

*Pre-Junior Certificate Examination, 2016*

*Technical Graphics*  
*Higher Level*  
*Section B*  
*(280 marks)*

*Time : 3 Hours*

***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 name, your school's name and your teacher's name on each sheet of paper used.*

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

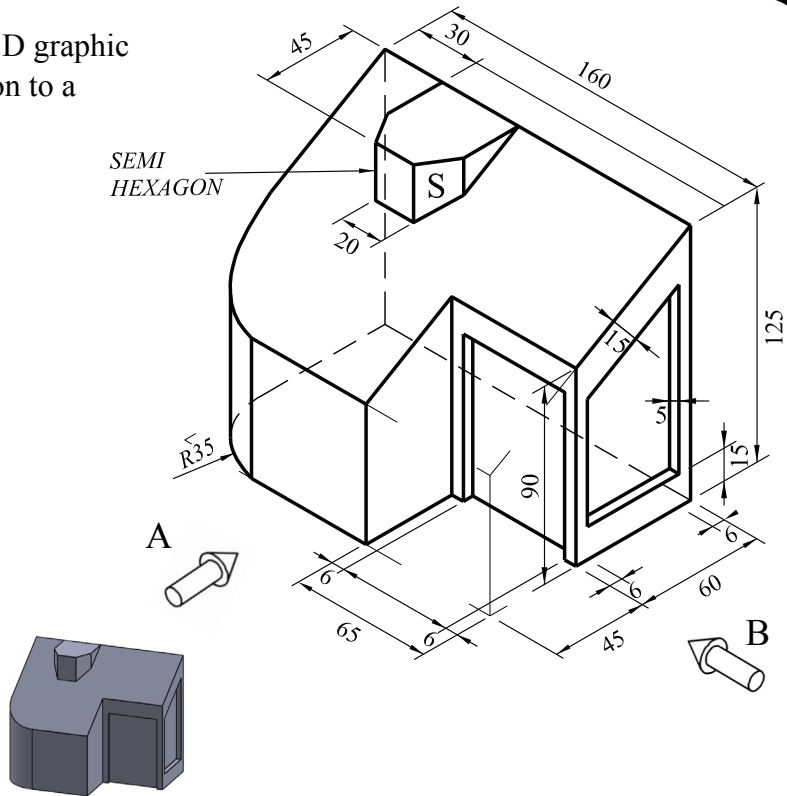
**1.** A pictorial view and 3D graphic of a proposed extension to a house are shown.

(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**.

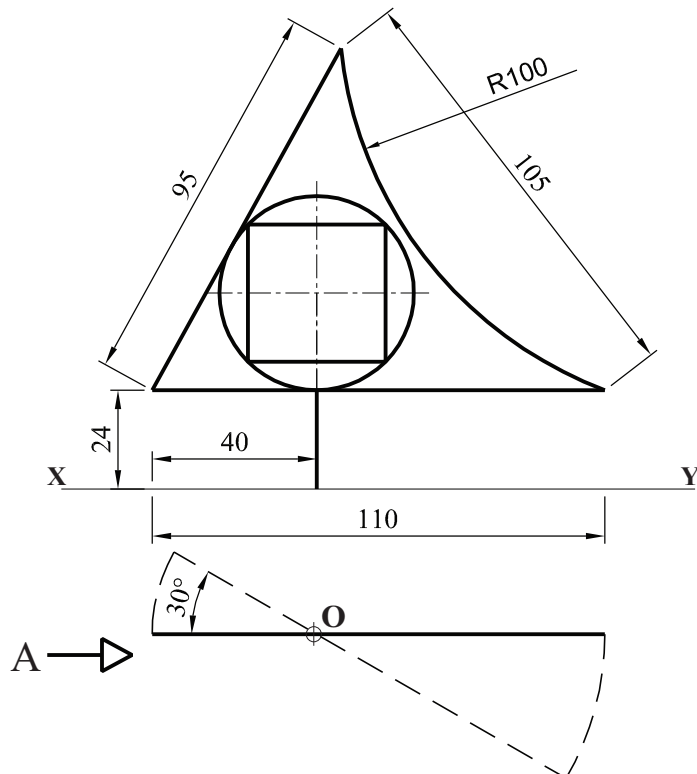
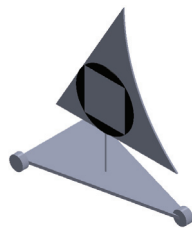


**2.** The elevation, plan and a 3D graphic of a sail of a sail boat are shown. The design on the sail includes a square inscribed in a circle.

(a) Draw the given plan and elevation.

To gain speed, the sail is rotated through  $30^\circ$  about the point **O** as shown by the broken line in plan.

(b) Project an end elevation of the sail in the direction of arrow **A** to show the sail in the rotated position.

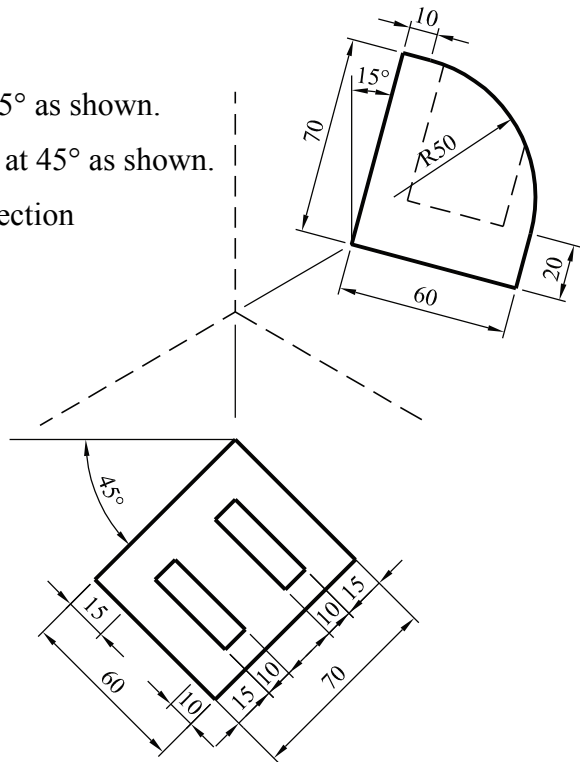
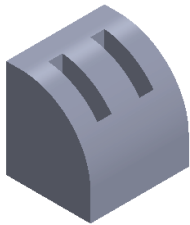


**3.** The axonometric axes required for the isometric projection of a toaster are shown. The elevation, plan and a 3D graphic of the toaster are also shown.

- (a)
- (i) Draw the axonometric axes as shown.
  - (ii) Draw the given elevation inclined at  $15^\circ$  as shown.
  - (iii) Draw the given end elevation inclined at  $45^\circ$  as shown.
  - (iv) Draw the completed axonometric projection of the toaster.

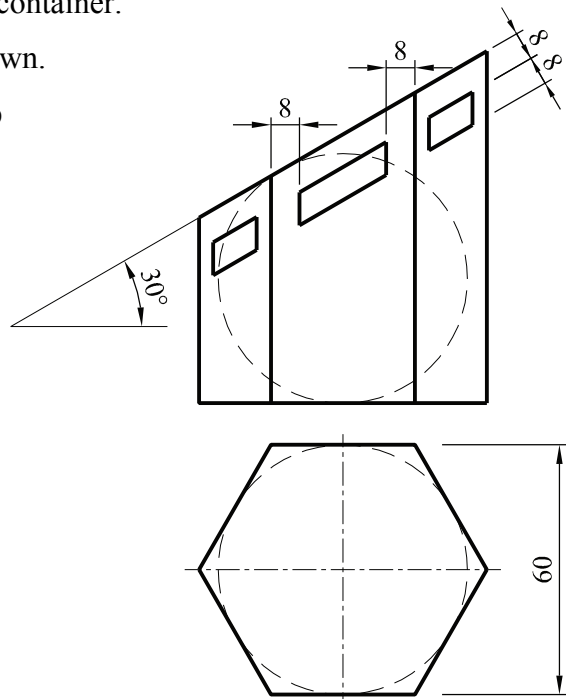
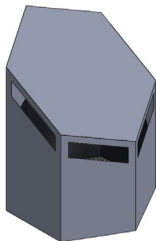
**OR**

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



**4.** The elevation and plan of a container to hold a spherical Easter egg are shown. Also shown is a 3D graphic of the container.

- (a) Draw the elevation and plan as shown.
- (b) Determine the true shape of the top of the container.
- (c) Draw the development of the entire container.



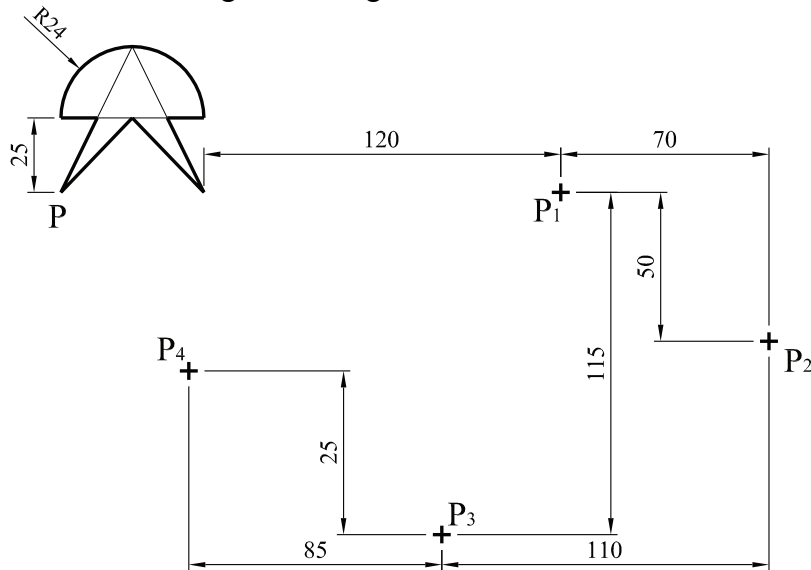
5. The figure shows the logo for an electrical components company. The logo is subject to transformations in the following order:

- Central Symmetry
- Translation
- Axial Symmetry
- Rotation anti-clockwise through  $110^\circ$ .

$P_1$ ,  $P_2$ ,  $P_3$  and  $P_4$  show the positions of point  $P$  under each of these transformations.

(a) Draw the given figure.

(b) Determine the image of the logo under **each** of these transformations.



6. The figure shows a design for a garden pond.

The curve  $ABC$  is a parabola with vertex at  $B$ .

The curve  $CDE$  is an ellipse with focal point  $F_1$ . The curve  $ALK$  is an identical ellipse with focal point  $F$ .

The curve  $JHG$  is identical to the ellipse.

The line  $EG$  is a tangent to the curve  $CDE$ . The line  $KJ$  is a tangent to the curve  $ALK$ .

Draw the given design showing clearly all constructions.

