

## Annexure-V(A)

### Compliance report

**Note:** The bidder is required to mention detailed specifications clearly in column named as Specifications from Bidder against each item as mentioned in below format. Please note that merely mentioning Yes/No in deviation column will lead to disqualification of the bidder.

#### (I) Name of Instrument : IC Engine Laboratory

Sr. No.	Specification of e-Tender	Specification of Bidder/Vendor	Deviation (Yes/No)	Remarks
1.	<b>Computerised Diesel engine set-up</b> <ul style="list-style-type: none"> <li>• Single cylinder, 4 stroke, Diesel engine with Exhaust Gas Recirculation (close loop)</li> <li>• Independently change inlet and exhaust valve timing, Overhead Cam Shaft.</li> <li>• Power: 3-5HP</li> <li>• Engine Speed: 800-1500 rpm</li> <li>• Electric Start</li> <li>• Engine Aspiration: Engine should have the ability to run on both natural and turbo charged mode</li> <li>• Diesel Injection Pressure sensing</li> <li>• Fuel System: CRDI Diesel injection with the ability to change the start of injection, injection duration, injection pressure and multiple injection. Changing of injection parameters should be controlled from the computer.</li> <li>• The engine should be capable to run on other fuel such as LPG, CNG, H2-NG, ethanol blend, methanol etc.</li> <li>• Dynamometer: The Engine Should be coupled with 5 HP Eddy Current Dynamometer with Strain Gauge Loadcell.</li> </ul>			

	<ul style="list-style-type: none"> <li>• Controls : Fuel injection System with controls</li> <li>• Software: Engine Combustion Analysis and performance Software, Fuel injection and control software.</li> <li>• Smoke meter</li> <li>• Measurement range: 0 to 10 FSN (filter smoke number)</li> <li>• Detection limit: 0.002 FSN or 0.02 mg/m<sup>3</sup> Resolution : 0.001FSNor0.01mg/m<sup>3</sup></li> </ul>			
2.	<p><b>Computerised Petrol engine set-up</b></p> <ul style="list-style-type: none"> <li>• Three Cylinder , 4 Stroke, Brand New Petrol engine</li> <li>• Multi Point Fuel Injection, Displacement :796 (cc)</li> <li>• 10HP Eddy Current Dynamometer.</li> <li>• Electronic ignition system to adjust ignition timing and Engine Knock Detector</li> <li>• <b>Software:</b> Engine Combustion Analysis and performance Software.</li> <li>• Flue gas analyser measures five gases including Hydrocarbons (HC), Carbon Monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), Oxygen (O<sub>2</sub>), and Oxides of Nitrogen (NO<sub>x</sub>).</li> <li>• CO and CO<sub>2</sub> and HC measurement shall be based on NON-DISPERSIVE INFRARED (NDIR) and FID method. NO<sub>x</sub> and O<sub>2</sub> measurement is carried out with an UV analyzer Accuracy: CO: 0 to 1,499 ppm: +-30 ppm abs., 1,500 ppm to 49,999 ppm: +-2% rel.; CO<sub>2</sub>: 0 9.99 vol.‰: +- 0.1 vol.‰ abs., 10 - 20 vol.‰: +-2% rel. NO: 0 5,000 ppm: +-0.2% FS or +-2% rel. NO<sub>2</sub>: 0 2,500 ppm: +-0.2% FS or +-2% rel. HC: 0 to 249 ppmC<sub>1</sub>: +-5 ppmC<sub>1</sub>, 250 to 30,000 ppmC<sub>1</sub>: +-2% rel. O<sub>2</sub>: +-1 vol.‰ FS</li> </ul>			