



**T163**

**Thursday, 29/7/2021**

**08:30 - 11:30 AM**

**Names**

**Index number**

**TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021**

## QUESTIONS and ANSWERS BOOKLET

**OPTION/TRADE: AUTOMOBILE ELECTRICITY AND ELECTRONICS SYSTEMS**

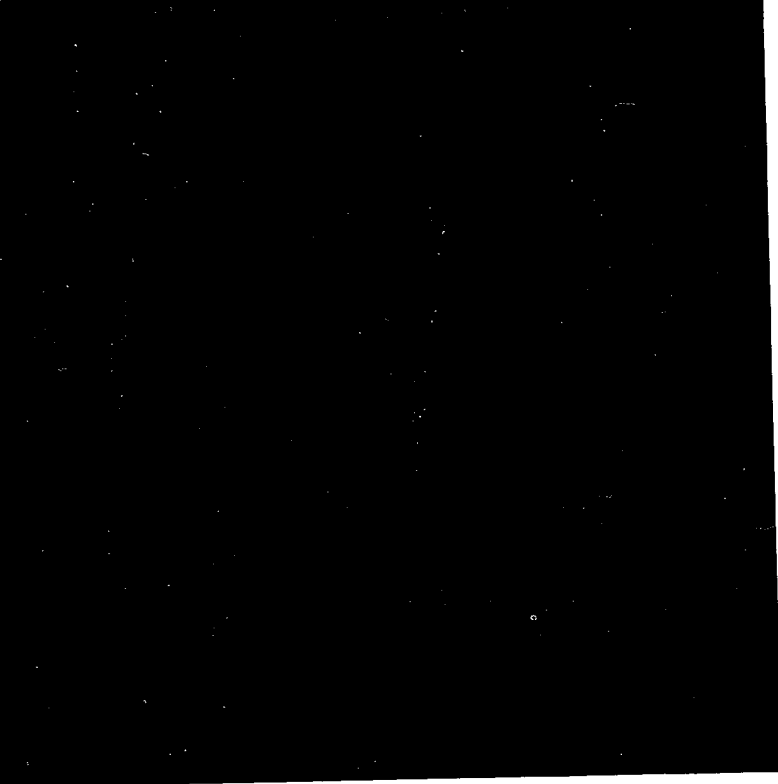
**SUBJECT: Automotive Engine ignition system and Powering**

ACADEMIC YEAR: 2020-2021

Read carefully the instructions on page (i) & (ii)

FOR EXAMINER'S USE ONLY

[illegible]



# TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

## **INSTRUCTIONS TO CANDIDATES: PART I (Answer Booklet)**

1. A candidate should fill in the actual names and the index number on the cover of this questions and answer booklet on the provided place (Black Box).
2. It is illegal for a candidate to write any of his/her names, index number or a school name inside the answer booklet.
3. A candidate should check if all pages of the answer booklet are complete. No candidate should remove or tear any pages or part of it from the answer booklet.
4. A candidate should answer in the language in which the examination is set. (See page **(ii)**)
5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.
6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.
7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.
8. Write your answers on the 12 lined pages (From page 1 of 12 to page 12 of 12).
9. Use the last non-lined pages as draft.
10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

# **TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021**

**OPTION/TRADE: AUTOMOBILE ELECTRICITY AND ELECTRONICS  
SYSTEMS**

**SUBJECT: Automotive Engine ignition system and Powering**

**DURATION: 3 hours**

## **INSTRUCTIONS TO CANDIDATES: PART II (Question paper)**

The paper is composed of two (2) Sections as follows:

**Section I: Attempt all the Twelve (12) questions (60 marks)**

**Section II: Attempt any Four (4) questions out of Six (6) (40 marks)**

### **Allowed materials:**

- Ruler or square
- Calculator

### **Note:**

***Every candidate is required to carefully comply with the provided assessment instructions.***

**Section I : Attempt all the Twelve (12) questions**

**(60 marks)**

**(01)** Define the following terms:

- a) Starter battery
- b) Current
- c) Resistance
- d) Open circuit voltage
- e) Voltage.

**(5 marks)**

**(02)** List any five (5) functions of car battery.

**(5 marks)**

**(03)** Identify five (5) causes of battery overheat during charging. **(5 marks)**

**(04)** Identify the five (5) types of ignition system used in the cars.

**(5 marks)**

**(05)** Enumerate any five (5) causes of the knocking combustion of the A/F mixture for petrol engine.

**(5 marks)**

**(06)** What is the firing order of engines with 4 and 6 cylinders?

**(5 marks)**

**(07)** Identify five (5) sensors used to determine the load.

**(5 marks)**

**(08)** Which statement is correct “Gasoline direct injection systems allow mixture in” the cylinder to be:

- a) Homogenous
- b) Stratified
- c) Incremental
- d) Strong.

**(5 marks)**

**(09)** What are the targets of modern engine techniques?

**(5 marks)**

**(10)** Mention the main ECU ‘input’ parameters for calculating Ignition timing and injector duration.

**(5 marks)**

**(11)** Identify any five (5) general stages which should be followed in Engine management fault findings.

**(5 marks)**

**(12)** What are the measures for emission control and reduction of gasoline engine?

**(5 marks)**

**Section II: Attempt any Four (4) questions out of Six (6) (40 marks)**

- (13) a)** Name five (5) factors affecting battery life.
- b)** Name five (5) safety precaution should be taken when performing vehicle jump start. **(10 marks)**
- (14) a)** List any three (3) possible causes of low state of charge
- b)** List any five (5) possible causes that shorten battery service life than expected.
- c)** List any two (2) possible causes of battery low capacity. **(10 marks)**
- (15) a)** Explain the term “**computer**” used in automotive.
- b)** Automobile manufactures use many names of computers, list them. **(10 marks)**
- (16)** Make a comparison between the human nervous system and computer system. **(10 marks)**
- (17)** A modern car has the different individual Control Modules that control the respective systems, list at least ten (10) of them. **(10 marks)**
- (18)** Identify any five (5) EMS Sensors and Actuators. **(10 marks)**

***Do not write anything on this page !***





