

2506/105
2507/105
**WORKSHOP TECHNOLOGY AND
LIFE SKILLS**
March/April 2024
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 any other TWO questions from section A.

Answer TWO questions from section B.

All questions carry equal marks.

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

All dimensions are in millimetres.

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.**

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SECTION A: WORKSHOP TECHNOLOGY (60 marks)

Answer question ONE (COMPULSORY) any other TWO questions from this section.

1. (a) List **two** tools used in making screw threads in an aviation workshop. (2 marks)
- (b) Illustrate the following forms of threads used in fasteners:
- (i) ISO metric thread;
 - (ii) acme thread;
 - (iii) square thread;
 - (iv) buttress thread.
- (8 marks)
- (c) Highlight **four** defects that may be revealed using non-destructive testing (NDT) method. (4 marks)
- (d) Describe each of the following methods of preventing corrosion in aircraft components:
- (i) galvanizing;
 - (ii) barrier coatings;
 - (iii) anodizing.
- (6 marks)
2. (a) Outline:
- (i) **two** reasons that make safety important in a workshop.
 - (ii) **two** factors that may enhance safety in a workshop.
- (4 marks)
- (b) (i) Identify **four** classes of materials used in engineering.
- (ii) Describe each of the following properties of engineering materials:
- (I) malleability;
 - (II) hardness;
 - (III) ductility;
 - (IV) toughness.
- (12 marks)
- (c) Highlight **four** methods of disposing waste materials in a workshop. (4 marks)

3. (a) (i) Explain the term quality control (QC) as used in manufacturing.
(ii) List **three** benefits of QC to a manufacturing firm. (5 marks)
- (b) (i) Outline **two** differences between measurement and inspection as used in workshop operations.
(ii) List **two** tools used for:
(I) direct measurement;
(II) indirect measurement. (6 marks)
- (c) Illustrate each of the following hand tools:
(i) hacksaw;
(ii) flat file;
(iii) cross pein hammer. (9 marks)
4. (a) (i) Define the following terms as used in limits and fits:
(I) unilateral tolerance;
(II) bilateral tolerance.
(ii) With the aid of sketches, describe **three** types of engineering fits. (16 marks)
- (b) Identify **four** sheet metal materials used in aircraft bodywork. (4 marks)
5. (a) With the aid of sketches, describe each of the following gas welding techniques:
(i) leftward technique;
(ii) rightward technique. (10 marks)
- (b) With the aid of sketches, describe each of the following lathe machine operations:
(i) parallel turning;
(ii) knurling. (10 marks)

SECTION B: LIFE SKILLS (40 marks)

Answer any TWO questions from this section.

6. (a) Petro intends to boost his self esteem. List **four** measures that he may take to achieve this objective. (4 marks)
- (b) Explain **three** ways in which a supervisor may demonstrate empathy at the workplace. (6 marks)
- (c) Anita is suspected to be in the full blown stage of HIV infection. Outline **four** signs that she may be exhibiting. (4 marks)
- (d) Explain **three** challenges that may be associated with lack of creativity among employees in an organization. (6 marks)
7. (a) Outline **three** differences between an assertive person and a passive person. (6 marks)
- (b) Identify **four** categories of problems that a college student may face. (4 marks)
- (c) Explain **four** benefits that an organization may derive from effective time management. (4 marks)
- (d) Increased child labour has been reported in Country X. State **six** interventions that the government may put in place to address this situation. (6 marks)
8. (a) Outline **four** ways in which the management of an organization may demonstrate gender discrimination at the workplace. (4 marks)
- (b) A young graduate intends to make a decision on a certain matter. Outline the steps that he should follow to enhance the effectiveness of his decision. (7 marks)
- (c) Identify **four** situations that a young person may find himself in as a result of misusing leisure time. (4 marks)
- (d) Highlight **five** signs that an abused child may exhibit. (5 marks)

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