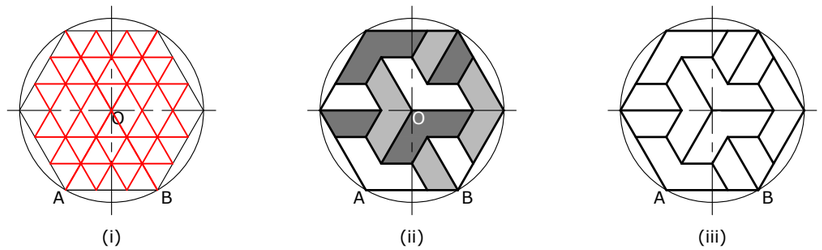
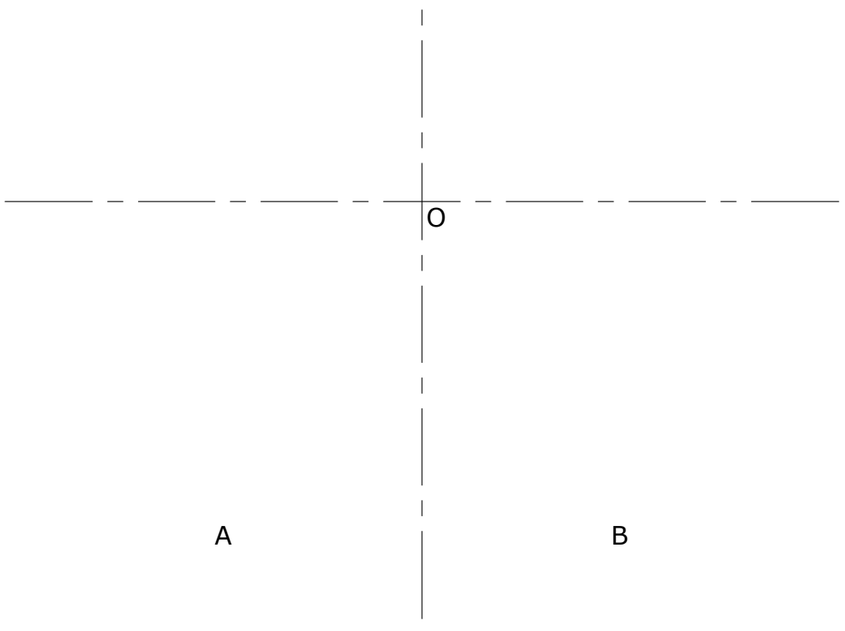
Question 1.
Three stages of a construction to produce a tile design are given below.

Construct the tile design by following these steps:

a. shade in grayscale or colour, the tile design in stage iii; (3)
b. using centre O, draw a circle R60 and construct a regular hexagon; (2)
c. using a geometrical method, divide base AB into 3 equal parts; (2)
d. draw the grid lines inside the hexagon parallel to the hexagon sides; (2)
e. draw the tile design on the grid. (3)

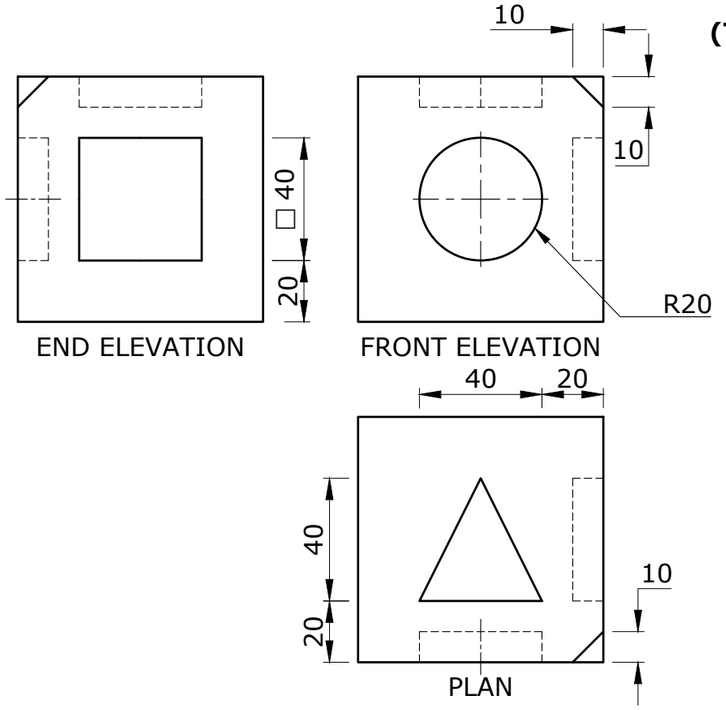
(Total: 12 marks)

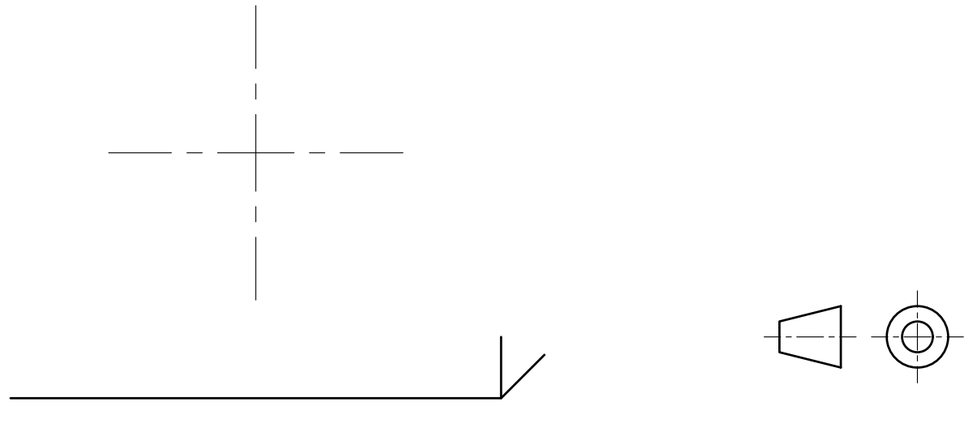




Question 2.
Three orthogaphic views of a child toy cube are given below. The cube has three recesses in which a square, a triangular and a circular shape fit in. Draw the toy in cabinet oblique using the given starter lines. The cube's dimensions are 80 X 80 x 80 mm and the shapes' recesses are all 10 mm.

(Total: 14 marks)





Question 3.

A profile of an anvil is shown on the right. The profile consists of a quarter ellipse, tangential arcs and lines.

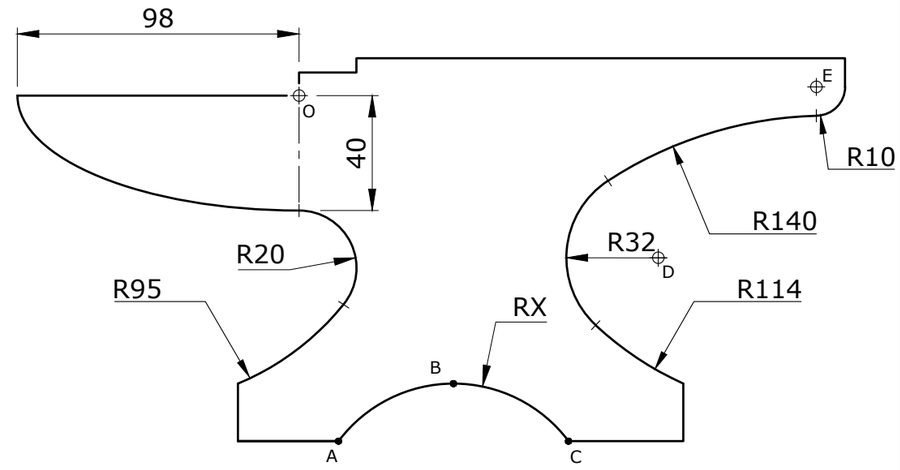
Using the given starting lines and dimensions, construct:

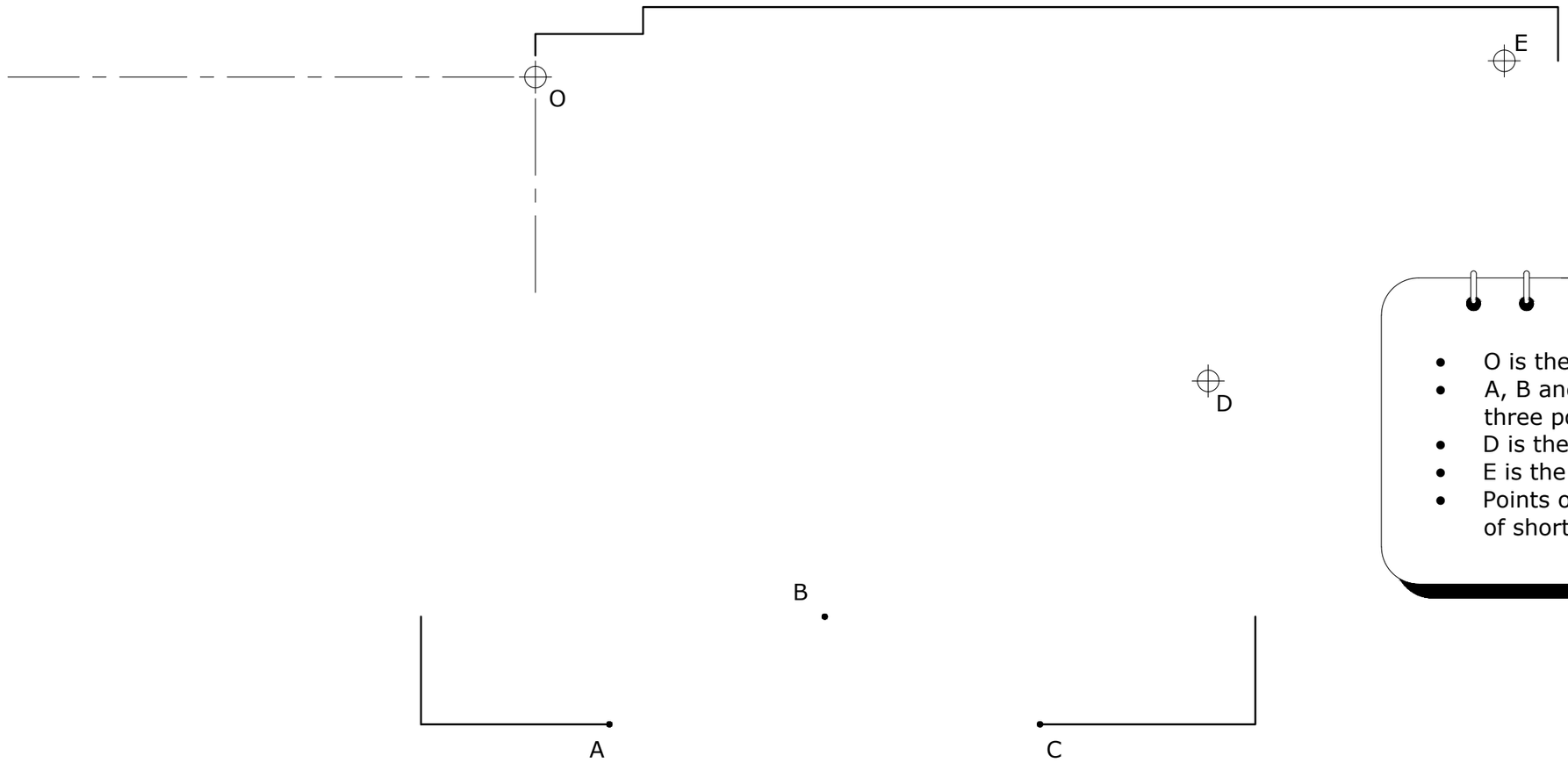
a. the quarter ellipse having major axis 196 mm, minor axis 80 mm and centre O; (8)

b. the three point circle passing from points A, B and C. Measure and state radius RX; (3)

c. the missing tangential arcs and lines, showing clearly how the centres, tangents and points of tangencies were derived. (9)

(Total: 20 marks)





NOTES

- O is the center of the quarter ellipse
- A, B and C are the points to construct the three point circle RX.
- D is the centre of the R32 arc.
- E is the centre of the R10 arc.
- Points of tangencies are denoted by means of short dashes as shown.

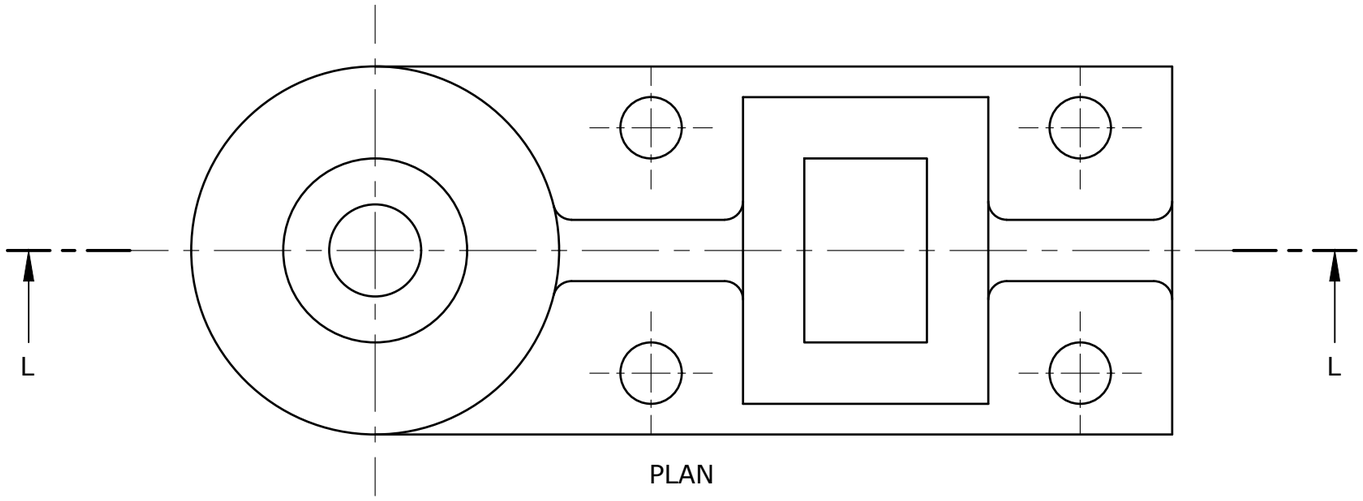
RX = _____ mm

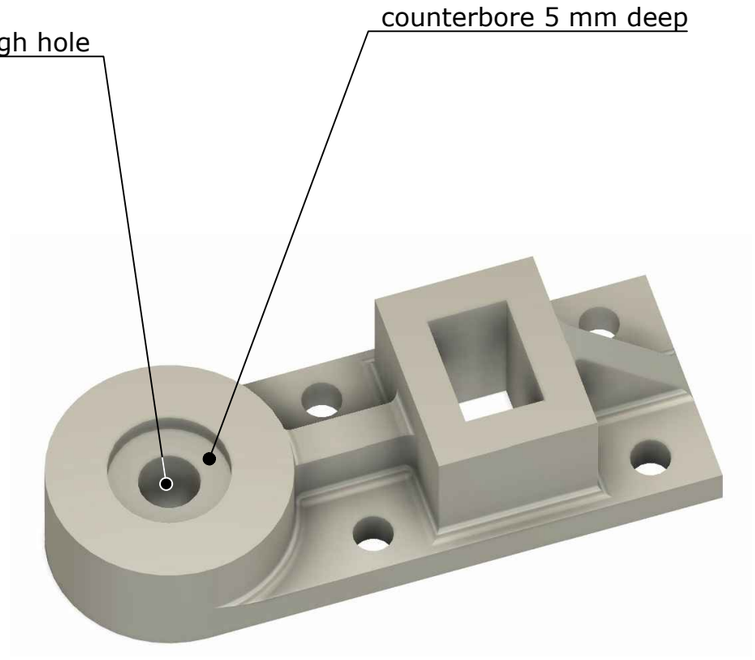
Question 4.
An illustration of a cast support bracket is given below.
The plan and the profile of the front elevation are also given.

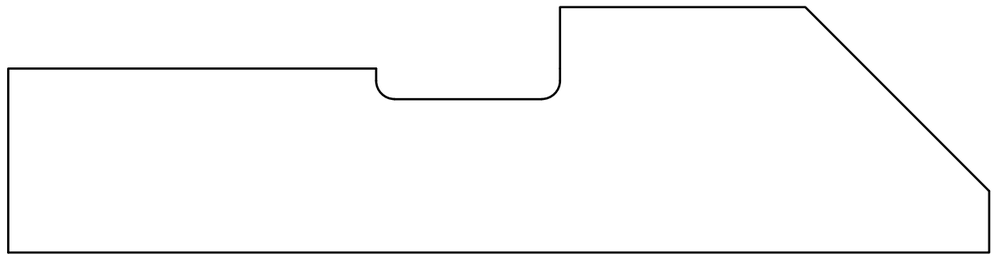
a. In the space provided, complete a sectional front elevation on the cutting plane L-L. (12)
b. Insert **TWO** radial and **TWO** linear dimensions in the orthographic views. (4)

Notes:
- Show all centre lines.
- Do **not** show hidden details.

(Total: 16 marks)



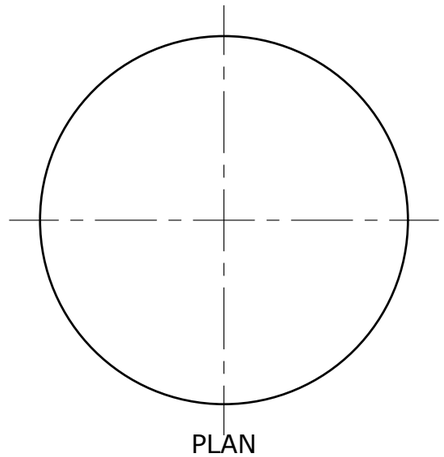




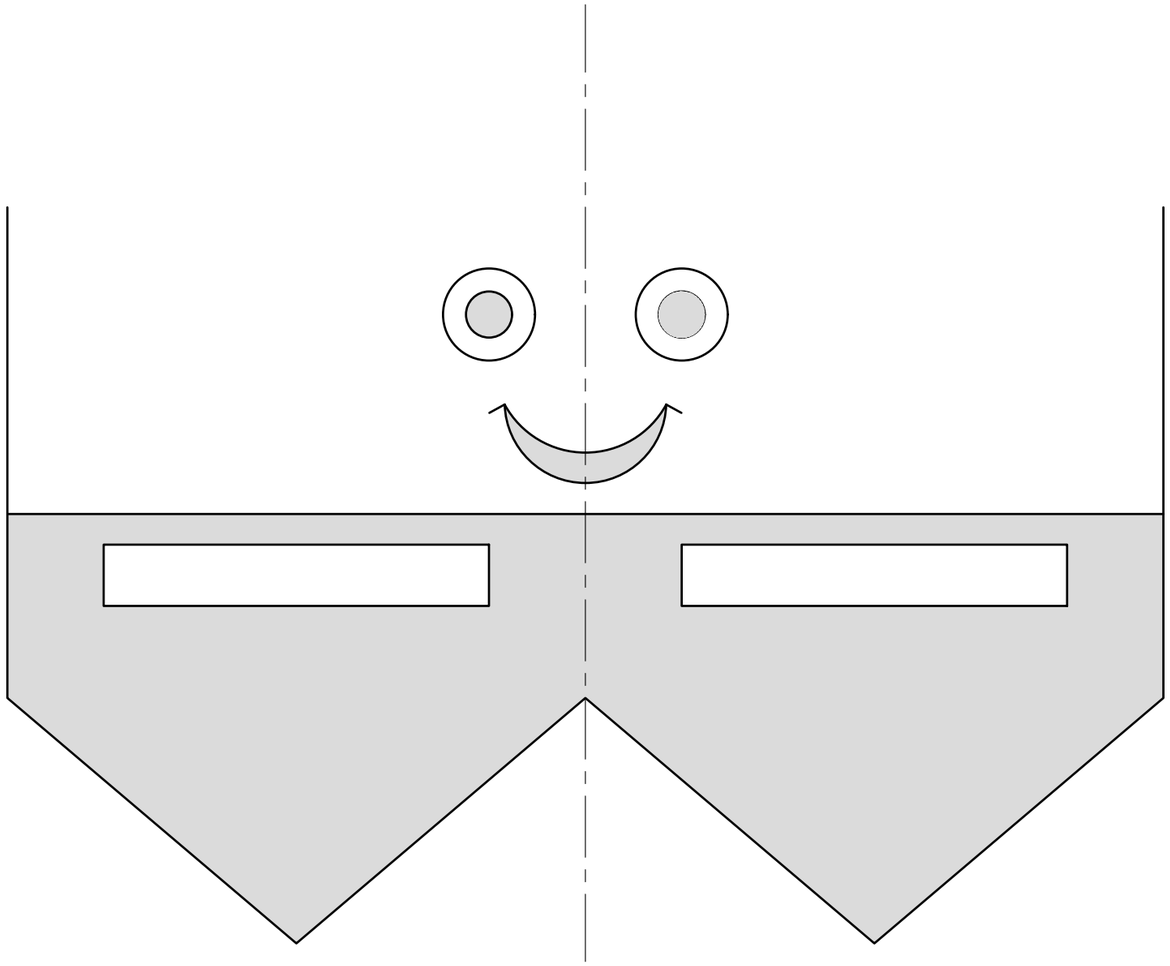
Question 5.
The plan, the incomplete front and the incomplete development of a hollow cylindrical puppet toy are given.

Using the given starting lines and dimensions:
a. complete the top part of the development; (7)
b. complete the bottom part of the front elevation; (7)
c. shade lightly the development and the front elevation according to the design. (4)

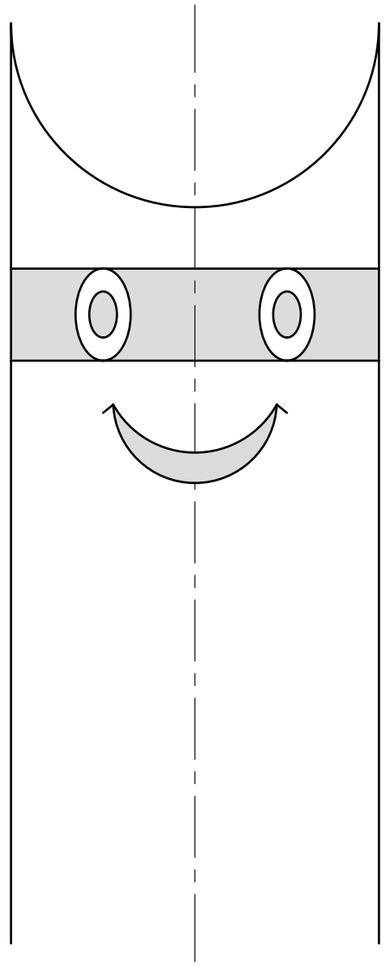
(Total: 18 marks)



PLAN



DEVELOPMENT



FRONT ELEVATION

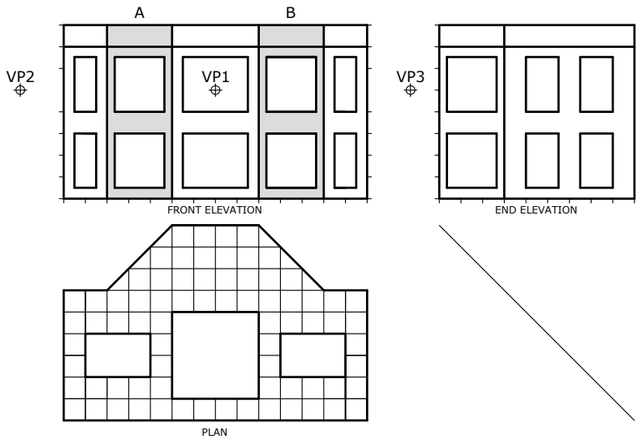
Question 6.

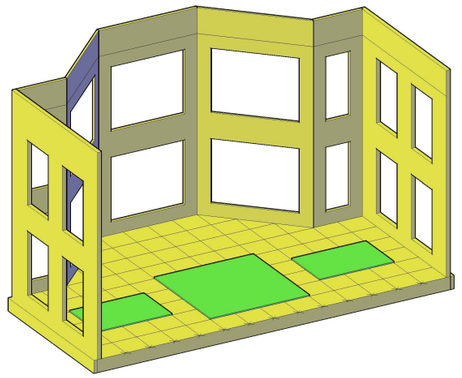
Three orthographic views and a pictorial view of an observation deck are given. Using the given starting lines and VP1, draw an estimated single-point perspective view of the deck.

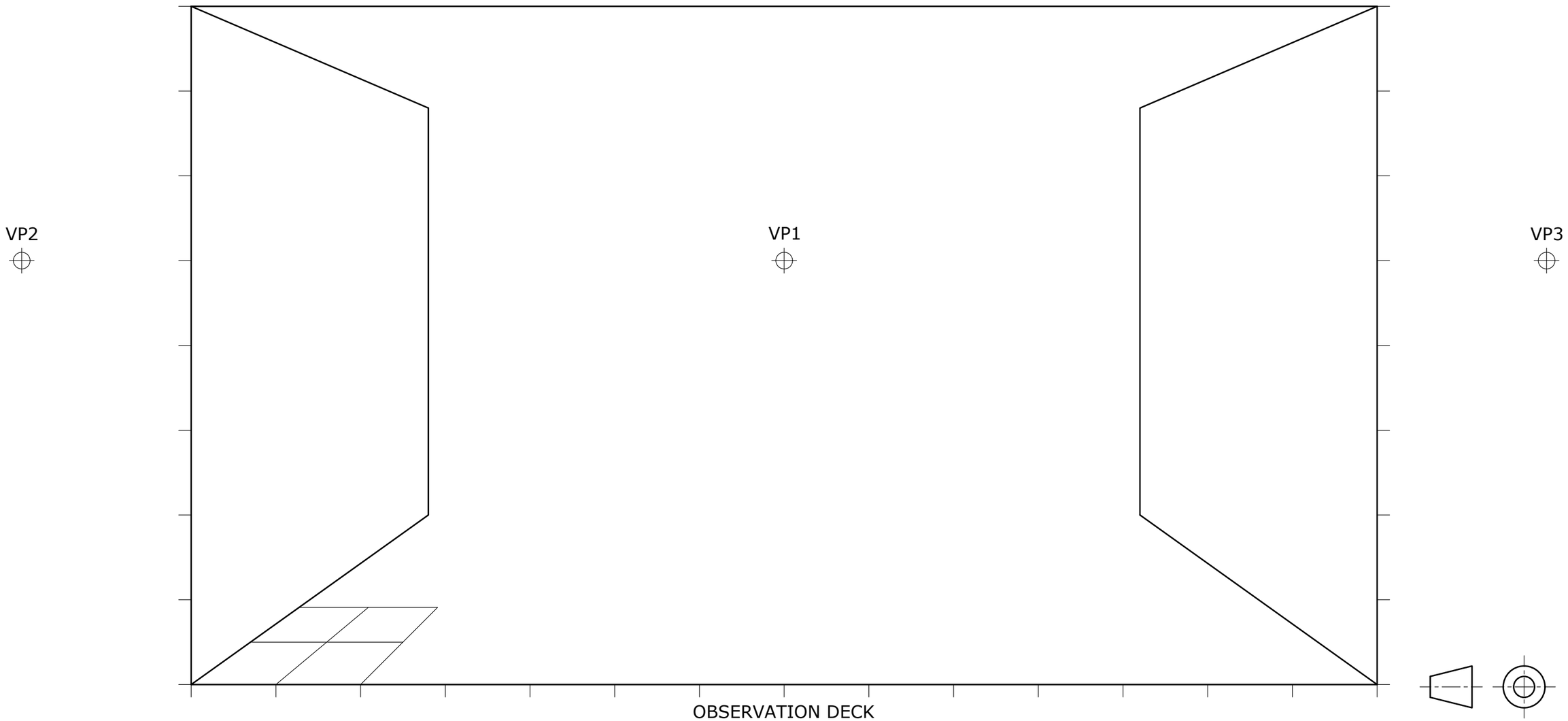
Notes:

- Two additional vanishing points, VP2 and VP3, may be used to complete the shaded panels A and B.
- The first four tiles and the two sides are given.
- Ignore wall thickness.

(Total: 20 marks)







Question 1.
The following computer programme is written to create a sewing pattern.

DATA: A = 50; B = 100; C = 150; D = 200; E = 250; F = 300; G = 350;
H = 400; I = 450; J = 500; K = 550; L= 600; M = 650; N = 700;
O = 750; P = 800.

ACI 1: MOVE I,H; DRAW I,L; DRAW K,L:
ACI 1: MOVE L,L; DRAW N,L; DRAW N,O; DRAW O,O; DRAW O,K; DRAW L,K:
ACI 1: MOVE K,K; DRAW J,K; DRAW J,H:
ACI 5: MOVE H,I; DRAW I,I:
ACI 5: MOVE J,I; DRAW L,I; DRAW L,O; DRAW I,O; DRAW I,N; DRAW K,N;
DRAW K,J; DRAW J,J:
ACI 5: MOVE I,J; DRAW H,J:
ACI 7: MOVE N,H; DRAW N,J; DRAW O,J; DRAW O,H.

The **DATA** statement specifies the numeric values (in pixels) of given variables. **MOVE,** positions the cursor at a new location without drawing a line. **DRAW** draws a line from a current location to a new location. The instruction **ACI No**. makes the images that follow the instruction, appear in the colour associated with the number. The computer responds to the following colour commands:

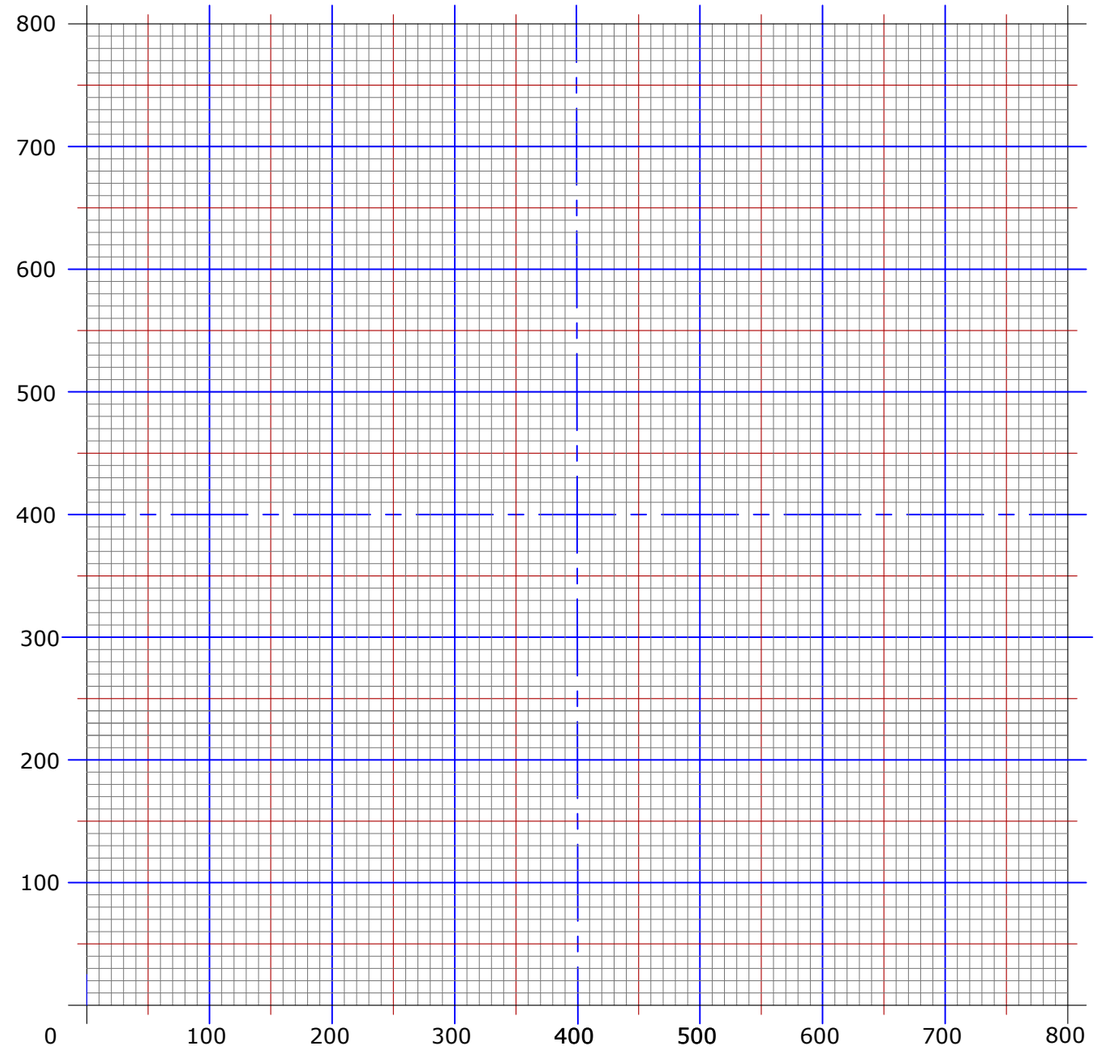
COLOUR	RED	BLUE	BLACK
ACI No.	1	5	7

The starter sheet shows a pre-printed grid representing an 800 x 800 graphical display. Complete the programme by:

a. using the grid to plot the image produced by this programme; (6)
b. **MIRRORING** the plotted design, using the vertical and horizontal centre lines as the mirror lines (lines of symmetry). (4)

Note: Do **not** colour in the pattern.

(Total: 10 marks)

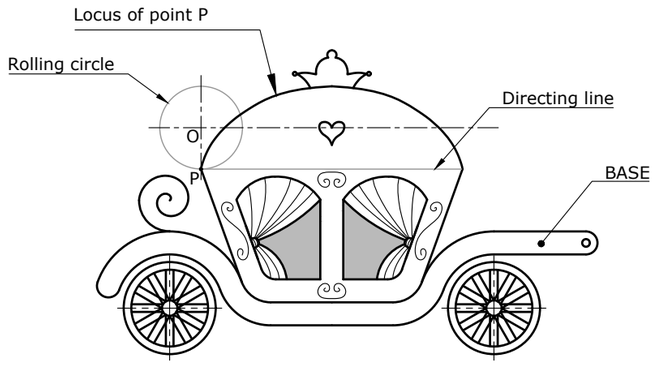


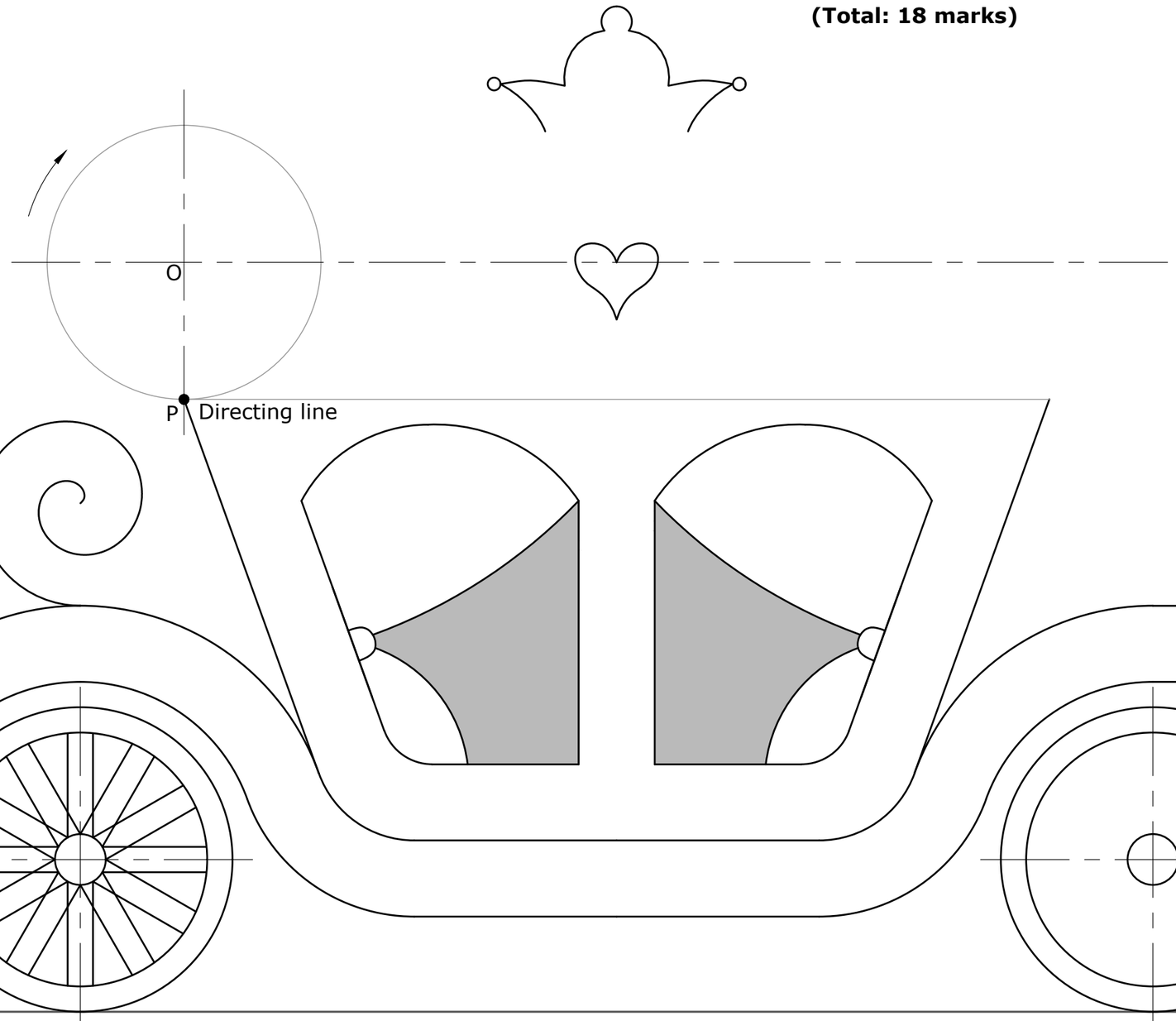
Question 2.
The profile of a toy fairy tale carriage is given on the right.

Using the given starting lines and dimensions:

a. draw the missing spokes in the front wheel; (2)
b. construct the locus of point P, as circle center O rolls without slipping on the given directing line for one complete revolution; (8)
c. state and label the name of the curve generated; (2)
d. add the **FOUR** missing scroll decorations in freehand (S-scrolls and C-scrolls); (2)
e. render the base (material: wood) and the cabin curtains (material: textile). (4)

(Total: 18 marks)





Name of curve = _____

Front of carriage

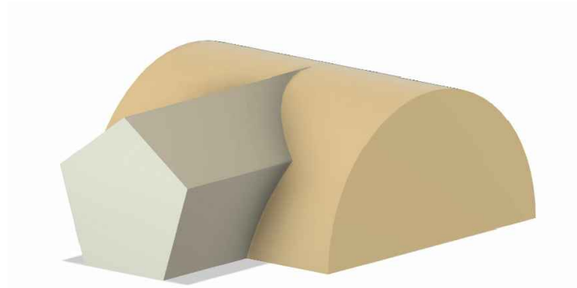
Question 3.

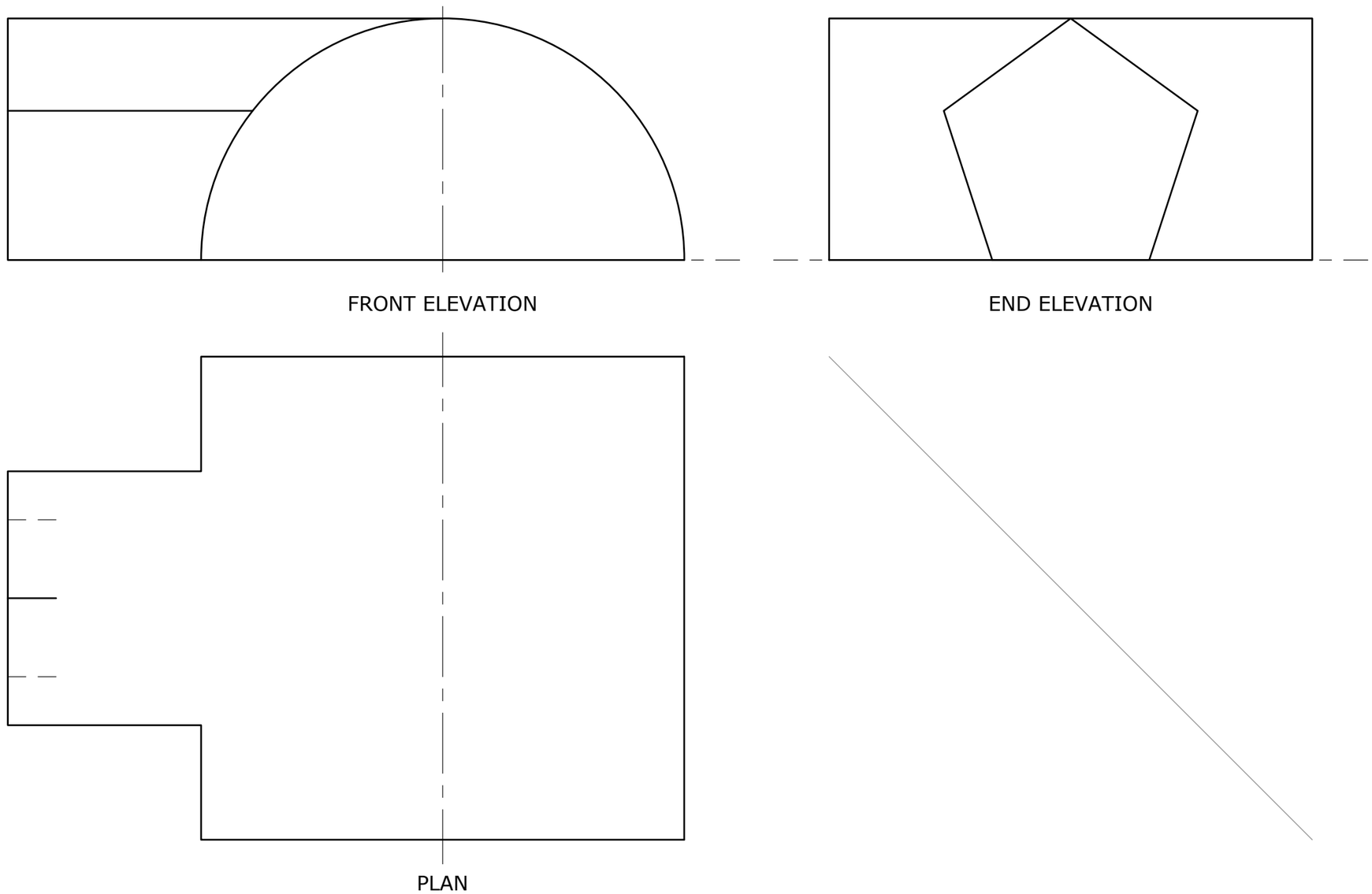
A pictorial view of a Nissen hut is shown on the right. The hut is made up of a semi-cylinder intersected by a pentagonal prism. Draw:

a. the lines of intersection and complete the plan; (7)

b. all hidden details (part of which are lines of intersections). (5)

(Total: 12 marks)

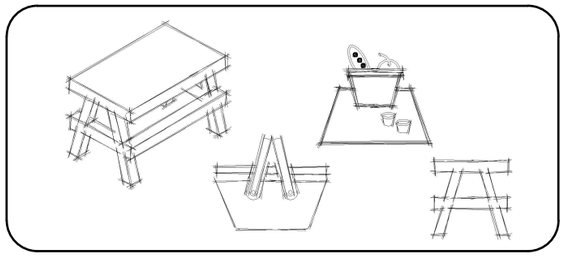




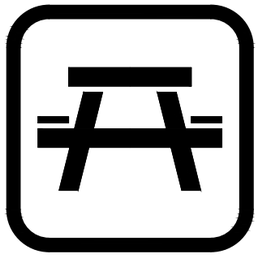
Question 4.
The management of a family park needs to design some graphic symbols.
The sketches and final symbol for a 'Picnic area' has been given.

Using the indicated spaces:
a. draw **TWO** or more sketches and **ONE** final symbol for 'Public toilet'; (5)
b. draw **TWO** or more sketches and **ONE** final symbol for 'Toddlers area'; (5)
c. shade lightly both final symbols. (2)

(Total: 12 marks)



Sketches



Picnic area

Sketches

Public toilet

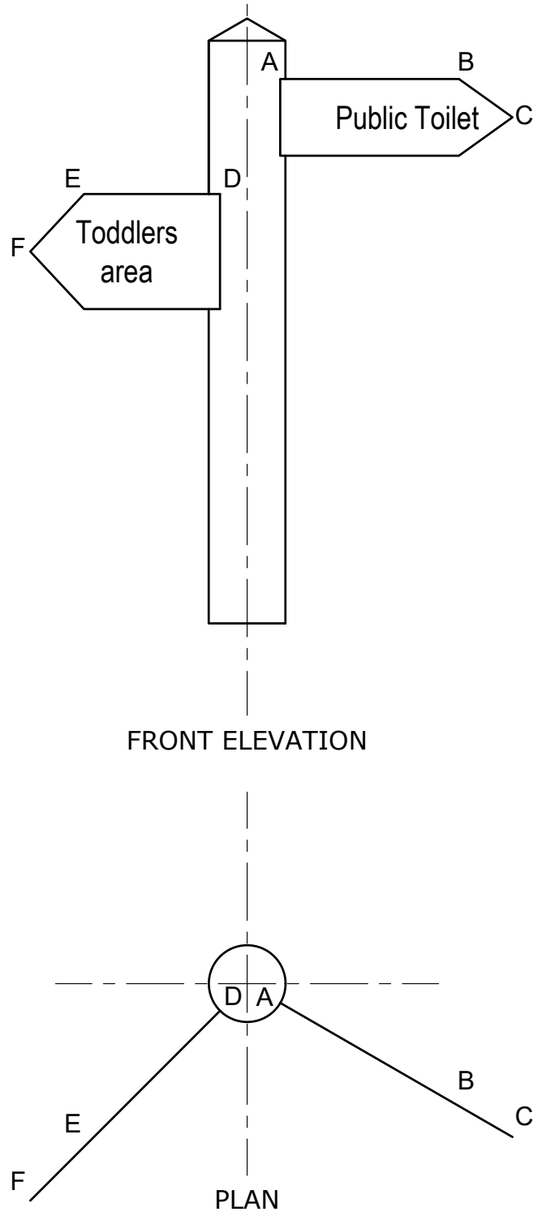
Sketches

Toddlers area

Question 5.
A front elevation and plan of two playground wayfinding signs attached to a pole are given below.

Using the given starting lines and dimensions:
a. find the true lengths of the sides AB, BC, DE and EF; (8)
b. draw the true shapes of both signs. (4)

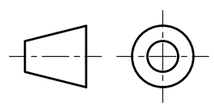
(Total: 12 marks)



A
Public toilet

D
Toddlers
area

True Lengths:
AB = ___mm
BC = ___mm
DE = ___mm
EF = ___mm



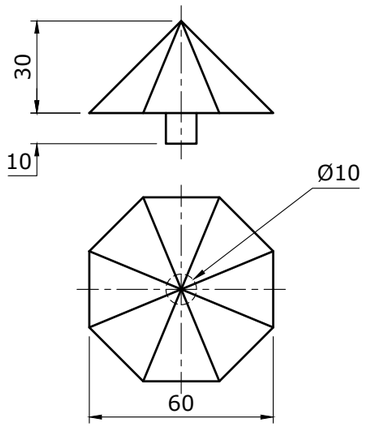
Question 6.

An exploded view of a toy windmill is shown on the right. Detail drawings of the separate parts and a parts list are given below. Use the given starting lines to draw: (a) front elevation and (b) plan of the assembled windmill.

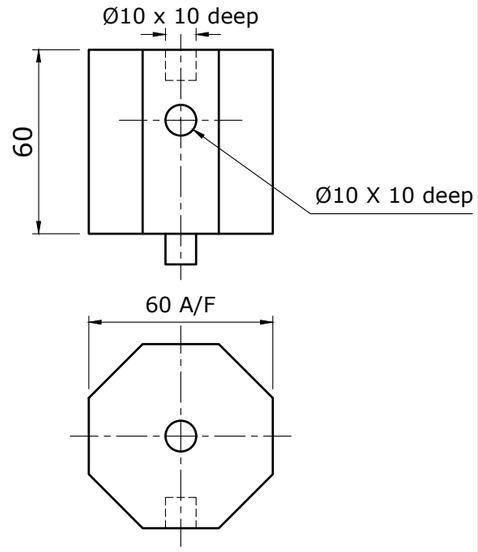
Note: Show hidden details.

(Total: 18 marks)

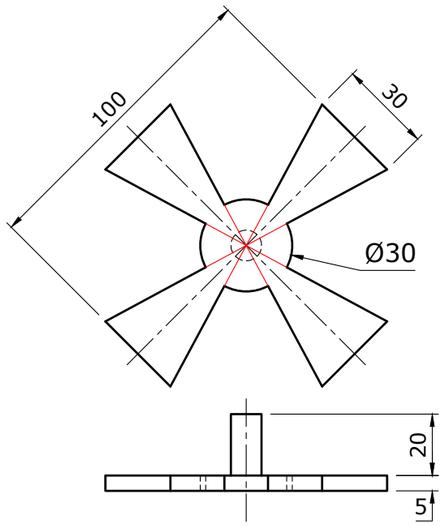
PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	OCTAGONAL PYRAMID
2	1	OCTAGONAL PRISM
3	1	WINDMILL BLADES
4	1	OCTAGONAL FRUSTRUM



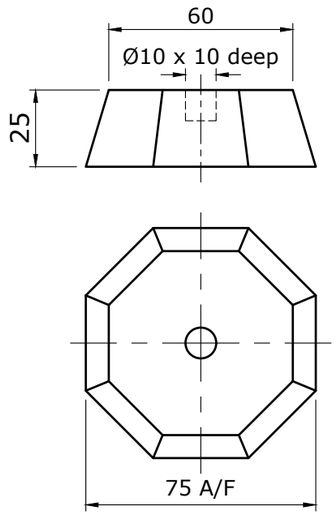
ITEM 1



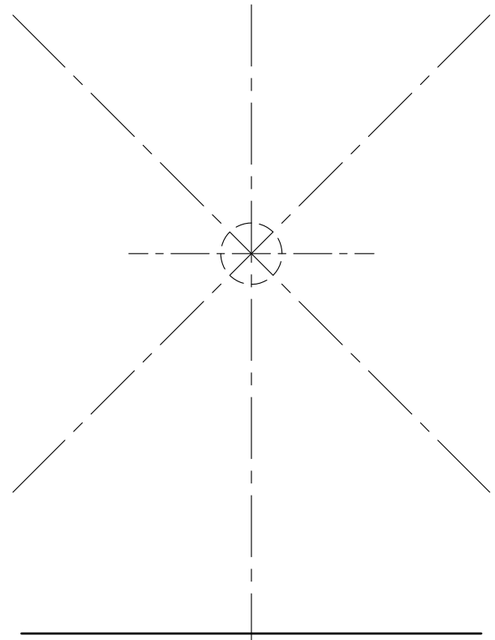
ITEM 2



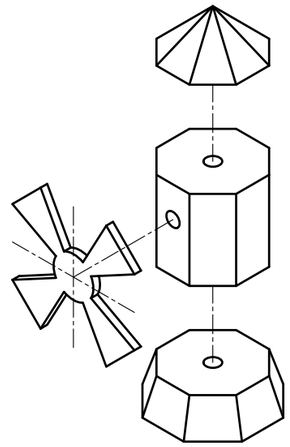
ITEM 3



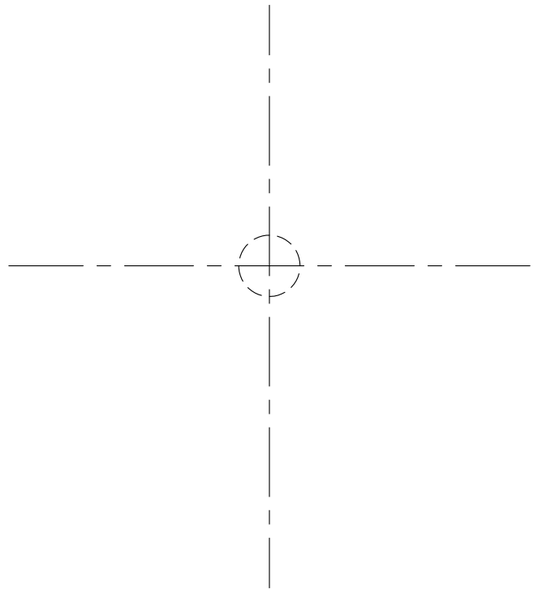
ITEM 4



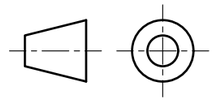
FRONT ELEVATION



(exploded view of the toy windmill)



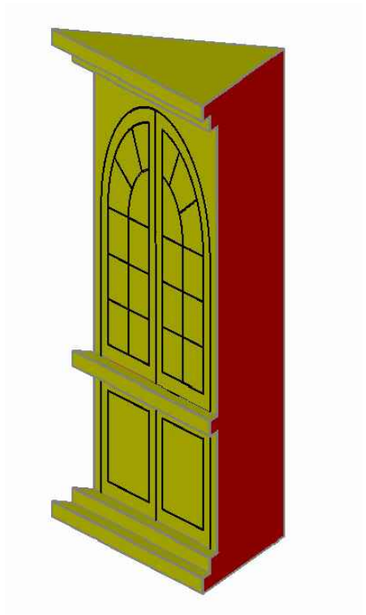
PLAN

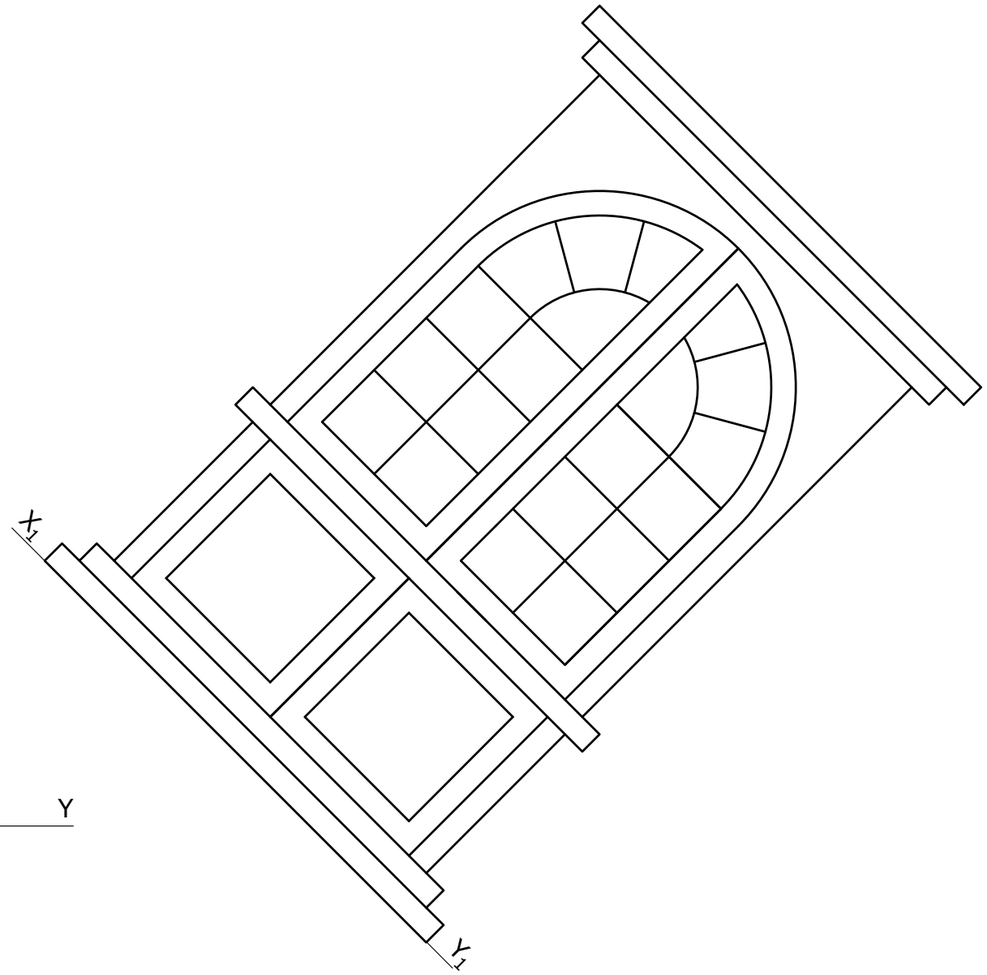


Question 7.

A pictorial projection of a corner cabinet is shown below. The plan and the auxiliary elevation, as seen from the direction of arrow A, on line X_1 - Y_1 are given. Complete the front elevation on line X - Y.

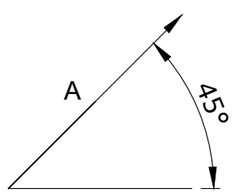
(Total: 18 marks)

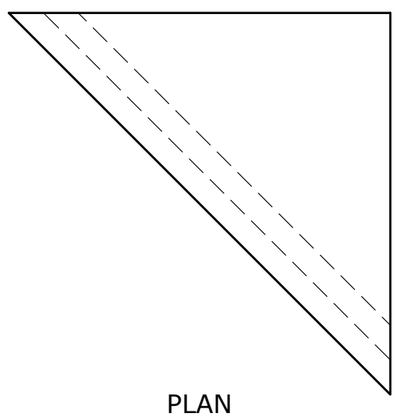




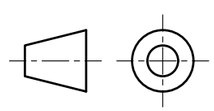
X ——— Y

FRONT ELEVATION





PLAN



INDEX NUMBER : _____

Question 1.
The following computer programme is written to create a tile pattern.

DATA: A = 50; B = 100; C = 150; D = 200; E = 250; F = 300; G = 350;
H = 400; I = 450; J = 500; K = 550; L= 600; M = 650; N = 700;
O = 750; P = 800.

ACI 1: MOVE N,A; DRAW O,B:
ACI 1: MOVE L,A; DRAW M,B; DRAW M,C; DRAW N,C; DRAW O,D:
ACI 5: MOVE I,A; DRAW I,I; DRAW G,I; DRAW G,G; DRAW I,G:
ACI 5: MOVE J,A; DRAW J,J; DRAW F,J; DRAW F,F; DRAW I,F:
ACI 5: MOVE J,G; DRAW O,G:
ACI 5: MOVE J,F; DRAW O,F:
ACI 7: MOVE A,J; DRAW D,J; DRAW D,L; DRAW F,L; DRAW F,O:
ACI 7: MOVE A,K; DRAW C,K; DRAW C,M; DRAW E,M; DRAW E,O:
ACI 7: MOVE A,A; DRAW A,O; DRAW O,O; DRAW O,A; DRAW A,A.

The **DATA** statement specifies the numeric values (in pixels) of given variables. **MOVE,** positions the cursor at a new location without drawing a line. **DRAW** draws a line from a current location to a new location. The instruction **ACI No**. makes the images that follow the instruction, appear in the colour associated with the number. The computer responds to the following colour commands:

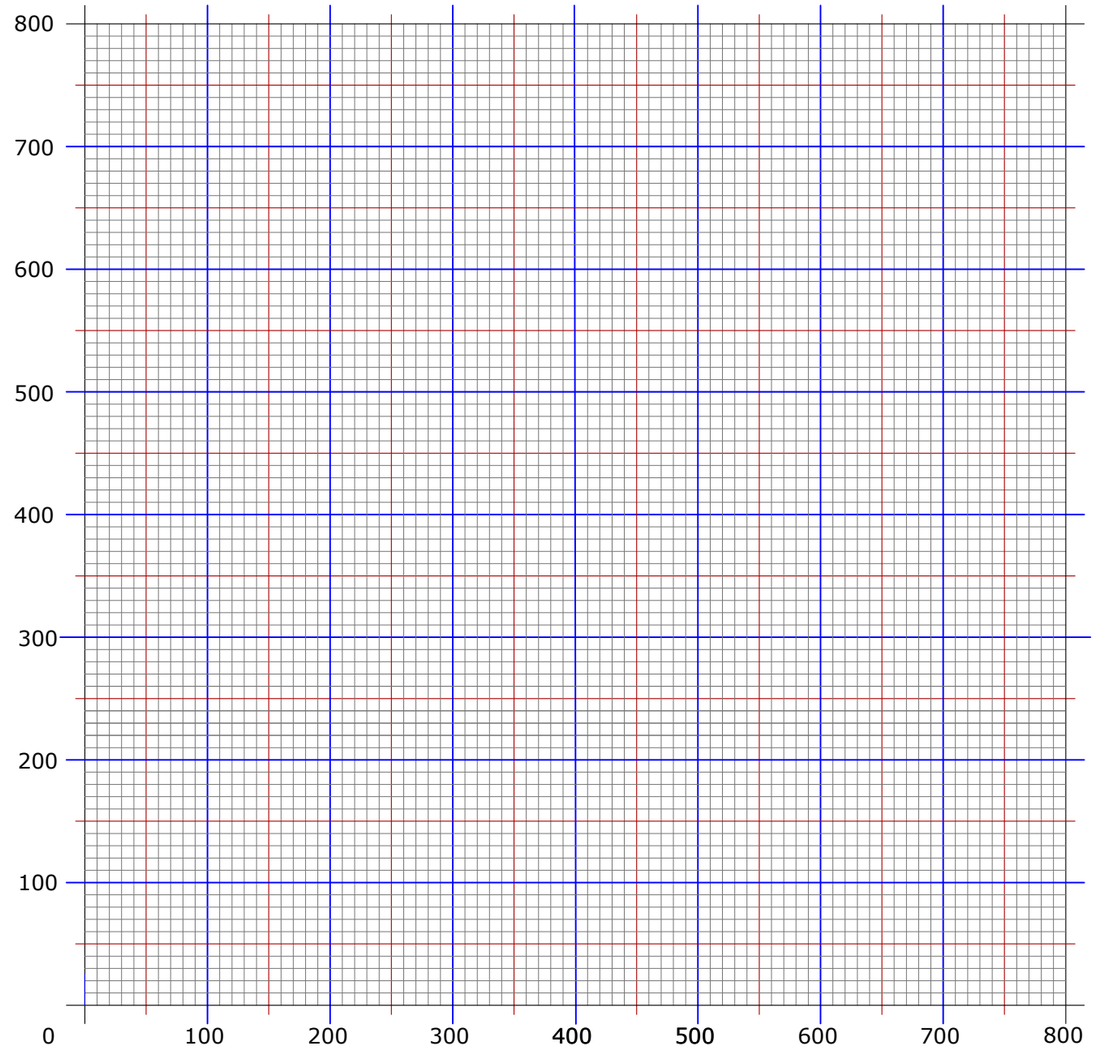
COLOUR	RED	BLUE	BLACK
ACI No.	1	5	7

The starter sheet shows a pre-printed grid representing an 800 x 800 graphical display. Complete the programme by:

a. using the grid to plot the image produced by this programme; (8)
b. sketch, in the spaces below, a pattern made up of 4 tiles. (2)

Note: Do **not** colour in the pattern.

(Total: 10 marks)

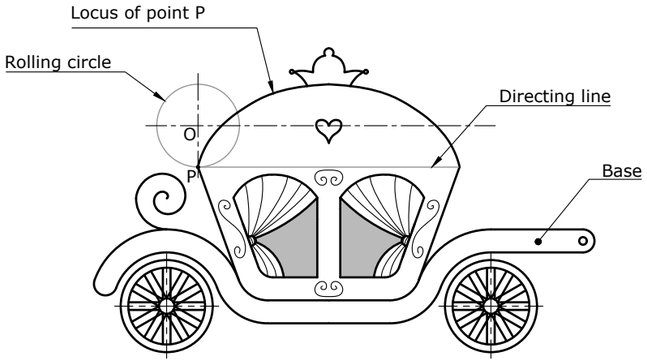


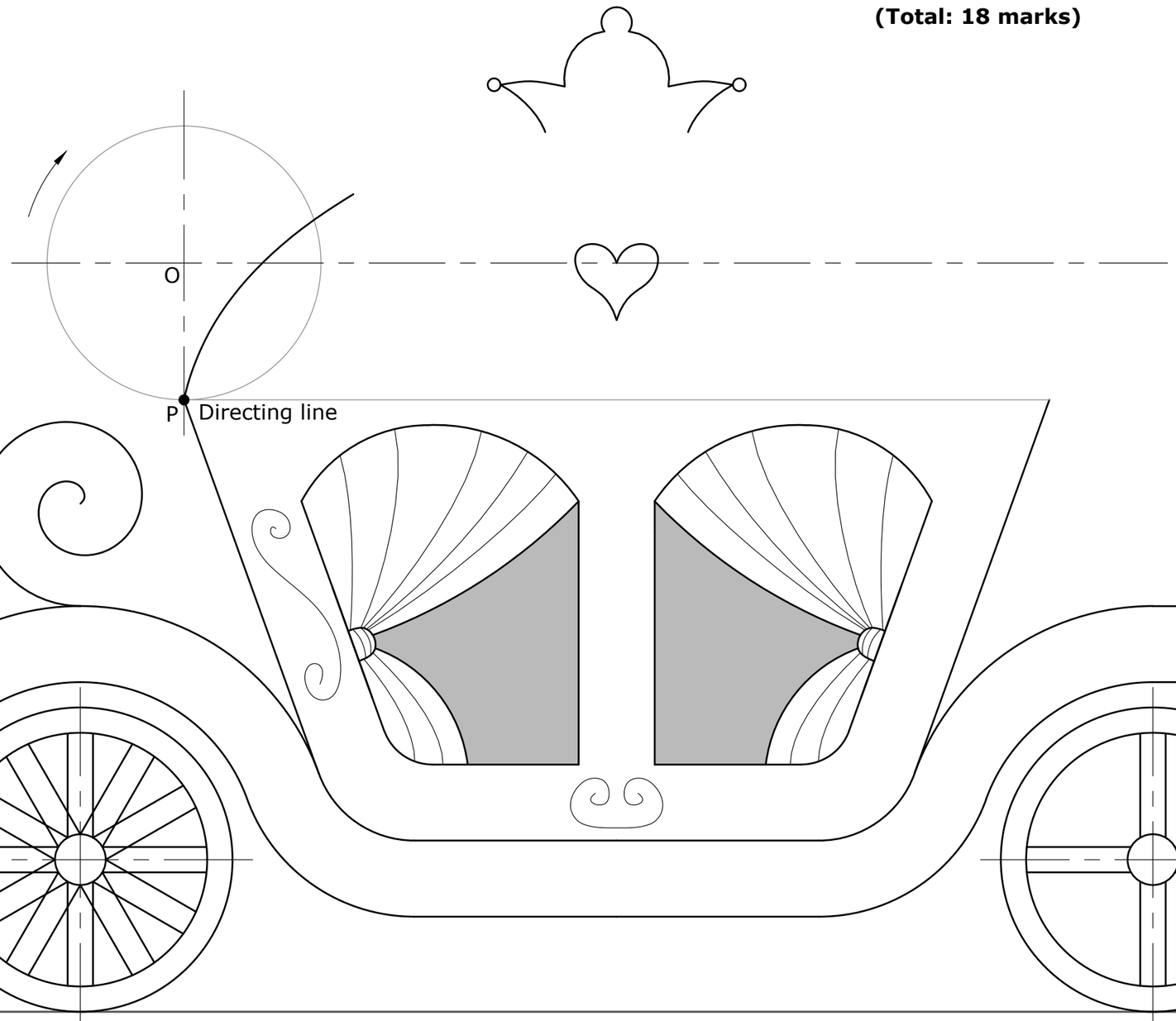
Question 2.
The profile of a toy fairy tale carriage is given on the right.

Using the given starting lines and dimensions:

a. draw the **EIGHT** missing spokes in the front wheel; (4)
b. complete the locus of point P, as circle center O rolls without slipping along the given directing line for one complete revolution; (6)
c. state and label the name of the curve generated; (3)
d. add the missing S-scroll and C-scroll decorations in freehand; (2)
e. render the base (material: wood). (3)

(Total: 18 marks)





Name of curve = _____

Front of carriage

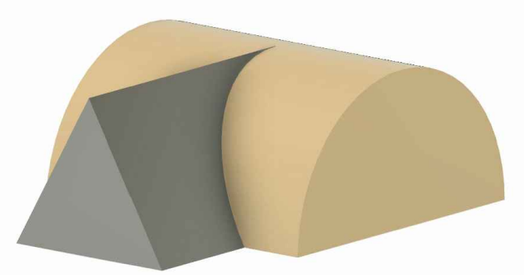
Question 3.

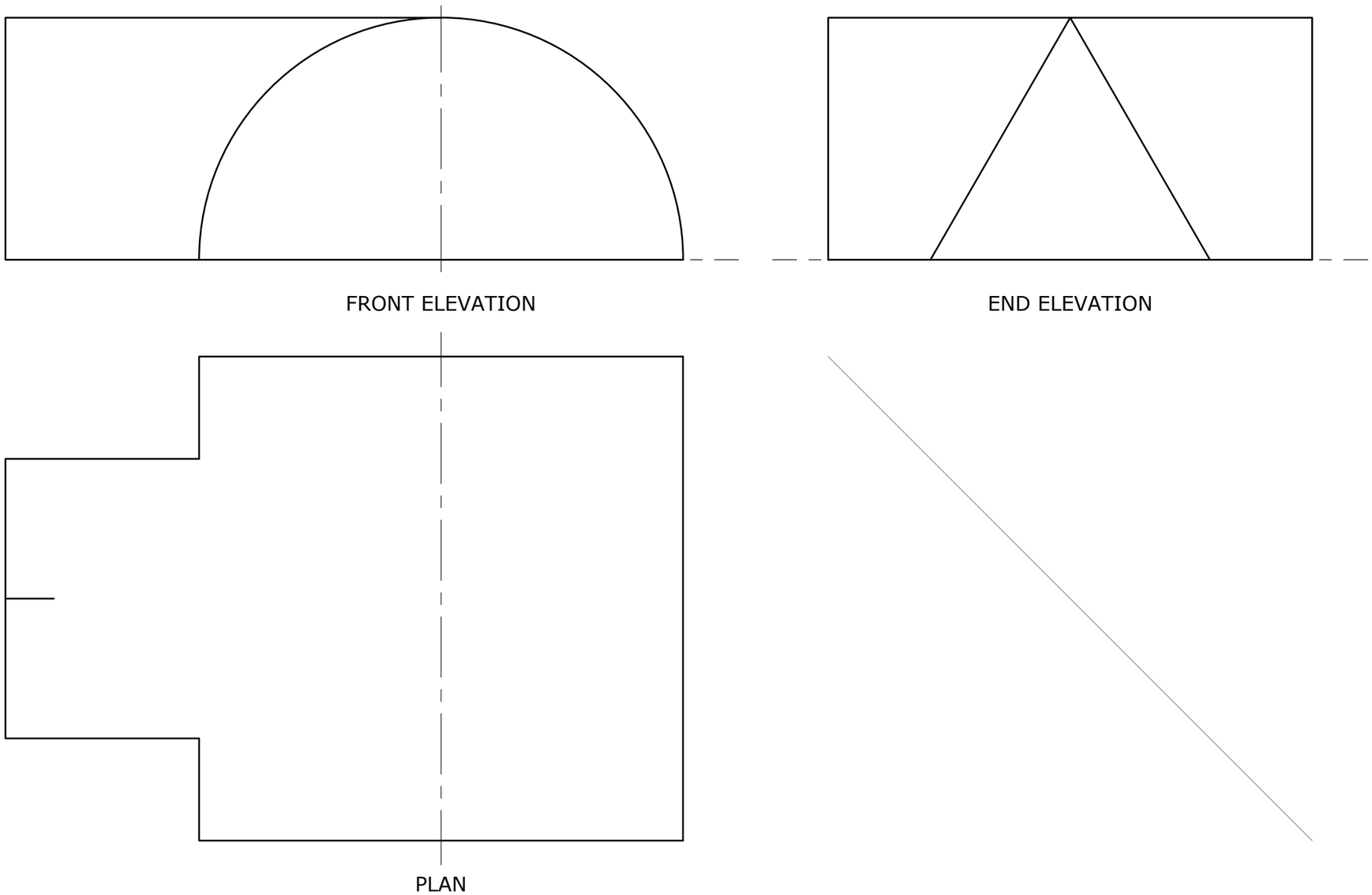
A pictorial view of a Nissen hut is shown on the right. The hut is made up of a semi-cylinder intersected by a triangular prism. Draw:

a. the lines of intersection and complete the plan; (8)

b. the hidden detail. (4)

(Total: 12 marks)

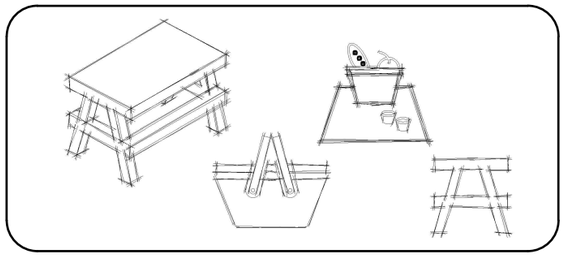




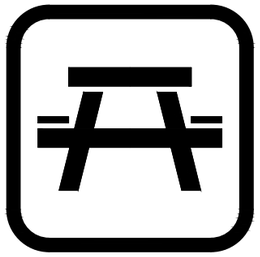
Question 4.
The management of a family park needs to design some graphic symbols.
The sketches and final symbol for a 'Picnic area' has been given.

Using the indicated spaces:
a. draw **ONE** or more sketches and **ONE** final symbol for 'Football pitch'; (4)
b. draw **ONE** or more sketches and **ONE** final symbol for 'Food kiosk'; (4)
c. shade lightly both final symbols. (4)

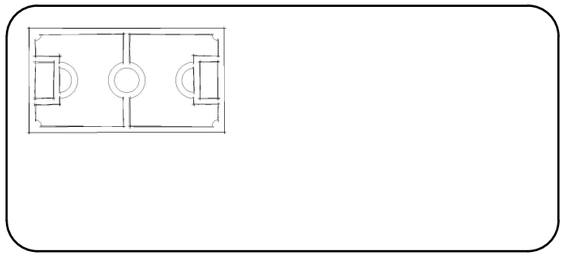
(Total: 12 marks)



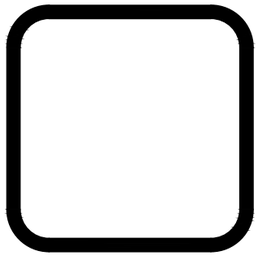
Sketches



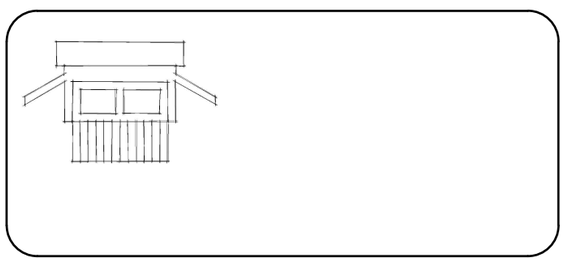
Picnic area



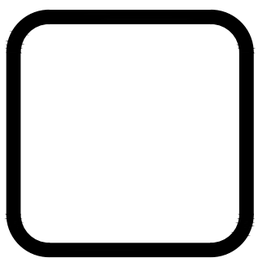
Sketches



Football pitch



Sketches

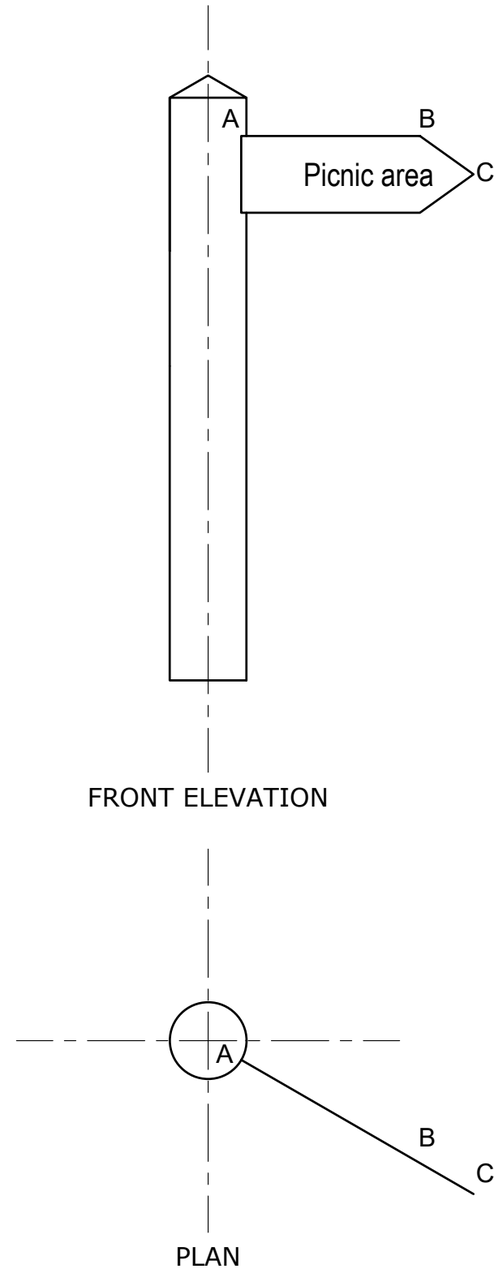


Food kiosk

Question 5.
A front elevation and plan of a playground wayfinding sign attached to a pole is given below.

Using the given starting lines and dimensions:
a. find the true lengths of the sides AB and BC; (8)
b. draw the true shapes of the sign. (4)

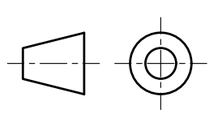
(Total: 12 marks)



True Lengths:

AB = ___mm

BC = ___mm



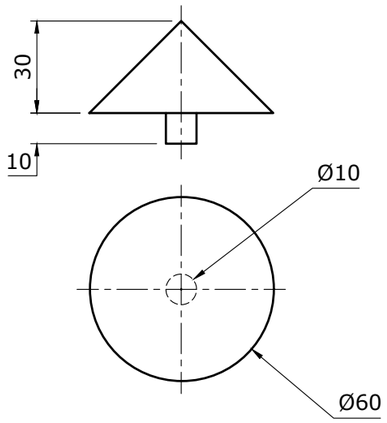
Question 6.

An exploded view of a toy windmill is shown on the right. Detail drawings of the separate parts and a parts list are given below. Use the given starting lines to draw: (a) front elevation and (b) plan of the assembled windmill.

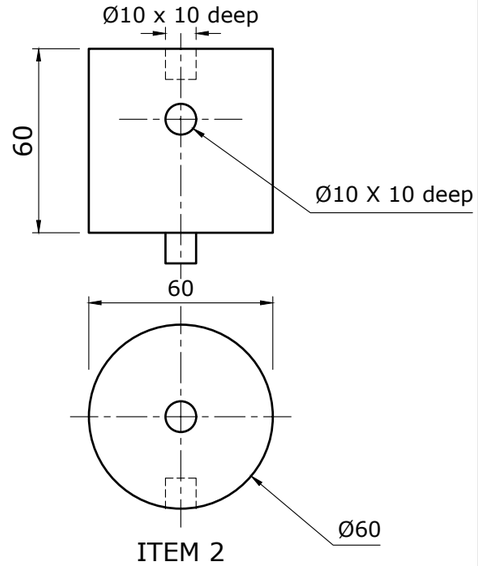
Note: Show hidden details.

(Total: 18 marks)

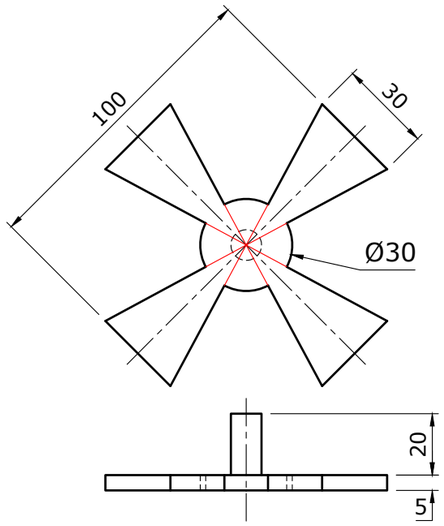
PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	CONE
2	1	CYLINDER
3	1	WINDMILL BLADES
4	1	FRUSTRUM



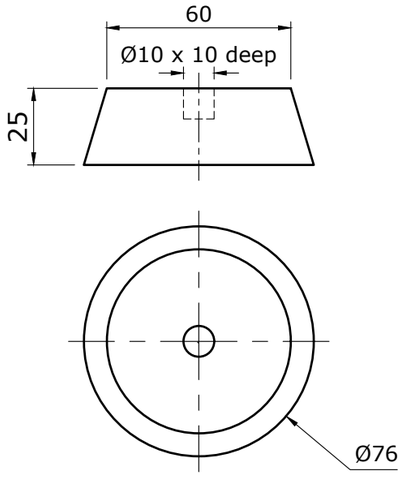
ITEM 1



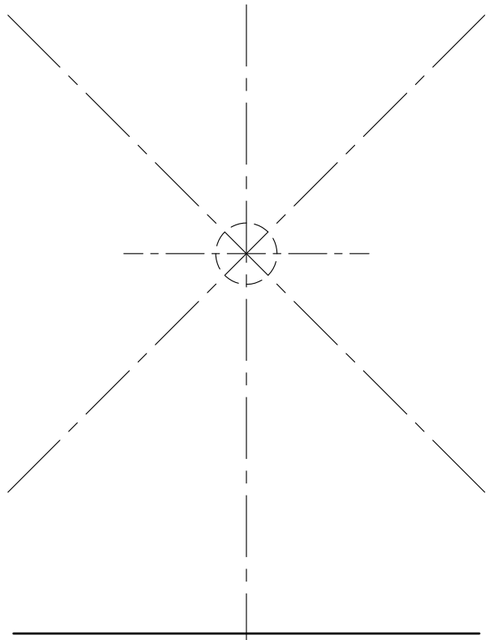
ITEM 2



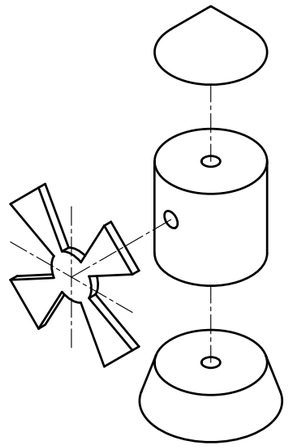
ITEM 3



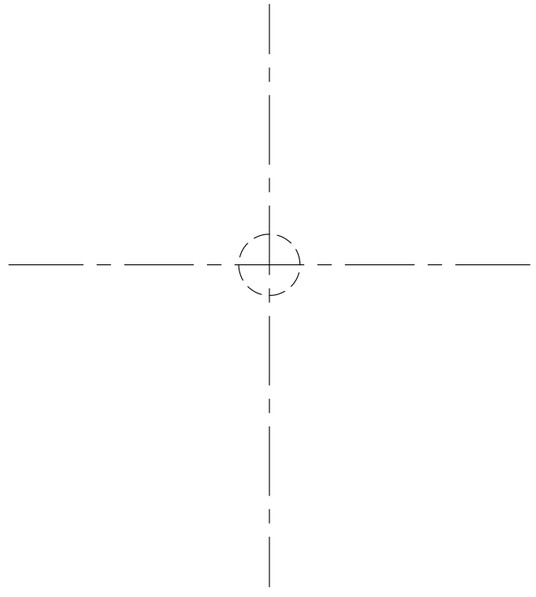
ITEM 4



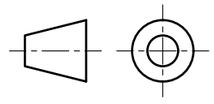
FRONT ELEVATION



(exploded view of the toy windmill)



PLAN

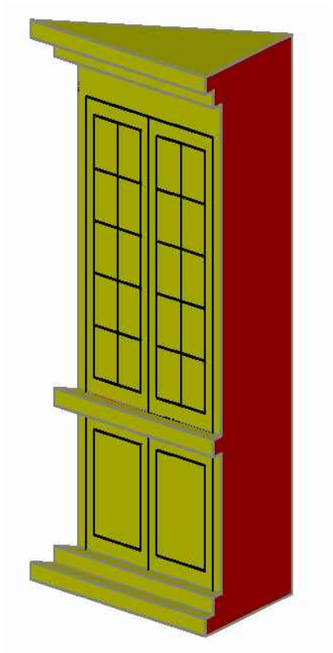


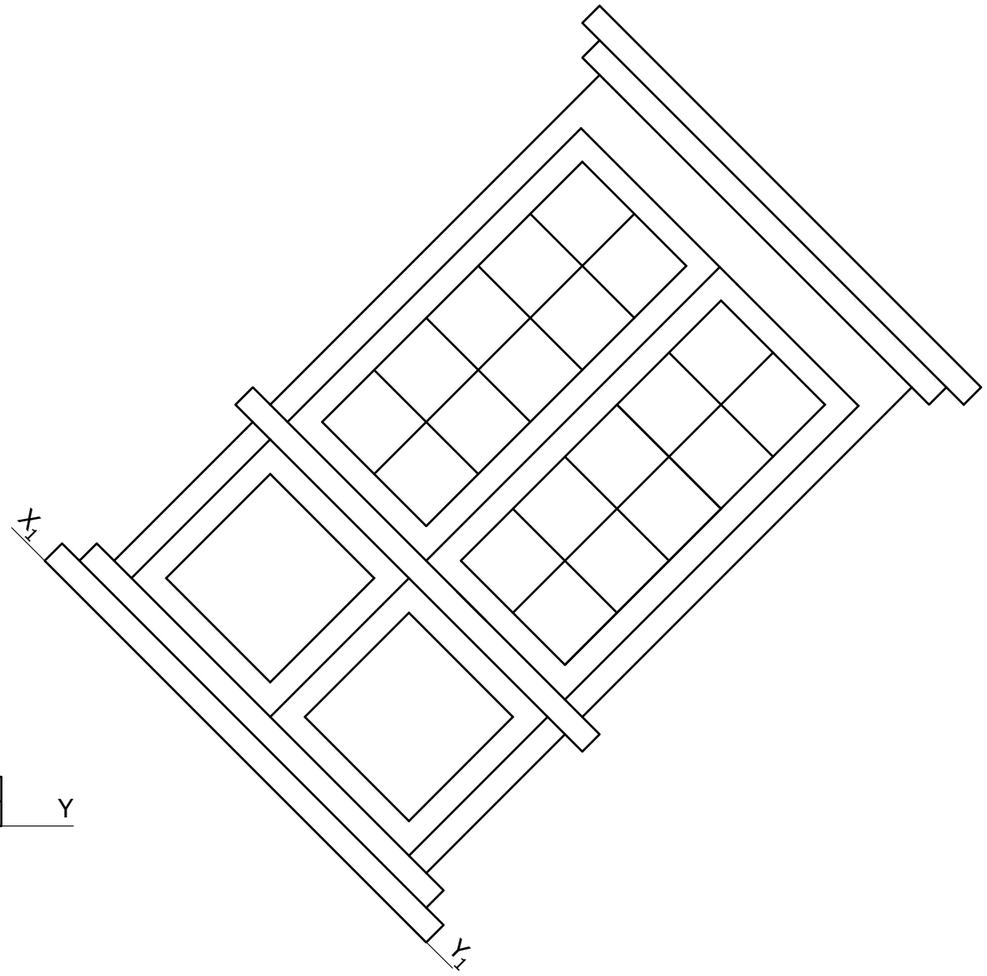
INDEX NUMBER : _____

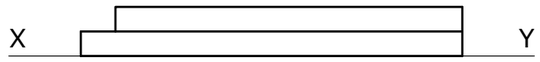
Question 7.

A pictorial projection of a corner cabinet is shown below. The plan and the auxiliary elevation, as seen from the direction of arrow A, on line X_1 - Y_1 are given. Complete the front elevation on line X - Y. The first two steps have been given.

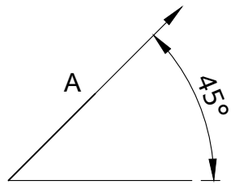
(Total: 18 marks)

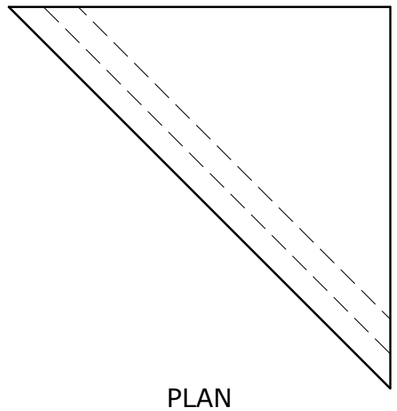






FRONT ELEVATION





PLAN