



MACHAKOS UNIVERSITY

MECHANICAL ENGINEERING DEPARTMENT

CERTIFICATE IN VEHICLE TECHNOLOGY MODULE I

VEHICLE TECHNOLOGY TERM 2

Time 2 hours

INSTRUCTIONS:

- **This Examination contains FIVE questions**
 - **Attempt all questions**
 - **All questions carry equal marks**
1. (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. (6mks)
(c) With the help of a diagram explain the construction of a eddy current retarder. (12 mks)

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

3. (a) Explain the need for constant velocity joints in automotive transmission.
(3marks)
- (b) Explain the construction and operation of a rzeppa constant velocity joint.
(17marks)
4. (a) State THREE advantages and TWO disadvantages of power assisted steering used in motor vehicle industry. (5marks)
- (b) Using a well labeled diagram explain the operation of a Vickers type of power assisted steering system. (15marks)
5. Using a diagram explain the construction and operation of an overdrive unit fitted in motor vehicle transmission system. (20marks)