**Coimisiún na Scrúduithe Stáit**
State Examinations Commission

***Junior Certificate Examination, 2012***

# *Technical Graphics*
# *Higher Level*
# *Section B*

*(280 marks)*

## *Monday, 18 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.

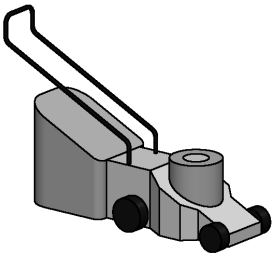
**1** A pictorial view of the design for a lawnmower is shown. A 3D graphic of the lawnmower is also shown.

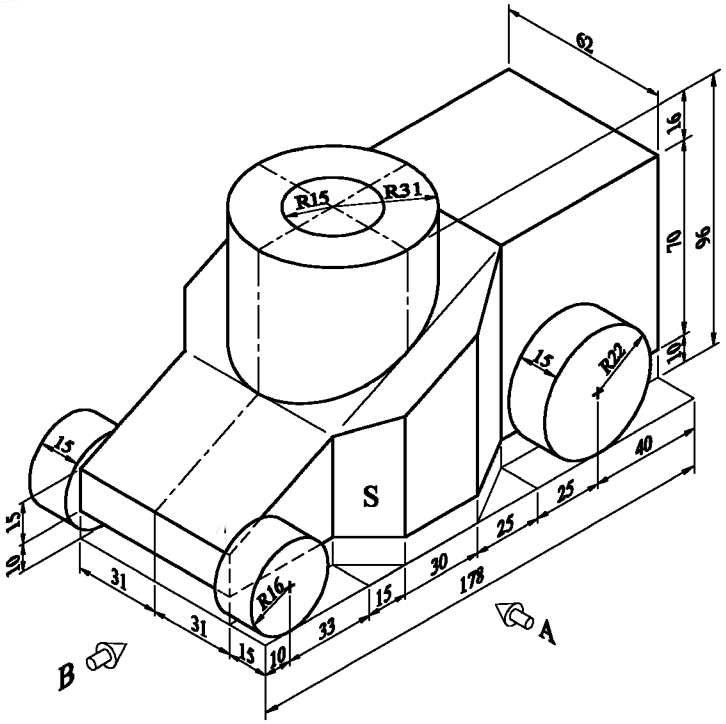
**(a)** Draw an elevation in the direction of arrow **A**.

**(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**.

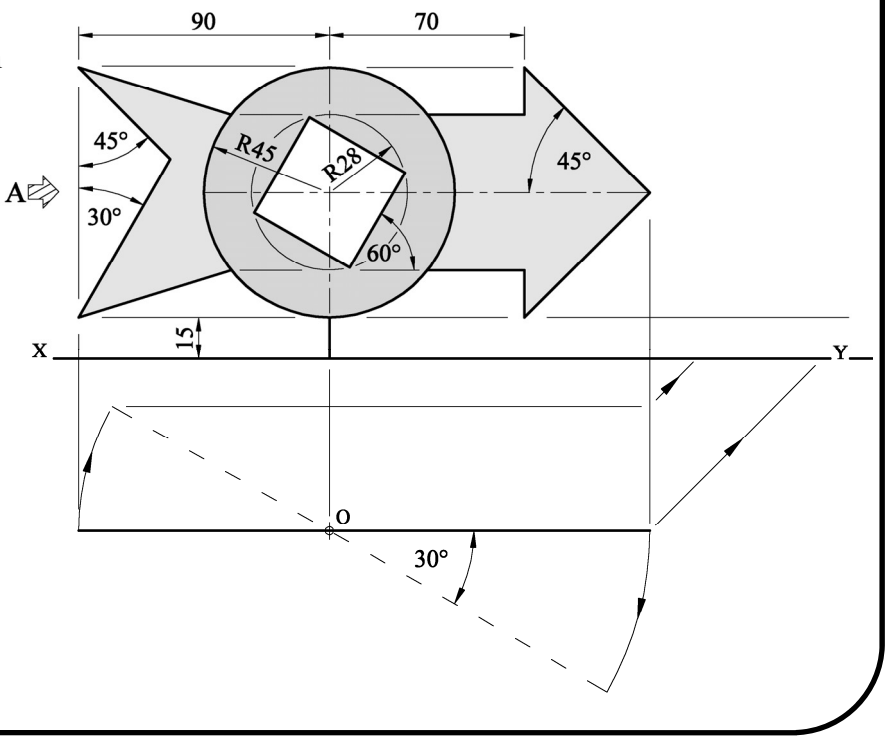


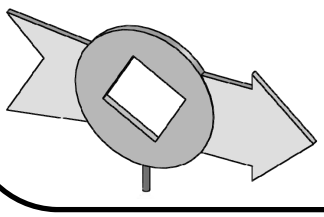



**2** The elevation, plan and a 3D graphic of a weather vane are shown. A square is inscribed in the circle as shown. The weather vane is rotated through 30° about point **O**, as shown by the broken line in plan.

**(a)** Draw the given elevation and plan showing all constructions.

**(b)** Project an end view of the weather vane in the direction of arrow **A** to show the weather vane in the rotated position.



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

**(a)**

(i) Draw the axonometric axes as shown.

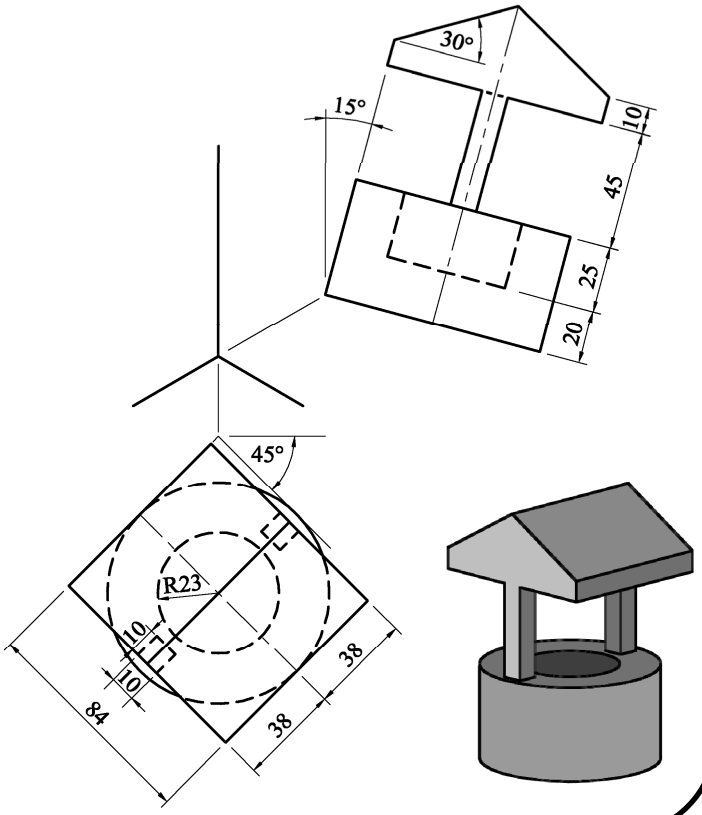
(ii) Draw the given plan orientated at 45° as shown.

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

(iv) Draw the completed axonometric projection of the well.

**OR**

**(b)** Draw the completed isometric projection of the well using the isometric scale method.

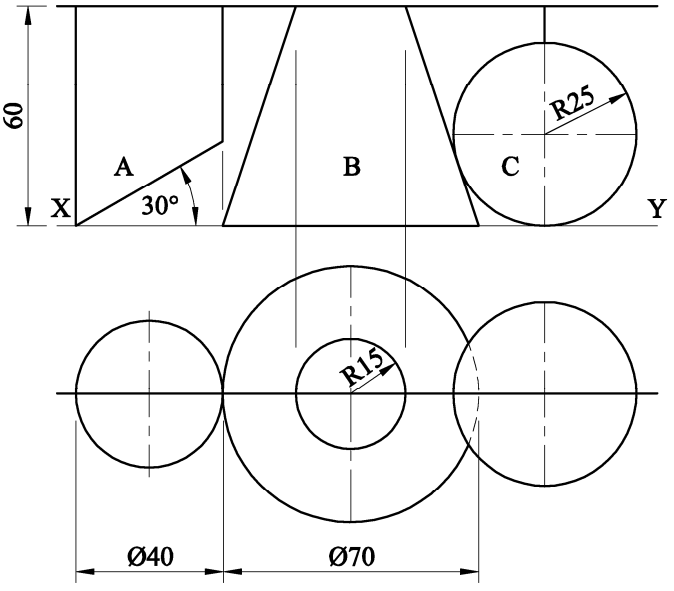


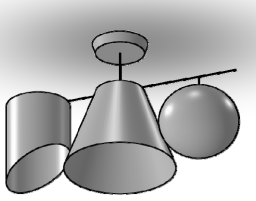

**4** The drawing shows the elevation and plan of an arrangement of ceiling lights. A 3D graphic of the lights is also shown.

**(a)** Draw the given elevation and plan, showing how to obtain the centre of the sphere **C**.

**(b)** Draw a development of the cylindrical surface **A**.

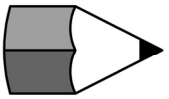
**(c)** Draw a development of the conical surface **B**.



**5** The figure shows a logo for an art gallery.
The figure is subject to transformations in the following order:

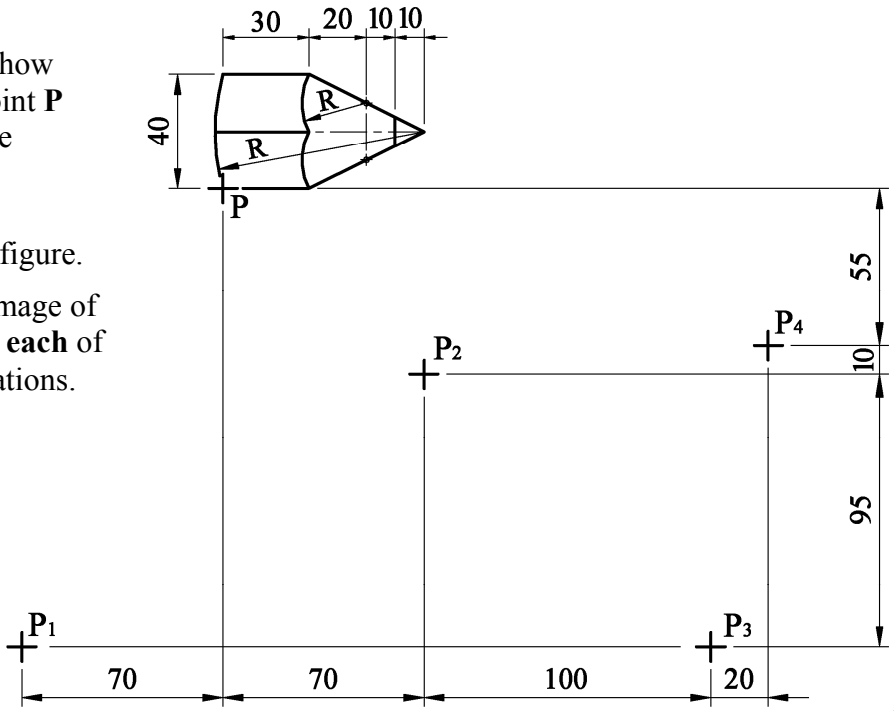
- Translation
- Axial Symmetry
- Central Symmetry
- Rotation anti-clockwise through 120°.



$\mathbf{P_1}$, $\mathbf{P_2}$, $\mathbf{P_3}$ and $\mathbf{P_4}$ show the positions of point **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 logo for riding stables.
The curve **AB** is parabolic with vertex at **B**. The curve **TDE** is a portion of an ellipse.
The points **F** and **F1** are the focal points of the ellipse as shown.

The line **BT** is a tangent to the ellipse from **B**.

The curve **LM,** with vertex at **L**, is identical to a portion of the ellipse.

The line **RS** is a tangent to the circle from **S**.

Locate the centre of arc **APS** and draw the arc.

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