Name: ……………………….……………………… Index No: ……………………..……………………….

 Candidates signature: ……………..…………….……

 Date: ……………………….…………..……………...

 449/1

DRAWING AND DESIGN

PAPER 1

TIME 2 ½ Hours.

**MACHAKOS COUNTY KCSE TRIAL AND PRACTICE EXAM 2015**

***Kenya Certificate of Secondary Education (K.C.S.E)***

449/1

DRAWING AND DESIGN

PAPER 1

 Instructions to candidates

1. You should have the following materials for this examination:

 Drawing instruments

 3 sheets of A3 drawing papers.

 Scale rule

1. This paper consists of three sections: A, B and C
2. Answer all questions in section A and B and any two questions in section C.
3. Questions in section A must be answered on the answer sheet provided.
4. Questions in section A, B and C should be answered on the A3 sheets of drawing papers.
5. All dimensions are in millimeters unless otherwise stated.
6. Candidates may be penalized for not following instructions given in this paper.
7. This paper consists of 12 printed pages.
8. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no question is missing.
9. Candidates should answer the questions in English.

*A special Performance Improvement Project*

*By His Excellency Dr. Alfred Mutua*

 *Sponsored by the County Government of Machakos*

**SECTION A (50MARKS)**

**Answer all five questions in this section in the spaces provided**

1. a) Give the following information regarding parastatal organizations in Kenya with respect to:

 (i) Ownership (1mark)

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 (ii) Management. (1mark)

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 (iii) Services (1mark)

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 b) Describe four main steps involved in design process. (4marks)

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2. a) i) State one reason for using different types of lines in drawing. (1mark)

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 ii) Explain one use of each of the following lines. (1mark)

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 b) Outline six advantages of using computers in drawing. (3marks)

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3. a) State one disadvantage of using each of the following items to hold paper on the drawing board .

 (i) Masking tape. (1mark)

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 (ii) Thumb pins (1mark)

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 b) Describe each of the following manufactured boards.

 (i) Plywood (1mark)

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 (ii) Chipboard (1mark)

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 (iii) Block board (1mark)

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4. Figure 1 shows a template drawn full size.



 Measure and dimension the hole and angle of the slanting face. (2marks)

5. Figure 2 shows a pictorial view of a block.

 Using third angle projection, sketch in good proportion the orthographic views of the block. (6marks)

6. Figure 3 shows two views of a block drawn in first angle projection. In good proportionality sketch the block in oblique projection. (6marks)

 Figure 3

7. Construct an internal common tangent to the circle given in figure 4.



 (7marks)

8. The following lines were drawn using different scale.

 a) A B

 b) C D

 Determine the distance represented by each line using the given scale. (3marks)

 i) Line AB if the scale used is 1:2

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 ii) Line CD if the scale used is 2:1

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9. A right square pyramid is truncated along X-X and Y –Y as shown in figure 5.

 

 Figure 5

 Complete the plan (4marks)

10. Figure 6 shows two views of a shaped block drawn in first angle projection. Sketch the third view by projecting from the given views. (5marks)



**SECTION B (20MARKS)**

**This question is compulsory.**

11. Figure 7 shows parts of a machined component drawn in first angle projection.

 Assemble the parts and draw the following:

a) Sectional front elevation through the cutting plane F-F.

b) The plan.



**SECTION C (30MKS)**

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

12. Figure 8 shows the three orthographic views of a machined block drawn in first angle projection.

 Draw full size, the isometric view of the block taking corner X as the lowest point. (15marks)



Figure 8

X

13. In the mechanism shown in figure 9, the crank EF rotates about centre E while GH oscillates about G.

 Plot the locus of point P for one complete revolution of EF. (15marks)



Figure 9

14. Figure 10 shows a branch pipe A connected to a conical shaped base of a chimney B.



Figure 10

 Draw the curves of interpenetration between the pipe and the conical base in:

1. Plan
2. Elevation (15marks)