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DRAWING AND DESIGN
PAPER 1
JULY/AUGUST 2013
TIME: 2½ HOURS

KIRINYAGA CENTRAL DISTRICT JOINT EXAMINATION - 2013

Kenya Certificate of Secondary Education
DRAWING AND DESIGN
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TIME: 2½ HOURS

INSTRUCTIONS TO THE CANDIDATES:

- (a) You should have the following:
- Drawing instruments.
 - Drawing papers size A₃.
 - Scale rule.
- (b) This paper consists of three Sections; **A**, **B** and **C**.
- (c) Answer all questions in Sections **A** and **B** and any **two** questions from Section **C**.
- (d) All dimensions are in millimeters.
- (e) Candidates should check the question paper to ascertain that there are no missing questions.

SECTION A: (50 MARKS)

1. (a) Why are drawing boards always inclined at a small angle? (1mk)
- (b) What is a two dimensional drawing? State three examples. (2mks)
2. Using a ruler and a pair of compass only, construct.
- (a) A regular pentagon whose sides are 30mm long. (3mks)
- (b) The template shown in figure **1 below**. (2mks)

Fig.1

3. (a) Sketch each of the following lines. (2mks)
- (i) Hidden details.
- (ii) Centre line.
- (iii) Construction line.
- (iv) Dimension line.
- (b) State the meaning of the following: (2mks)
- (i)
- (ii)
- (iii)
- (iv)
4. (a) State **two** advantages of using computers in drawing. (1mk)
- (b) With reference to sheet metal, explain the term galvanizing. (2mks)

5. Construct a diagonal scale of 1: 5 to measure to an accuracy of 5mm up to 800mm. Show a reading of 615mm on the scale. (4mks)
6. Figure **2 below** shows the elevation of a truncated right square pyramid project the plan. (5mks)
7. (a) Gas welding consists of two gas cylinders. State the type of gas in each of the cylinders and the standard colour painted on the gas cylinder for each. (2mks)
- (b) Using a cube, show the three types of pictorial drawings. (3mks)
8. Views of a shaped block are shown in figure **3 below** in first angle orthographic projection. Sketch in good proportion the oblique view of the block. (3mks)

9. (a) Views of a shaped block are shown in figure 4 in first angle projection. Sketch a two point perspective view of the block. (3mks)

- (b) Using the concentric circle method, construct an ellipse of major and minor axis as 85 and 45mm respectively. (5mks)

10. A wheel 55mm diameter rolls without slipping on a straight line. Plot the locus of point P for one complete revolution. (10mks)

SECTION B:(20 MARKS)

11. Details of a heavy duty trolley wheel are shown in the figure below. Assemble all the parts and draw:
- Front elevation as seen along length 120.
 - End elevation.
 - Include a parts list and angle of projection used.

SECTION C: (30 MARKS)

Attempt any **two** questions from this section.

12. The figure shows a line diagram a slider crank mechanism. The slider is constrained to move along the groove XY, while the crank OB rotates about centre O. Plot the locus of point P on the connecting rod. (15mks)

$$AB = 90$$

$$OB = 25$$

$$AP = PB$$

13. The figure shows an incomplete front elevation of a truncated hexagonal pyramid with a hollow triangular prism joining it. (15mks)
- Draw:
- (i) A complete front elevation.
 - (ii) End elevation in the direction of arrow K.
 - (iii) Plan.

14. The figure **below** shows an elevation and an incomplete plan of a square pyramid truncated along XX and YY. (15mks)

- (a) Copy the given views and complete the plan.
- (b) Draw the end elevation in the direction of arrow K. (15mks)