**DEPARTMENT OF MECHANICAL ENGINEERING**
**NATIONAL INSTITUTE OF TECHNOLOGY: TIRUCHIRAPPALLI**

## SPECIFICATIONS FOR TENDER

The engineering equipment manufacturers/ suppliers are required to supply the following Test rigs/Equipments for the Thermal Engineering Laboratory of Mechanical Engineering Department as per the specifications.

### 1. EXHAUST GAS ANALYSER (FIVE GAS)

- Should measure CO, $CO_2$, HC, $O_2$, and NO.
- Should measure lambda values.
- Should have the following measurement range and resolution.

| PARAMETER | MEASUREMENT RANGE | RESOLUTION |
|---|---|---|
| CO | 0 to 10% VOL. | 0.01% VOL. |
| HC | 0 to 20,000 PPM VOL. | 1 PPM/10 PPM |
| $CO_2$ | 0 to 20% VOL | 0.1% |
| $O_2$ | 0 to 22% VOL | 0.01% |
| NO | 0 to 5000 PPM VOL. | 1 PPM VOL. |
| LAMBDA | 0 to 9.999 | 0.001 |

- Should have computer interface RS 232 with USB computer interface.
- Should have the provision to print the report.
- Should provide error codes for easy fault analysis.
- Should be suitable for low idling, increased idling and for load test.
- Should operate on both AC and DC.
- All the data taken from the instrument need to be given as input to the computer for analysis.
- Should provide computerization software.
- Should have provision to connect with vibration type universal magnetic speed pickup to measure engine speed and oil temperature measurement.
- Should indicate for incorrect pressure, temperature and operating voltage.
- Should supply accessories to connect the meter to the engine.
- Should hold valid approval from ARAI, Pune.
- Should hold valid confirmative of production certificate from ARAI, Pune.
- Should have International approval OIML CLASS 1/CE/ISO 3930:2000/PTB (Europe).
- All the electrical systems must be as per IS specification
- Installation and Demo is must at the Thermal Engineering Laboratory of the Institute
- Should provide at site calibration every six months throughout the life of the instrument.
- Offer should also include spare parts/consumables for three years of satisfactory operation.