

SECTION C: WORKSHOP TECHNOLOGY

Answer at least ONE question in this section.

7. (a) State three functions of flux in soldering. (3 marks)
- (b) State two materials that can be arc welded. (2 marks)
- (c) With the aid of sketches, explain three oxy-acetylene flames. (15 marks)

8. (a) Define the following:

- (i) brittleness,
- (ii) ductility,
- (iii) hardness,
- (iv) elasticity,
- (v) malleability.

(10 marks)

- (b) With the aid of sketches, explain each of the following work holding devices on a lathe machine:

- (i) three jaw chuck,
- (ii) planer handle.

(10 marks)

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1503/105

VEHICLE TECHNOLOGY, BODYWORK
AND WORKSHOP TECHNOLOGY

Oct./Nov. 2021

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN AUTOMOTIVE ENGINEERING

MODULE 1

VEHICLE TECHNOLOGY, BODYWORK AND
WORKSHOP TECHNOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet

Non-programmable scientific calculator

Drawing instrument

This paper consists of THREE sections: A, B and C.

Answer a total of FIVE questions as follows:

at least TWO questions from Section A,

at least ONE question from Section B;

and at least ONE question from section C in the answer booklet provided.

Maximum marks for each part of a question as shown.

Candidates should answer the questions in English.

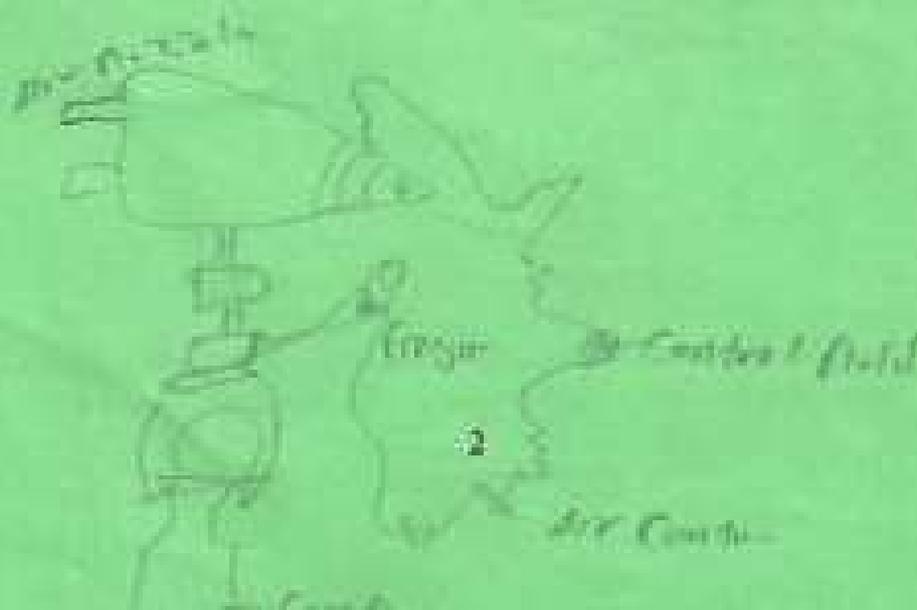
This paper consists of 4 printed pages.

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

SECTION A: VEHICLE TECHNOLOGY

Answer at least TWO questions from this section.

1. (a) State two functions of a clutch in a vehicle. (2 marks)
- (b) Explain the meaning of propeller shaft "wind up". (2 marks)
- (c) With the aid of a sketch, explain the operation of a single plate multi coil spring clutch. (16 marks)
2. (a) Differentiate between leading shoe and trailing shoe of a drum brake. (4 marks)
- (b) State two advantages of disc brakes over drum brakes. (2 marks)
- (c) With the aid of a sketch, explain the operation of disc brakes. (14 marks)
3. (a) State three functions of a damper in the suspension system. (3 marks)
- (b) State three advantages of a hydraulic suspension. (3 marks)
- (c) With the aid of a sketch, explain the operation of a hydraulic suspension system. (14 marks)
4. (a) State three requirements of power steering. (3 marks)
- (b) With the aid of sketches, explain:
(i) camber angle,
(ii) caster angle. (3 marks)
- (c) With the aid of a sketch, explain the operation of worm and sector steering box. (14 marks)



SECTION B: VEHICLE BODYWORK

Answer at least ONE question in this section.

(a) State five safety precautions to be observed in paint work. (5 marks)

(b) Explain four reasons for painting a car. (4 marks)

(c) Sketch a spray gun. (11 marks)

(a) State

(i) three upholstery materials.

(ii) two reasons for valancing. (5 marks)

(b) Sketch three chassis frame sections. (6 marks)

(c) With the aid of sketches, explain the following panel beating tools.

(i) beating file.

(ii) surface hammer.

(iii) curved dolly. (9 marks)