Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2009

Technical Graphics
Higher Level
Section B
(280 marks)

Monday, 15 June
Morning 9:30 - 12:30
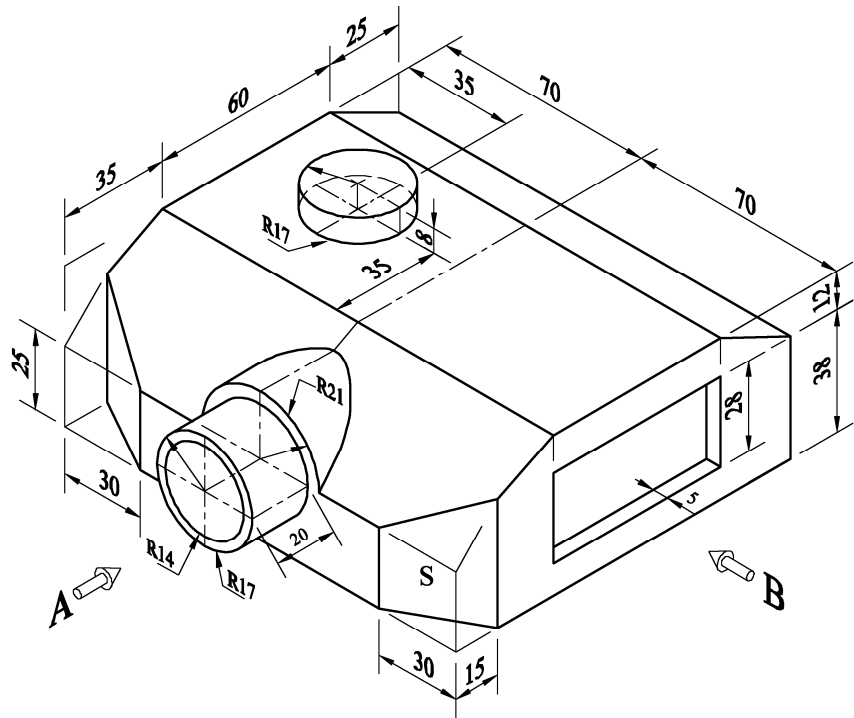
Instructions

*(a)   Answer **any four** questions. All questions in this section carry equal marks.*

(b)   The number of the question must be distinctly marked by the side of each answer.

*(c)   Work on **one side** of the paper only.*

(d)   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 data projector is 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**.

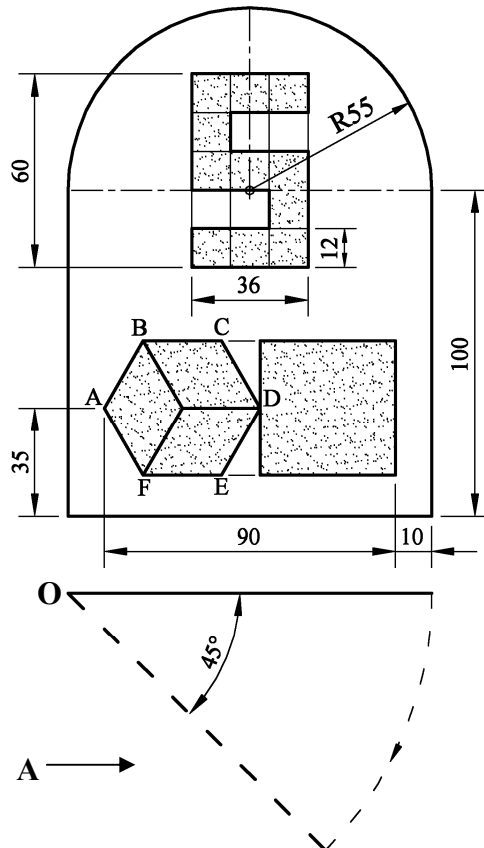**(d)** Determine the true shape of surface **S**.

2

The figure shows the elevation and plan of a birthday card.

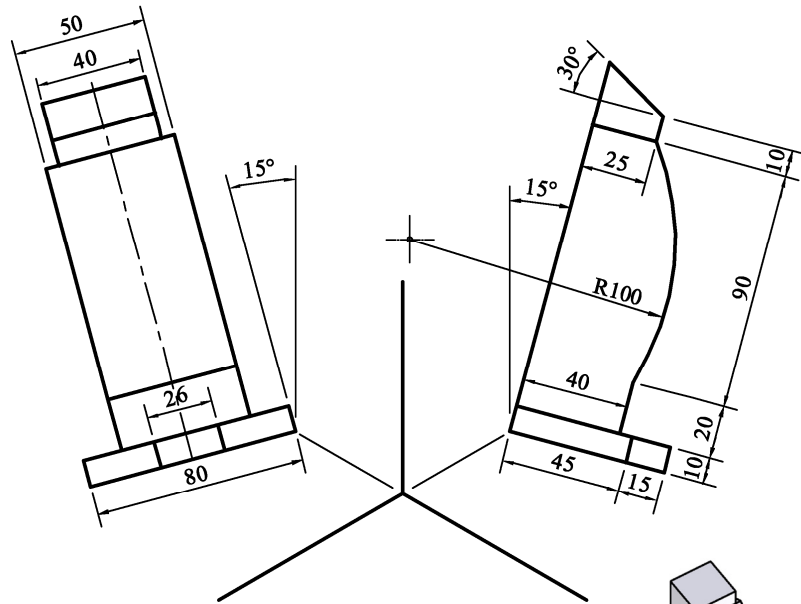The logo is based on a regular hexagon **ABCDEF** and a square.

The card is rotated about point **O** in plan, as shown by the broken line.

(a) Draw the given elevation and plan showing clearly how to determine the size of the logo.

(b) Project an end view of the birthday card in the direction of arrow **A** to show the card in the rotated position.
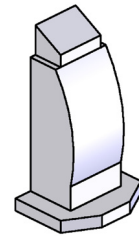
3 Shown are the axonometric axes required for the isometric projection of a parking meter. Also shown is a 3D graphic of the parking meter.

(a)

(i) Draw the axonometric axes as shown.

(ii) Draw the given side elevations oriented at 15° as shown.

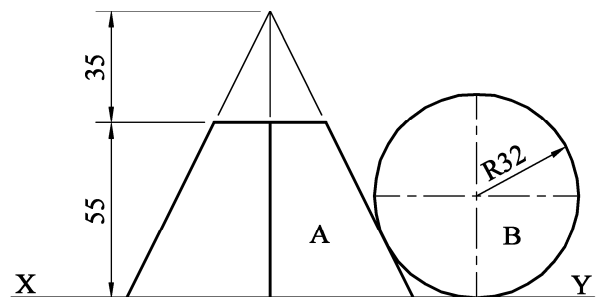(iii) Draw the completed axonometric projection of the parking meter.

OR

(b) Draw the completed isometric projection of the parking meter using the isometric scale method.

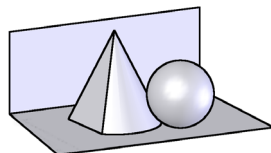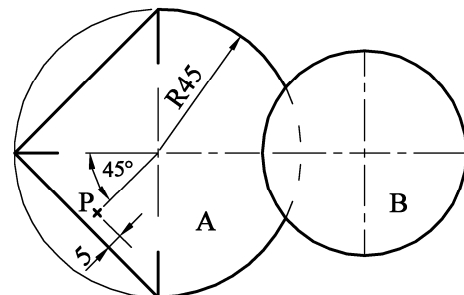50
40
15°
26
80

30°
25
15°
R100
90
10
40
45
15
10
20

4 The elevation and incomplete plan of a solid **A** and a sphere **B** are shown.

Solid **A** consists of a semi-cone and a pyramid, which is cut as shown in elevation.

Also shown is a 3D graphic of the solids before being cut.

(a) Draw the given elevation and complete the plan of both solids.

(b) Draw the projections of another sphere which rests on the horizontal plane and is in contact with the solid **A** at point **P**.

(c) Show all points of contact in plan and elevation.
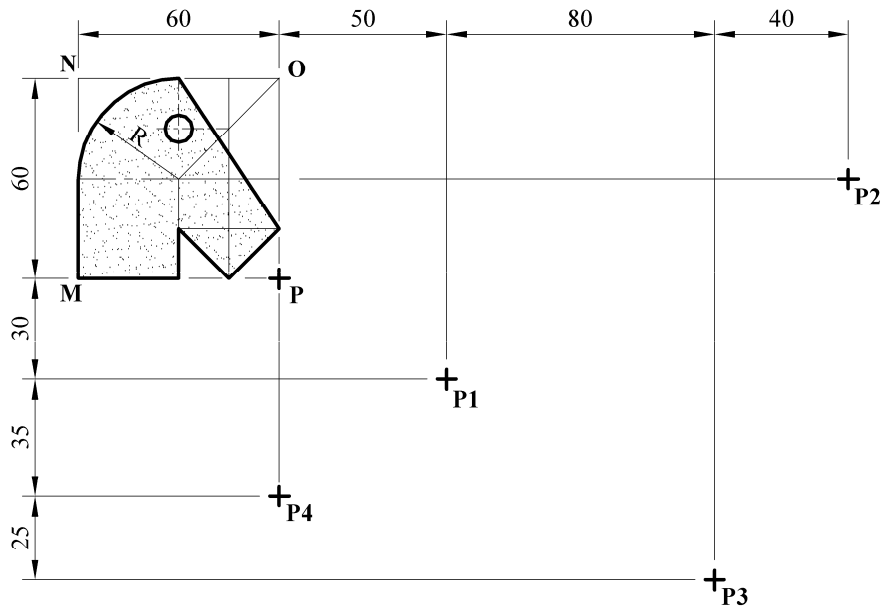
35
55
X
A
R32
B
Y

R45
45°
P
5
A
B

5 The figure shows the design of a chess piece inscribed in the square **MNOP**.
The figure is subject to transformations in the following order:

- Central symmetry
- Translation
- Axial symmetry
- Rotation clockwise through 120°.

P1, **P2**, **P3** and **P4** show the positions of corner **P** under each of these transformations.

(a) Draw the given figure.

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

Note: Choose your own dimension for the eye.

---

6 The figure shows the design of a coffee pot.

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

The curve **DEG** is portion of the ellipse shown, **F** and F_1 are the focal points of this ellipse.

The curve **RS** is an identical portion of the same ellipse.

The line **JK** is a tangent to the ellipse at **K**.

Draw the given design showing clearly all constructions.