



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA DMEN 03

EAU 2101: MOTOR VEHICLE THEORY

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.

Q1.

a) Define the term chassis and give **THREE** of its functions as used in vehicle technology (5mks)

b) Explain the following types of chassis

i. Full-forward chassis

ii. Frame- full chassis

iii. Frameless chassis (6mks)

c) State the advantage of each of the sections used in chassis construction (3mks)

d) Explain the following types of chassis frames

i. Space frame

ii. Torsion box

iii. Monocoque (6mks)

Q.2

- a) With the aid of a well labeled diagram, explain the following types of vehicle layouts
- i. Front engine- front- wheel drive
 - ii. Rear engine- rear-wheel drive
 - iii. All -wheel-drive (6mks)
- b) List any FOUR components of a four wheel drive and give their functions (4mks)
- c) Explain the working principle of a part-time 4WD system (4mks)
- d) Give ONE advantage and ONE disadvantage of each of the layouts below
- i. Front engine-front wheel drive
 - ii. Front engine- rear wheel drive
 - iii. Four wheel drive (6mks)

Q.3

- a) Explain the working principle of the following suspension systems
- i. Rigid suspension
 - ii. Independent suspension (4mks)
- b) List TWO functions of a suspension system as used in vehicles (2mks)
- c) Explain any TWO types of front suspension systems (4mks)
- d) With the aid of a diagram explain the working principle of a shock absorber (4mks)
- e) Explain THREE factors which indicate that the suspension system needs replacement (6mks)

Q.4

- a) Explain the working principle of the following safety gadgets used in vehicles (6mks)
- i. Traction Control System (TCS)
 - ii. Electronic Stability Control (ESC)

b) Explain the difference between Absorbed Glass Mat (AGM) battery and gelled battery (4mks)

c) Define the following terms as used in capacity rating system

i. Reserve Capacity (RC)

ii. Cold Cranking Amps (CCA) (4mks)

d) With the aid of a diagram explain the reactions taking place in a lead acid battery during

i. Charging

ii. Discharging (6mks)

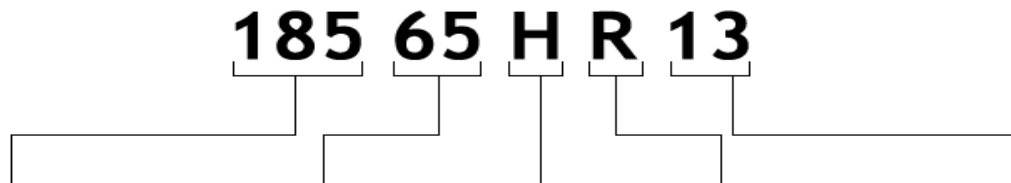
Q.5

a) List any FOUR parts of a vehicle tyre (4mks)

b) Name THREE types of carcass (tread) used in vehicle wheel construction (3mks)

c) Give FOUR advantages of tubeless tyres (4mks)

d) Define the following terms as used in tyre designation (5mks)



e) List FOUR factors affecting tyre service life (4mks)