Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Master the complicated techniques of exhaust emission tests
Code	111762L4
Range	This unit of competency is applicable to technicians working at vehicle servicing workshops and test laboratories. Practitioners should be able to master various recognised emission test procedures and the use of approved inspection / maintenance-grade exhaust emission test gear / equipment, and be familiar with the associated routine maintenance in accordance with the guidelines of the corresponding manufacturer's manual. They should also be capable of providing evaluation report upon the completion of test.
Level	4
Credit	6 *(For Reference Only)*
Competency	**Performance Requirements** 1. Knowledge (Natures of pollutants in vehicle exhaust, principles of emission measurement, and the legislative requirements on exhaust emission control) • Master the pollutants generated during normal and abnormal fuel oxidation processes. • Good understanding of the combustion process, fuel type and quality effects on the concentrations of various pollutants. • Good understanding of the harm caused by various kinds of pollutants. • Understanding of basic pollutant detection principles, including but not limited to chemiluminescence, non-dispersive infrared, flame ionisation, electromagnetic radiation and light scattering, their applications such as portable emission measurement system, remote sensing system, static test, dynamometer test, etc. • Good understanding of the basic principles of various pollutant measurement procedures using inspection/maintenance (I/M) grade emission test gear/equipment, including but not limited to free acceleration test, lug-down test and transient dynamometer test, their measurement conditions, levels of credibility, applications and limitations. • Good understanding of the use of the I/M grade exhaust emission test gear/equipment and associated routine calibrations and functional checks. • Master the legislative requirements regarding the emission standards of various exhaust pollutants set by the local authorities, such as Environmental Protection Department, Transport Department, etc.

	2. Performance (vehicle exhaust pollutant measurement and result recognition) • Conduct routine maintenance for the I/M grade emission test gear/equipment, including but not limited to system functional tests, calibration, control software updates and proper functioning of peripheral setup. • Select the appropriate emission test method and associated test gear/equipment for complying with the specific objectives of inspection, such as performance analysis, roadside emission checks, annual safety inspections, etc. • Conduct the specified exhaust emission tests in accordance with the designated procedures, equipment and safety setup, testing conditions, and the requirements of occupational safety and health, environmental protection, and road and vehicle safety. • Record the measurement data from emission tests and evaluate their validity and compliance with standards. • Continuously review the testing conditions, equipment and procedures during the process, and compile the testing report covering the emission testing results, conformity to the relevant requirements, and suggestions for improvement.
Assessment Criteria	The integrated outcome requirements of this unit of competency are that the practitioner being assessed shall prove that he/she is: • Capable of good understanding of the basic principles of various pollutant measurements, the maintenance and operating procedures of various inspection/maintenance-grade emission measuring gear/equipment; • Capable of determining the appropriate emission test method and associated gear/equipment for complying with the specific objectives of inspection; • Capable of conducting the specified exhaust emission test in accordance with designated procedures, equipment and safety setup, testing conditions, and the requirements of occupational safety and health, environmental protection, and road and vehicle safety; • Capable of evaluating the validity of testing results and the adherence to the standards concerned; and • Capable of compiling the test report covering the emission test results, conformity to the relevant requirements, and suggestions for improvement.
Remark	The credit value of this competency unit assumes that the practitioner has already possessed extensive knowledge of automobile combustion and emissions technology, quantitative analysis and gas measurement, and understanding of the information technology, operation of engines, and associated systems.