



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

**THIRD YEAR SECOND SEMESTER EXAMINATION FOR, DIPLOMA IN
AUTOMOTIVE ENGINEERING**

SEM 1322 - ENGINE TECHNOLOGY AND PRACTICE III

DURATION: 2 HOURS

DATE: 18/12/2018

TIME: 2 – 4 P.M.

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a. Briefly describe the TWO basic types of friction brakes commonly used in vehicles. (3 Marks)
- b. State FOUR requirements of a vehicle steering system. (4 Marks)
- c. Define the term “chassis” and list THREE different types of chassis frames. (5 Marks)
- d. List any SIX types of vehicle layouts. (3 Marks)
- e. List FIVE functions of a vehicle suspension system. (5 Marks)
- f. List TWO advantages and TWO disadvantages of alloy wheels when compared to pressed steel wheels. (4 Marks)
- g. List any SIX types of motor vehicle steering gears. (6 Marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a. Explain the use of the following in a vehicle; Strut; Wishbone; Torsion bar (3 Marks)
- b. Name FIVE factors that stopping time and distance depend on in a vehicle (5 Marks)
- c. Describe the following: Kingpin inclination and castor angle (4 Marks)
- d. Describe with the aid of a clear labeled sketch how bleeding of hydraulic brakes is carried out (8 Marks)

QUESTION THREE (20 MARKS)

- a. With the aid of a labeled clear sketch, describe the construction and operation of a hydraulic brake system (10 Marks)
- b. Differentiate between cross-ply and radical-ply tyres (4 Marks)
- c. List THREE effects of an out-of-balance wheel (3 Marks)
- d. List THREE advantages of using a coil spring in a vehicle (3 Marks)

QUESTION FOUR (20 MARKS)

- a. Define the term “steering geometry”. (2 Marks)
- b. Using a clear labeled sketch, describe the construction and operation of recirculating ball steering gear (12 Marks)
- c. List THREE requirements of a braking system. (6 Marks)