## T/ Coimisiún na Scrúduithe Stáit State Examinations Commission

Junior Certificate Examination, 2013

# Technical Graphics Higher Level Section B 

(280 marks)

Monday, 17 June<br>Morning 9:30-12:30

## Instructions

(a) Answer any four questions.
(b) All questions in this section carry equal marks.
(c) The number of the question must be distinctly marked by the side of each answer.
(d) Work on one side of the paper only.
(e) Write your examination number on each sheet of paper used.

SECTION B. Answer any four questions. All questions carry equal marks.

1. A pictorial view of a drinks machine is shown.

A 3D graphic of the drinks machine is also shown.
(a) Draw an elevation in the direction of arrow $\mathbf{A}$.
(b) Project a plan from the elevation.
(c) Project an end view in the direction of arrow $\mathbf{B}$.
(d) Determine the true shape of surface $\mathbf{S}$.

2. The elevation, plan and a 3D graphic of a child's walker are shown.

The design of the walker includes holes in the shape of a square, an equilateral triangle and a regular pentagon.
(a) Draw the given plan and elevation.

The lid of the walker is rotated through $45^{\circ}$ about the point $\mathbf{O}$ as shown by the broken line in elevation.
(b) Project an end view of the walker in the direction of arrow $\mathbf{A}$ to show the lid in the rotated position.
 (b) Piojer

3. The axonometric axes required for the isometric projection of a half-pipe from a skateboard park are shown. The elevation, plan and a 3D graphic of the structure are also shown.
(a)
(i) Draw the axonometric axes as shown.
(ii) Draw the given elevation inclined at $15^{\circ}$ as shown.
(iii) Draw the given plan inclined at $45^{\circ}$ as shown.
(iv) Draw the completed axonometric projection of the half-pipe.

## OR

(b) Draw the isometric projection of the half-pipe using the isometric scale method.

4. The elevation and plan of a desk organiser are shown.

A 3D graphic of the desk organiser is also shown.
(a) Draw the given elevation and plan. Show all points of contact.
(b) Draw the development of the cylindrical surface $\mathbf{A}$.
(c) Draw the development of the sloping surfaces of the truncated pyramid B.

X

5. The figure shows the logo for a college.

The logo is subject to transformations in the following order:

- Central Symmetry
- Axial Symmetry
- Translation
- Rotation clockwise through $120^{\circ}$.
$\mathbf{P}_{1}, \mathbf{P}_{2}, \mathbf{P}_{3}$ and $\mathbf{P}_{4}$ show the positions of point $\mathbf{P}$ under each of these transformations.
(a) Draw the given figure.
(b) Determine the image of the figure under each of these transformations.


6. The figure shows a design for a toy rocket.

The curve BCDEG is a semi-ellipse.
The curve LMN is identical to a portion of the same ellipse.

The curve BA is a parabola with the vertex at $\mathbf{B}$.

The curve GA is an identical parabola with vertex at $\mathbf{G}$.

The lines CJ and EK are tangents to the ellipse.

Draw the given design showing clearly all constructions.

