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Date: 04.08.2025 10:45 AM

071605T4AUT

AUTOMOTIVE TECHNICIAN LEVEL 5

ENG/OS/AUT/CC/4/05/A

APPLY WORKSHOP TECHNOLOGY PRINCIPLES

July/Aug 2025

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

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WRITTEN ASSESSMENT

TIME: 3 HOURS

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INSTRUCTIONS TO CANDIDATE

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1. The paper consists of **TWO** sections: **A** and **B**.

2. Attempt **ALL** the questions in Section A and any **THREE** questions in Section B.

3. You are provided with a separate answer booklet

4. **DO NOT** write on this question paper.

5. Do not write on the question paper.

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This paper consists of FOUR (4) printed pages.

Candidates 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 the questions in this section.**

1. An engineering workshop automotive engineer. Define an engineering workshop. (2 Marks)
2. There are a number of workshop safety rules, which should be adhered to when performing an in an engineering workshop. State five of these workshop safety rules and regulations. (5 Marks)
3. Workshop tools are grouped into different classifications depem the purpose. List four classifications of workshop tools. (4 Marks)
4. In order for workshop tools to have a long life, they should be maintained properly. State four general ways of maintaining workshop tools. (4 Marks)
5. Soldering and brazing are both methods of joining metals using heat. Differentiate between the two. (4 Marks)
6. Metals can be joined through mechanical means either temporarily or permanently. Name three of joining metals by mechanical means. (3 Marks)
7. In order to cut a work piece, marking out and measurement must be done first. Differentiate between marking out and measuring as applied in workshop practice. (4 Marks)
8. When operating any workshop machine, one must be dressed in the proper Personal Protective Equipment (PPE). List four of these PPE. (4 Marks)
9. When fab or carrying out a mechanical project, one must have an operation plan. Define an operation plan. (2 Marks)
10. There are different positions a welder can take when jds through welding. List four welding positions. (4 Marks)
11. The following tools are of importance use in an automotive engineering workshop. Sketch them and state their purpose:
 - (i) Rubber mallet (2 Marks)
 - (ii) Ring spanner (2 Marks)

SECTION B (60 MARKS)

Answer any THREE questions from this section

12.

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- a) There are different types of accidents, which can occur in an engineering workshop.

Define the term workshop accident. (2 Marks)

- b) Explain **four** causes of accidents in a workshop. (8 Marks)

- c) Different fires can erupt in an engineering workshop depending on the cause. Explain five classifications of fires, their causes and state the types of fire extinguishers used to extinguish them. (10 Marks)

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13.

- a) Facing is one of the operations performed on a lathe machine. Define the term facing and explain the steps involved when carrying it out. (6 Marks)

- b) Explain the functions of the following lathe machine parts:

(i) Headstock (2 Marks)

(ii) Carriage (2 Marks)

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(iii) Tail stock (2 Marks)

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(iv) Chuck (2 Marks)

- c) When operating a lathe machine, there are a number of safety precautions that should be observed. Explain **six** of these safety precautions. (6 Marks)

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14.

- a) A drilling machine is used in producing holes of different sizes on work pieces. In **stepedure** of producing a hole on a work piece using a drilling machine. (6 Marks)

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- b) To increase the lifespan of drilling machine, proper maintenance should be observed. Explain **four** maintenance practices for a drilling machine. (4 Marks)

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- c) Discuss the functions of a drilling machine:

(i) Column (2 Marks)

(ii) Table (2 Marks)

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(iii) Chuck (2 Marks)

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(v) Base (2 Marks)

15.

- a) Taps and dies are used to produce threads on work pieces manually. List down the steps involved when using taps and dies in producing internal threads. (7 Marks)
- b) Any project carried out in an engineering workshop is usually guided by a technical working drawing. Explain a working drawing, stating its purpose. (4 Marks)
- c) The following workshop tools are commonly available in an automotive engineering workshop. With the aid of neat diagrams of the tools, explain their functions:
- (i) Triangular file. (3 Marks)
- (ii) Centre punch. (3 Marks)
- (iii) Hacksaw. (3 Marks)