

2506/105

2507/105

**WORKSHOP TECHNOLOGY AND**

**LIFE SKILLS**

**June/July 2019**

**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 any **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 (60 marks)**

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

1. (a) Describe the procedure of rescuing a person stuck on a faulty electrical equipment. (6 marks)
- (b) Explain each of the following types of maintenance as applied in aircraft hardware:
- (i) breakdown;
  - (ii) preventive;
  - (iii) corrective.
- (6 marks)
- (c) (i) Outline **five** factors that influence a machine tool life.
- (ii) List **three** functions of cutting fluids as used in production of aircraft fasteners. (8 marks)
2. (a) Explain each of the following terms as used in finishing processes of aircraft parts:
- (i) cladding;
  - (ii) lapping;
  - (iii) honing.
- (6 marks)
- (b) (i) Describe “stress corrosion”.
- (ii) Outline **four** methods of corrosion prevention. (6 marks)
- (c) (i) Sketch an external micrometer screw gauge and label its parts.
- (ii) Highlight **three** uses of a vernier caliper. (8 marks)
3. (a) With the aid of sketches, describe each of the following metal joining processes:
- (i) riveting;
  - (ii) bolting.
- (10 marks)



(b) Explain each of the following terms:

- (i) quality control;
- (ii) quality assurance;
- (iii) material handling;
- (iv) waste management.

(8 marks)

(c) Outline **two** safety precautions that should be observed when using the cold chisel.

(2 marks)

4. (a) With the aid of sketches, explain each of the following aircraft hardware:

- (i) journal bearing;
- (ii) thrust bearing.

(10 marks)

(b) Describe each of the following heat treatment processes:

- (i) normalising;
- (ii) annealing;
- (iii) carburising.

(6 marks)

(c) List **four** types of metals used in sheet metalwork.

(4 marks)

5. (a) With the aid of a sketch, describe the metal non-destructive testing method using the X-ray radiations.

(10 marks)

(b) In a limit and fits system, the following parameters are specified,

Shaft	30	$-0.005$	mm $\phi$
		$-0.018$	
Hole	30	$+0.02$	mm $\phi$
		$-0.000$	

Determine the:

- (i) basic size;
- (ii) hole and shaft tolerances;
- (iii) hole and shaft limits;
- (iv) maximum and minimum clearance/interference;
- (v) type of fit.

(10 marks)  
**Turn over**



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

*Answer any TWO questions from this section.*

6. (a) Explain each of the following terms in relation to human rights:
- (i) abuse;
  - (ii) needs. (4 marks)
- (b) (i) Outline **two** types of life skills.
- (ii) Explain **three** social benefits that an individual may derive from the study of life skills. (8 marks)
- (c) Some youth set personal goals but fail to achieve them in the long run. Explain **four** personal reasons that may account for such failure. (8 marks)
7. (a) Identify **five** categories of relationships that may exist between people in society. (5 marks)
- (b) Andrew intends to make a decision on a certain personal issue. Highlight the steps that he should follow to make an effective decision. (7 marks)
- (c) Gladwel who works with Amicos Airlines recently sought audience with the manager over frustrations at work. Explain **four** ways in which the manager may have demonstrated empathy during the conversation to connect with Gladwel. (8 marks)
8. (a) Distinguish between drug abuse and drug dependence. (4 marks)
- (b) Outline **four** problems that may result from misuse of leisure by the youth. (4 marks)
- (c) Outline **four** benefits that an organization may derive from effective time management. (4 marks)
- (d) Explain **four** factors that may facilitate the spread of HIV and AIDS in a community. (8 marks)

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