TEVETA
Technical Education, Vocational and Entrepreneurship Training Authority

# DIPLOMA IN AUTOMOTIVE/HEAVY EQUIPMENT ENGINEERING

## LEVEL 6 YEAR I EXAMINATIONS

## FINAL INTEGRATED SUMMATIVE EXAMINATIONS

## SITTING: JULY/AUGUST 2025

## SUBJECT: WORKSHOP PROCESSES

**TIME: THREE (3) HOURS** **TOTAL MARKS: 100**

**PASS MARK: 50**

**INSTRUCTIONS TO CANDIDATE**

1. Write your Examination number and National Registration Card (NRC) number on the answer booklet provided. Ensure you append your signature in the space provided on the answer booklet.
2. Write the ANSWER SCRIPT SERIAL NUMBER on the examination register and on the entry slip provided.
3. Answer five (5) questions. Question 1 is compulsory and choose any other four (4) questions.
4. All questions carry equal marks.
5. Cell phones and programmable calculators are not allowed in the examination room.

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO**

**QUESTION 1**

Imagine you are tasked with organising a heavily used tool crib in an Auto/HEE workshop.

a) Describe step-by-step how you would apply the 5S principles to improve its efficiency and organisation. [10 marks]

b) Provide two (2) examples on how 'Standardize' the (Fourth 'S') can be effectively implemented to ensure consistence, cleanliness and order. [2 marks]

c) Describe how the layout and organisation of Auto/HEE workshop (e.g. placement of heavy machinery, clear pathways, designated areas) directly impact safety. Provide at least two (2) concrete examples. [3marks]

d) Explain how proper workshop organisation improve ergonomics for Technicians working on heavy equipment, reducing strain and preventing injuries. [4 marks]

**Total: 20 Marks**

**QUESTION 2**

a) Explain why Personal Protective Equipment PPE is considered as the last line of defence in hazard control. [2 marks]

b) List five (5) essential PPE items that one should wear during general workshop duties and justify the importance of each item. [10 marks]

**Total: 20 Marks**

**QUESTION 3**

a) Explain the importance of **Lockout/Tagout (LOTO)** procedures in a workshop. [2 marks]

b) Describe at least five (5) steps involved in a typical LOTO procedure before working on a mobile heavy equipment machinery. [10 marks]

c) What are the potential damages if the above mentioned LOTO procedures in (b) are not followed correctly. [8 marks]

**Total: 20 Marks**

**QUESTION 4**

a) Explain the critical role workshop supervisors and managers play in demonstrating and fostering a safe working environment. Provide three (3) examples of how they can actively show commitment to safety. [6 marks]

b) Explain the importance of clear and appropriate safety signage in the workshop. [2 marks]

c) State four (4) examples of different types of safety signs and where they would be used. [4 marks]

d) Describe four (4) benefits of good housekeeping in the workshop. [8 marks]

**Total: 20 Marks**

50

**QUESTION 5**

a) State five (5) primary function of different types of hand tools commonly used in the workshop. [10 marks]

b) Explain the criteria for selecting the correct hand tool for a given task emphasising factors like size, type and material. [4 marks]

c) Describe three (3) unsafe practices when using hand tools and explain the potential injuries or damage they can cause. [6 marks]

**Total: 20 Marks**

**QUESTION 6**

a) What is **'rigging'** in the context of Automotive/Heavy Equipment Engineering? [2 marks]

b) Why is **'Safety'** the paramount concern in all rigging operations involving heavy equipment? [2 marks]

c) State three (3) different types of slings used in Auto/HEE rigging. [6 marks]

d) Explain the importance of clear and consistent communication during a rigging operation. [3 marks]

e) Describe common hand signals used between the Rigger and the Crane/Hoist operation. [7 marks]

**Total: 20 Marks**

**QUESTION 7**

a) Explain five (5) significant hazards associated with welding operations in a workshop. [10 marks]

b) What are the essential safety precautions that must be followed before, during, and after any welding operation in a workshop? [10 marks]

**Total: 20 Marks**

**QUESTION 8**

a) Explain the difference between temporary and permanent fasteners. Provide two (2) examples for each type found on heavy equipment. [4 marks]

b) Describe three (3) different types of screw heads and their common uses. [6 marks]

c) What is torque and why is applying the correct roque to fasteners on heavy equipment critical? [4 marks]

d) Describe the safe procedures for removing stubborn or rusted fasteners. [6 marks]

**Total: 20 Marks**