

071606T4AUT
AUTOMOTIVE TECHNICIAN LEVEL 6
ENG/OS/AUT/CR/05/6
SERVICE VEHICLE STEERING SYSTEM

Nov. /Dec. 2022



THE KENYA NATIONAL EXAMINATIONS COUNCIL

WRITTEN ASSESSMENT

Time: 3 hours

INSTRUCTIONS TO CANDIDATE.

*This paper has **TWO** sections **A** and **B**. Attempt questions in each section as per instructions given in the section.*

You are provided with a separate answer booklet.

Marks for each question are indicated in the brackets.

Do not write on the question paper

Write your name and registration code on the answer booklet.

*This paper consists of **THREE (3)** 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)

In this section you are required to answer ALL questions.

1. State **TWO** steering characteristics. (2 marks)
2. Briefly explain with the aid of a diagram, the operation of rack and pinion steering mechanism. (8 marks)
3. State **TWO** advantages of fitting power assisted steering system in motor vehicles. (2 marks)
4. Explain **THREE** methods used in steering system to prevent serious injuring steering collision. (3 marks)
5. State any **THREE** functions of pitman arm. (3 marks)
6. Explain the order in which the effort applied to the steering wheel is transferred to the front wheel. (6 marks)
7. State **TWO** types of steering control valves used in power assisted steering systems. (2 marks)
8. What are the safety precautions which must be observed when overhauling a vehicle hydraulic assisted steering system? (4 marks)
9. List **FIVE** the major causes of hard steering? (5 marks)
10. State **THREE** causes of excessive play or looseness in the steering system. (3 marks)
11. Define camber angle as used in steering systems and **TWO** types. (2 marks)

SECTION B: 60 MARKS

*In this section, you are required to attempt any **THREE** questions.*

12. (a) Explain the Ackerman steering principle using a sketch. (14 marks)
(b) How does the recirculating ball steering gear operate. (6 marks)
13. (a) with an aid of a diagram explain the operation of a power steering system. (12 marks)
(b) What are the **FOUR** major requirements of steering ball joints? (8 marks)
14. (a) Explain the operation of four-wheel steering system and state **TWO** advantages. (10 marks)
(b) A customer brought a vehicle into the workshop having a problem of pulling on one side when in motion. (10 marks)
i. Explain how to identify the problem.
ii. Describe the procedure of rectifying the problem above.
15. a) Explain the different forms of adjustment provided for to set the camber and castor angles. (10 marks)
b) Describe the operation of a vane type power assisted steering pump. (10 marks)