



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING
DIPLOMA IN AUTOMOTIVE ENGINEERING (DAE 6)

EAU 2306: VEHICLE TECHNOLOGY IV

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- Answer booklet

This paper consists of **TWO** sections **A** and **B**

Answer **TWO** questions in section **A** and any other **ONE** question from section **B**

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

SECTION A (Attempt any TWO questions from this section)

Question One

- a) Explain the TWO major drawbacks of the connectional fluid flywheel **(4 marks)**
- b) With the aid of a diagram, explain the construction and operation of the fluid friction coupling. **(16 marks)**

Question Two

- a) Differentiate between ‘torque sensitive’ and ‘speed sensitive’ limited slip differential. **(2 marks)**
- b) With the aid of a diagram, describe the construction and operation of a viscous type limited slip differential. **(14 marks)**
- c) State any FOUR advantages of limited slip differentials fitted to vehicles. **(4 marks)**

Question Three

- a) Explain any FOUR conditions under which transmission wind-up can occur in a four-wheel drive vehicle. **(4 marks)**
- b) Outline the FOUR duties of a transfer gearbox. **(4 marks)**
- c) Draw an epicyclic centre differential with viscous coupling unit and explain its operation. **(12 marks)**

SECTION B (Answer only ONE question from this section)

Question Four

A vehicle with a badly damaged front bumper and bonnet in a road accident is brought to the workshop for repair:

- a) Describe the processes and procedure to repair the vehicle including spray painting
- b) Name the tools used for this operation **(20 marks)**

Question Five

A disused commercial heavy vehicle has undergone restoration process in a workshop. Explain all the procedures involved to make this heavy roadworthy and the subsequent inspection at the vehicle inspection centre. **(20 marks)**