



# 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 FOUR components of a differential (4mks)
- b) State FOUR functions of a differential in an automobile (4mks)
- c) With the aid of a well labeled diagram explain how a car differential works when
  - i. the vehicle is moving straight
  - ii. the vehicle is taking a turn (6mks)
- d) Name THREE types of gears used in car differential systems (3mks)
- 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) With the aid of a diagram explain the following types of 4WD designs
  - i. Rear wheel drive
  - ii. Front wheel drive (4mks)
- c) Give TWO advantages and disadvantages of a 4WD vehicle (4mks)
- d) With the aid of a diagram explain the working principle of a transfer case in a vehicle (5mks)
- e) List THREE types of control shifts in a part- time 4WD system (3mks)

## Q.4

- a) Give FOUR classification of automobiles based on purpose (4mks)
- b) Define the term vehicle inspection (2mks)
- c) Name FIVE vehicle parts which should be inspected (5mks)
- d) Explain the importance of vehicle inspection (3mks)
- e) State any SIX shortcomings of the current inspection system in Kenya (6mks)

Q.5

- a) List FOUR contents of paint used in automobiles (4mks)
- b) Give THREE functions of additives in paints (3mks)
- c) Name THREE tools used in painting (3mks)
- d) Briefly explain FIVE major steps in vehicle painting (10mks)