

2506/105

2507/105

**WORKSHOP TECHNOLOGY AND  
LIFE SKILLS**

**June/July 2020**

**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 and any TWO questions from section B.*

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

*All dimensions are in millimeters.*

*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 (60 marks)**

*Answer Question 1 (COMPULSORY) and any other TWO questions from this section.*

1. (a) (i) Illustrate each of the following drilling operations:
- I. spot facing;
  - II. boring;
  - III. counter sinking.
- (ii) Explain the reason that makes it necessary to carry out each of the operations in (i). (12 marks)
- (b) In relation to corrosion prevention, outline **five** precautions that should be observed in the design and assembly stages of aircraft hardware. (5 marks)
- (c) Highlight **three** methods employed in waste disposal in a workshop. (3 marks)
2. (a) With the aid of sketches, explain **three** types of Oxy-acetylene flames. (12 marks)
- (b) Illustrate each of the following sheet metal tools:
- (i) steel square;
  - (ii) centre punch;
  - (iii) ball peen hammer. (6 marks)
- (c) List **four** methods used in mechanical joining processes. (2 marks)
3. (a) Describe each of the following forming processes:
- (i) chipping;
  - (ii) tapping;
  - (iii) reaming. (6 marks)
- (b) (i) Outline **two** non-metallic bearing materials.  
(ii) Highlight **four** properties of bearing materials. (6 marks)
- (c) Explain each of the following finishing processes as employed in an aircraft body:
- (i) conventional spraying;
  - (ii) airless spraying. (4 marks)
- (d) (i) List **two** objectives of aircraft maintenance.  
(ii) Highlight **two** areas that need maintenance in an aircraft workshop. (4 marks)



4. (a) Highlight **four** effects of noise on workshop employees. (4 marks)
- (b) Outline **four** factors to consider when choosing an engineer's steel rule. (4 marks)
- (c) Describe the effect of each of the following factors on carbon steels:
- (i) carbon content;
  - (ii) rate of cooling. (4 marks)
- (d) (i) Explain each of the following types of plastics used in the fabrication of aircraft body:
- I. thermosetting;
  - II. thermoplastics.
- (ii) List **four** advantages of plastics as aircraft materials. (8 marks)
5. (a) Describe each of the following parameters as used in limits and fits:
- (i) tolerance deposition;
  - (ii) basis system. (10 marks)
- (b) Highlight **four** limitations of the X-ray method of non-destructive metal testing. (4 marks)
- (c) (i) Define each of the following terms as used in quality control:
- I. standardization;
  - II. interchangeability.
- (ii) Outline **two** objectives of standardization. (6 marks)



**SECTION B: LIFE SKILLS (40 marks)**

*Answer any TWO questions from this section.*

6. (a) Outline **four** strategies that an individual may adopt to enhance effective time management. (4 marks)
- (b) Outline **three** differences between a passive person and an assertive person. (6 marks)
- (c) During a routine medical examination, Belinda was diagnosed with HIV infection. Explain **five** measures that she may have been advised to take to live positively with the virus. (10 marks)
7. (a) List **five** behavioural symptoms of stress. (5 marks)
- (b) Distinguish between passive leisure and active leisure. (4 marks)
- (c) Explain each of the following phrases as used in life skills:  
(i) gender stereotypes;  
(ii) self esteem;  
(iii) self awareness. (6 marks)
- (d) Highlight **five** health challenges that may be associated with alcohol abuse. (5 marks)
8. (a) Timothy recently lost both his parents following a road accident. Outline **four** ways in which Timothy's friends may demonstrate empathy to him. (4 marks)
- (b) Explain **four** factors that may hinder effective negotiation between two parties. (8 marks)
- (c) The management of Pana Airlines has noted increased conflicts amongst the staff. Highlight **four** measures that may be taken to minimize such conflicts. (4 marks)
- (d) Outline **four** reasons that make creative thinking important to an individual. (4 marks)

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