



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2018

Technical Graphics
Higher Level

Section B

(280 marks)

Monday, 18 June
Morning, 9:30 - 12:30

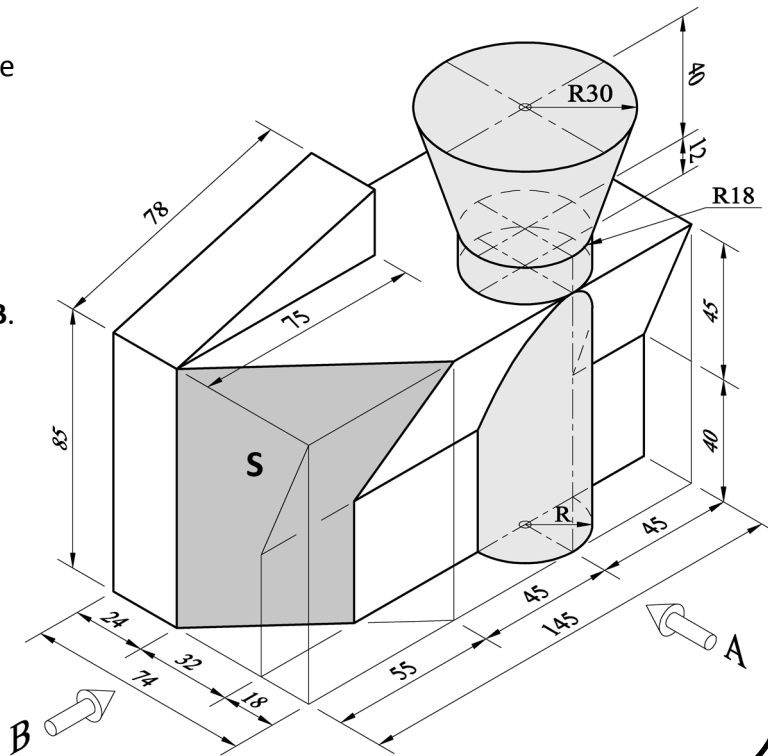
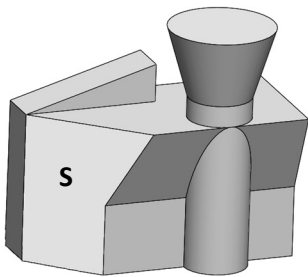
Instructions

- (a) Answer **any four** questions.*
- (b) Construction lines must be clearly shown.*
- (c) All questions in this section carry equal marks.*
- (d) The number of the question must be distinctly marked by the side of each answer.*
- (e) Work on **one side** of the paper only.*
- (f) 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 an airport terminal is shown. Also shown is a 3D graphic of the terminal.

- (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**.

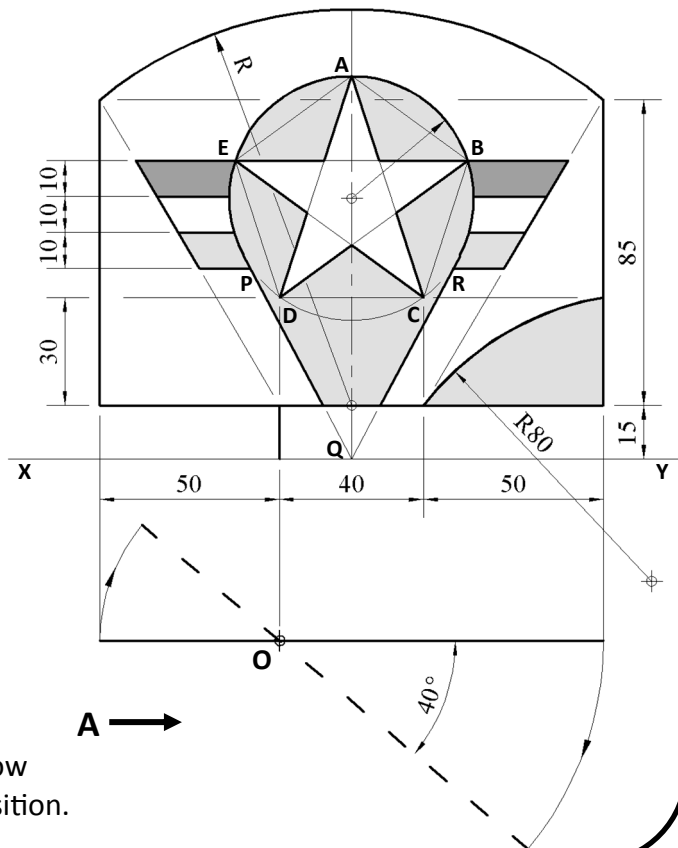
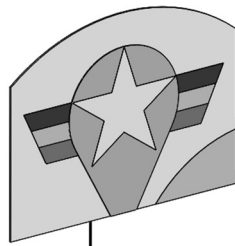


2. The elevation, plan and 3D graphic of a logo for a hot air balloon club are shown.

The logo is based on a regular pentagon **ABCDE** and tangents **QP** and **QR** to the circle at points **P** and **R** respectively.

- (a) Draw the given elevation and plan.

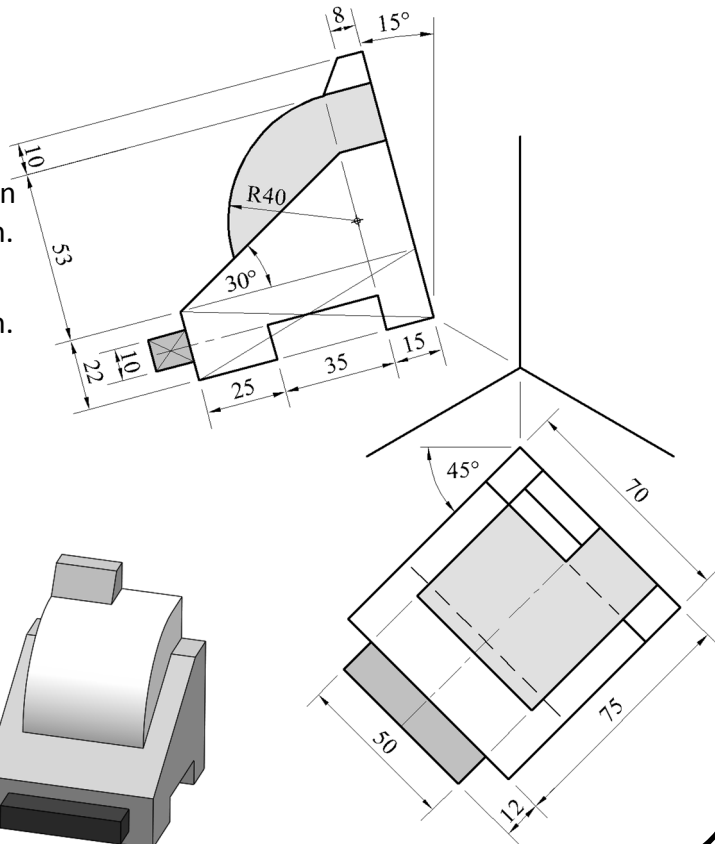
The logo is rotated through 40° about point **O** as shown by the broken line in plan.



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

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

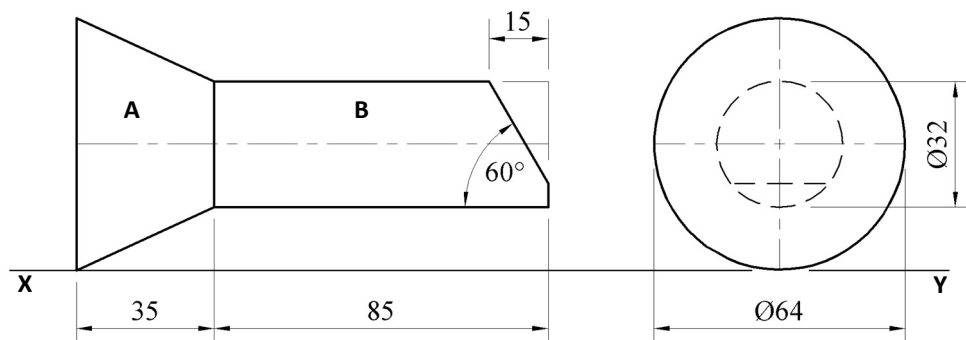
- (a)
- Draw the axonometric axes as shown.
 - Draw the given elevation inclined at 15° as shown.
 - Draw the given plan inclined at 45° as shown.
 - Draw the completed axonometric projection of the cash register.



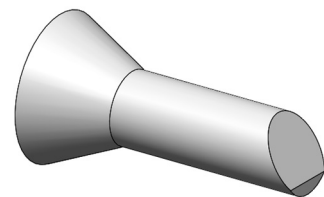
OR

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

4. The elevation and end view of a torch are shown. The torch consists of a truncated cone **A** and a cylinder **B**, which is also truncated as shown. A 3D graphic of the torch is also shown.

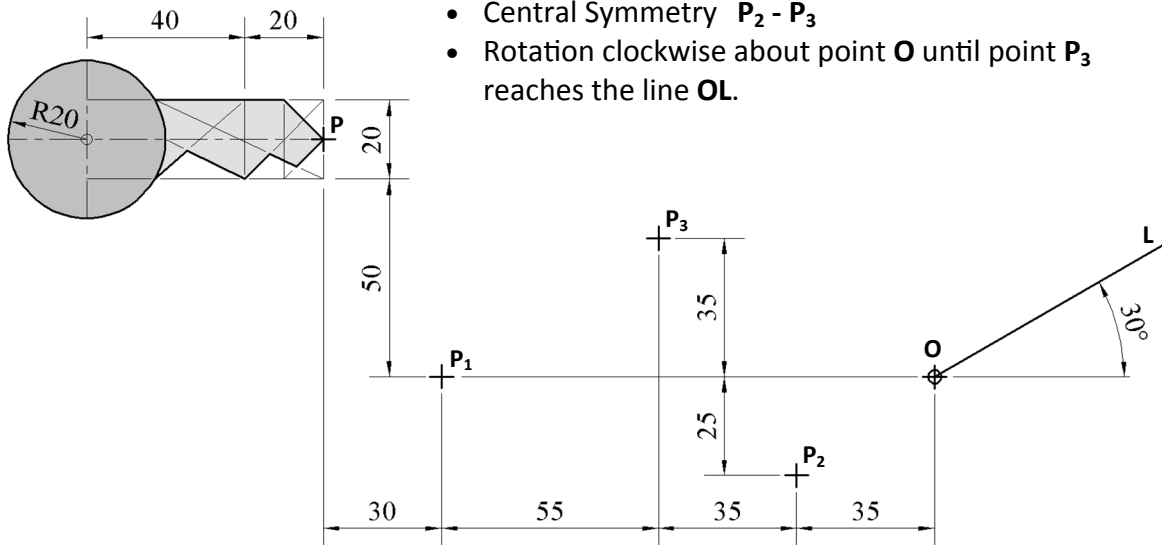


- Draw the given elevation and end view.
- Project a plan from the elevation.
- Draw a development of the conical surface **A**.
- Draw a development of the cylindrical surface **B**.



5. The figure shows a logo for a locksmith shop.
The logo is subject to transformations in the following order:

- Axial Symmetry $P - P_1$
- Translation $P_1 - P_2$
- Central Symmetry $P_2 - P_3$
- Rotation clockwise about point O until point P_3 reaches the line OL .



- (a) Draw the given figure.
(b) Determine the image of the logo under **each** of the above transformations.

Note: All geometric constructions must be clearly shown on your drawing sheet.

6. The figure shows a design for a toy loading-shovel.
The curve **ABCD** is portion of an ellipse with major axis **AD**. Point **B** is a point on the curve. Determine the length of the minor axis and draw the ellipse.

The curve **UV**, with vertex at **U** is an identical portion of the same ellipse.

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

The curve **KMN** is a parabola with vertex at **M**.

Draw the given design showing clearly all constructions and points of contact.

