



Pre-Leaving Certificate Examination, 2011

***Design & Communication Graphics
Ordinary Level***

Section A (60 Marks)

Time: 3 Hours

This examination is divided into three sections:

- SECTION A (Core - Short Questions)
- SECTION B (Core - Long Questions)
- SECTION A (Applied Graphics - Long Questions)

- Four questions are presented.
- SECTION A** • Answer **any three** on the A3 sheet overleaf.
- All questions in Section A carry **20 marks** each.

- Three questions are presented.
- SECTION B** • Answer **any two** on drawing paper.
- All questions in Section B carry **45 marks** each.

- Five questions are presented.
- SECTION A** • Answer **any two** (i.e. the options you have studied) on drawing paper.
- All questions in Section C carry **45 marks** each.

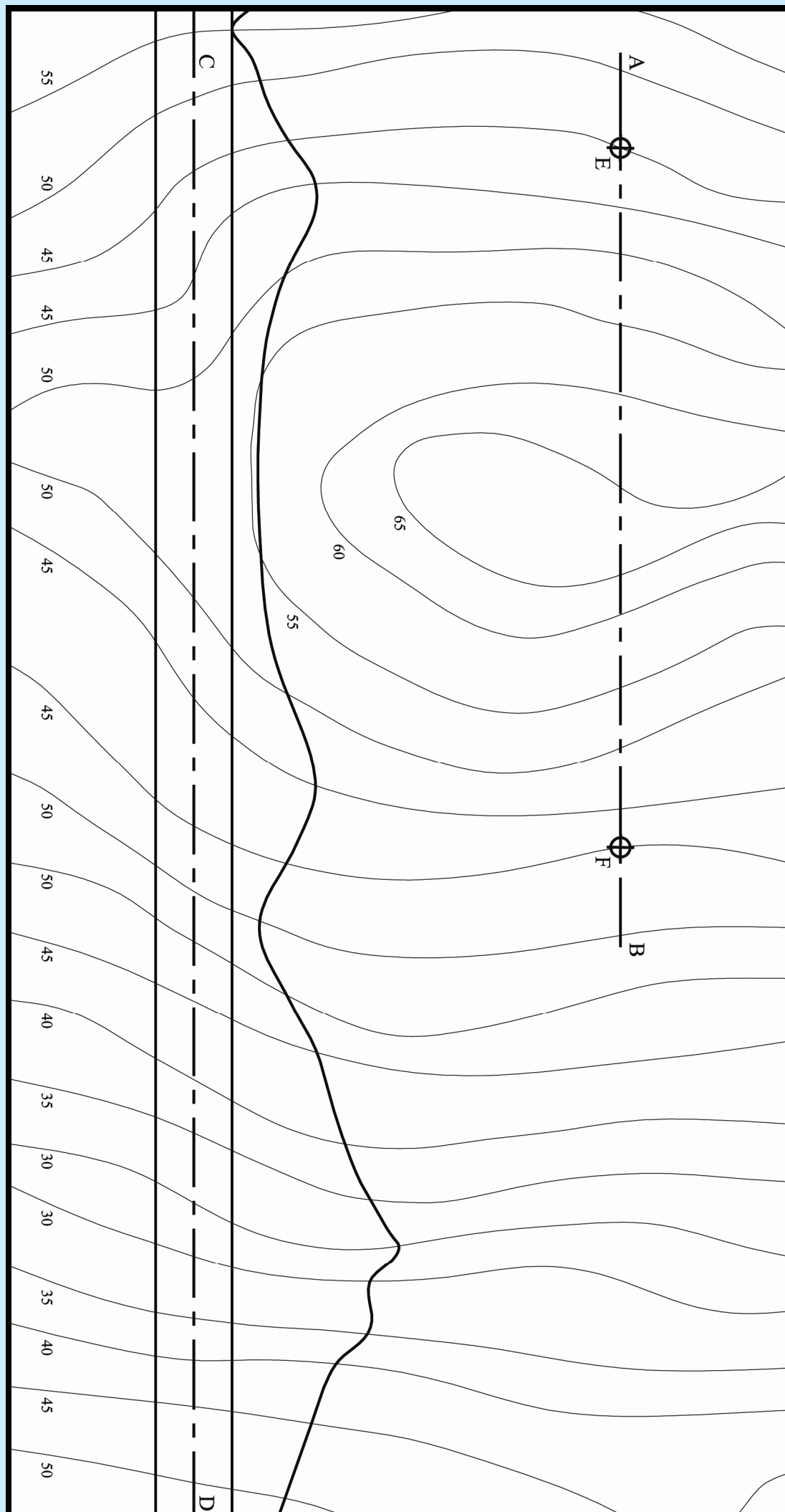
General Instructions:

- Construction lines must be shown on all solutions.
- Write the question number distinctly on the answer paper in Sections B and C.
- Work on one side of the drawing paper only.
- All dimensions are given in metres or millimetres.
- Write your name, school name and teacher name in the box below and on all other sheets used.

Name:

School Name:

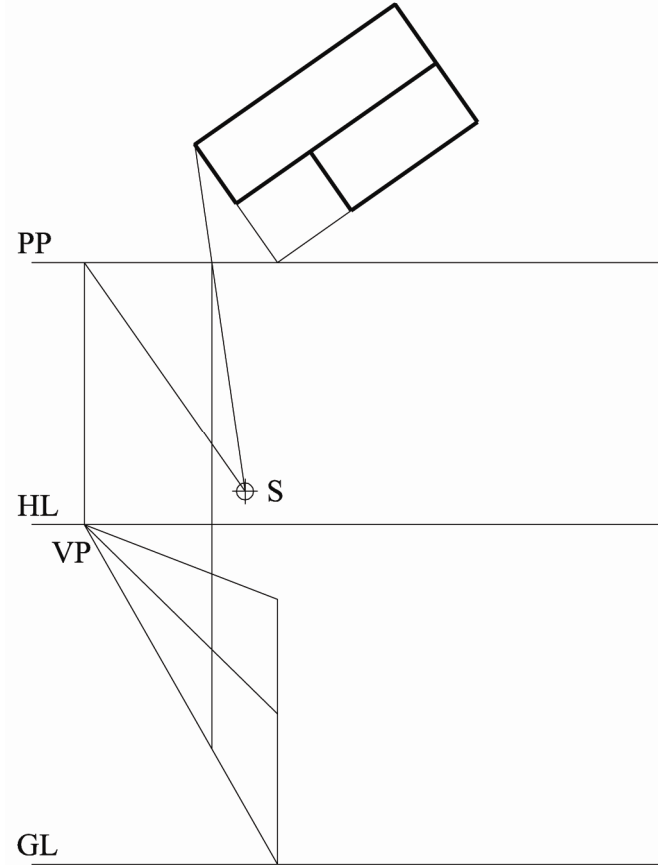
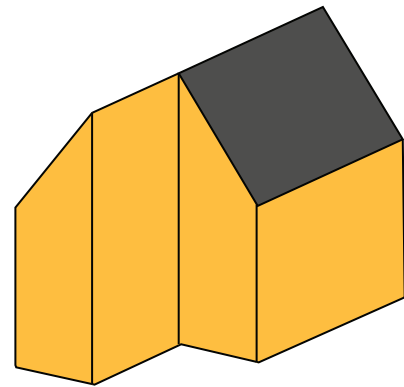
Teacher Name:



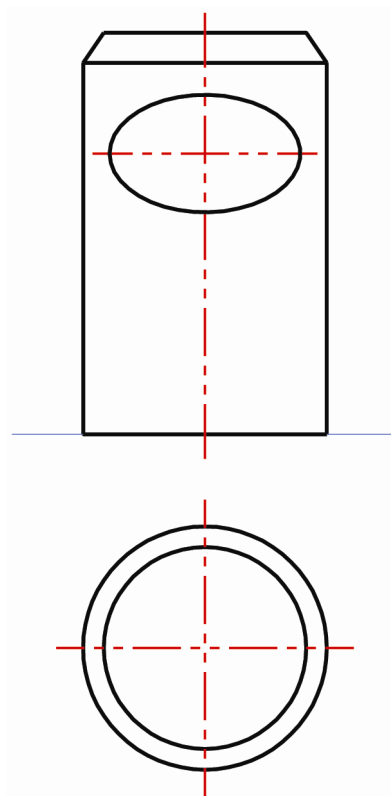
This Contour Map is part of Section C and should only be used for the answering of the Geologic Geometry Option (Question C-1).

SECTION A - Core - Answer Any Three of the questions on this A3 sheet

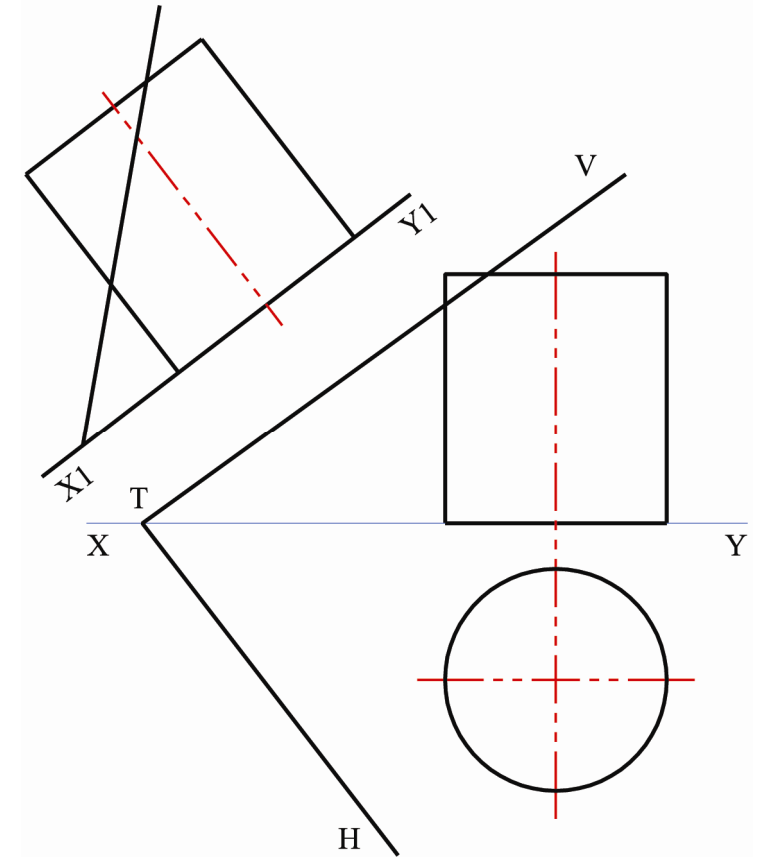
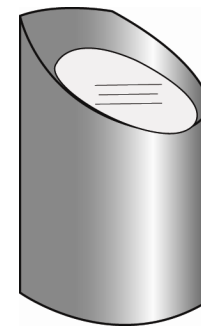
A-1. The drawing shows the plan and partially completed perspective drawing of a model house.
Find the second vanishing point and complete the perspective drawing.



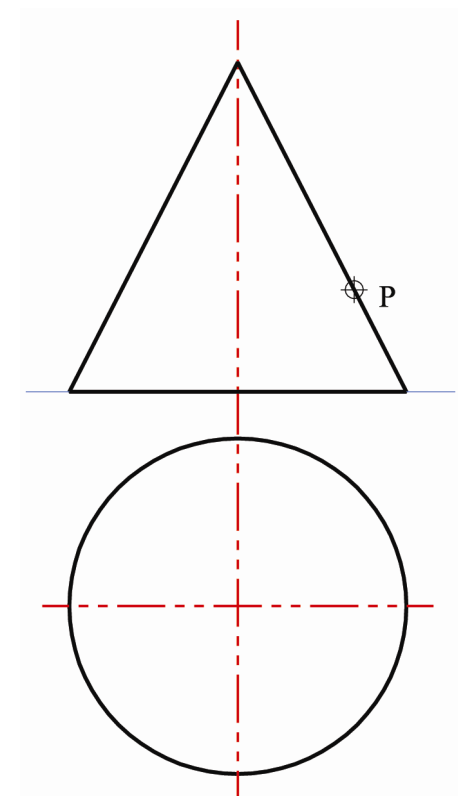
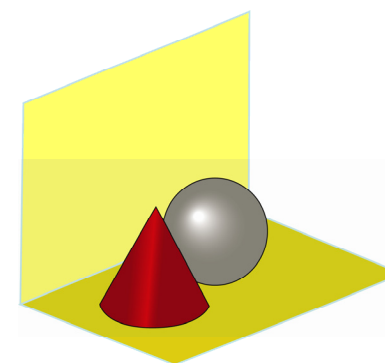
A-2. The 3D graphic below shows a litter bin.
It is based on a cylinder and the opening for the litter is elliptical as shown.
Draw an end view of the bin showing clearly how to find the outline of the opening.



A-3. The 3D graphic below shows a garden light.
The projections of a cylinder are shown on the right.
The cylinder is cut by the oblique plane VTH to form the light.
Complete the plan and elevation of the cut solid.



A-4. The 3D graphic below shows a cone and a sphere which are in contact and sitting on the horizontal plane.
The drawing on the right shows the elevation and plan of the cone. A point P on the curved surface of the cone is also shown in the elevation.
(a) Draw the plan of point P.
(b) Draw the elevation and plan of the sphere which is in contact with the cone at the point P and rests on the horizontal plane.



Pre-Leaving Certificate Examination, 2011

***Design & Communication Graphics
Ordinary Level***

Section B and C (180 Marks)

Time: 3 Hours

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This examination is divided into three sections:

SECTION A (Core - Short Questions)
SECTION B (Core - Long Questions)
SECTION C (Applied Graphics - Long Questions)

- SECTION A**
- Four questions are presented.
 - Answer **any three** on the accompanying A3 examination paper.
 - All questions in Section A carry **20 marks** each.

- SECTION B**
- Three questions are presented.
 - Answer **any two** on drawing paper.
 - All questions in Section B carry **45 marks** each.

- SECTION C**
- Five questions are presented.
 - Answer **any two** (i.e. the options you have studied) on drawing paper.
 - All questions in Section C carry **45 marks** each.

General Instructions:

- *Construction lines must be shown on all solutions.*
- *Write the question number distinctly on the answer paper in Sections B and C.*
- *Work on one side of the paper only.*
- *All dimensions are given in metres or millimetres.*
- *Write your name, school name and teacher name in the box provided on Section A and on all other sheets used.*

SECTION B - Core

Answer **Any Two** questions from this section on drawing paper

B-1. The graphic on the right shows a conservatory at the rear of a house.

Fig. B-1 below shows the elevation, plan and end view of the conservatory.

The plan of the conservatory is based on an octagon.

- (a) Draw the given plan, elevation and end view of the conservatory.
- (b) Draw an auxiliary elevation of the **conservatory**, projected from the plan, which will show the true shape of surface A of the conservatory.

Scale 1:50



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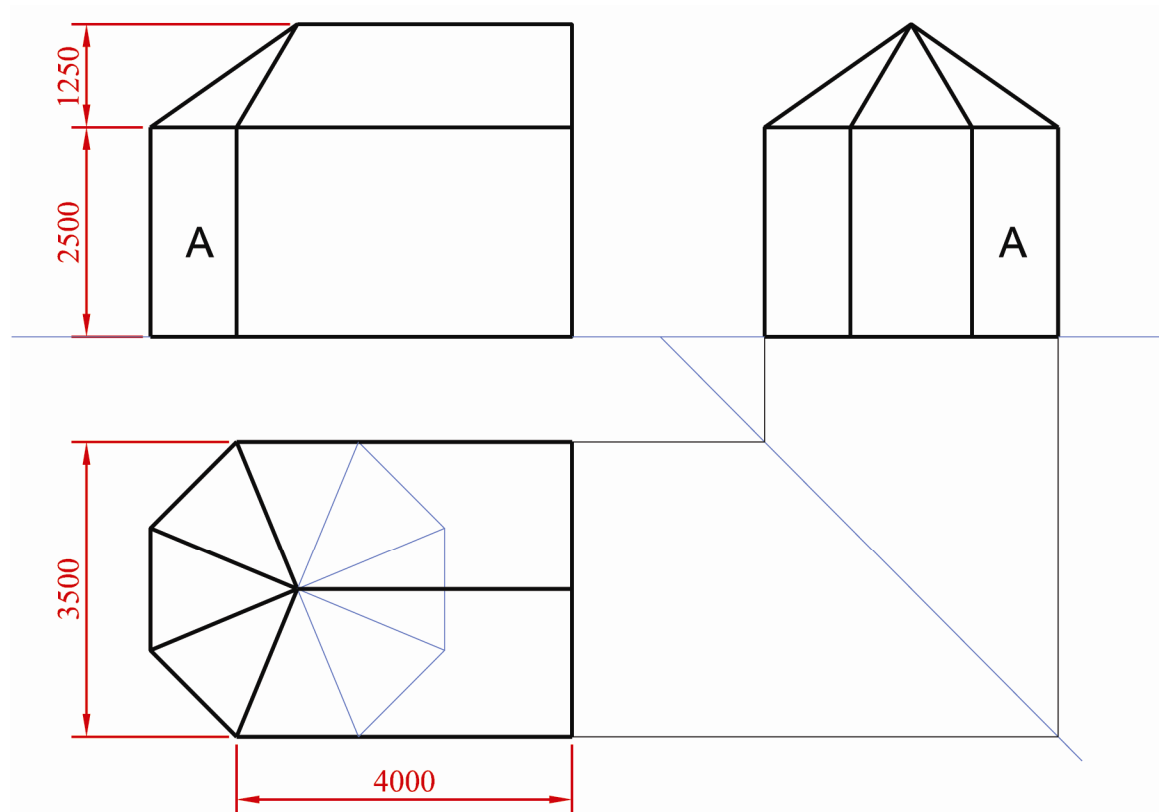


Fig. B-1

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- B-2.** The 3D graphic on the right shows a model of a trophy.
Fig. B-2 shows the plan and elevation of the trophy.
- (a) Draw the isometric axes.
 - (b) Draw the elevation and plan in their correct positions relative to the axis.
 - (c) Draw the axonometric projection of the trophy.

Scale 1:1

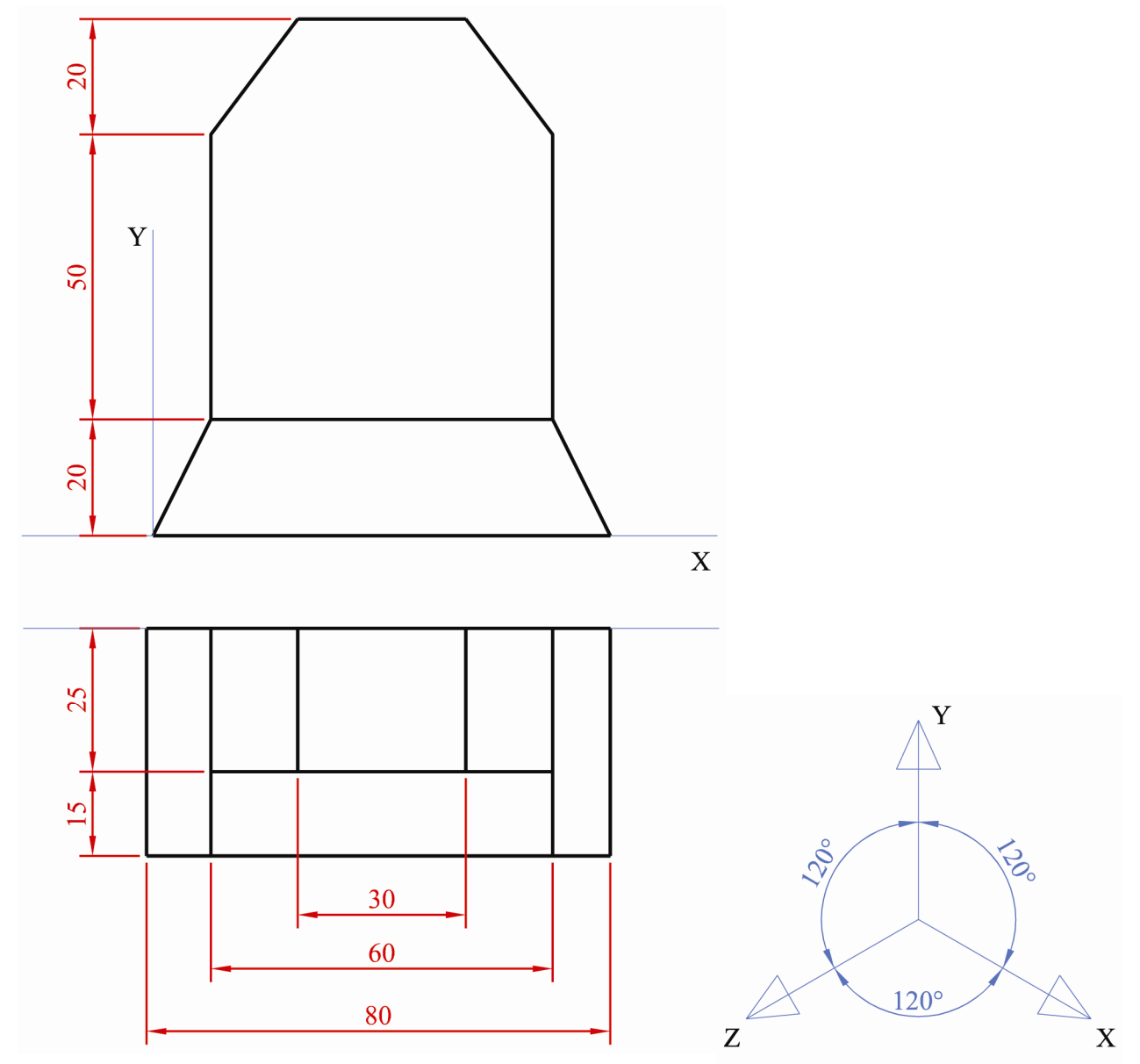
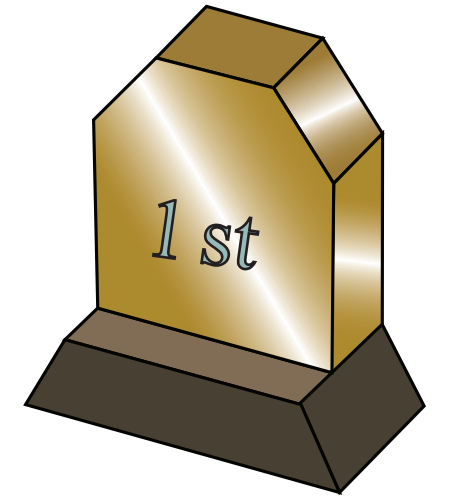


Fig. B-2

B-3. The 3D graphic on the right shows a design for a rugby club entrance sign.

Fig. B-3 shows the elevation and end view of the entrance sign.

The base of the sign is a parabola and the top portion is based on an ellipse.

- (a) Draw the given elevation and end view.
- (b) Project a plan.

Scale 1:10

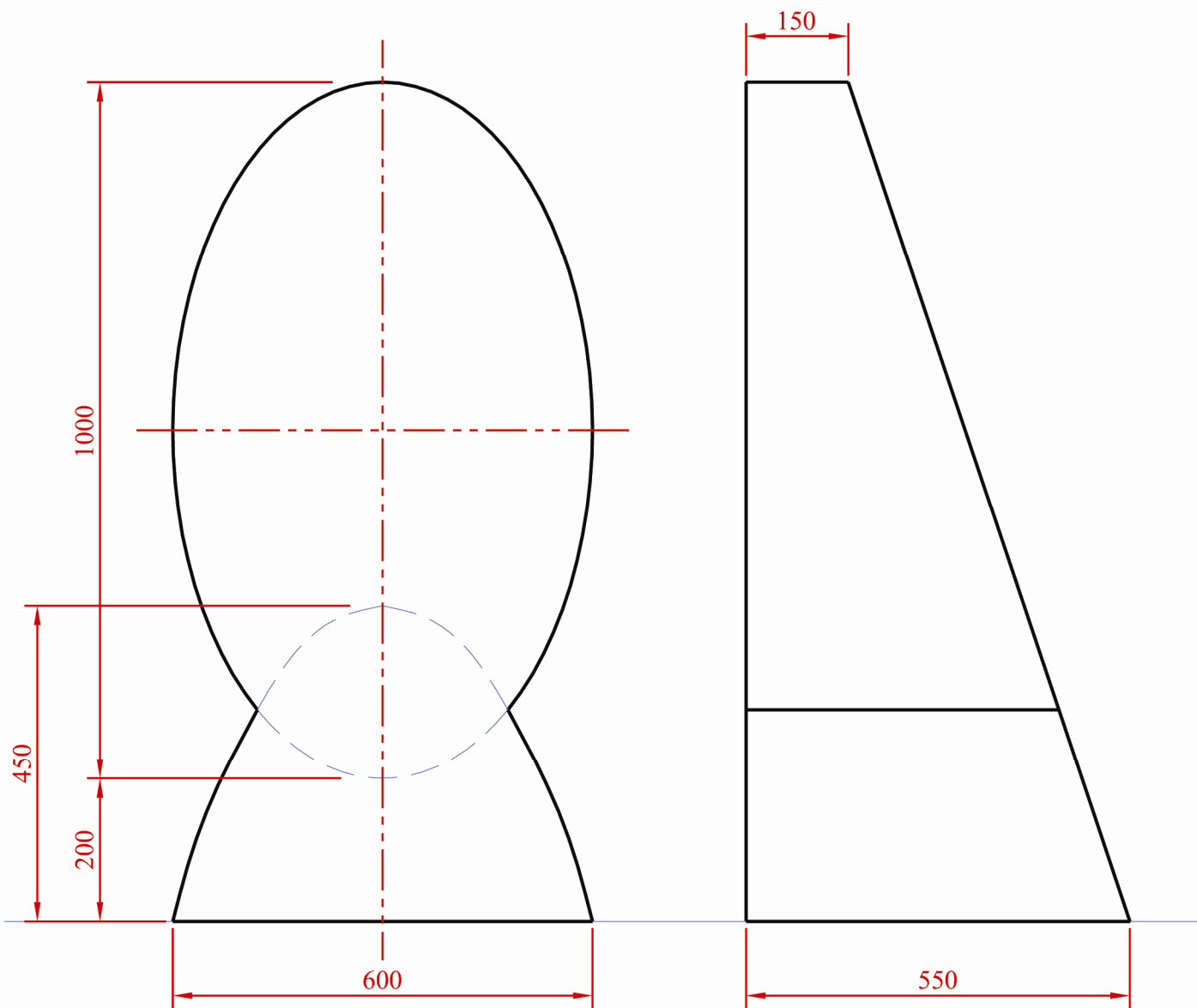
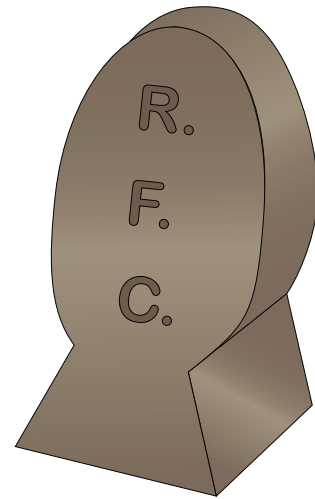


Fig. B-3

Assemblies

C-5. The photograph on the right shows a folding bathroom mirror.

Details of the Mirror are given in Fig. C-5 with the parts list tabulated below.

Draw a sectional elevation A-A of the assembled parts when the mirror is in a vertical position.
(Any omitted dimensions may be estimated.)



Scale 1:1

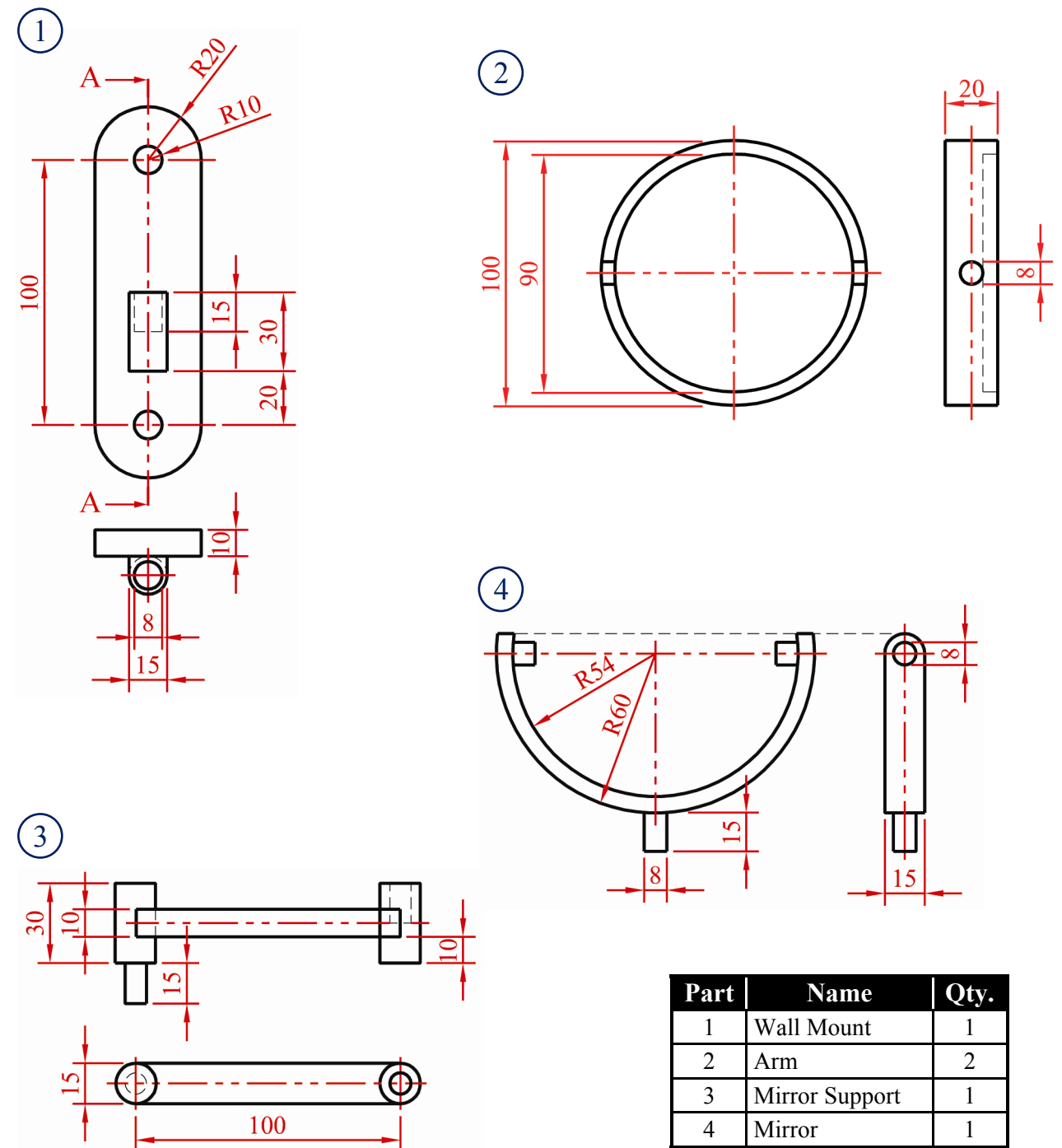


Fig. C-5

Dynamic Mechanisms

C-4. (a) The 3D graphic on the right shows the wheel of a car.

In Fig. C-4(a) below, circle C represents the outline of the wheel. In the diagram circle C rolls clockwise along the line LL_1 for one full revolution.

Plot the locus of point P for this movement.

Scale 1:4

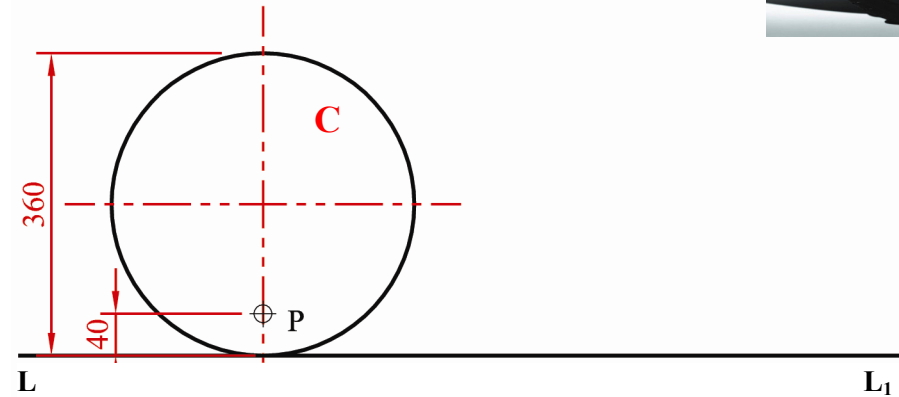


Fig. C-4(a)

(b) The 3D graphic on the right shows an iced cake with a ribbon.

Fig. C-4(b) below shows the plan of the cake. The ribbon is to be cut at point R and unwound in a clockwise direction.

Show the involute of the point R for one revolution.

Scale 1:10

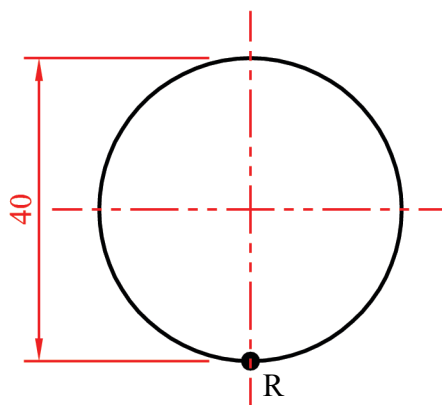


Fig. C-4(b)

SECTION C - Applied Graphics

Answer **Any Two** questions (i.e. the options you have studied) from this section on drawing paper

Geologic Geometry

C-1. The accompanying map, located on the back page of Section A, shows ground contours at five metre vertical intervals.

(a) On the drawing supplied, draw a vertical section (profile) on the line AB.

(b) CD is the centreline of a proposed roadway which is level at an altitude of 55m.

Using side slopes of 1 in 1 for the embankments, complete the earthworks necessary to accommodate the roadway.

(Note: The earthworks on the northern side of the roadway have already been completed)

(c) An observation tower is to be built at F. Determine the minimum height for the tower if the ground at E is to be visible from the top tower.

Scale 1:1000

Structural Forms

C-2. A number of vases are shown on the right.

Both are in the form of a hyperboloid of revolution sitting on a portion of a sphere.

Fig. C-2 below shows the plan and elevation of one of the vases.

- Show graphically how to find the radius of the sphere.
- Complete the elevation of the vase.
- Draw the plan of the vase.

Scale 1:4

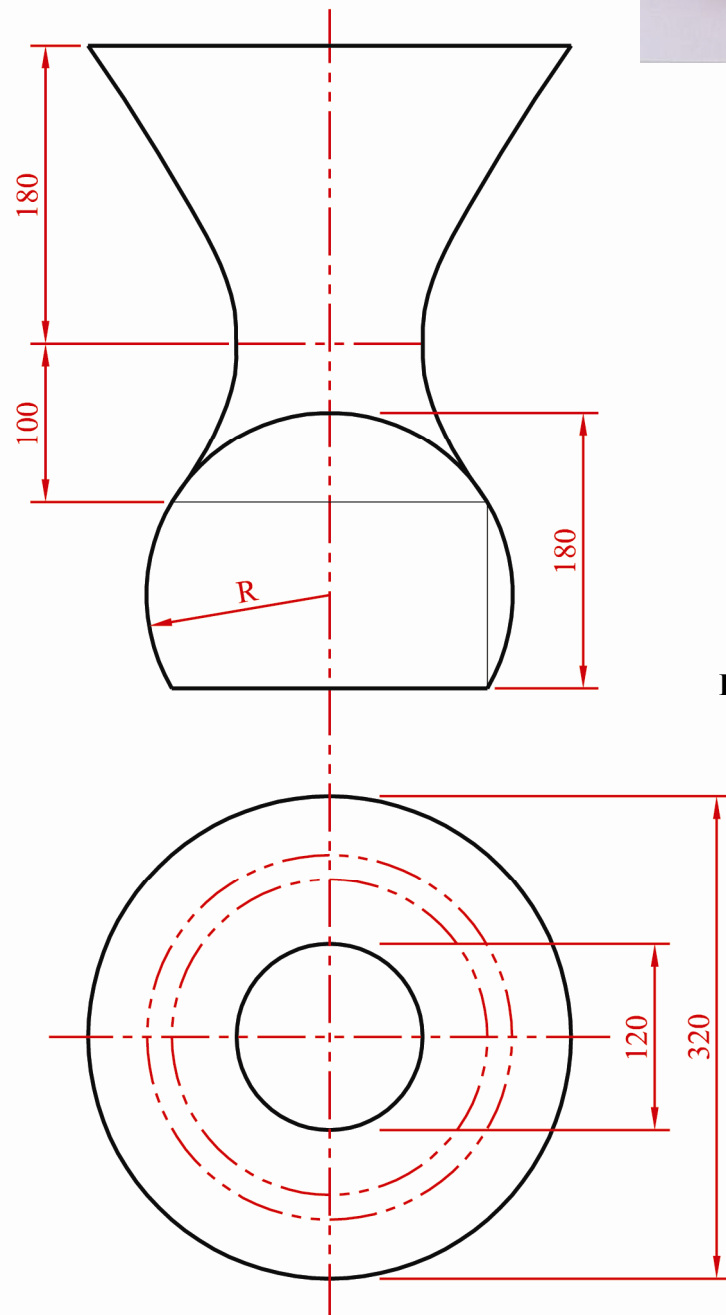


Fig. C-2

Surface Geometry

C-3. The photograph on the right shows two lamps.

The plan, elevation and end view of one of the lampshades are shown in Fig. C-3.

Each of the sloping surfaces of the lampshade is inclined at seventy degrees to the horizontal plane.

- Draw the given plan and elevation.
- Determine the dihedral angle between surfaces B and C.
- Draw a one piece surface development of the surfaces A, B, C and D.

Scale 1:2

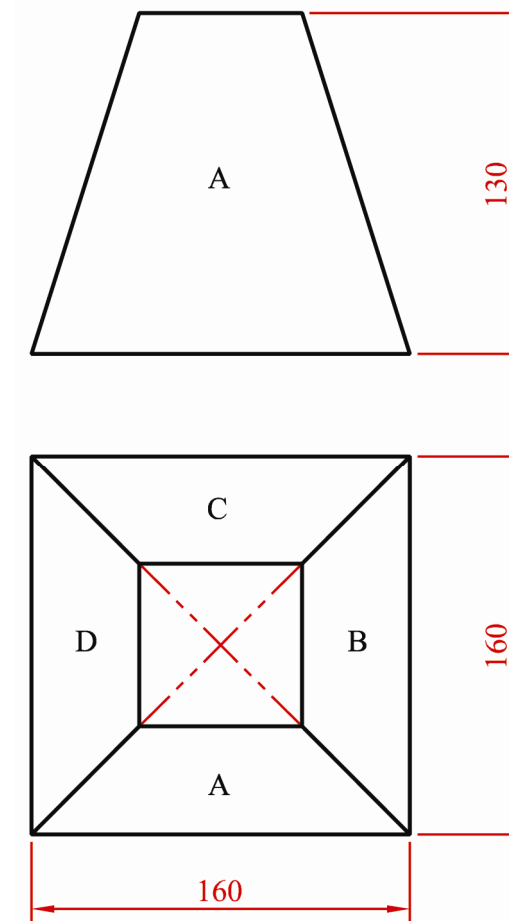


Fig. C-3

Pre-Leaving Certificate Examination, 2012

***Design & Communication Graphics
Ordinary Level***

Sections B and C (180 marks)

Time: 3 Hours

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SECTION B (Core - Long Questions)
SECTION C (Applied Graphics - Long Questions)

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- Four questions are presented.
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- SECTION C**
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 - All questions in Section C carry **45 marks** each.

General Instructions:

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- *Work on one side of the drawing paper only.*
- *All dimensions are given in metres or millimetres.*
- *Write your name, school name and teacher name in the box provided on Section A and on all other sheets used.*

SECTION B - Core

Answer **Any Two** questions from this section on drawing paper

B-1. The 3D graphic on the right shows a coal bunker.

Fig. B-1 below shows the plan and elevation of a model of the coal bunker.

- (a) Draw the given plan and elevation.
- (b) Draw an auxiliary elevation of the *coal bunker*, projected from the plan in the direction of arrow A.



Scale 1:1

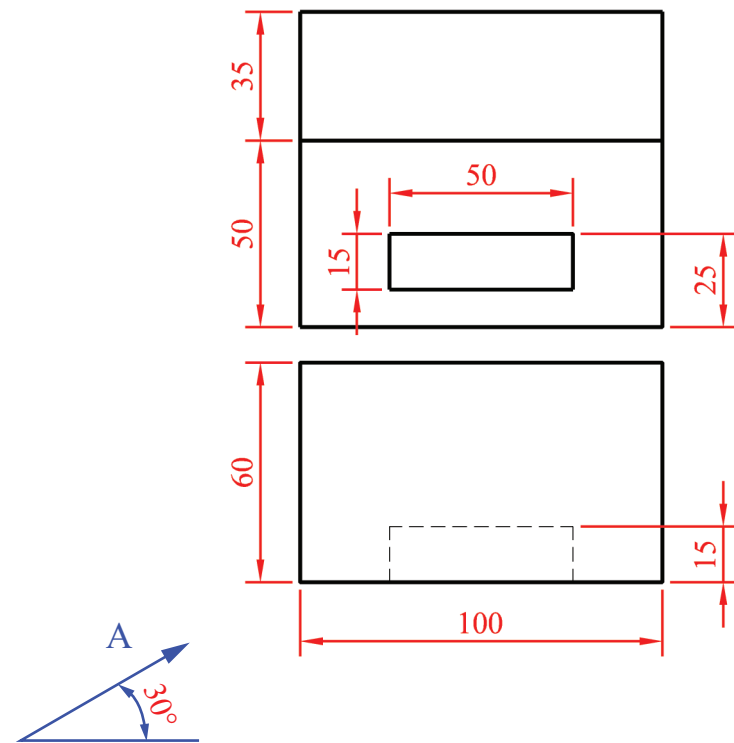


Fig. B-1

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B-2. The 3D graphic on the right shows a model house with a solar panel.

Fig. B-2 shows the plan and elevation of a portion of the house including the solar panel.



Make a perspective drawing of the house given the following:

- The picture plane passes through corner **A**
- The spectator point is 360mm from corner **A**
- The horizon line is 300mm above the ground line.

Scale 1:4

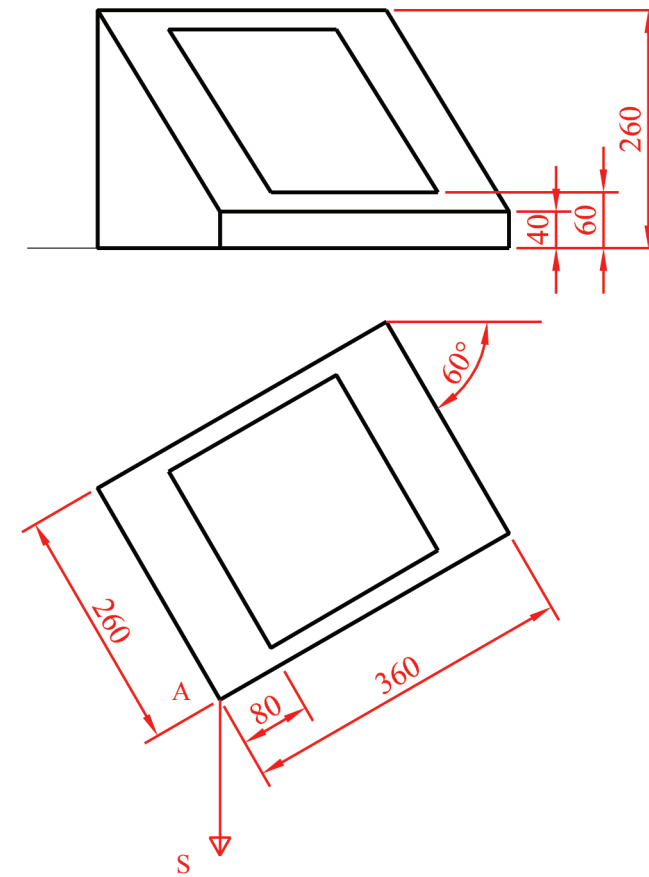


Fig. B-2

B-3. The 3D graphic on the right shows an Easter egg box. It is hexagonal in shape with a hole cut through it as shown.

Fig. B-3 shows the elevation and plan of the box.

- (a) Draw the given plan and elevation of the box.
- (b) Project an end elevation of the box which will include the outline of the hole.



Scale 1:1

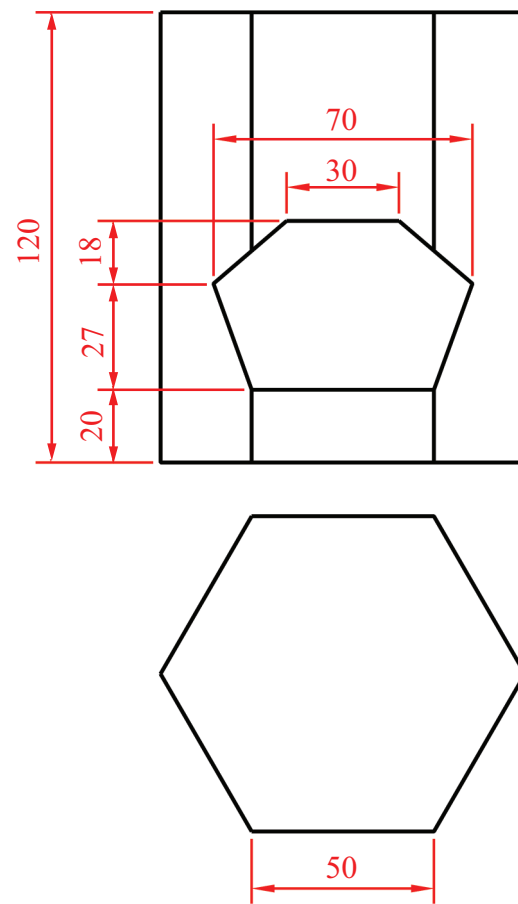


Fig. B-3

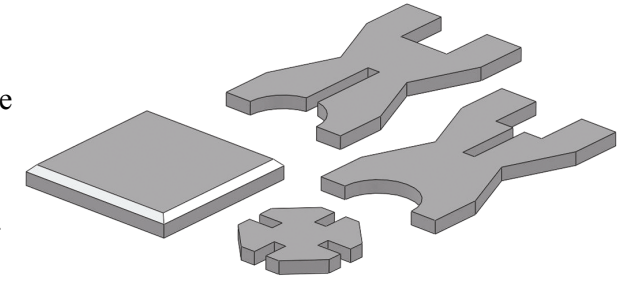
Assemblies

C-5. The 3D graphic on the right shows the individual parts which are used to form a concrete Garden Table.

Details of the Garden Table are given in Fig. C-5 with the parts list tabulated below.

The outline of the shelf is a regular octagon.

Draw the elevation, plan and sectional elevation A-A₁ of the Garden Table.



Scale 1:10

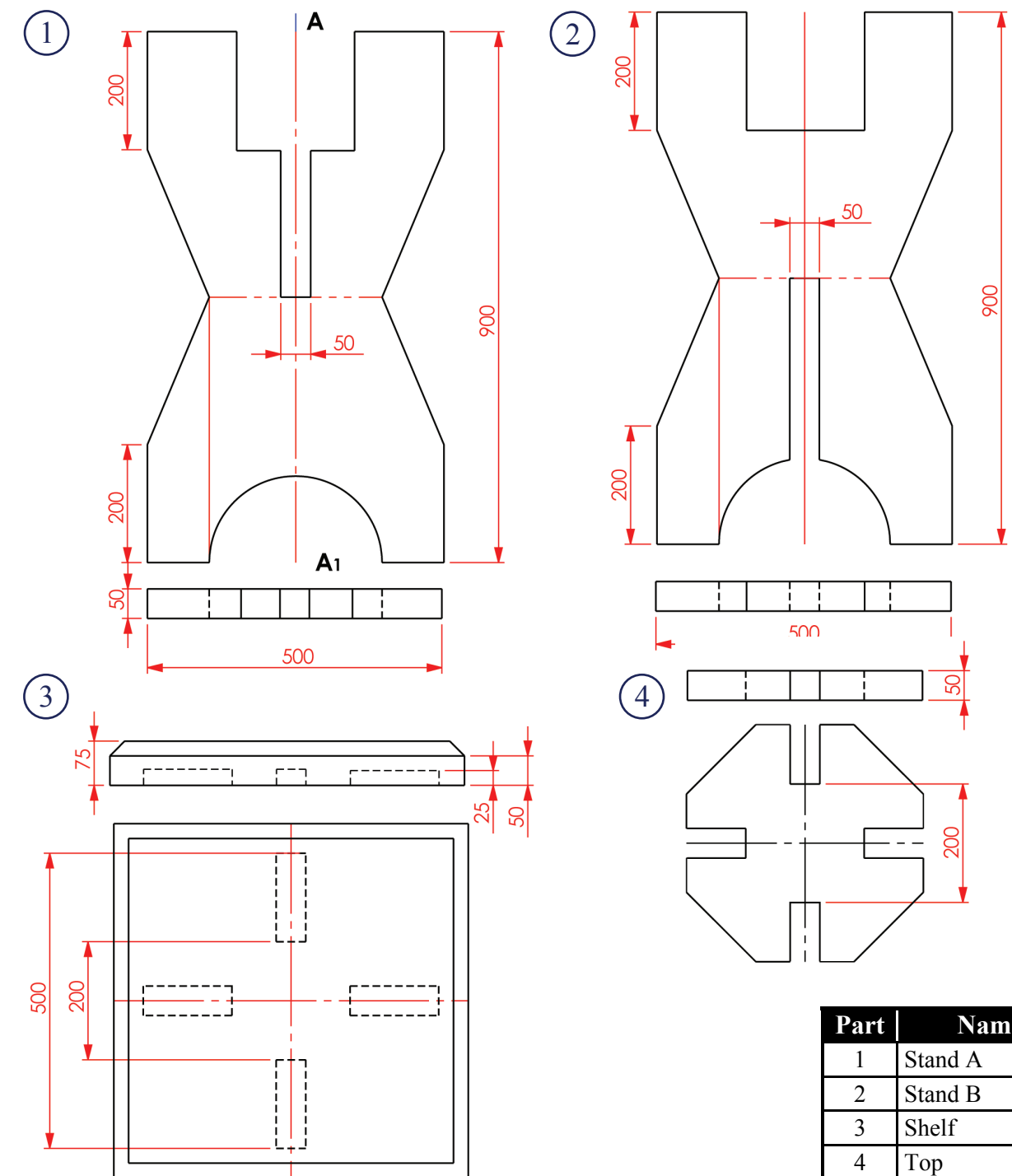


Fig. C-5

Part	Name	Qty.
1	Stand A	1
2	Stand B	1
3	Shelf	1
4	Top	1

Dynamic Mechanisms

- C-4. (a)** The graphic on the right shows a pull-along train. A rotating cam causes the chimney to move up and down as the train rolls along.

The cam imparts the following motion to the follower:

- 0° to 120° SHM rise of 45mm
- 120° to 210° Dwell
- 210° to 360° UV fall of 45mm



Draw the displacement diagram.

Note: It is not necessary to draw the outline of the cam.

- (b)** The graphic below shows a curved building. The plan and elevation of the lower portion of the building are shown in Fig. C-4(b).

A spiral staircase is to be installed on the outside curved surface of the building. It is proposed to follow a helical path to maintain gradient, to travel from top to bottom in two revolutions and to pass through the access point A.

Show the projections of the helix.

Scale 1:20

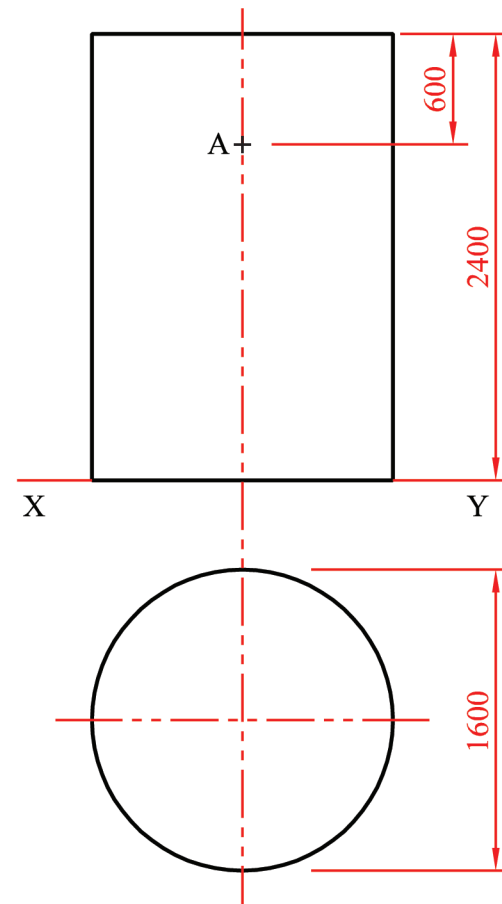


Fig. C-4(b)

SECTION C - Applied Graphics

Answer **Any Two** questions (i.e. the options you have studied)
from this section on drawing paper

Geologic Geometry

- C-1.** The accompanying map, located on the back page of Section A, shows ground contours at five metre vertical intervals.

(a) On the drawing supplied, draw a vertical section (profile) on the line **AB**.

(b) **CD** is the centreline of a proposed roadway which is level at an altitude of 50m.

Using side slopes of 1 in 1 for the cuttings, complete the earthworks, on the northern side, necessary to accommodate the roadway.

(Note: The earthworks on the southern side of the roadway have already been completed.)

(c) **E, F** and **G** are outcrop points on the surface of the stratum of ore. Determine the strike of the stratum.

Scale 1:1000

Structural Forms

C-2. The photograph on the right shows a building. Its roof is in the form of a hyperbolic paraboloid.

Fig. C-2 below shows the plan and elevation of the roof.

- Draw the given plan and elevation of the hyperbolic paraboloid surface.
- Project an end view of the hyperbolic paraboloid surface.



Scale 1:100

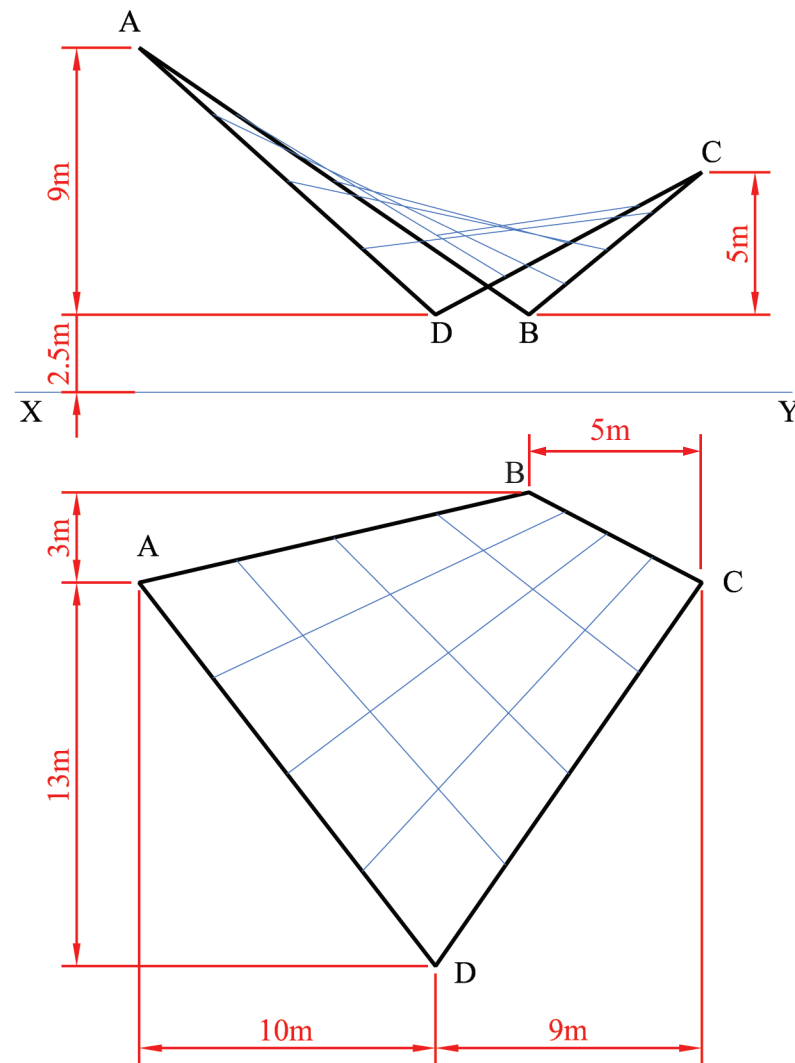


Fig. C-2

Surface Geometry

C-3. The 3D graphic on the right shows a litter bin.

The plan and elevation of the litter bin are shown in Fig. C-3.

- Draw the given plan and elevation of the litter bin.
- Draw a one-piece surface development of the litter bin.
- Draw and indicate in millimetres, the minimum size of a rectangular sheet which would contain the development.



Scale 1:4

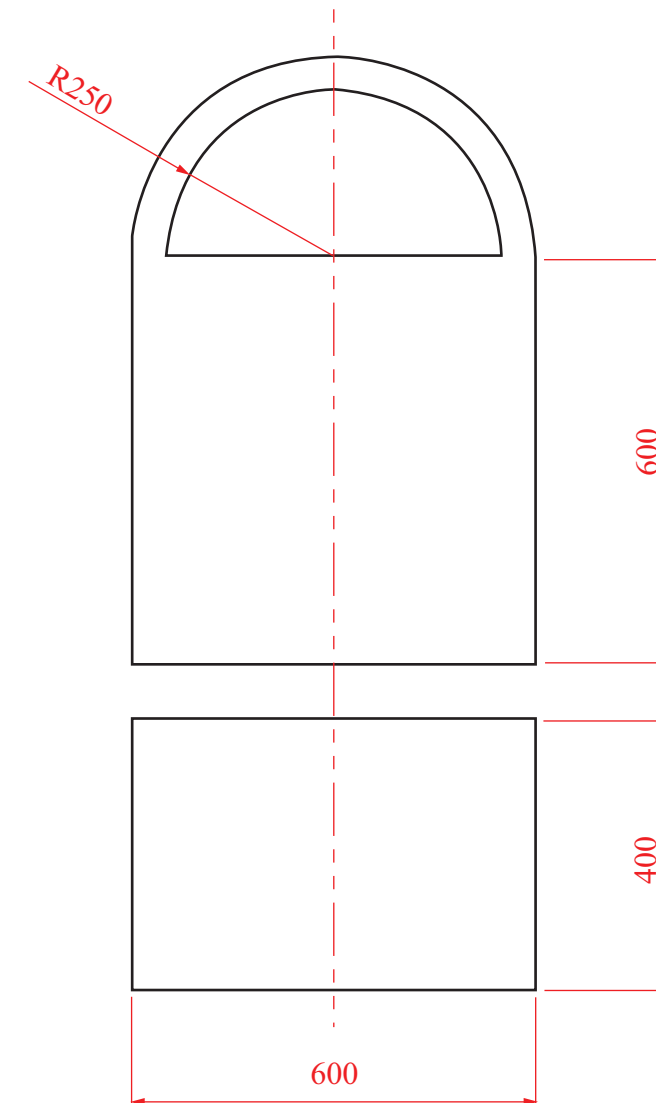


Fig. C-3