



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of Mechanical & Automotive Engineering
UNIVERSITY EXAMINATION FOR:
Diploma in Automotive Engineering
EAU 2204 : Auto-Electrical Technology & Practice I
END OF SEMESTER EXAMINATION
SERIES: AUGUST 2019
TIME: 2 HOURS
DATE: Pick Date Aug 2019

Instruction to Candidates:

You should have the following for this examination

- *Student I.D. Card & Examination Pass*
- *Answer booklet*
- *Non-Programmable scientific calculator*
- *Drawing instruments*

This paper consists of **FIVE** questions in **TWO** sections **A** and **B**. Attempt **TWO** questions from section **A** and **ONE** question from section **B**.

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

Do not write on the question paper.

SECTION A

Attempt TWO Questions from this section

Question ONE

- a) State **three** things upon which the generation of electrical energy depend. **(3 marks)**
- b) Explain how magnetic strength is controlled to avoid damage to the alternator and prevent overcharging of the battery. **(3 marks)**
- c) With the aid of a diagram, explain the construction and operation of the cut-out. **(14 marks)**

Question TWO

- a) State **four** advantages of the pre-engaged starter motor when compared with an inertia drive starter motor. **(4 marks)**

- b) (i) Draw a circuit diagram of a vehicle starting system and label all the main parts
(ii) Explain briefly how the starting system works. **(14 marks)**
- c) Explain the function of an overrunning clutch in a pre-engaged starter motor. **(2 marks)**

Question THREE

- a) State the function of the following:-
- i. Contact breaker points
 - ii. Condenser
 - iii. The centrifugal weights
 - iv. The central electrode in the distributor cap
 - v. The rotor arm
 - vi. Spark plugs
- (6 marks)**
- b) With the aid of a diagram, explain the operation of the coil ignition system **(14 marks)**

SECTION B

Attempt ONE Question from this section

Question FOUR

- a) List any **four** ignition system faults and their causes **(4 marks)**
- b) Outline a procedure to carry out the following:-
- i. Identifying a faulty spark plug from an engine, cleaning and testing
 - ii. Ignition timing on a four cylinder, four stroke engine
- (16 marks)**

Question FIVE

- a) State any **five** faults of the starting system and their causes. **(5 marks)**
- b) List **six** components of a starter motor that are recommended for inspection and service after 20,000km of operation. For each component, state the type of inspection and service carried out. **(15 marks)**