

2503/105  
VEHICLE TECHNOLOGY AND  
PRACTICE  
June/July 2018  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
DIPLOMA IN AUTOMOTIVE ENGINEERING  
MODULE I

VEHICLE TECHNOLOGY AND PRACTICE

3 hours

**INSTRUCTIONS TO THE CANDIDATE**

*You should have the following for this examination:*

*drawing instruments;*

*answer booklet.*

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

*Answer FIVE questions taking at least TWO questions from each section.*

*All questions carry equal marks.*

*Maximum marks for each part of a question are as shown.*

*Candidates should answer the questions in English.*

**This paper consists of 3 printed pages.**

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

## SECTION A

Answer at least **TWO** questions from this section.

1. (a) State **four** categories of fires and in each case, state a possible material involved and an appropriate type of fire extinguisher. *class c - bicarb powder fire extinguisher or liquid fire extinguisher* (6 marks)
- (b) (i) Explain the procedure to follow in administering emergency aid to a colleague who has suffered a deep cut on the palm while working in the workshop. *Use a damp cloth to clean the palm*
- (ii) Explain the procedure for resuscitating a colleague who has fainted upon receiving an electric shock. *Make the person lie on the ground so that nothing falls off* (14 marks)
2. (a) (i) Differentiate between a live and dead axle.
- (ii) Illustrate with labelled diagrams the three types of live axles suited to vehicles. (9 marks)
- (b) With the aid of a diagram, explain the operation of a transfer gearbox. (11 marks)
3. (a) State:
  - (i) **two** functions of a suspension system;
  - (ii) **two** advantages of air suspension. *eliminates driver fatigue*(4 marks)
- (b) With the aid of a labelled diagram, explain the operation of an air suspension system. (16 marks)
4. (a) State **four** advantages of an antilock braking system. *does not require much effort from the driver, experience it does not require full use of the brakes, to avoid locking when applying brakes on steep ground* (4 marks)
- (b) Using a labelled diagram, explain the operation of an anti-lock braking system. (16 marks)

## SECTION B

Answer at least **TWO** questions from this section.

5. (a) State **two** causes for each of the following brake faults:
- (i) dragging brakes;
  - (ii) vehicle pulling to one side upon brake application. *No lubricating oil in the system. Presence of air in the system. Bring the vehicle to a stand. Remove the brake and inspect it. Clean the parts of the drum.* (4 marks)
- (b) A vehicle has been brought into the workshop with worn out disc brake seals. Describe the procedure to follow in replacing the seals and preparing the vehicle for use. *Remove the disc and inspect it. Clean the parts of the drum.* (16 marks)
6. (a) State **two** suspension causes that would lead to:
- (i) vehicle leaning to one side;
  - (ii) frequent leaf spring breakage. (4 marks)
- (b) A heavy commercial truck has been brought into the workshop with a damaged equalizer beam. Describe the procedure to follow in replacing the beam. (16 marks)
7. (a) State **two** causes for each of the following clutch faults:
- (i) clutch spin;
  - (ii) clutch slip. *worn out clutch plates* (4 marks)
- (b) (i) Describe the procedure to follow in carrying out the clutch stall test.
- (ii) A van has been brought into the workshop with a faulty diaphragm spring clutch. Describe the procedure in replacing the faulty components. (16 marks)
8. (a) State **two** causes for each of the following faults:
- (i) hard steering; *worn out bearings*
  - (ii) front end noise. *worn out bearing. No lubricating oil* (4 marks)
- (b) A truck fitted with a front beam axle has its kingpin bushes worn. Describe the procedure to follow in replacing them. (16 marks)

*disassembly*  
*disassembly*

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