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071606T4AUT**AUTOMOTIVE TECHNOLOGY LEVEL 6****ENG/OS/AUT/CR/2/6**

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Service and Repair Vehicle Engine Components

Date: 24.11.2025 11:02 AM

November/December 2025

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**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)****WRITTEN ASSESSMENT**

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TIME: 3 HOURS**INSTRUCTIONS TO CANDIDATE**

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1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE (3)** questions in section B.
3. 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
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. A vehicle has been brought to your workshop for a minor engine service. Identify FOUR personal protective equipment you need to wear when carrying out the service. (4 Marks)
2. Proper circulation of engine oil within the engine block is very important. Identify FOUR effects of blocked engine oil galleries. (4 Marks)
3. Due to technology advancement in automotive industry, most engine manufacturers are producing engines with different designs of combustion chambers. Name FOUR different types of combustion chambers designs used in different types of vehicles. (4 Marks)
4. As an automotive technician, highlight to your client FOUR possible effects of excessively high engine temperatures. (4 Marks)
5. A vehicle has been brought to your workshop for service and the owner of the vehicle complains that the engine overheats when he drives for a long distance. List FOUR possible causes of this problem. (4 Marks)
6. Observing safety precaution in a workshop is essential for protecting both operators and machines. State FOUR safety precautions which should be observed when servicing an engine in a workshop. (4 Marks)
7. State the function of the following components of lubrication system; (4 Marks)
 - a) Oil Galleries
 - b) Oil Filter
 - c) Relief Valve (Pressure Relief Valve)
 - d) Pump
8. A vehicle is brought to your garage for engine overhaul. List FOUR important preparatory steps that must be taken before removing an engine from a vehicle. (4 Marks)
9. State FOUR key health and safety regulations to be observed when handling used engine oil, in line with Kenyan environmental (NEMA). (4 Marks)
10. After a complete engine overhaul, a customer complains of blue smoke from the exhaust. Identify TWO likely causes related to the reassembly process. (2 Marks)
11. Poor a major cause of engine overheating. List TWO causes of poor coolant circulation. (2 Marks)

SECTION B: (60 MARKS)***Answer ANY THREE questions in this section***

12. Comprehensive understanding is key to accurate maintenance of its systems.

- a) Successful second phase of combustion (flame speed period) in diesel engines depends on a number of factors. Outline FOUR of these factors. (4 Marks)
- b) Outline the procedure for replacing engine valve guides. (7 Marks)
- c) Explain THREE potential consequences of not grinding engine valve seats. (9 Marks)

13.

- a) Explain TWO main functions of a lubrication system in an engine. (4 Marks)
- b) An engine's lubrication oil is very essential for its optimum performance. Explain THREE additives used to enrich engine oil. (6 Marks)
- c) Explain FIVE consequences of operating an engine with low oil pressure. (10 Marks)

14. A vehicle was brought to your workshop for coolant top-up. As an automotive technician;

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- a) Highlight FOUR functions of a radiator cap. (4 Marks)
- b) Outline THREE safety steps for opening of radiator cap. (3 Marks)
- c) Using a labelled sketch, describe the operation of a radiator pressure cap. (13 Marks)

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15.

- a) A Catalytic converter plays crucial functions in an automotive exhaust system. List FOUR of the. (4 Marks)
- b) Describe THREE effects of a faulty catalytic converter on engine performance. (6 Marks)
- c) While assessing an engine for repair, you discover that it has suffered from engine knock. Explain FIVE causes of this. (10 Marks)

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