



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
SPECIAL/ SUPPLEMENTARY 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) With the aid of diagrams, describe the construction and operation of the alternator, and how alternating current is changed to direct current. **(16 marks)**
- b) Explain how alternator voltage and current output are controlled. **(4 marks)**

Question TWO

- a) Describe the difference in construction between an electromagnetic starting motor and a permanent magnet starting motor. **(12 marks)**

- b) Explain **two** different ways the pinion is moved in and out of mesh with the ring gear. (4 marks)
- c) Discuss gear reduction and how it affects armature and engine cranking speed. (4 marks)

Question THREE

- a) State the function of the ignition coil and hence explain how it operates. (10 marks)
- b) (i) Make a line diagram of an ignition circuit and give the firing order and direction of rotation of the distributor rotor arm.
(ii) What is the purpose of the condenser in the distributor? (10 marks)

SECTION B

Attempt ONE Question from this section

Question FOUR

- a) List **six** charging system faults and associated symptoms (6 marks)
- b) Write a procedure to overhaul and test the alternator (14 marks)

Question FIVE

- a) List **three** categories of ignition failure and give examples of each (6 marks)
- b) Describe a procedure to perform the following:-
i. Perform a triggering test and explain what it tells you
ii. Time the distributor to the engine after the crankshaft has turned while the distributor was out (14 marks)