Name	Index No /
2503/105 VEHICLE TECHNOLOGY AND	Candidate's Signature
PRACTICE	Date
Oct./Nov. 2015	



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AUTOMOTIVE ENGINEERING

MODULE I

VEHICLE TECHNOLOGY AND PRACTICE

3 hours

INSTRUCTIONS TO CANDIDATES

Time: 3 hours

Write your name and index number in the spaces provided above.

Sign and write the date of examination in the spaces provided above.

You should have Drawing instruments for this examination.

This paper consists of EIGHT questions in TWO sections; A and B.

Answer a total of FIVE questions in the spaces provided in this question paper as follows:

Any TWO questions from section A;

Any TWO questions from section B;

Any other ONE question from either section A or B.

All questions carry equal marks.

Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	is E same	20	
		20	3153
В		20	
	-	20	
A or B		20	200
	TOT	AL SCORE	

This paper consists of 20 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

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SECTION A

Answer at least TWO questions from this section in the spaces provided.

- I. (a) (i) State two functions of a clutch in a vehicle.
 - (ii) State three factors upon which the torque transmitted by a clutch depends on.
 (5 marks)
 - (b) With the aid of a diagram, explain the operation of a torque converter fitted in a vehicle. (15 marks)
- 2. (a) State four advantages of employing air suspension in vehicles. (4 marks)
 - (b) Using a labelled diagram, explain the operation of an air suspension system for commercial vehicles. (16 marks)
- 3. (a) State two advantages and two limitations of auxiliary brakes in vehicles. (4 marks)
 - (b) With the aid of a diagram, explain the operation of a hydraulic retarder. (16 marks)
- 4. (a) (i) State two requirements of a power assisted steering system.
 - (ii) State two advantages of a power assisted steering over manual steering.

 (4 marks)
 - (b) With the aid of a diagram, explain the operation of a power assisted steering system.

 (16 marks)

SECTION B

Answer at least TWO questions from this section in the spaces provided.

- 5. (a) State two causes for each of the following manual gearbox faults:
 - (i) Gears jump out of mesh
 - (ii) Gears noisy when shifting

(4 marks)

- (b) Describe the procedure to follow in replacing worn synchroniser units for a manual gearbox fitted on a car. (16 marks)
- 6. (a) State two causes for each of the following:
 - (i) vehicle wanders;
 - (ii) hard steering.

(4 marks)

2503/105 Oct/Nov. 2015

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		(ii)	A passenger has a nose bleed. Describe the procedure for administe first aid to the passenger.	(11 marks)
	(b)	(i)	Distinguish angle parking from flush parking.	
37 1	(a)		in the three classes of road signs, citing an example in each case.	(9 marks)
		(ii)	testing brake performance using a roller tester.	(16 marks)
		(i)	testing power brakes for assistance;	
	(b)	Descr	ibe the procedure for:	
		(ii)	one wheel drags when brakes are applied.	(4 marks)
		(i)	vehicle pulls to one side when braking;	
7.	(a)	State	two causes for each of the faults:	
		(iii)	adjusting the wheel bearings on a vehicle.	(16 marks)
		(ii)	determining condition of shock absorbers in a car;	
		(i)	determining ball joint wear in a car;	
	(b)	Descr	ribe the procedure for:	