

AUTOMOTIVE TECHNOLOGY LEVEL 6

ENG/OS/AUT/CR/3/6

Printed By And Vocational College

Service Vehicle Fuel System

Date: 20.11.2025 03:09 PM

November/December 2025

Printed By: h Technical And Vocational College Date: 20.11.2025
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TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

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TIME: 3 HOURS

Date: 20.11.2025 03:09 PM

INSTRUCTIONS TO CANDIDATE

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1. This paper consists of **TWO** sections: **A** and **B**. Date: 20.11.2025 03:09 PM
2. Answer **ALL** questions in section A and **ANY THREE (3)** questions in section B.
3. **Marks for each question are indicated in the brackets.**
4. **Candidates are provided with a separate answer booklet.**
5. Do not write on the question paper.

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This paper consists of THREE (3) printed pages

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Candidate should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A: (40 MARKS)

Answer ALL questions in this section

1. Safety should be observed in the workshop to prevent accidents. State FOUR safety precautions when handling fuel injectors. (4 Marks)

2. In the fuel system, the fuel tank serves several purposes. Give any THREE functions. (3 Marks)

3. Bleeding air from a fuel system is an important maintenance practice. Mention THREE reasons for carrying out this practice. (3 Marks)

4. Calibration helps maintain efficiency of the injection system. Give TWO reasons for carrying out fuel injector calibration. (4 Marks)

5. A faulty fuel pump affects the whole fuel system. Identify FOUR possible causes of fuel pump failure. (4 Marks)

6. An electronic fuel injection system comprises of various sensors. List any FOUR sensors associated with this system. (4 Marks)

7. Petrol and diesel engines require different injection systems. State FOUR differences between them. (4 Marks)

8. To diagnose injector condition, mechanics use special tools and equipment. Identify THREE such tools and equipment. (3 Marks)

9. As part of the electronic diesel system, the common purpose is to outline FOUR of its functions. (4 Marks)

10. Electronic fuel injection system is preferred by motor vehicle manufacturers. List THREE advantages of this system. (3 Marks)

11. Before mixing with air, fuel is atomized.

- Define fuel atomization (2 Marks)
- Highlight TWO of its purposes. (2 Marks)

SECTION B: (60 MARKS)

Answer ANY THREE questions in this section

12. John was attached in Nairobi's industrial area. A car with a diesel engine was brought and John discovered that it had troubles like hard starting and poor fuel economy.

a) State THREE possible causes of each.

i) Hard start. (3 Marks)

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ii) Poor Fuel Economy. (3 Marks)

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b) Describe the diagnostic checks and tests to identify each of the faults.

i) Hard Starting. (7 Marks)

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ii) Poor Fuel Economy. (7 Marks)

13. In diesel engines, inline and rotary (distributor) fuel injection pumps are used to meter, pressurize, and distribute fuel to the engine cylinders in the correct form, sequence and at the right time.

a) Outline TWO tests and adjustments carried out on an inline injection pump. (2 Marks)

b) Highlight FOUR advantages of rotary injector pump over inline injector pump. (4 Marks)

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Using a well labelled diagram, explain the operation of a rotary (distributor) fuel injection pump. (14 Marks)

14. Mr. Charles, your trainer, has taken you to the automotive workshop after a session on fuel injector testing. Explain the following in relation to fuel injection.

a) Injection Pressure Test. (5 Marks)

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b) Spray Pattern Test. (5 Marks)

c) Leaking. (5 Marks)

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d) Voltage and Resistance Test. (5 Marks)

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15. When servicing modern diesel engines, the replacement of a common rail fuel pump must be carried out carefully to avoid damage to the system and ensure proper operation.

a) Highlight THREE tools trying out this service. (3 Marks)

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b) List FOUR safety precautions to be observed. (4 Marks)

c) Outline the procedure of removing the common rail fuel pump. (5 Marks)

d) Highlight three tests carried out on the common rail fuel pump after replacement. (5 Marks)

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(3 Marks)