**Term 1- 2023 OPENER EXAM**

 **DRAWING AND DESIGN (449/1)**

**PAPER 1**

**FORM FOUR (4)**

**Time: 2½ Hours**

**Name**: …………………………………………………………. **Adm** **No**: ……………….

**School**: ……………………………………………………….. **Class**: …………………..

**Signature**: …………………………………………………….. **Date**: …………………...

**FOR EXAMINERS USE ONLY**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **TOTAL** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**INSTRUCTIONS TO CANDIDATES.**

You should have the following for this examination:

* Drawing instruments
* 3 sheet of drawing paper size A3

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

Answer ALL the questions in section A and B and any TWO questions from section C.

Questions in section A must be answered on the answer sheets provided.

Questions in section B and C should be answered on the A3 drawing papers provided.

All dimensions are in millimeters unless otherwise stated.

Candidates may be penalized for not following the instructions given in this paper.

**SECTION A (50 MARKS)**

***Answer All Questions in This Section***

1. (a) Outline four qualities of an entrepreneur. (4 marks)

 (b) List four advantages of using a computer draw over use of hands (4 marks)

1. State what an industrial training Centre in Kenya is. ( 1mark)
2. State the composition of the following alloys (2 marks)
3. Brass

1. Stainless steel

1. State two advantages of plywood over solid timber (2 Marks)
2. Sketch a conventional breaks of the following (4 marks)
3. Wood
4. Pipe
5. Round section
6. Short break
7. State four reasons for sectioning parts in engineering drawings. (4 marks)
8. Two views of a machine part are shown below. Project the auxiliary view in the direction of arrow A (8 marks)



1. Construct a regular octagon whose distance across the flats is 60mm. (6 marks)
2. (a) Use sketches to describe three types of dimensions in drawing. (3 marks)

(b) Construct a diagonal scale in which 30mm represent 1 km to read up to 4km. Indicate a distance of 2.84km on the scale. (6 marks)

1. Figure 3 shows the front elevation and incomplete plan of a truncated square pyramid. Complete the plan and draw the true shape of the cut face. (6 marks)



**Section B (20 Marks)**

**This is a compulsory question.**

***Students are advised not to spend more than 1 hour answering this question***

11. Figure 7 shows part of a machine component drawn in first angle projection,

Assemble the parts and draw, FULL SIZE the following: (20 marks)

1. Sectional front elevation along the cutting plane A-A
2. The plan
3. Insert 4 leading dimensions



**Section C (30 Marks)**

 ***Answer any two questions from this section***

12. Figure 8 shows a cylinder truncated by two cutting planes A-A and B-B. (15 Marks)

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13. Figure 7 shows two views of an axle boss drawn in first angle projection. Draw the boss in isometric projection taking X as the lowest point. (15 marks)



