Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2014

Technical Graphics
Higher Level
Section B

(280 marks)

Monday, 16 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.

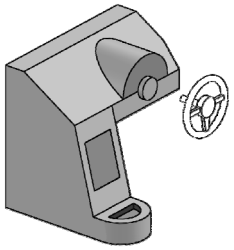
1. A pictorial view of part of a car dashboard is shown in **Fig**.**1**. An exploded 3D graphic is also shown.

(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 the surface **S**.



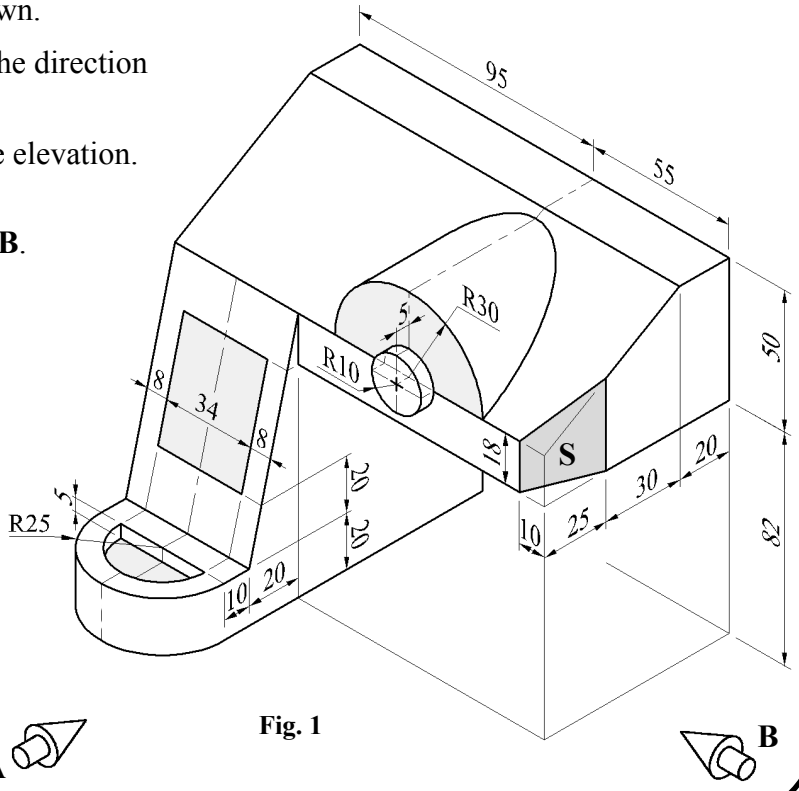


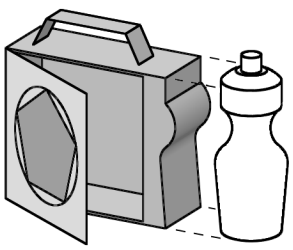
Fig. 1

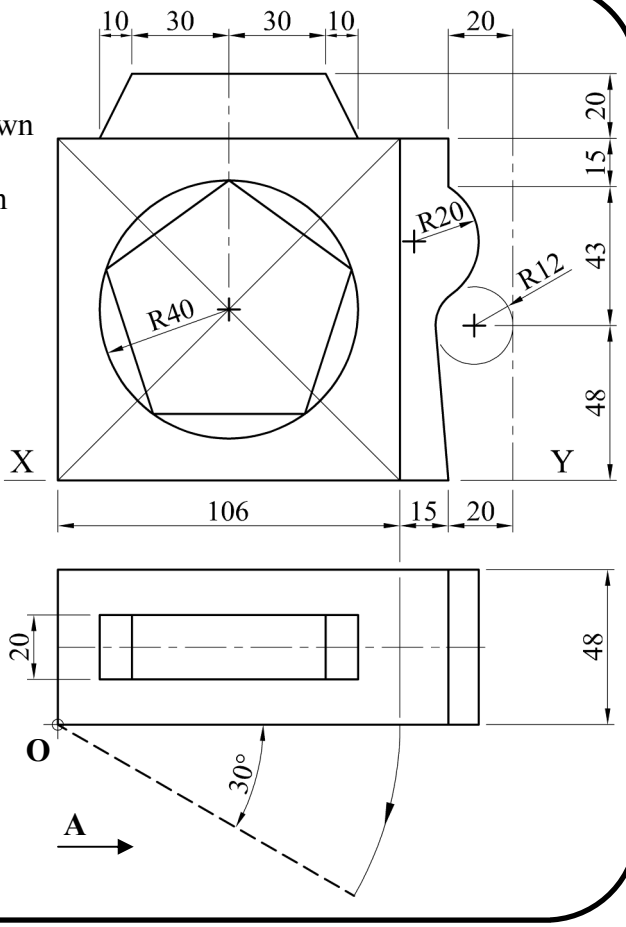
2. The elevation and plan of a child's lunchbox are shown. The lunchbox accommodates a water bottle, as shown in the 3D graphic. The cover of the lunchbox includes a regular pentagon inscribed in a circle.

(a) Draw the given elevation and plan.

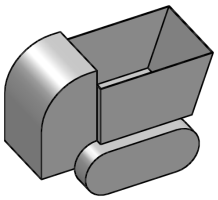
The cover of the lunchbox is rotated through 30° about the point **O** as shown by the broken line in plan.

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





3. The axonometric axes required for the isometric projection of a toy truck are shown. The elevation, end view and a 3D graphic of the truck are also shown.



(a)

(i) Draw the axonometric axes as shown.

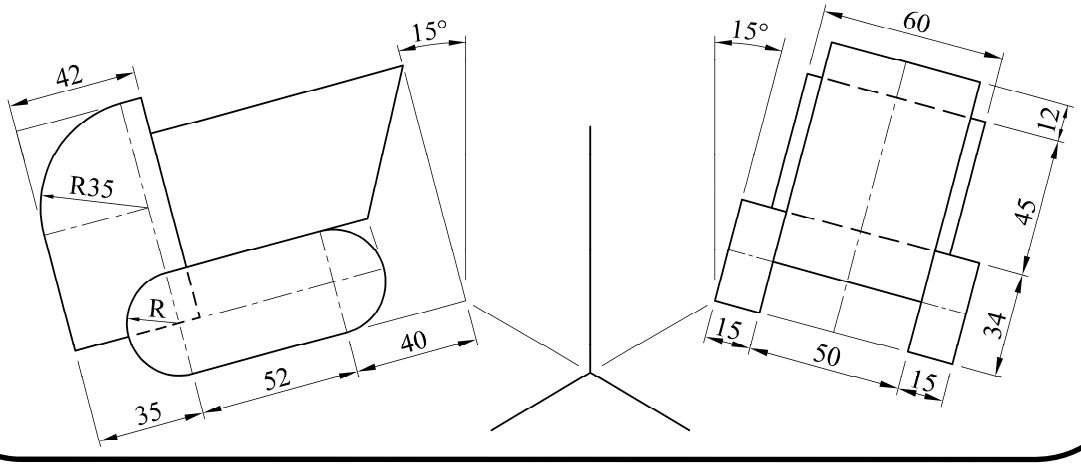
(ii) Draw the given elevation inclined at 15° as shown.

(iii) Draw the given end view inclined at 15° as shown.

(iv) Draw the completed axonometric projection of the toy truck.

OR

(b) Draw the isometric projection of the toy truck using the isometric scale method.

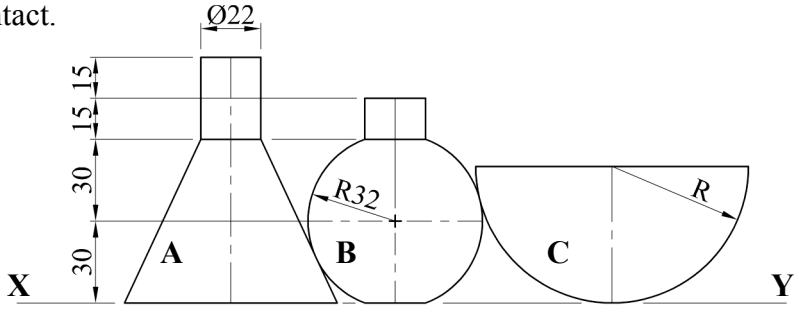


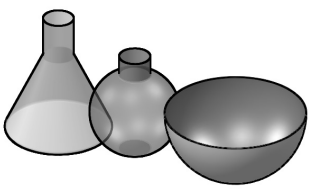
4. The elevation and plan of a set of science equipment are shown. A 3D graphic of the equipment is also shown.

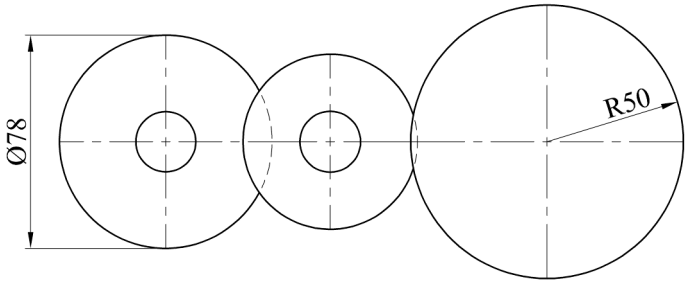
(a) Draw the given elevation and plan, showing all constructions.

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

(c) Show all points of contact.

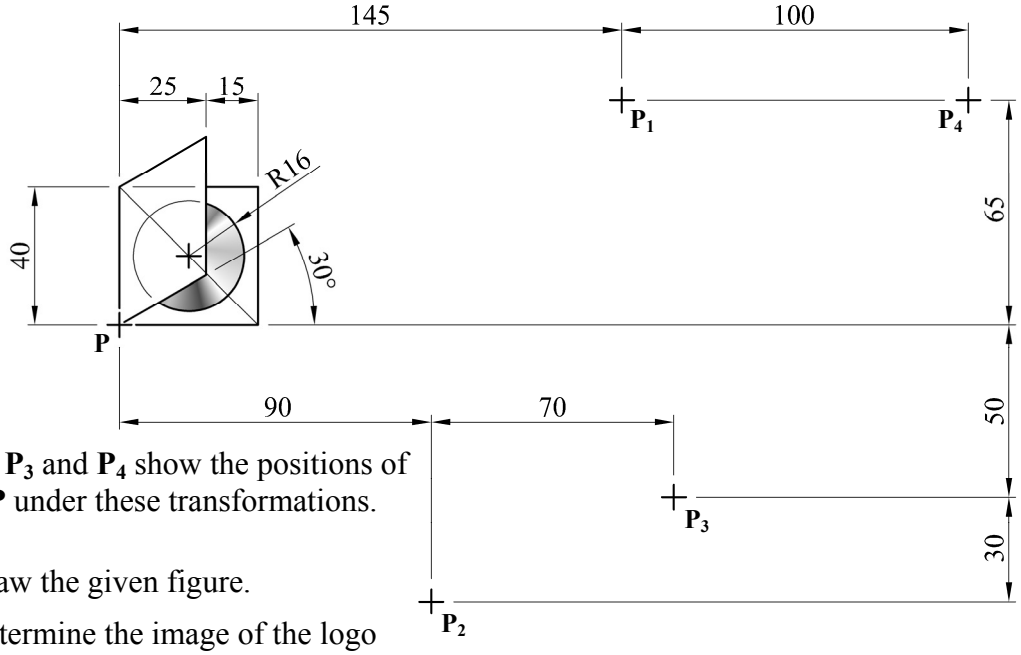






5. The figure shows the logo of a music app for a smartphone.
The logo is subject to transformations in the following order:

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



$\mathbf{P_1}$, $\mathbf{P_2}$, $\mathbf{P_3}$ and $\mathbf{P_4}$ show the positions of point **P** under these transformations.

(a) Draw the given figure.

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

6. The figure shows a logo for an animal shelter.

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

The curves **DEF** and **GHF** are identical to portions of the same parabola with vertices at **E** and **H**, respectively.

The curve **JKLM** is an ellipse with focal points at **N** and **P**.

Draw the given design showing clearly all construction.