

071604T4AUT

AUTOMOTIVE TECHNOLOGY LEVEL 4

ENG/OS/AUT/CR/4/4/A

SERVICE VEHICLE STEERING AND SUSPENSION SYSTEMS

July/August 2024



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

WRITTEN ASSESSMENT

TIME: 2 HOURS

INSTRUCTIONS TO THE CANDIDATE

1. This paper consists of **TWO** sections; **A** and **B**
2. Attempt **ALL** questions in both sections.
3. Marks for each question are indicated.
4. You are provided with a separate answer booklet.
5. Do not write on the question paper.

This paper consists of FIVE (5) printed pages

**Candidates should check the question paper to ascertain that all pages are printed as
indicated and that no question is missing**

SECTION A: (10 MARKS)

Attempt ALL questions in this section

Each question is 1 mark in this section

1. MacPherson strut Suspension is widely used for light salon cars, its classified as _____ type of suspension.
 - A. Wishbone
 - B. Shock absorbers
 - C. Stabilizer bar
 - D. Springs
2. In a rack and pinion steering system, _____ protects the rack from contamination.
 - A. The inner tie-rod socket
 - B. The outer tie-rod socket
 - C. Grommets the bellows boot
 - D. Grommets
3. Coil spring suspension systems have several advantages over other suspension systems, which one of the following statements describes their advantage?
 - A. Are heavier than leaf spring suspension systems
 - B. Have more absorbing effect
 - C. do not require the use of suspension dampers
 - D. are only suitable for small vehicles
4. As a vehicle turns a corner, side forces cause it to move inside radius of turn, if unchecked it would make it difficult for the driver to retain control. Which component of the suspension system performs this function?
 - A. Stabilizer link
 - B. Drag link
 - C. Anti-roll bar
 - D. Tie rod end

5. Suspension systems comprises of several components, _____ absorbs shocks and vibrations from the road surface.
- A. Wishbone
 - B. dampers
 - C. Stabilizer bar
 - D. Springs
6. Different workshop tools are used for different workshop applications. Which one of the following tools is used to measure small gaps and clearances?
- A. Micrometer screw gauge
 - B. Dial gauge
 - C. Feeler gauge
 - D. Steel ruler
7. Lubrication is needed during suspension service, _____ is used for lubricating suspension components.
- A. Steering fluid
 - B. Suspension hydraulic fluid
 - C. Grease
 - D. Brake fluid
8. Vehicle steering geometry consists of several adjustments, _____ refers to the adjustment of the wheels to ensure they are parallel to each other.
- A. Toe in / Toe out
 - B. Castor
 - C. Camber
 - D. Wheel track
9. The following tools are commonly used in vehicle garages, which one of the following tools is used for tightening and loosening bolts and nuts.
- A. files
 - B. Pliers
 - C. Screwdrivers
 - D. Spanners

10. _____ Personal protective equipment is essential for avoiding head injuries during automotive repair.
- A. Gloves
 - B. Safety boots
 - C. Apron
 - D. Helmet

SECTION B: (40 MARKS)

Attempt ALL questions in this section.

11. State **three** advantages of suspension systems as used in vehicles (3Marks)
12. Outline **three** forms of springs used in vehicles (3Marks)
13. State **four** types of steering gearboxes (4Marks)
14. Briefly explain **two** importance of using dampers(shock absorbers) in suspension systems (4Marks)
15. Explain **two** functional requirements of power-assisted steering as used in vehicles (4Marks)
16. State **two** factors that affect the stiffness of a spring in vehicles suspension system. (2Marks)
17. State **three** advantages of coil spring over leaf springs in vehicle suspension system. (3Marks)
18. Name **two** types of leaf springs as used in vehicle suspension system. (2marks)
19. Differentiate between each of the following steering geometry terms (6marks)
 - i. Caster angle
 - ii. Camber angle
 - iii. Kingpin inclination
20. State **three** causes of each of the following steering system faults (3marks)
 - i. Car pulls to one side (3marks)
 - ii. Car wanders (3marks)
 - iii. Car vibrations (3marks)