

2506/105
2507/105
WORKSHOP TECHNOLOGY AND
LIFE SKILLS
June/July 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN AERONAUTICAL ENGINEERING
(AIRFRAMES AND ENGINES OPTION)
(AVIONICS OPTION)

MODULE I

WORKSHOP TECHNOLOGY AND LIFE SKILLS

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/Non-programmable scientific calculator.

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

Answer question 1 (compulsory) and TWO other questions from section A, and

TWO questions from section B.

All questions carry equal marks.

Maximum marks for each part of a question are as indicated.

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: WORKSHOP TECHNOLOGY

Answer question 1 (compulsory) and TWO other questions from this section.

1. (a) Outline **two** safety precautions that should be observed with regard to workshop machines. (2 marks)
- (b) (i) Describe class D fire, highlighting its suitable fire extinguisher.
(ii) Highlight the procedure for treatment of minor burns in a workshop. (5 marks)
- (c) (i) Define soft soldering as applied to metal joining.
(ii) List **two** applications of soft soldering. (4 marks)
- (d) Define each of the following material properties, highlighting their application:
(i) hardness;
(ii) malleability;
(iii) elasticity. (9 marks)
2. (a) (i) Define material handling.
(ii) Outline **two** measures that should be taken to ensure safe handling of materials at the work place. (4 marks)
- (b) Explain each of the following methods of waste disposal, listing **two** examples of waste disposed in each case:
(i) incineration;
(ii) recycling. (8 marks)
- (c) (i) List **two** uses of a micrometer screw gauge.
(ii) Sketch a micrometer screw gauge with an accuracy of 0.01 mm, reading 25.78 mm. (4 marks)
- (d) Explain each of the following with respect to files:
(i) grade;
(ii) pinning. (4 marks)

3. (a) (i) List **four** sheet metal materials used in a mechanical workshop.
(ii) Explain a self secured joint in sheet metal work. (6 marks)
- (b) Illustrate the use of a sheet metal hand grooving tool. (4 marks)
- (c) Explain each of the following aircraft hardware:
(i) airframe control bearing;
(ii) plug connectors;
(ii) receptacle connector. (6 marks)
- (d) Explain each of the following in relation to corrosion:
(i) uniform attack;
(ii) electroplating. (4 marks)
4. (a) Define each of the following terms as used in limits and fits:
(i) nominal size;
(ii) tolerance. (4 marks)
- (b) Explain each of the following types of maintenance:
(i) preventive;
(ii) scheduled;
(iii) corrective. (6 marks)
- (c) With the aid of sketches, explain each of the following machine processes:
(i) boring;
(ii) countersinking. (10 marks)
5. (a) Describe each of the following heat treatment processes:
(i) normalising;
(ii) hardening. (8 marks)
- (b) With the aid of sketches, describe the die penetrant method of crack detection. (12 marks)

SECTION B: LIFE SKILLS

Answer any TWO questions from this section.

6. (a) List **four** benefits that the education sector in Kenya may derive from life skills education. (4 marks)
- (b) Outline **four** external factors that may limit the achievement of personal goals. (4 marks)
- (c) Baka's behaviour when interacting with other people exhibits low self esteem. Explain **three** such behaviour. (6 marks)
- (d) List **six** living values that may promote a healthy relationship between spouses. (6 marks)
7. (a) Outline **four** characteristics of child labour. (4 marks)
- (b) A college student is drawing his time management chart. List **four** contents of such a chart. (4 marks)
- (c) Explain **three** responsibilities of a parent with respect to child protection. (6 marks)
- (d) Explain **three** causes of sibling rivalry in a family. (6 marks)
8. (a) Explain **three** measures that the management of an organization may take to encourage creative thinking among employees. (6 marks)
- (b) Explain each of the following phrases as used in life skills:
- (i) emotional intelligence;
- (ii) gender stereotyping. (4 marks)
- (c) Outline **three** differences between an assertive person and a passive person. (6 marks)
- (d) Outline **four** causes of work-related stress. (4 marks)

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