



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

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING
DIPLOMA IN AUTOMOTIVE ENGINEERING (DAE 5)

EAU 2304: AUTO ELECTRICAL TECHNOLOGY II

END OF SEMESTER EXAMINATION
SERIES: APRIL 2014
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Drawing Instruments*
- *Electronic Calculator*

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) Give FOUR reasons why heavy engines require heavy starter motors. **(4 marks)**
- b) With the aid of a neat circuit diagram, describe the operation of an axial starter motor. **(16 marks)**

Question Two

- a) State THREE advantages of Alternators as compared to D.C. generator charging systems. **(3 marks)**
- b) With the aid of a neat circuit diagram, describe the operation of an electronic regulator with three transistors. **(17 marks)**

Question Three

- a) Distinguish between the following types of injection systems used in EFIs (Electronic Fuel Injection)
- (i) Sequential Injection
 - (ii) Group Injection
 - (iii) Cylinder Specific Injection
 - (iv) Simultaneous Injection **(8 marks)**
- b) Describe the construction and operation of the D-jectronic electronic fuel injection system. **(12 marks)**

SECTION B (Answer only ONE question from this section)

Question Four

A heavy vehicle starter motor has been brought into the workshop. Describe the procedure for carrying out the following on the starter:

- a) To remove and replace the starter motor from the engine
- b) Testing the armature for:
- (i) Open circuit
 - (ii) Short circuit
 - (iii) Earthed circuit **(20 marks)**

Question Five

A faulty alternator is brought into the workshop. Describe a practical procedure for carrying out a complete overhaul on the unit. **(20 marks)**