EXAMINATIONS COUNCIL OF ZAMBIA
Examination for General Certificate of Education Ordinary Level

Geometrical and Mechanical Drawing

Paper 1

Tuesday 2 AUGUST 2016

Additional materials:
A2 Drawing paper (1 sheet)
Standard drawing equipment

Time: 2 hours 40 minutes

Marks: 100

Instructions to Candidates

Print your name, centre number and candidate number in the Title Block at the bottom right-hand corner of your drawing paper.

There are eight questions in this paper. Answer five questions.

Answer not more than three questions from any one section.

Unless otherwise stated, strictly geometrical methods must be used. Solutions should be drawn full size and no dimensions are required. All construction lines must be shown clearly. Lines which are parallel, perpendicular or inclined at angles of 30°, 45° or 60° to other lines may be drawn without showing construction lines.

All the drawings in this question paper are NOT DRAWN TO SCALE.

USE ONLY ONE SHEET OF A2 DRAWING PAPER.

You may use both sides of the drawing paper for your answers.

Information for Candidates

The number of marks is given in brackets [ ] at the end of each question or part question.

All dimensions are in millimetres unless otherwise stated.

Cell phones are not allowed in the examination room.

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This question paper consists of 5 printed pages.
SECTION A

PLANE GEOMETRY

Answer two or three questions from this section

QUESTION 1
(a) Construct a regular pentagon given its perimeter 145mm.
(b) Transpose the pentagon in (a) to a square of equal area.
(c) Measure and state the side of the square.

[Total 20 marks]

QUESTION 2

Figure 1 shows a drawing of a locking lever in which curve ABC is semi-elliptical. Draw full size the locking lever showing all the geometrical constructions.

[Total 20 marks]

QUESTION 3
(a) Construct the locus of a point on the circumference of a thin disc of diameter 75mm rolling without slipping off along a horizontal path for one revolution.
(b) Name the produced locus.
(c) Draw the normal and tangent to the locus at a point ‘P’ 50mm above the horizontal path on the right hand side.

[Total 20 marks]
SECTION B
SOLID GEOMETRY

Answer not more than three questions from this section.

QUESTION 4
Figure 2 shows the front and end elevation of a crank bearing. Do not copy the given views, but draw full size the block in isometric projection with point 'P' as the lowest point. Hidden details should not be shown.

Figure 2

[Total 20 marks]

QUESTION 5
Figure 3 shows two views of a bearing bracket drawn in First Angle Projection.
(a) Draw the given views.
(b) Project an auxiliary elevation looking in the direction of arrow X.

Figure 3

[Total 20 marks]
QUESTION 6

Figure 4 shows a truncated regular pentagonal pyramid in First Angle Projection.
(a) Draw the given views and complete the plan as viewed from arrow A.
(b) Draw the End Elevation viewed from arrow E.
(c) Draw the true shape of the cut surface.

[Total 20 marks]

QUESTION 7

A triangular lamina ABC is represented in the plan view by an equilateral triangle of side 40mm, with side AB parallel to, and 25mm from XY. The corners ABC of the elevation are 30mm, 70mm and 10mm respectively above the horizontal plane.
(a) Draw the plan and elevation of the lamina.
(b) Measure and state the true lengths of each side.
(c) Draw the true shape of the Lamina.

[Total 20 marks]
QUESTION 8

Figure 5 shows an incomplete plan and elevation of an octagonal hollow prism intersected by a square duct. Both are made from material of negligible thickness.

(a) Draw the given views.
(b) Complete the plan and elevation by showing the necessary lines of intersection.
(c) Draw the surface development of the square duct, the seam line along S – S.
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