



Junior Certificate Examination 2005

Technical Graphics
Higher Level
Section A (120 marks)

Monday 20 June
Morning 9:30 - 12:30

Instructions

- (a) Answer **any ten** questions in the spaces provided.
All questions carry equal marks.
- (b) Construction lines must be clearly shown.
- (c) All measurements are in millimetres.
- (d) This booklet must be handed up at the end of the examination.
- (e) Write your examination number in the box provided below and on all other pages used.

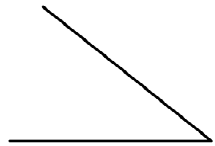
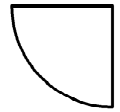


Examination Number

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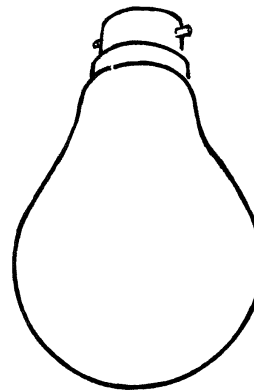
Centre Number

Question	Mark
Section A	
1	
2	
3	
4	
5	
6	
TOTAL	
GRADE	

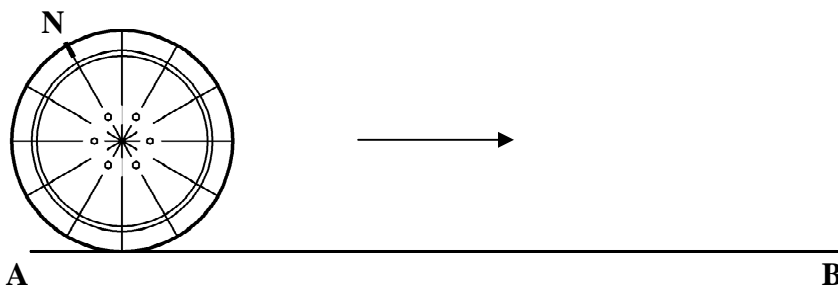
1. Fill in the label for each diagram by selecting from the given table.

Table			
Perpendicular	Acute	Quadrant	Tangent
			
1. _____	2. _____	3. _____	4. _____

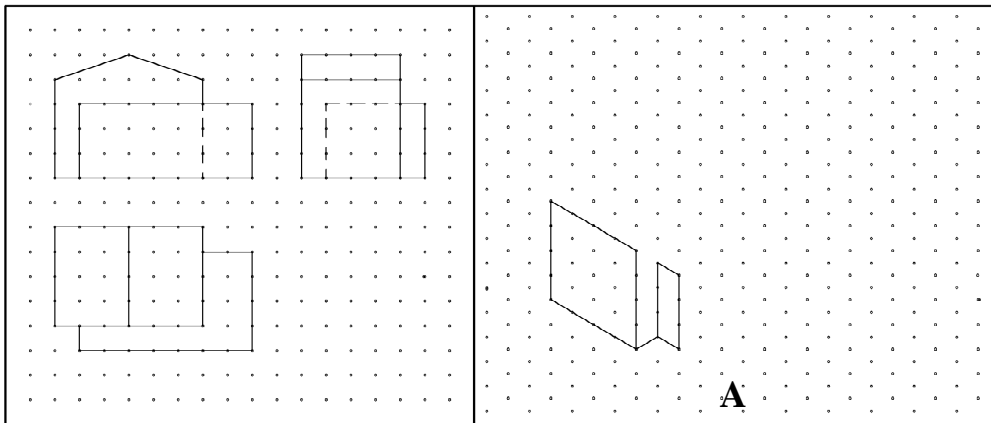
2. Apply shading to the sketch of the light bulb shown.



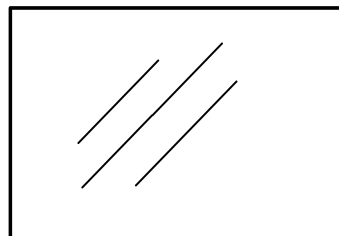
3. The given wheel is pierced by the nail N as shown. The wheel rolls along the line AB in the direction indicated by the arrow. Determine where the nail N meets the line AB.



4. The square grid shows the elevation, plan and end view of a house. Complete the pictorial sketch A of the house.



5. A rectangular window is to be replaced with a square one of the same area. Show the construction necessary to determine the size of the square window.

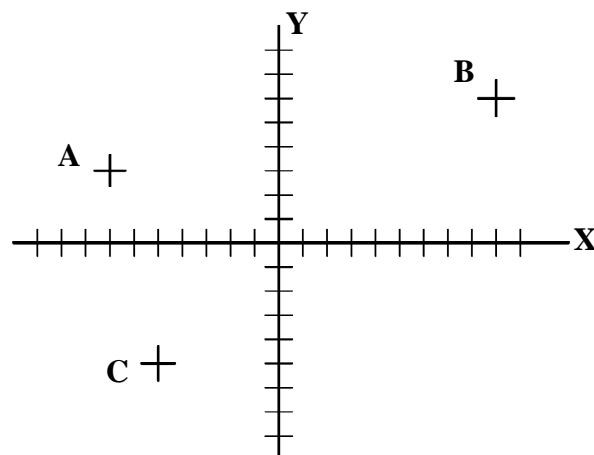


6. The X and Y axes shown are marked at intervals of 5 units. State the coordinates of the points marked A, B and C.

A _____

B _____

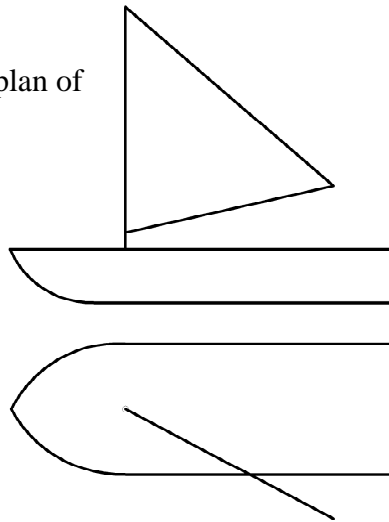
C _____



7.

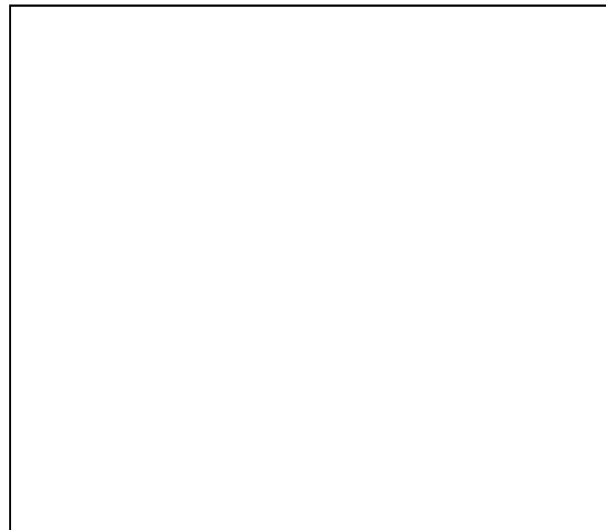
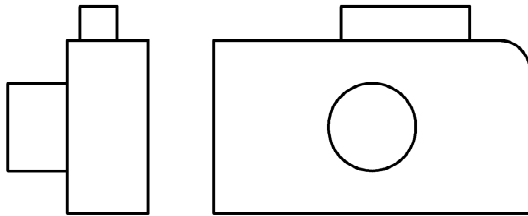
The figure shows the elevation and plan of a boat with a triangular sail.

Determine the true shape of the sail.

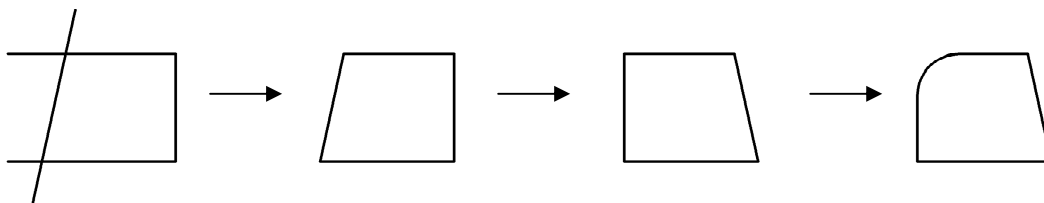


8. The elevation and end view of a pocket camera are shown.

Draw a **freehand** pictorial sketch of the camera in the space provided.

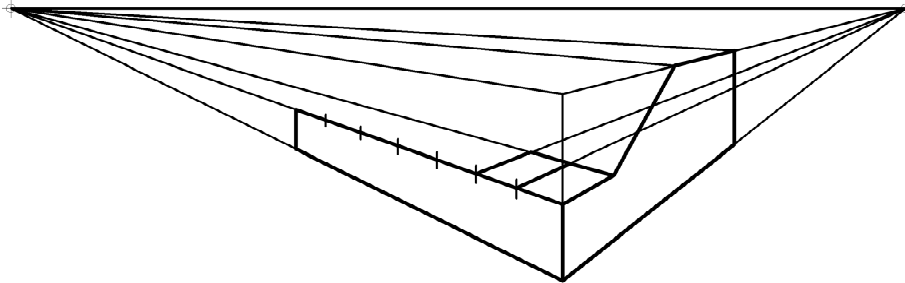


9. List the CAD commands used to edit the figure as shown in the sequence below.



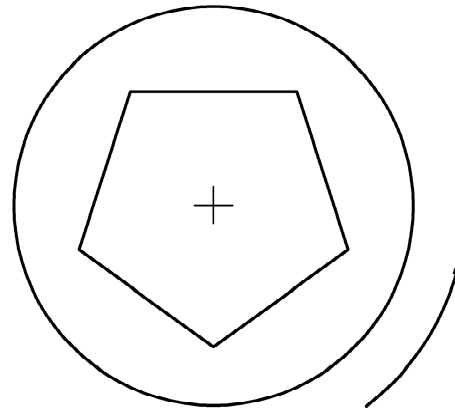
Commands used:

- 10.** The figure shows the incomplete perspective drawing of an electric piano. Complete the drawing using the given vanishing points.

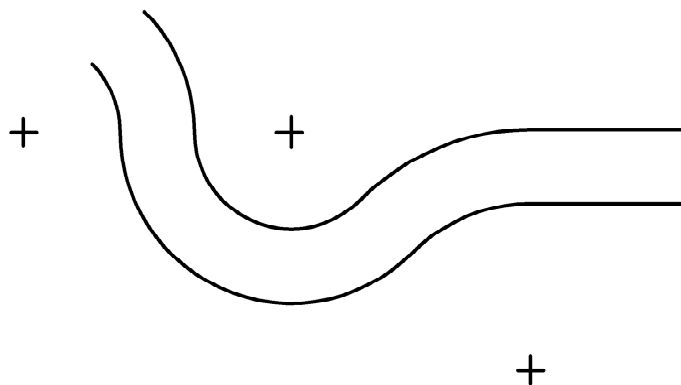


- 11.** The plan of the lid of a coffee jar is shown.

Draw the lid when it has been unscrewed through 45° in an anti-clockwise direction as shown by the arrow.



- 12.** The figure shows portion of a racing circuit consisting of arcs and straight lines. The centres of the curves are shown. Locate all the points of contact.

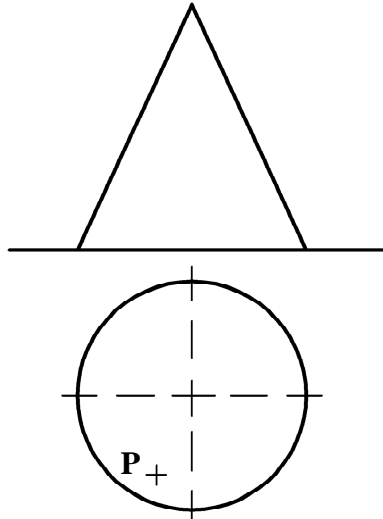


13.

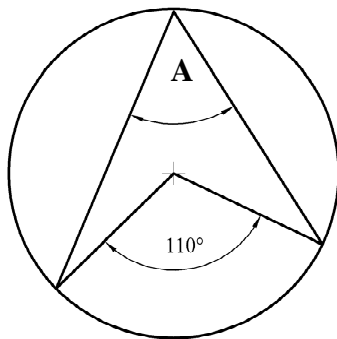
The elevation and plan of a cone are shown.

The plan of a point P on the surface of the cone is also shown.

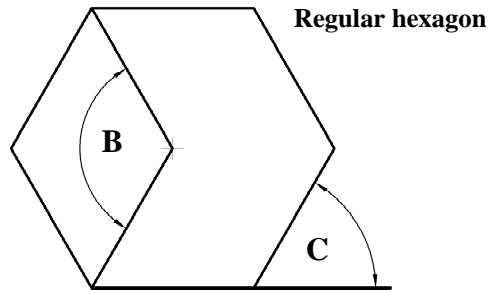
Locate the elevation of point P.



14. State the measure of the angles marked A, B and C.



A = _____



B = _____

C = _____

15.

A survey of weekly mobile phone usage shows the following results for four students A, B, C and D.

A — 180 minutes

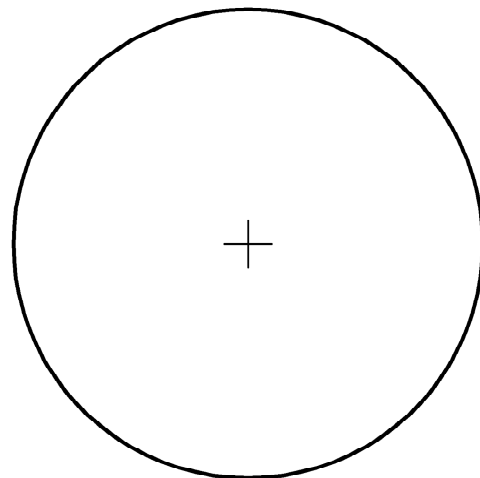
B — 45 minutes

C — 90 minutes

D — 45 minutes

Divide the given circle to represent this information graphically.

Shade **OR** colour the completed diagram.



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Higher Level
Section B (280 marks)

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Instructions

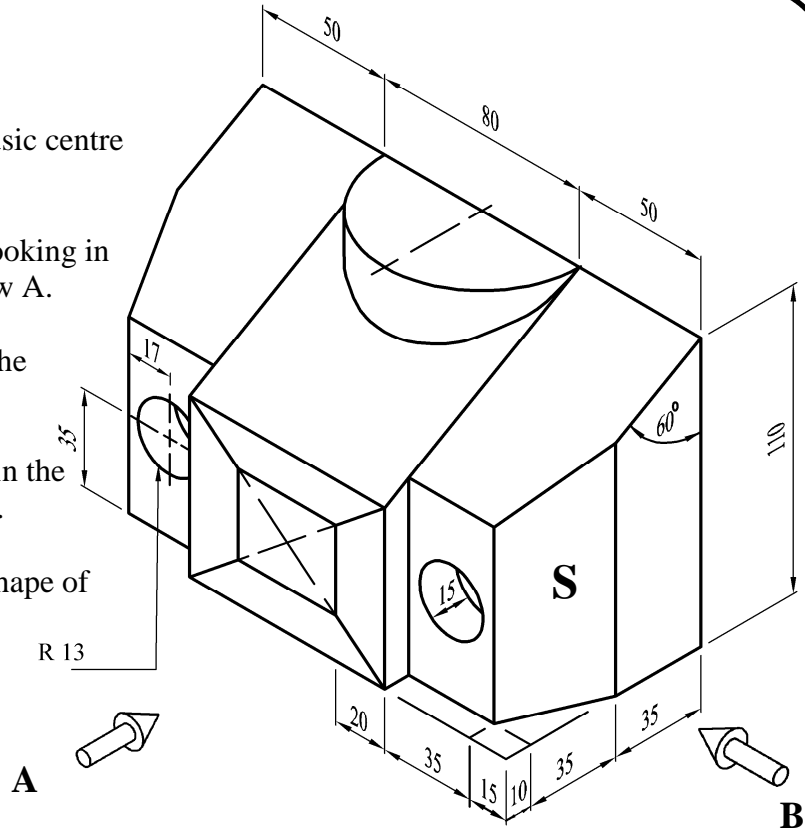
- (a) Any four questions to be answered.*
- (b) All questions in this section carry equal marks.*
- (c) The number of the question must be distinctly marked by the side of each answer.*
- (d) Work on **one side** of the paper only.*
- (e) Write your examination number on each sheet of paper used.*

SECTION B (ANSWER ANY FOUR QUESTIONS - ALL QUESTIONS CARRY EQUAL MARKS)

1.

A pictorial view of a music centre is shown.

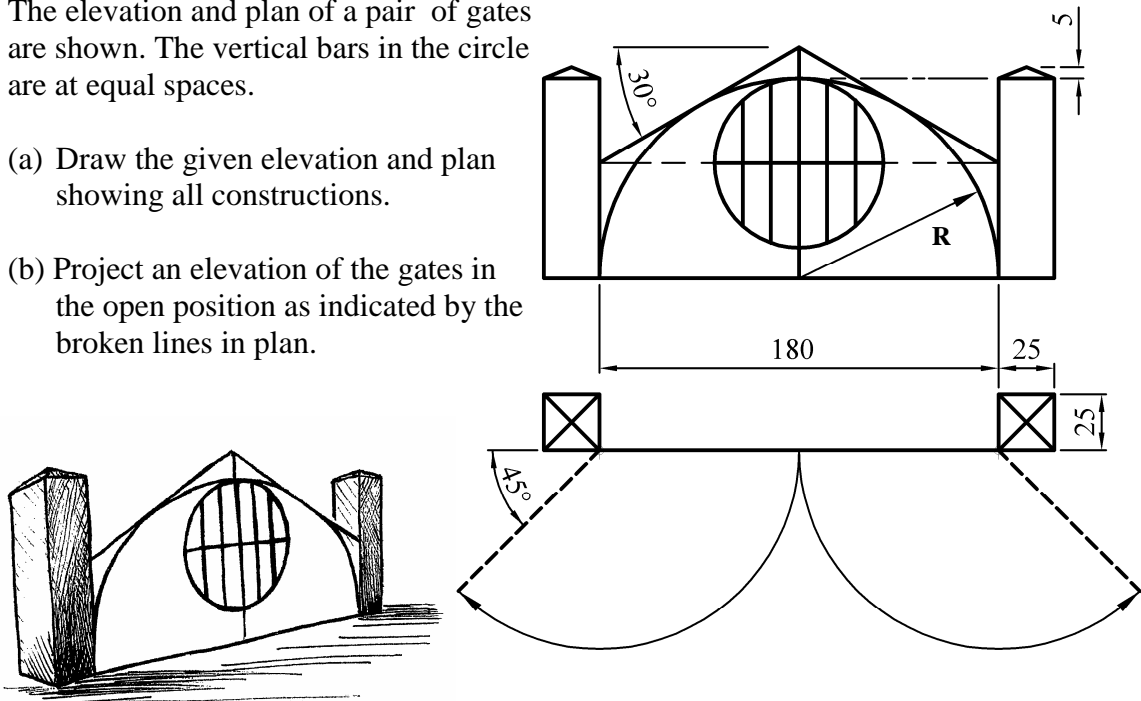
- (a) Draw an elevation looking in the direction of arrow A.
- (b) Project a plan from the elevation.
- (c) Project an end view in the direction of arrow B.
- (d) Determine the true shape of Surface S.



2.

The elevation and plan of a pair of gates are shown. The vertical bars in the circle are at equal spaces.

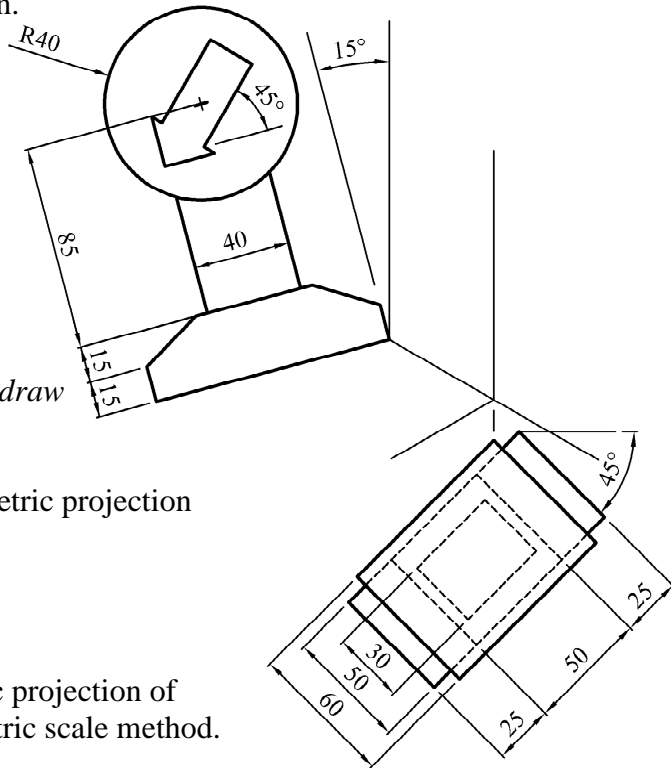
- (a) Draw the given elevation and plan showing all constructions.
- (b) Project an elevation of the gates in the open position as indicated by the broken lines in plan.



3.

Shown are the axonometric axes required for the isometric projection of a road sign.

- (a)
- (i) Draw the axonometric axes as shown.
 - (ii) Draw the plan orientated at 45° as shown.
 - (iii) Draw the side elevation orientated at 15° as shown.
Use your own dimensions to draw the given arrow.
 - (iv) Draw the completed axonometric projection of the road sign.



OR

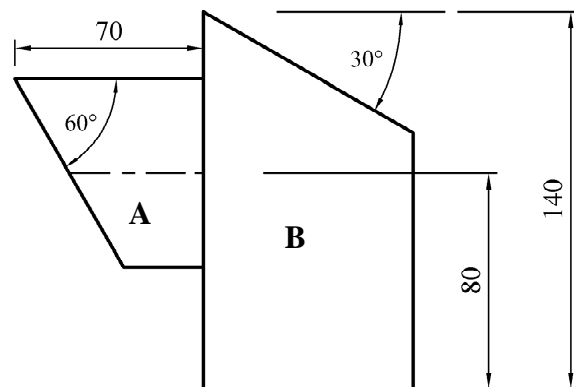
- (b) Draw the completed isometric projection of the road sign using the isometric scale method.

4.

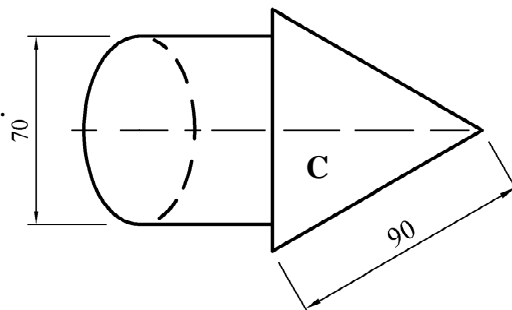
The elevation and plan of the top portion of a traffic light are shown.

The design is based on a truncated cylinder and a truncated equilateral triangular prism.

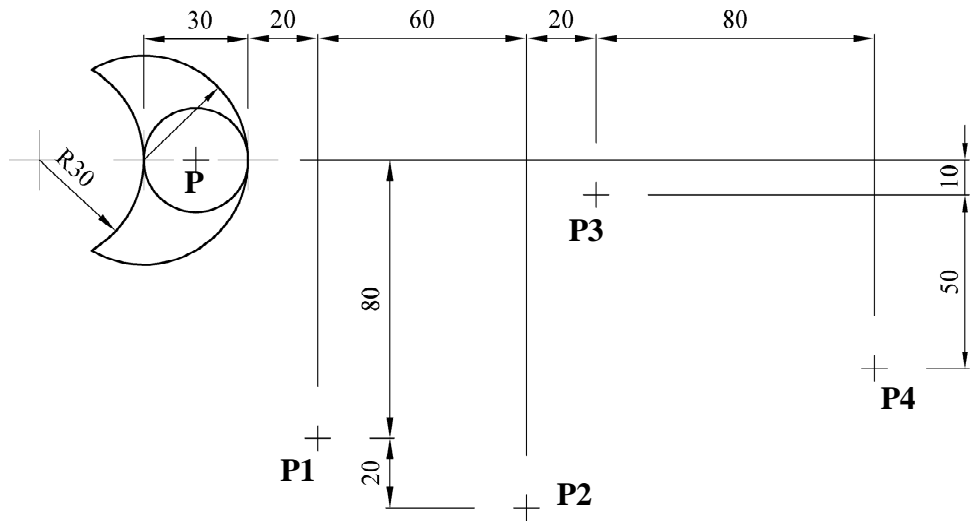
- (a) Draw the given plan and elevation.



- (b) Draw the development of the curved surface **A** of the cylinder.
- (c) Draw the development of the vertical surface **B** and the sloping surface **C** of the prism.



5.



The figure shows a logo for a company called DAY & NIGHT deliveries. The logo is subject to transformations in the following order;

- (i) Axial symmetry
- (ii) Central symmetry
- (iii) Translation
- (iv) Rotation clockwise through 120° .

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

Draw the given figure and determine the image of the logo under each of the transformations.

6.

The figure shows the design of a head rest for a car seat. A sketch of the head rest is also shown.

The curve ABC is a parabola with vertex B.

The arc DEF is tangential to the ellipse at E.

A and C are focal points of the ellipse.

Draw the given design.

Show clearly the constructions necessary to determine the major and minor axes of the ellipse and the centre of the arc DEF.

