



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA DAE 06**

**EAU 2305: VEHICLE TECHNOLOGY IV**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date May 2016**

## **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

**Do not write on the question paper.**

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Q.1

a) Sketch the layout of a vehicle transmission system (2mks)

b) Explain the following types of transmission systems

- i. Manual transmission
- ii. Automatic transmission
- iii. Continuous Variable transmission (CVT) (6mks)

c) List **FOUR** differences between the manual and automatic transmission systems (4mks)

d) Explain **FOUR** commands of each of the following transmission system when driving

- i. Manual transmission
- ii. Automatic transmission (8mks)

## Q.2

- a) List THREE types of vehicle differentials (3mks)
- b) With the aid of a well labeled diagram show four parts of a differential (5mks)
- c) State THREE functions of a differential in an automobile (3mks)
- d) Using a diagram explains how a car differential works when (6mks)
  - i.  $w_1 = w_2$
  - ii.  $w_1 > w_2$

- e) Explain the disadvantage of an open differential (3mks)

## Q.3

- a) Explain the following terminologies
  - i. part – time 4WD system
  - ii. Full - time 4WD system (4mks)
- b) Give TWO advantages and TWO disadvantages of a 4WD vehicle (4mks)
- c) With the aid of a diagram, explain the working principle of a transfer case in a vehicle (5mks)
- d) Explain the working principle of the following vehicles
  - i. Front wheel drive
  - ii. Rear wheel drive (4mks)
- e) List THREE advantages of front- engine, front wheel drive system (3mks)

## Q.4

- a) Explain THREE criteria of classifying automobiles (6 mks)
- b) Explain the importance of vehicle inspection (2mks)
- c) Name any FOUR vehicle parts which should be inspected (4 mks)
- d) Explain TWO reasons which make a vehicle unroadworthy (4mks)

e) State any FOUR shortcomings of the current inspection system in Kenya (4mks)

Q.5

a) Explain the process steps in modern automotive workshops (6mks)

b) List FOUR painting materials for vehicles (4mks)

d) Explain the following steps in vehicle painting (10mks)

Preparation

Primer

Base Coat

Clear Coat

Polish