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: APRIL2016

TIME: 2HOURS

DATE: Pick DateMay2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptany THREE questions.

Do not write on the question paper.

Q.1

a) Define the term Electronic Fuel Injection (EFI) system (2mks)

b) Explain the following methods of fuel injection in petrol engines

i. central fuel injection

ii. sequential fuel injection (4mks)

c) Name FOUR parts of an electronic fuel injection system and give their functions (8mks)

d) Explain THREE types of sensors used in electronic fuel injection system (6mks)

Q.2

a) With the aid of a diagram briefly explain THREE parts of the vehicle intake manifold (6mks)

b) Explain the working principle of the following parts as used in the exhaust manifold

i. Catalytic converter
ii. Muffler (4mks)

c) 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) Give FOUR reasons why engine balancing is necessary in vehicles (4mks)

c) List THREE methods of correcting errors in the balance of the crankshaft (3mks)

d) Explain how engine balancing is performed (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)