Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2019

Technical Graphics
Higher Level
Section B

(280 marks)

Monday, 17 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 written 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.

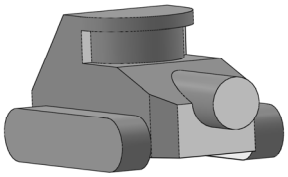
1. A pictorial view of a mobile lunar camera is shown in **Fig. 1**.
Also shown is a 3D graphic of the camera.

(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**.



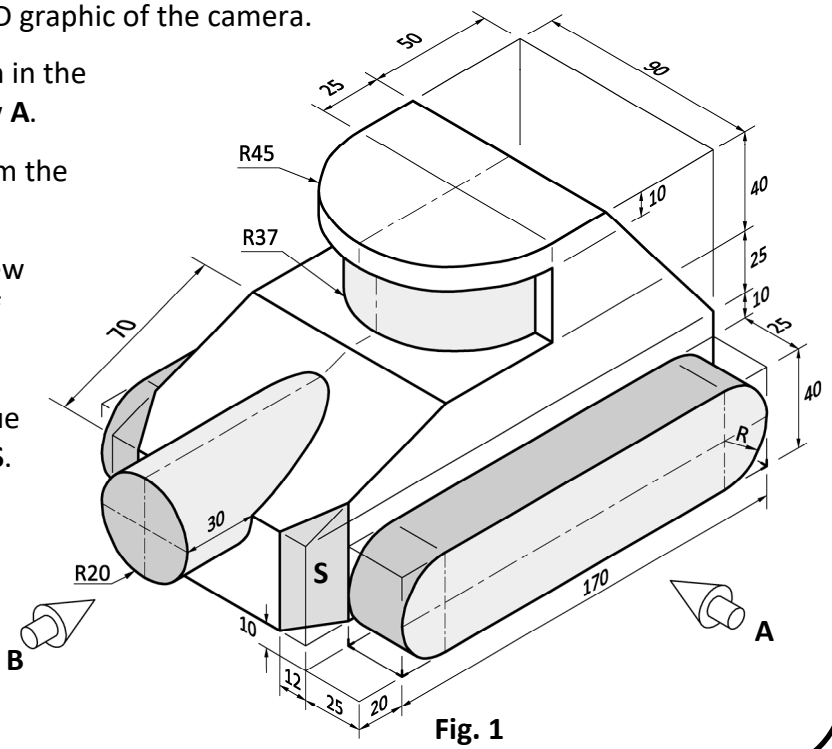


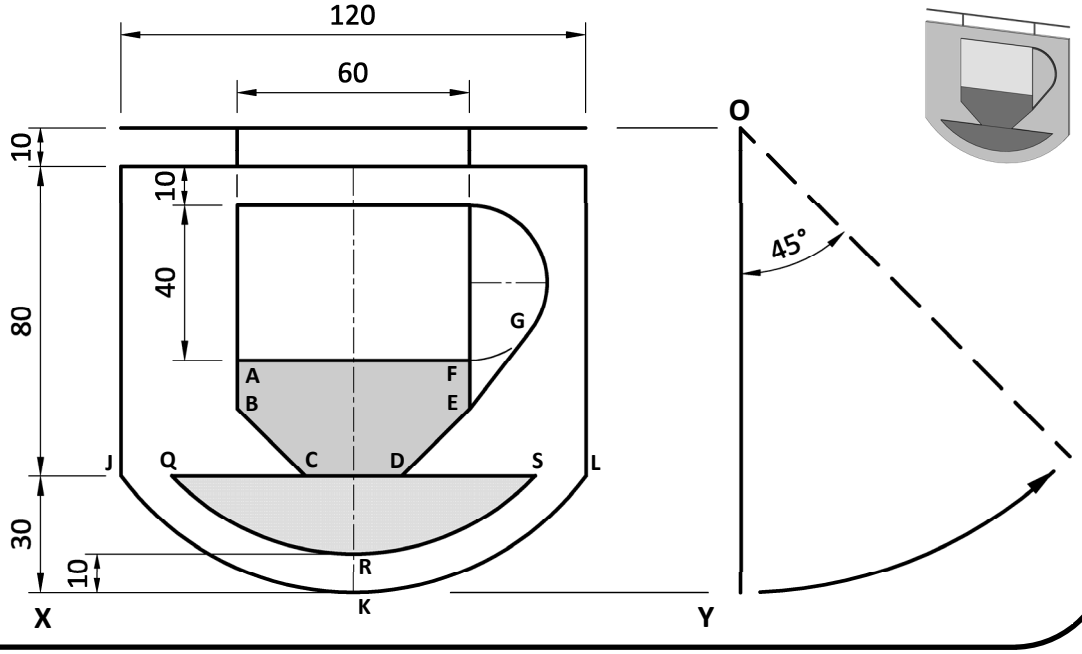
Fig. 1

2. The elevation, end view and a 3D graphic of a sign for a coffee shop are shown.
The sign includes a semi-octagon **ABCDEF**. The line **EG** is a tangent from **E**.
The curve **JKL** is a circular arc. The curve **QRS** is concentric with **JKL**.

(a) Draw the given elevation and end view.

The sign is rotated through 45° about point **O**, as shown by the broken line in end view.

(b) Project a plan to show the sign in the rotated position.



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

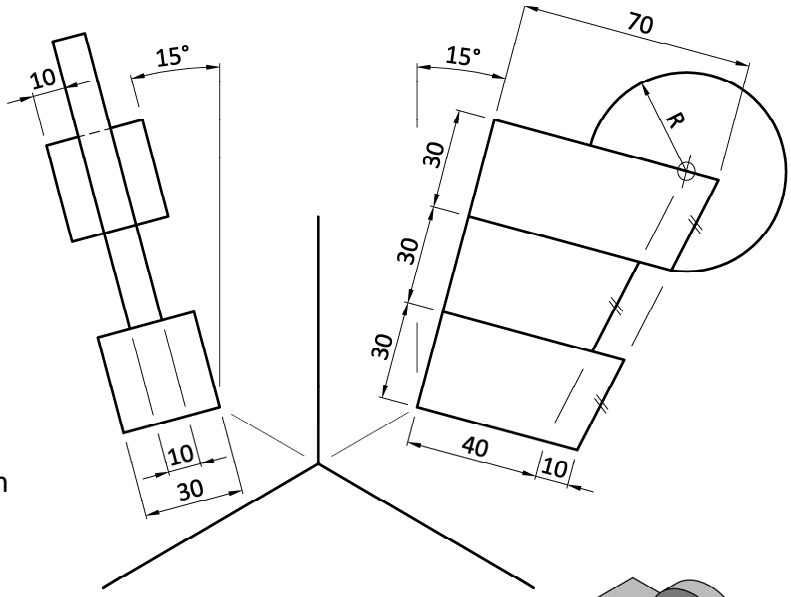
(a)

(i) Draw the axonometric axes as shown.

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

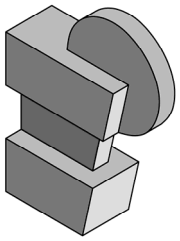
(iii) Draw the given end view inclined at 15° as shown.

(iv) Draw the completed axonometric projection of the petrol pump.



OR

(b) Draw the isometric projection of the petrol pump using the isometric scale method.



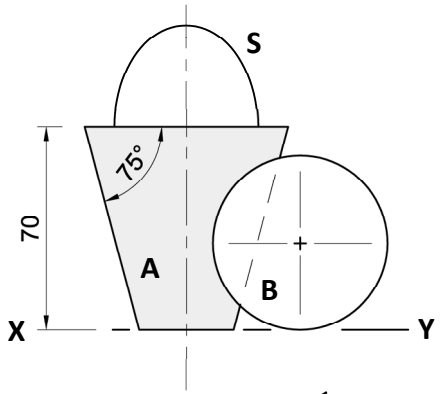
4. The elevation and plan of a sand bucket and beach ball are shown. A 3D graphic of the bucket and ball is also shown. The bucket and ball consist of a truncated inverted cone **A** and a sphere **B** respectively.

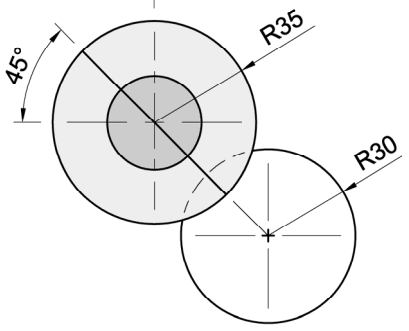
The sphere rests on the horizontal plane and is in contact with the truncated cone. The bucket has a semi-circular handle **S** positioned as shown in plan and elevation.

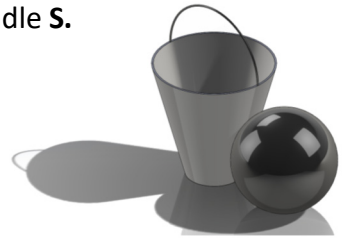
(a) Draw the given elevation and plan, showing all constructions and points of contact.

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

(c) Draw the development of the semi-circular handle **S.**

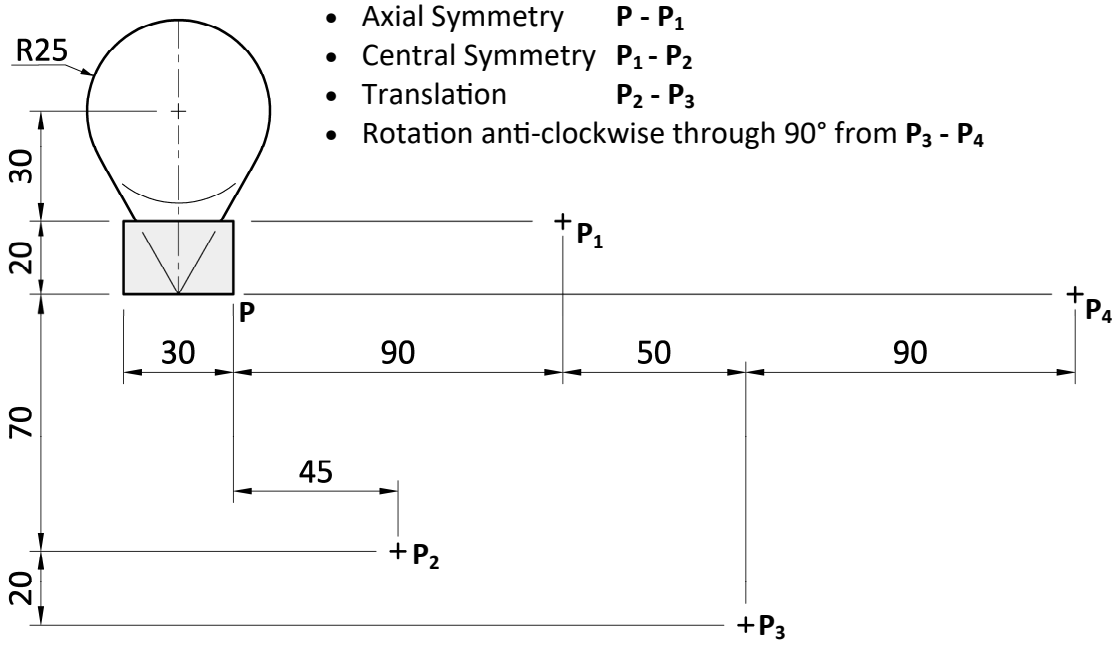






5. The figure shows the logo for a lighting company.
The logo is subject to transformations in the following order:

- Axial Symmetry **P - P_1**
- Central Symmetry **P_1 - P_2**
- Translation **P_2 - P_3**
- Rotation anti-clockwise through 90° from **P_3 - P_4**



(a) Draw the given figure.

(b) Determine and draw 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 rugby trophy.

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

The curve **DEF** is identical to a portion of the same parabola with vertex at **E**.

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

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

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