

071606T4AUT

AUTOMOTIVE TECHNICIAN LEVEL 6

ENG/OS/AUT/CR/02/6

SERVICE VEHICLE TRANSMISSION SYSTEMS

Nov. /Dec. 2022



THE KENYA NATIONAL EXAMINATIONS COUNCIL

WRITTEN ASSESSMENT

Time: 3 hours

INSTRUCTIONS TO CANDIDATES

Maximum marks for each question are indicated in brackets.

*This paper consists of **TWO** sections: **A** and **B**.*

Answer questions as per instructions in each section.

You are provided with a separate answer booklet.

Do not write on the question paper.

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: SHORT RESPON S QUESTIONS (40 Marks)

Attempt all questions in this section.

1. In each of the following;
 - a) Define a cone clutch. (1 Mark)
 - b) Outline any **two** advantages of using a cone clutch. (2 Marks)
 - c) State any **two** applications of a cone clutch. (2 Marks)
2. By giving their functions, outline any **four** Personal Protective Equipment. (4 Marks)
3. Explain the requirements of a propeller shaft. (3 Marks)
4. State **two** methods of power transmission used in vehicles. (2 Marks)
5. Explain;
 - a) Gear ratio
 - b) The differences between spur and helical shapes for gear teeth. (3 Marks)
6. State **three** functions of the gearbox. (3 Marks)
7. Give any **three** functions of the differential. (3 Marks)
8. Outline any **three** differences between multi-plate clutches and single plate clutches. (6 marks)
9. State **two** advantages of fluid flywheel that makes it cheaper compared to friction clutches used with manual transmissions. (2 Marks)
10. Outline the **three** types of manual gearboxes. (3 Marks)
11. Describe the main shortcoming of asbestos as used in friction lining of the friction clutches. (1 Mark)
12. Highlight what is meant by the following clutch faults;
 - a) Clutch slip
 - b) Clutch judder (2 Marks)
 - c) Outline any **three** causes of (a) above. (3 Marks)

SECTION B: EXTENDED RESPONNS QUESTIONS (60 Marks)

Attempt any THREE questions in this section.

13. Outline the maintenance tips you can advise the owner of a car equipped with an automatic transmission. (20 Marks)
14. a) State **four** advantages of the fluid flywheel. (4 Marks)
- b) By using a well labeled diagram, describe the construction and operation of a torque converter. (16 Marks)
15. a) Outline any **two** applications of centrifugal clutches. (2 Marks)
- b) What are the disadvantages of using centrifugal clutches? (2 Marks)
- c) With the aid of a well labeled sketch, describe the operation of a centrifugal clutch. (16 Marks)
16. a) Highlight the meaning of the term torque. (2 Marks)
- b) By using a well labeled diagram, describe the operation of a three speed sliding mesh gearbox. (18 Marks)