Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2011

Technical Graphics
Higher Level
Section B
(280 marks)

Monday, 20 June
Morning 9:30 - 12:30

*Instructions*

(a) **Any four** questions to be answered.

(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 model boat is shown.

(a) Draw an elevation in the direction of arrow **A**.

(b) Project a plan from the elevation.

(c) Project an end view in the direction of arrow **B**.

**(d)** Determine the true shape of surface **S**.
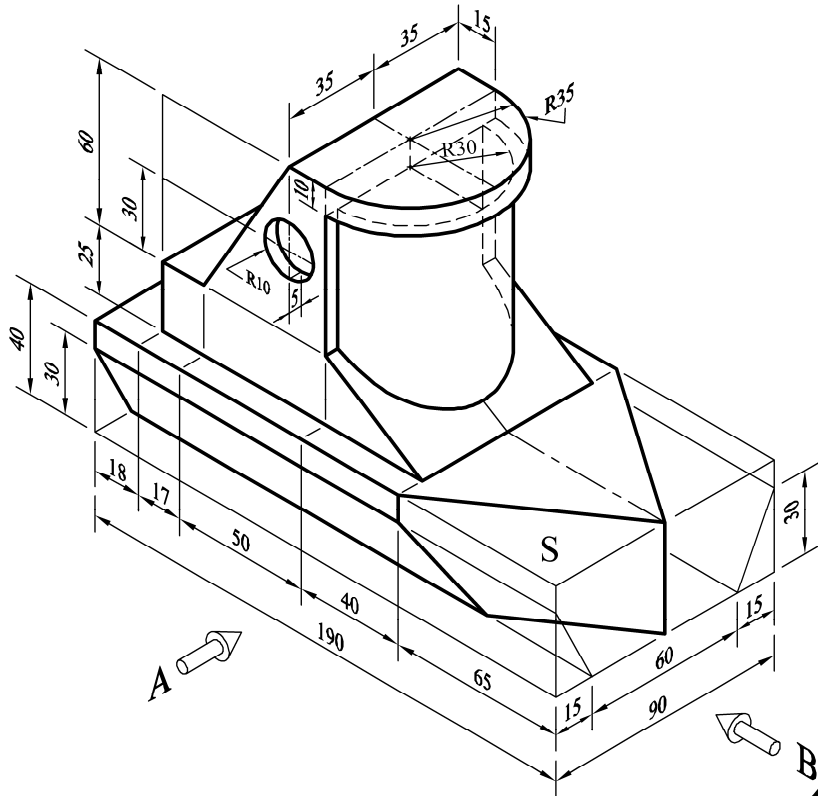
2 The elevation, end view and incomplete plan of the flap of a shoulder bag are shown. Also shown is a 3D graphic of the bag.

The logo on the flap is based on a regular pentagon **ABCDE**, a sector of a circle with centre **E** and a parallelogram **CBFG**.

The flap is rotated through 45° about **L-L**, as shown by the broken line in the end view.

(a) Draw the given elevation and end view.

**(b)** Project a plan of the flap on **L-L** to show the flap and logo in the rotated position.
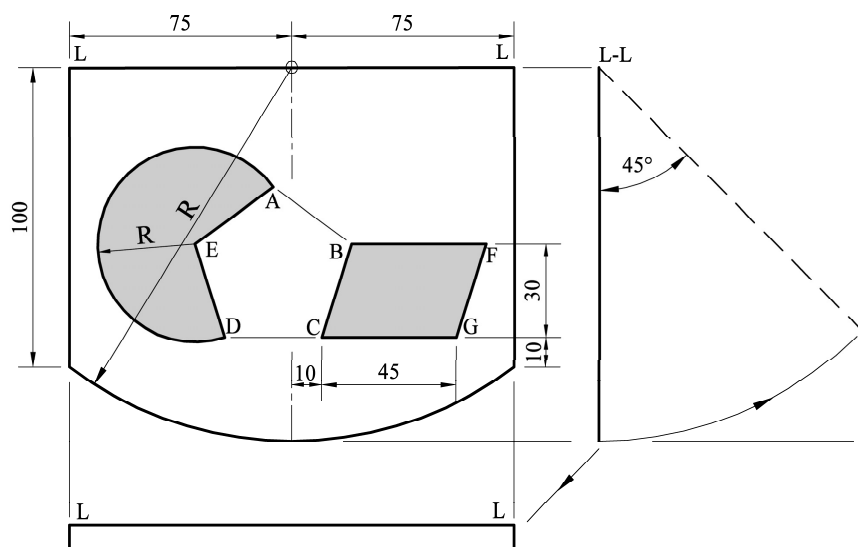
3 The axonometric axes required for the isometric projection of a trolley bag are shown. Also shown is the elevation, plan and a 3D graphic of the trolley bag.

(a)

(i) Draw the axonometric axes as shown.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the completed axonometric projection of the trolley bag.
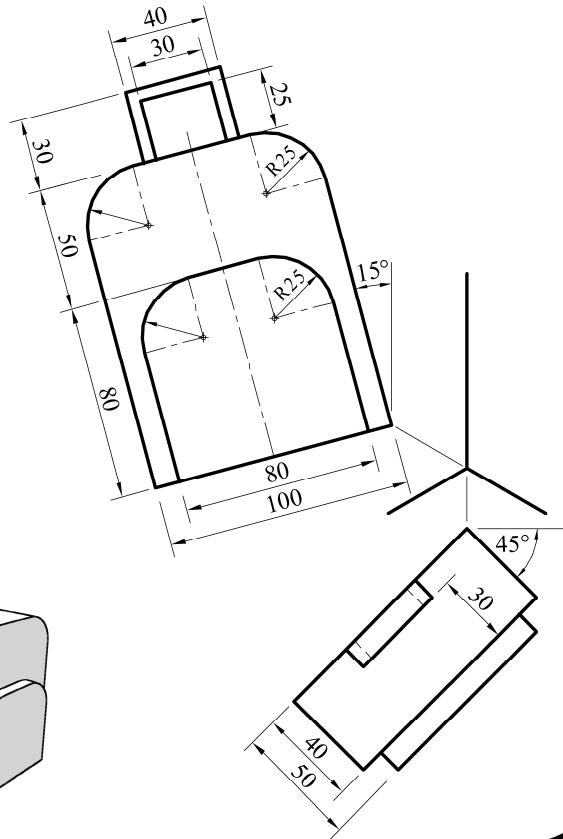
OR

(b) Draw the completed isometric projection of the trolley bag using the isometric scale method.
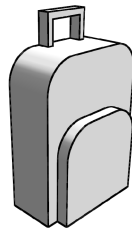
4 The elevation and plan of the design for a small tent are shown. The tent consists of a truncated semi-cone **A** and half a cylinder **B**, which is truncated as shown. Also shown is a 3D graphic of the tent.

(a) Draw the elevation and plan as shown.

(b) Project an end view in the direction of the arrow **P**.

(c) Draw the development of the conical surface **A**.

**(d)** Draw the development of the cylindrical surface **B**.
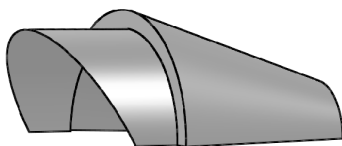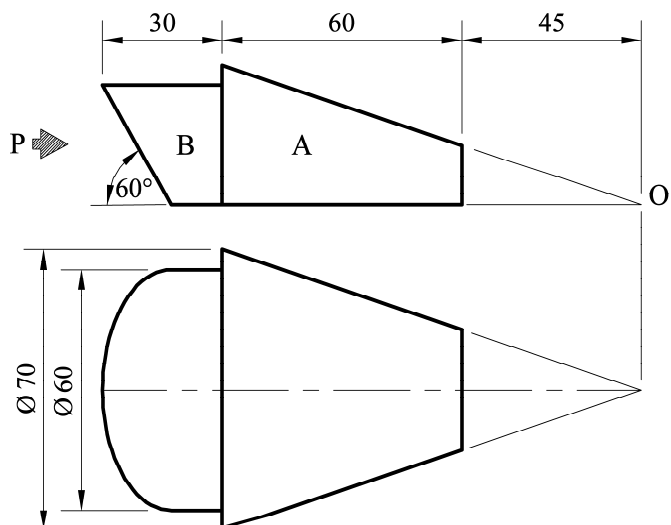
5 The figure shows a logo for dog kennels.
The figure is subject to transformations in the following order:

- Axial symmetry
- Central symmetry
- Translation
- Rotation clockwise through 90°.

P1, **P2**, **P3** and **P4** show the positions of point **P** under these transformations.

(a) Draw the given figure.

(b) Determine the image of the figure under **each** of these transformations.
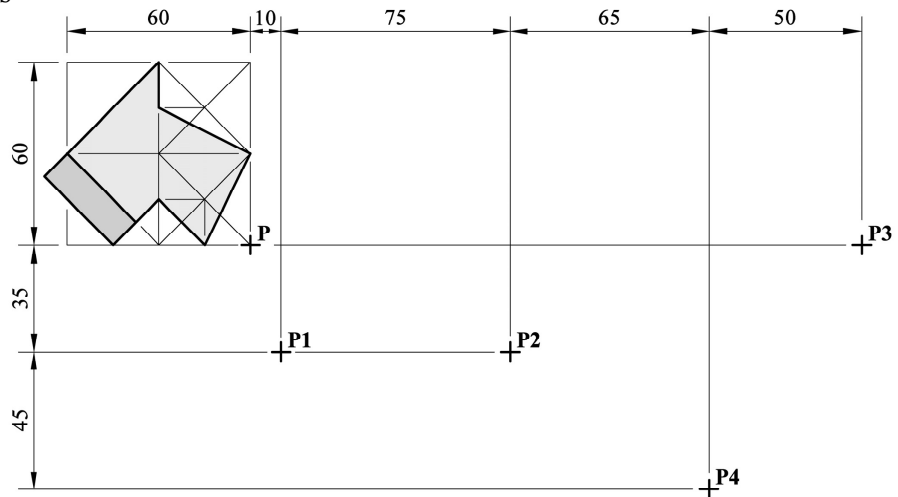
6 The figure shows the design of a logo for a bird sanctuary.

The curve **ABC** is a parabola with vertex at **B**. The curve **DEG** is a semi-ellipse and point **P** is a point on the curve. Determine the length of the minor axis and draw the semi-ellipse **DEG**.

The curve **RS**, with its vertex at **R**, is identical to a portion of the parabola **ABC**.

Draw the curve **RS** showing clearly how to determine point **S**.

The line **AT** is a tangent to the circle from **A**.

Complete the given logo showing clearly all construction lines and points of contact.

Note: Choose your own dimensions for the eye of the bird.