

## Annexure

Sr. No	Description of item/equipment including detailed specifications and summary of its functions	Quantity Required
1.	<p>a) Underwater Brushless DC Thrusters for Remotely operated Vehicle (ROV)</p> <p>b) Underwater Brushless DC counter rotary type thruster for ROV)</p> <p><b>Desired Specification:</b></p> <ul style="list-style-type: none"> <li>• Depth Rating: <b>150 m</b> or more</li> <li>• Nominal Operating Voltage: Any specific voltage <b>within 100-250 V range with +/-10%</b> tolerance (e.g. 250 V+/-10%, or 200 V+/-10%)</li> <li>• Forward Thrust: Within <b>36 kgf to 42 kgf</b></li> <li>• Power Rating: Within 1.1-1.5 kW</li> <li>• Interface: Preferably Serial (RS-485) or others</li> <li>• Weight (air): Less than 9 kg including drive and control electronics.</li> <li>• Preferably, the power/drive and control electronics circuitry should be housed within the thruster housing</li> <li>• Preferably the propellers should be compact in size with appropriate mounting facility on ROV</li> <li>• Approx. <b>4-5 ft long</b> both end terminated cable to be interfaced with the propeller to connect the propeller with bulkhead end and tools if necessary.</li> </ul> <p>The every set should have complete parts, associated drivers and software and related accessories in all respect.</p>	<p>4 set</p> <p>2 set</p>
2.	<p>The <b>matching connectors (bulkhead connectors)</b>, which will be fitted upon the control box for connecting the thruster cable end, has to be supplied.</p>	6 set
3.	<p><b><u>Spares :</u></b></p> <p>The following spares and accessories will have to</p>	

Nandy

<p><b>be supplied with the thruster</b></p> <ul style="list-style-type: none"> <li>i) Spares kit if any (O-rings, thruster blades etc.)</li> <li>ii) Electronics/Control module or cards</li> <li>iii) Sub-sea thrusters cable assembly</li> <li>iv) Protection circuitry or capacitor banks <b>if needed</b> to operate more than one thruster simultaneously directly from a battery bank</li> </ul> <p><b><u>Accessories :</u></b></p> <ol style="list-style-type: none"> <li>1. Thruster characteristics like i) Thrust-versus-speed Curves ii) Thrust-versus-input current curves etc are to be supplied</li> <li>2. Test Certificates showing thruster characteristic and testing / experimental data are to be supplied</li> <li>3. Hard Copy Manuals / CDs for thrusters</li> <li>4. Suggestion for prevention scheme of RF/EM Interference may be provided.</li> <li>5. Drawing of the thrusters including mounting details</li> </ol> <p><b><u>Delivery/Installation:</u></b></p> <p>Delivery and testing/installation at CSIR-CMERI, Durgapur, India`</p> <p>Warranty: 2 years</p>	<p>1 set</p> <p>2 set</p> <p>1 set</p> <p>1 set</p>
---	---

*Handwritten signature*