x10<sup>-6</sup> strain/mm</li> <li>• Temperature range: 0 to 40°C</li> <li>• Input/output resistance: 350 ohm</li> <li>• Recommended exciting voltage: less than 2 V</li> <li>• Allowable exciting voltage: 10 V</li> </ul>
6	<b>T2Ext Mech-5 (TEQIP-II/MH/MH2G02/179)</b>	Mech-5 (High Speed (CMOS) Camera)	Mechanical	<ul style="list-style-type: none"> <li>• Frame Speed :2000 fps at Resolution 1280 x 1024 pixel, Maximum frame rate above 100000 fps</li> <li>• Exposure time-1 micro-second</li> <li>• Image memory in camera: minimum 4 GB</li> <li>• Pixel size: Above 20 microns</li> <li>• flash card compatibility</li> <li>• One hour Battery back up</li> <li>• Remote control unit</li> </ul>
7	<b>T2Ext Mech-7 (TEQIP-II/MH/MH2G02/181)</b>	Mech-7 (Universal Vibration Test rig)	Mechanical	<p><b>TECHNICAL SPECIFICATIONS</b></p> <ul style="list-style-type: none"> <li>• Base platform enabling mounting of several vibration training modules</li> <li>• Integrated training package including data acquisition hardware and simulation/analysis software system</li> <li>• Software/manual driven variable speed shaker for excitation with tachometer display</li> <li>• One degree of freedom spring mass system</li> <li>• One aluminum beam with provision for adjusting weight location and one weight block(mass)</li> <li>• Two user configurable beam supports for cantilever or simply supported configurations (adjustable length)</li> <li>• Accelerometer and one USB to PC trans-receiver</li> <li>• Comprehensive operations manual</li> <li>• Sensor Kit (SK)</li> </ul> <p>Universal Vibration Test rig should be capable of doing a wide range of experiments covering all vibration concepts</p> <ul style="list-style-type: none"> <li>• <u>Lumped System Experiments</u>  Simple pendulum  Spring-Mass-Damper system: 1 &amp; 2 DOF  Free and forced vibration  Damped and undamped vibration  Viscous damping calculation  Transient vibration  Frequency Response Function (FRF)  Torsional System: 1 to 3 DOF</li> </ul>

				<ul style="list-style-type: none"> <li><b>Continuous System Experiments</b></li> </ul> <p>Beam with different boundary conditions Free and forced vibration Damped and undamped vibration Transient vibration Frequency Response Function (FRF) Modal analysis Operating Deflection Shape (ODS)</p>
8	<b>T2Ext Mech-8 (TEQIP-II/MH/MH2G02/182)</b>	Mech-8 (Vacuum Assisted Resin Transfer Molding (VARTM))	Mechanical	<p>1) Vacuum Pump – oil-lubricated rotary vane vacuum pumps with oil re-circulation system Nominal Capacity m3/hr 65 m3/Hr, Ultimate Pressure 0.5 mbar Operating Voltage 415V, 50Hz 3ø Motor Power 2.2 (kW), Motor Speed – 1400 RPM</p> <p>2) Resin trap -- this can be manufactured locally ---- approx 10 to 15 thousand./ can be manufactured in 3 to 4 thousand in house.</p> <p>3) Electronic vacuum sensors, WIKA make S11 model with readout unit</p> <p>4) Consumables are: Mould plates, Sealant tapes, Cleaners (IPA, acetone) release agents, vacuum bag material, PU pipes, pipe fittings (tees, connectors), permeable mesh etc</p>
9	<b>T2Ext Prod-2 (TEQIP-II/MH/MH2G02/185)</b>	Prod-2 (Articulated Arm)	Production	<p><b>Main unit</b></p> <p>Measuring envelope: 3600 mm Repeatability: <math>\pm 0.100</math> mm Accuracy (Arm type): <math>\pm 0.135</math> mm Mass (main unit): 15.6 kg.</p> <p><b>Softwares:</b></p> <p>1)For position measurement 2)For acquisition/evaluation of 2D profile data 3)for the statistical processing of measurement data 4)For evaluation of free-form surfaces 5)Inspection Table Generation Software 6)For line laser probe control Software for evaluation of point clouds.</p> <p><b>Accessories -- Standard accessories</b></p> <p>1) Tool box 2) Fixture (Magnet) 3) Line laser probe Surface Measure 4) Touch probe (LP2 probe) 5) WiFi kit 6) Various styli 7) Stand 8) Portable stand</p>

10	<b>T2Ext Prod-3 (TEQIP-II/MH/MH2G02/186)</b>	Prod-3 (Robot Industrial Arm)	Production	<p><b>Robot Manipulator Arm-</b> 6(six)-d.o.f. and payload capacity of up to 5kg,</p> <p><b>Robot Controller &amp; Teach Pendant</b></p> <p>Overall Dimensions, Range of performance parameters ( e.g. Accuracy, Repeatability, Precision .... etc. ) Range of movement for each axis, Load carrying capacity at Min &amp; Max reach condition, Power Consumption ....etc</p> <p><b>Robotic simulation software</b> -- Minimum 50 nos. perpetual licenses</p> <p><b>Training accessories – for example .....</b></p> <p>Customized Two Finger Gripper -- Pneumatic / Mechanical Gripper</p> <p>Training table with marking of set points .... etc.</p> <p>Robot pedestal</p> <p>Stylus / Probe / Pen magazine – Minimum 3 Pens</p> <p>Object such as a Cube – magazine – Minimum 5 to 10 objects</p> <p>Safety Wire Mesh Fence with a single door</p> <p><b>Other Optional Training accessories – availability with cost can be mentioned separately</b></p> <p>Welding head to be mounted on Robot Arm and / or fixture ( for simple butt and lap weld joints) and</p> <p>Welding power source &amp; accessories</p> <p>Conveyor Belt of suitable length.</p>
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