



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN MOTOR VEHICLE ENGINEERING

MVED 301/2: VEHICLE TECHNOLOGY AND PRACTICE

DATE: 23/10/2020

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions.

QUESTION ONE (30 MARKS)

- a) State three requirements of a brake fluid. (3 marks)
- b) State any two advantages of a transfer gearbox in a vehicle (2 marks)
- c) Explain the function of brakes in a vehicle (3 marks)
- d) Draw and label a simple diagram of a telescopic shock absorber (10 marks)
- e) With aid of a diagram explain how a rear double reduction is achieved in a commercial vehicle with large diameter wheels. (13 marks)

QUESTION TWO (20 MARKS)

- a) With aid of a diagram show how a leaf spring is normally attached to the chassis (10 marks)
- b) With aid of a sketch, explain the operation of hydraulastic suspension (10 marks)

QUESTION THREE (20 MARKS)

- a) State Two advantages of using air in the braking system of a vehicle (2 marks)
- b) With aid of a diagram explain the operation of compressed air braking system in a heavy commercial vehicle. (18 marks)

QUESTION FOUR (20 MARKS)

- a) State any two advantages of hydraulic retarder. (2 marks)
- b) With aid of a diagram, explain the operation of hydraulic retarder. (18 marks)

QUESTION FIVE (20 MARKS)

- a) State any two advantages of rubber suspension in a vehicle. (2 marks)
- b) With aid of a characteristic graphs, illustrate the effect of a damper on a suspension spring (3 marks)
- c) With aid of a diagram explain the operation of hydro-pneumatic suspension system (15 marks)