



**NATIONAL EXAMINATION
AND SCHOOL INSPECTION
AUTHORITY.**

T168

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 TRANSMISSION AND CONTROL SYSTEMS

SUBJECT: Automotive steering, suspension and hydraulic systems

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 TRANSMISSION AND CONTROL
SYSTEMS**

SUBJECT: Automotive steering, suspension and hydraulic systems

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)

1. State any five (5) purposes of steering system into a motor vehicle. **/5 marks**

2. Mention the main components of gear box steering system. **/5marks**

3. Identify the names of the components added on mechanical steering system and become hydraulic power assisted steering system and their function. **/5 marks**

4. Describe the operating principle of rack and pinion steering system. **/5 marks**

5. List down any five (5) basic parts of suspension system. **/5 marks**

6. Pinpoint any five (5) main purposes of suspension system in motor vehicle. **/5 marks**

7. Write down the five (5) main types of springs. **/5 marks**

8. How does Single-tube gas-pressure shock absorber work during Compression? **/5marks**

9. Highlight any five (5) types of independent suspension system.

/5 marks

10. a) Why is it said that if the speed of a vehicle is doubled, the braking distance is increased by four (4)?

/3 marks

b) What do you understand by term “braking distance”

/2 marks

11. Enumerate any five (5) factors that can influence the braking distance.

/5 marks

12. Define the following terms:

a) Lever

b) Coefficient of friction

c) Pedal ratio.

/5 marks

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

(40 marks)

- 13.** List down at least five (5) causes of the following automotive Steering system problems: **/10 marks**
- a)** Shimmy
 - b)** High steering effort in both directions.
- 14.** Describe the causes and correction of the Pump Inoperative, No Assist (Hard Steering) steering Problem. **/10 marks**
- 15.** a) Write down and explain the four (4) types of forces acting on the vehicle wheels. **/8 Marks**
- b) Highlight the two (2) types of coil spring. **/2 Marks**
- 16.** List any ten (10) typical problems that you might find in suspension system. **/10 Marks**
- 17.** Bring down five (5) hydraulic brake valves and their respective functions. **/10 Marks**
- 18.** Illustrate the causes and remedies when excessive pedal effort is required. **/ 10 marks**

Do not write anything on this page !

