



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA DAE 06

EAU 2306: ENGINE TECHNOLOGY III

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.

Q.1

- Define the term Electronic Fuel Injection (EFI) system (2mks)
- Explain the disadvantages of throttle body injection system (4mks)
- Name **FOUR** parts of an electronic fuel injection system and give their functions (8mks)
- Explain **THREE** types of sensors used in electronic fuel injection system (6mks)

Q.2

- List **TWO** factors to consider when designing a vehicle intake manifold (2mks)
- Name **FOUR** components of the exhaust manifold system and give their functions (8mks)
- With the aid of a well labeled diagram explain the working principle of a Turbocharger (4mks)

d) State THREE advantages and THREE disadvantages of using turbochargers and superchargers in vehicles

(6mks)

Q.3

a) Explain the sources and nature of emissions from automobiles (3mks)

b) Give THREE types of harmful emissions from the exhaust manifold (3mks)

c) With the aid of a diagram explain the following methods of vapor recovery

i. Positive Crankcase Ventilation (PCV)

ii. Fuel Tank Vapor Recovery (FTVR) (8mks)

d) Explain the following methods of heating the intake air as a way of

Controlling pollution in vehicles

i. Early fuel evaporation (EFE)

ii. Exhaust gas recirculation (EGR) (6mks)

Q.4

a) Define the term engine balancing (2mks)

b) List FOUR parts of the engine that need balancing (4mks)

b) Give THREE reasons why engine balancing is necessary in vehicles (3mks)

d) Explain the effects of unbalanced forces in the engine (3mks)

e) Explain FOUR factors to consider when designing an engine (8mks)

Q.5

a) State THREE differences between petrol injection systems and diesel injection systems (6mks)

b) Explain the reason for the fall of the carburetor (3mks)

c) Explain the following types of fuel injections (6mks)

i. Central port injection

ii. Multi- port injection

d) Explain the working principle of a petrol fuel injection system (5mks)