THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

CERTIFICATE IN AUTOMOTIVE ENGINEERING

(CAE 10J)

VEHICLE TECHNOLOGY

SEMESTER I EXAMINATIONS

SERIES: APRIL, 2010.

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination:

- Answer Booklet(s)
- Drawing Instruments

This paper consists of **TWO** Sections **A** and **B**.

Attempt **TWO** questions from Section **A** and **ONE** Question from Section **B**.

All questions carry equal marks.

Maximum marks for each part of a question are as shown.

SECTION A (THEORY)

(Answer **TWO** questions from this Section.)

Q.1 (a) Draw a well labeled diagram of a conventional vehicle structure. (14 marks)

(b) Explain the functions of the following components.

(i) Universal joint
(ii) Final drive
(iii) Propeller shaft
(iv) Rear axle
(v) Differential unit
(vi) Clutch (6 marks)

Q.2 (a) With an aid of a diagram illustrate the Ackerman layout. (4 marks)

(b) With the aid of diagrams describe oversteer and understeer. (10 marks)

(c) Explain any **THREE** causes of understeer. (6 marks)

Q.3 (a) (i) State any **TWO** main types of brakes. (2 marks)

(ii) With the aid of a well labeled diagram describe the operation of a leading and trailing shoe brake. (12 marks)

(b) Explain **THREE** factors affecting self servo action. (6 marks)

SECTION B (PRACTICE)

(Attempt **ONE** question.)

Q.4 (a) Outline **FIVE** motor vehicle workshop rules and regulations. (5 marks)

(b) State **THREE** causes and their respective remedies associated with the following braking system faults:

(i) Grabbing brakes
(ii) Vehicle pulling to one side
(iii) Dragging brakes
(iv) Brakes not operating
(v) Excessive pedal travel. (15 marks)

Q.5 Describe the procedure for the chassis frame inspection and repair. (20 marks)