



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

CERTIFICATE IN VEHICLE TECHNOLOGY

VEHICLE TECHNOLOGY

DATE: 17/4/2019

TIME: 8.30-11.30 AM

INSTRUCTIONS:

- *This Examination contains FIVE questions*
- *Attempt all questions*
- *All questions carry equal marks*

QUESTION ONE (20 MARKS)

- a) State the purpose of the braking system used in the motor vehicle industry. (2 marks)
- b) Using a well labeled diagram explain the operation of a tandem master cylinder. (6 marks)
- c) With the help of a diagram explain the construction of a eddy current retarder. (12 marks)

QUESTION TWO (20 MARKS)

- a) State the functions of a suspension system (3 marks)
- b) Differentiate between constant rate and progressive rate type of springs (4 marks)
- c) Describe the characteristics of a good wheel to be used in a motor vehicle (8 marks)
- d) Explain the merits of tubeless tyres over tubed tyres (5 marks)

QUESTION THREE (20 MARKS)

- a) Explain the need for constant velocity joints in automotive transmission. (3 marks)

- b) Explain the construction and operation of a rzeppa constant velocity joint. (17 marks)

QUESTION FOUR (20 MARKS)

- a) State THREE advantages and TWO disadvantages of power assisted steering used in motor vehicle industry. (5 marks)
- b) Using a well labeled diagram explain the operation of a Vickers type of power assisted steering system. (15 marks)

QUESTION FIVE (20 MARKS)

Using a diagram explain the construction and operation of an overdrive unit fitted in motor vehicle transmission system.