

**JUNIOR LYCEUM and SECONDARY SCHOOL  
ANNUAL EXAMINATIONS 2007**

Educational Assessment Unit - Education Division

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**FORM 5**

**TECHNICAL DESIGN**

**Time: 2 hours**

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**Instructions**

Write your name and class on ALL sheets.

Attempt ALL questions.

Questions should be attempted on the pre-printed answer sheets provided.

All answers are to be drawn accurately, with instruments, unless otherwise stated.

All construction lines MUST be left on each solution to show the method used.

Drawing aids may be used.

**Information**

All dimensions are in millimetres.

Estimate any dimensions not given.

Marks will be awarded for accuracy, clarity and appropriateness of construction.

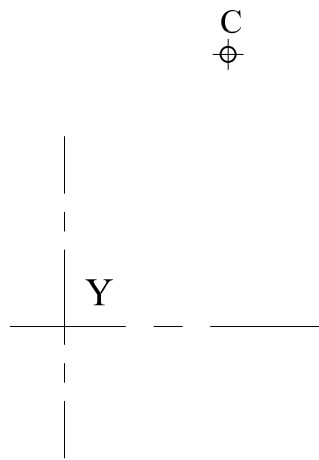
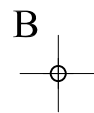
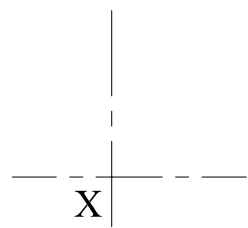
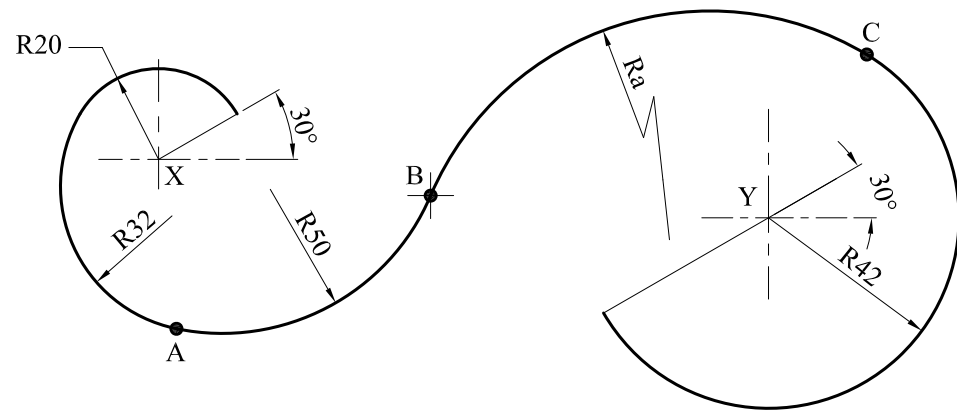
**NAME:** \_\_\_\_\_

**CLASS:** \_\_\_\_\_

Question No.	1	2	3	4	5	6
Total mark	15	15	15	15	20	20
Marks awarded						

1. The figure below shows part of the decoration for a wrought iron gate.  
Construct the scroll shown, by determining the unknown centres and the radius  $R_a$ .  
The given points A, B and C are common tangential points.  
Enter radius  $R_a$  in the space provided below.

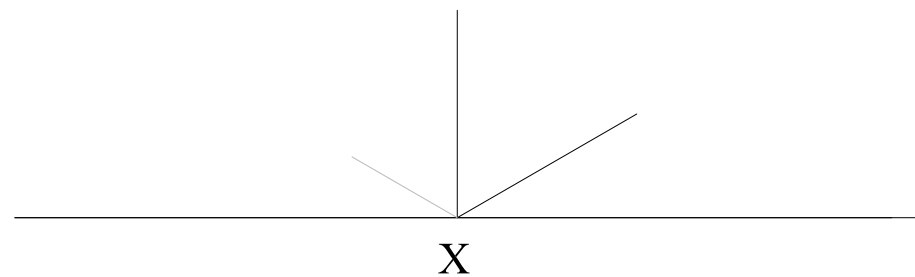
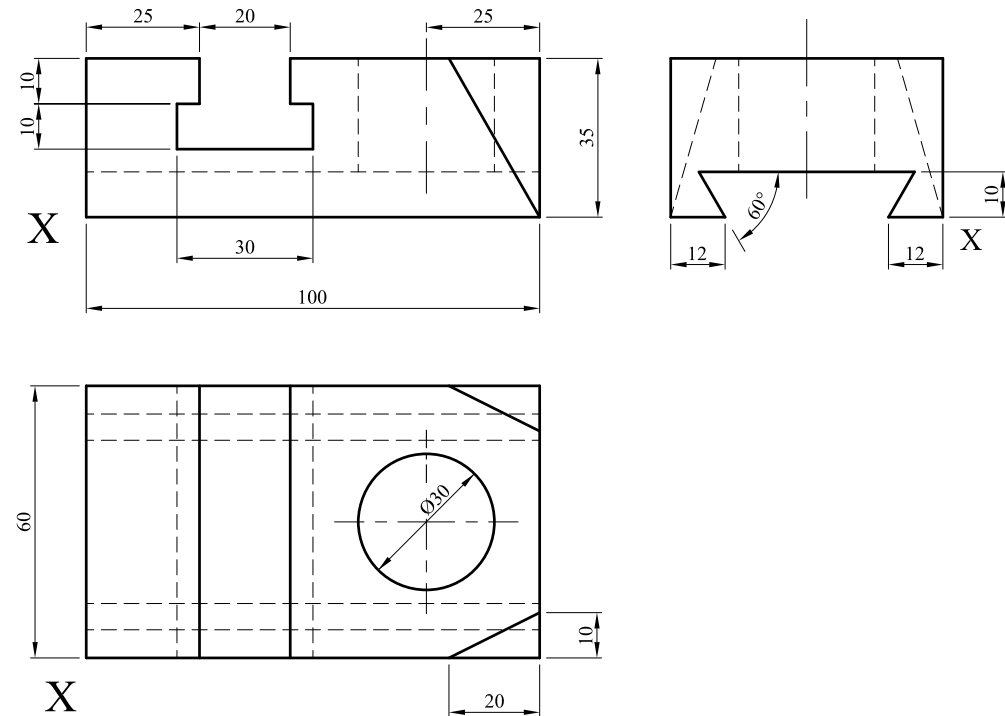
15 marks



Radius  $R_a$  = \_\_\_\_\_ mm

2. The figure below shows three views in first angle orthographic projection of a Slide Block.  
Draw, full size, an isometric view of the component, making X the lowest corner in your drawing.

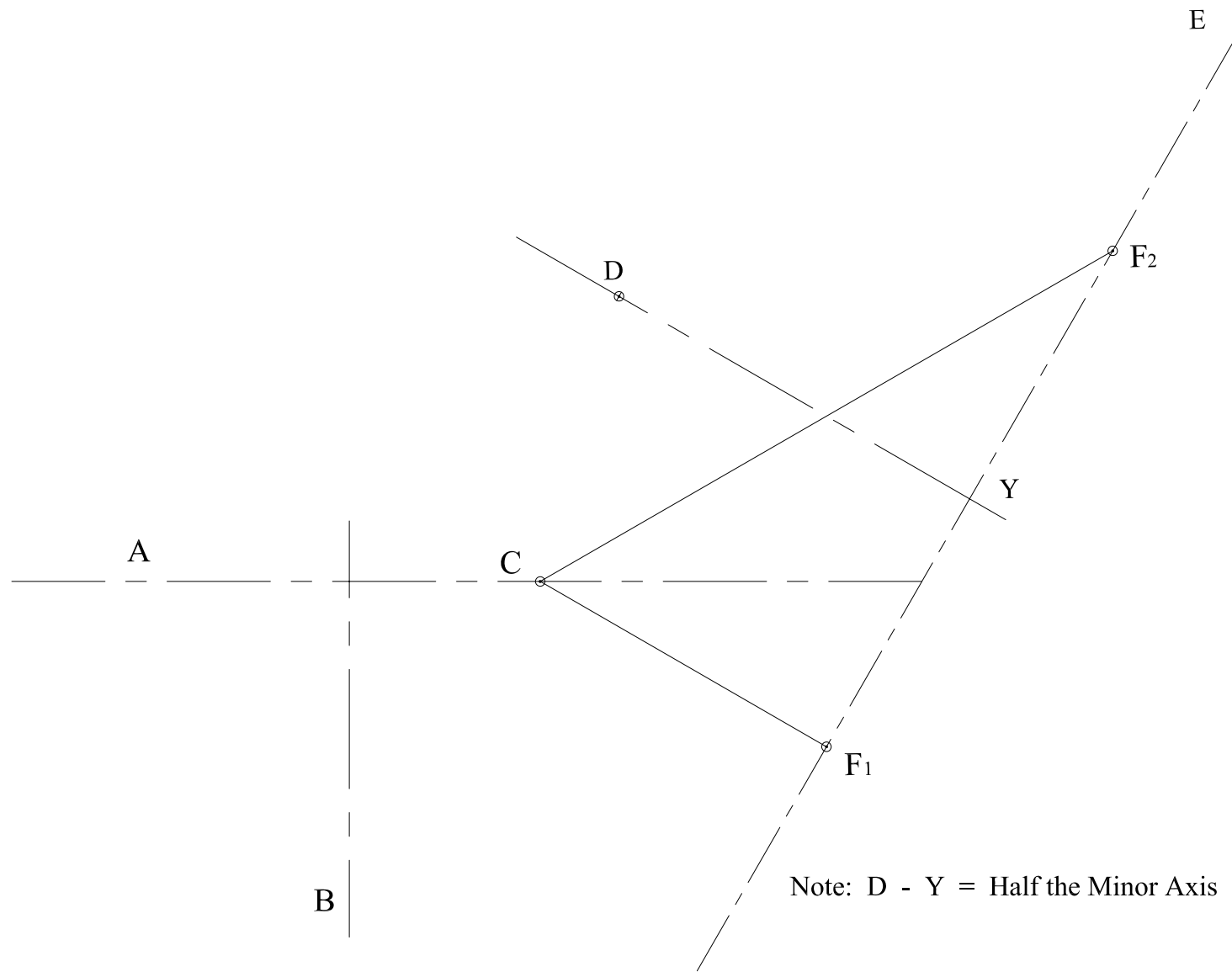
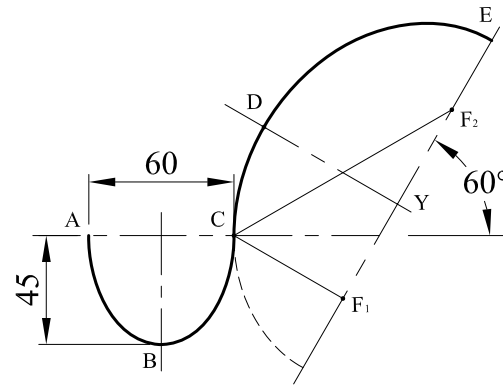
15 marks



Sheet 1 of 4

3. The figure shows a special spring made from steel wire. Its shape consists of a true semi-ellipse ABC, of minor axis AC, which is in tangential contact with the true part-ellipse CDE. AC is the normal to CDE at C.  $F_1$  and  $F_2$  are the focal points of the part-ellipse CDE. Draw the Spring, full size, using geometrical construction, other than a trammel method, for the ellipses.

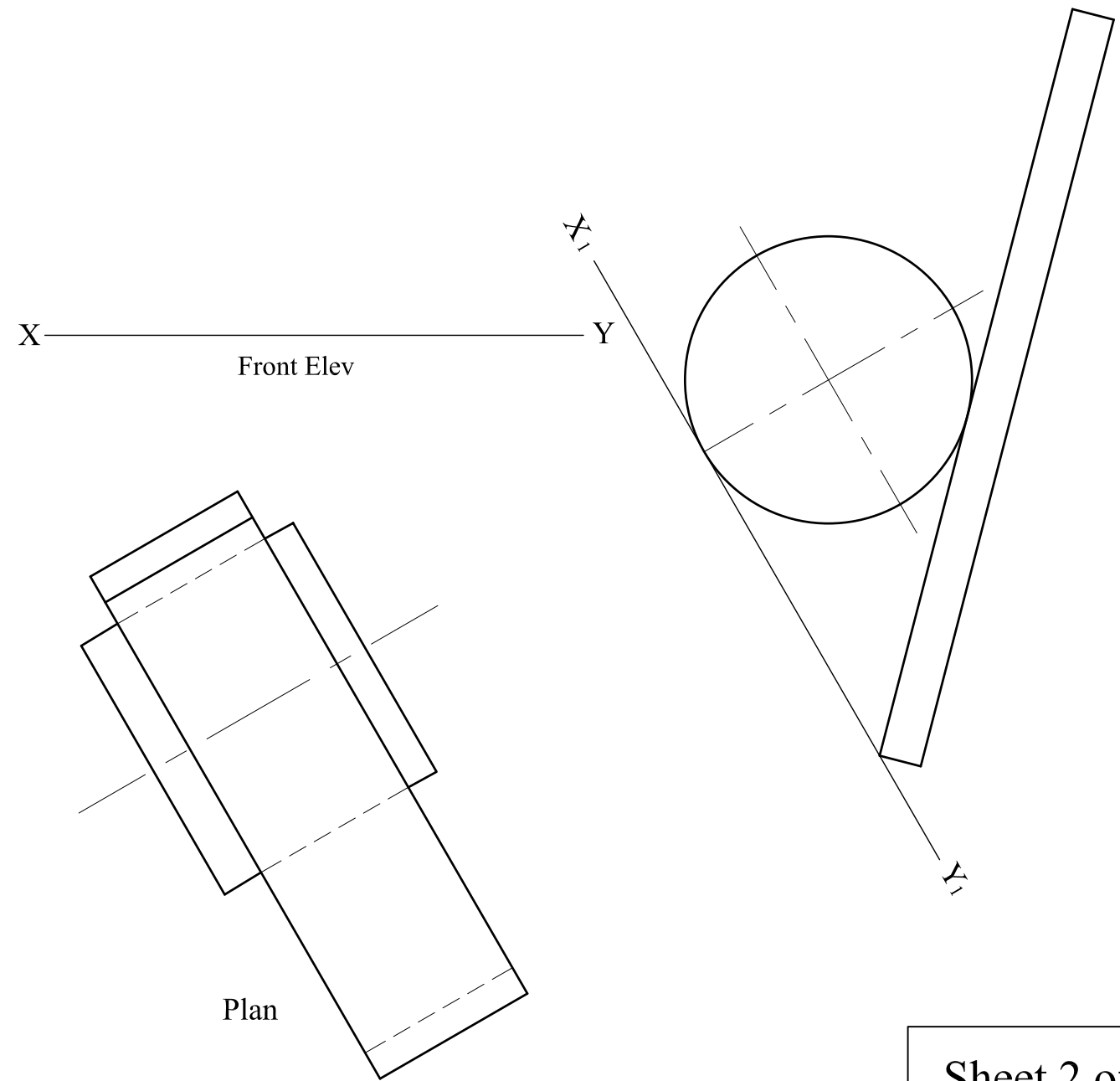
- Note:** (a) D - Y is equal to half the minor axis  
 (b) you have to locate point E  
 (c) all construction lines must be shown. 15 marks



Note: D - Y = Half the Minor Axis

4. The drawings below show the plan and auxiliary view of a simple See - Saw. Using neat projection lines, draw a complete front elevation on X - Y. Do not include any hidden details.

15 marks

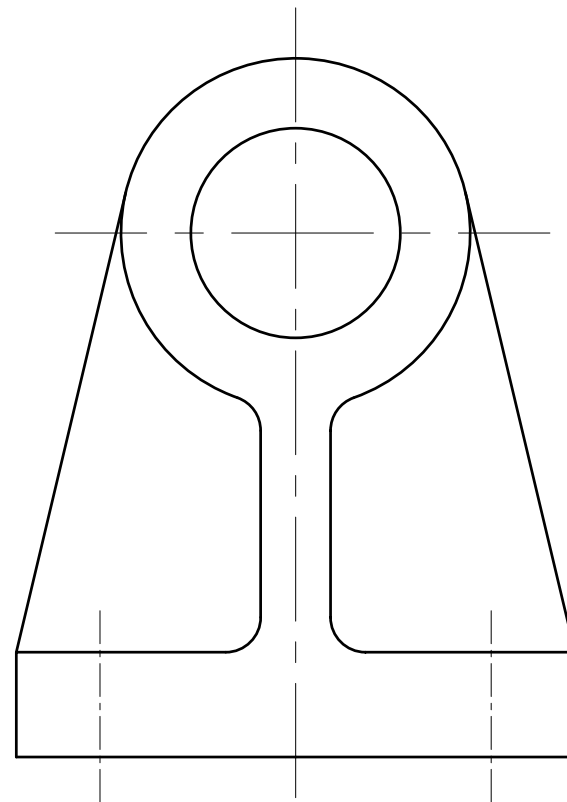
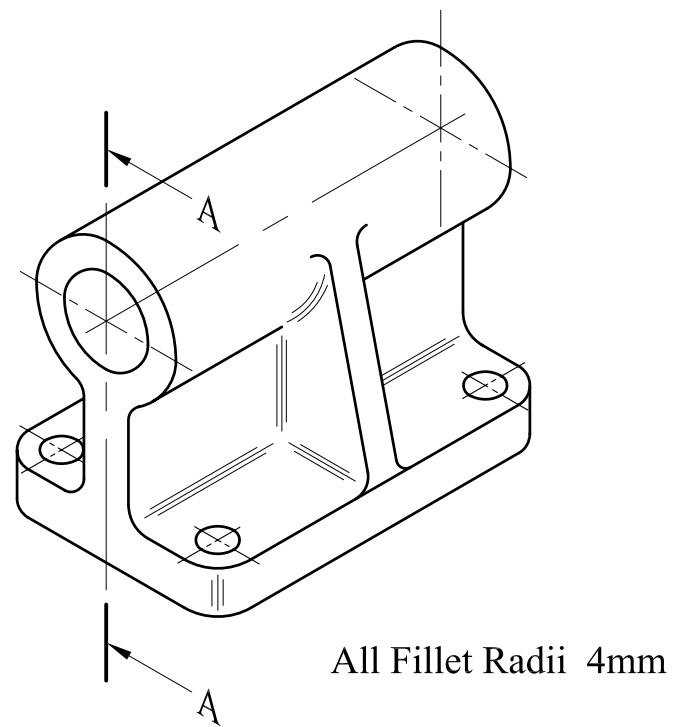


Sheet 2 of 4

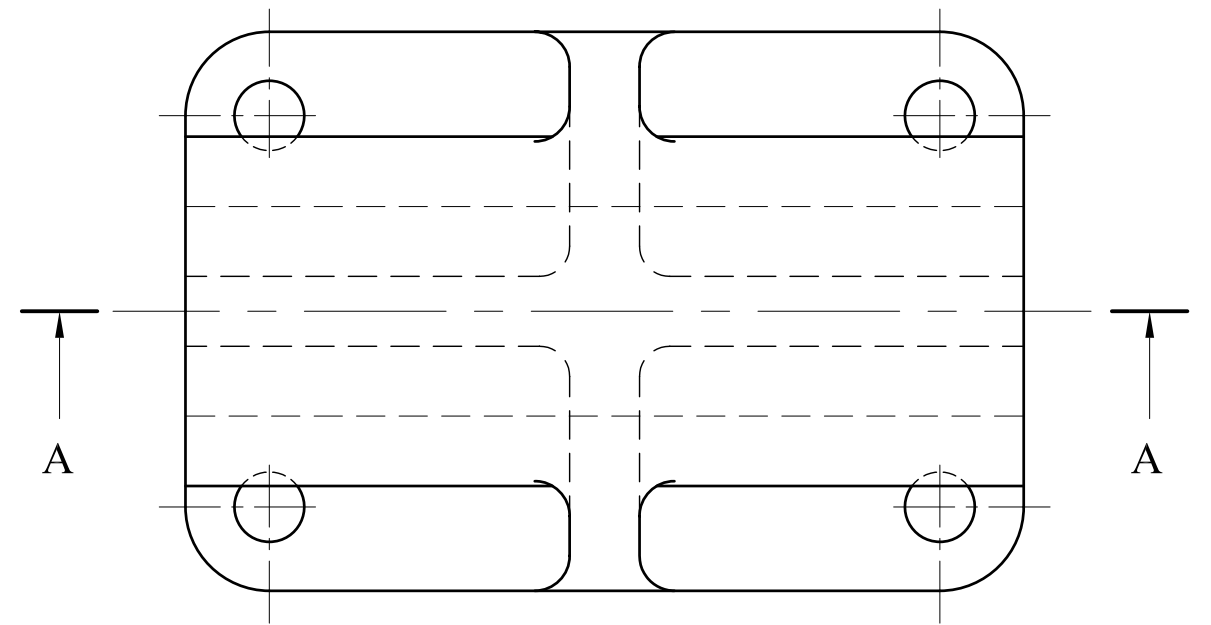
5. The figure below shows a complete end elevation, a complete plan and a pictorial view of a Cast Iron Bracket.

- (a) Draw full size, in third angle orthographic projection:  
 (i) a sectional front elevation on the section plane A - A in the direction indicated by the arrows  
 No hidden detail is required in the solution.
- (b) Add the following to your drawing  
 (i) the centres of the four fixing holes in the bracket base  
 (ii) the appropriate symbol to show the projection angle used.

20 marks



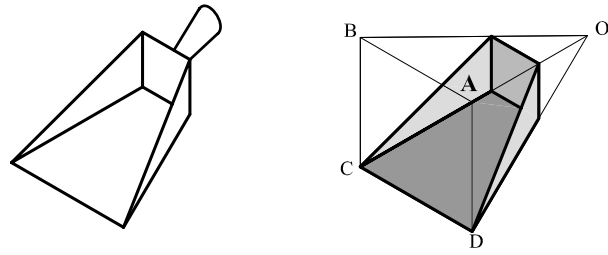
End Elevation



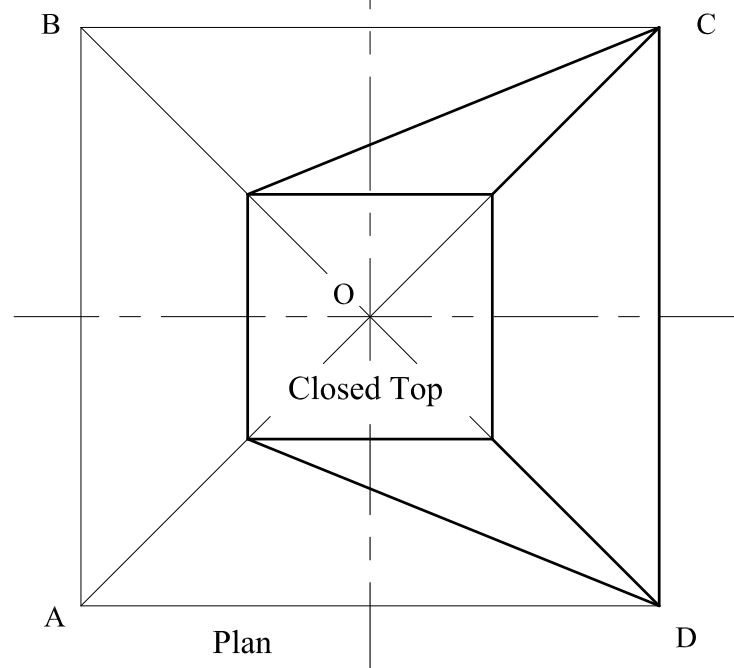
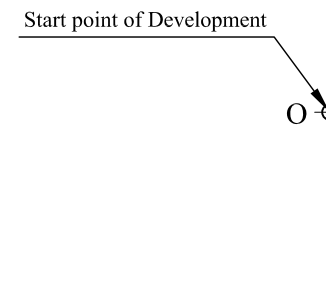
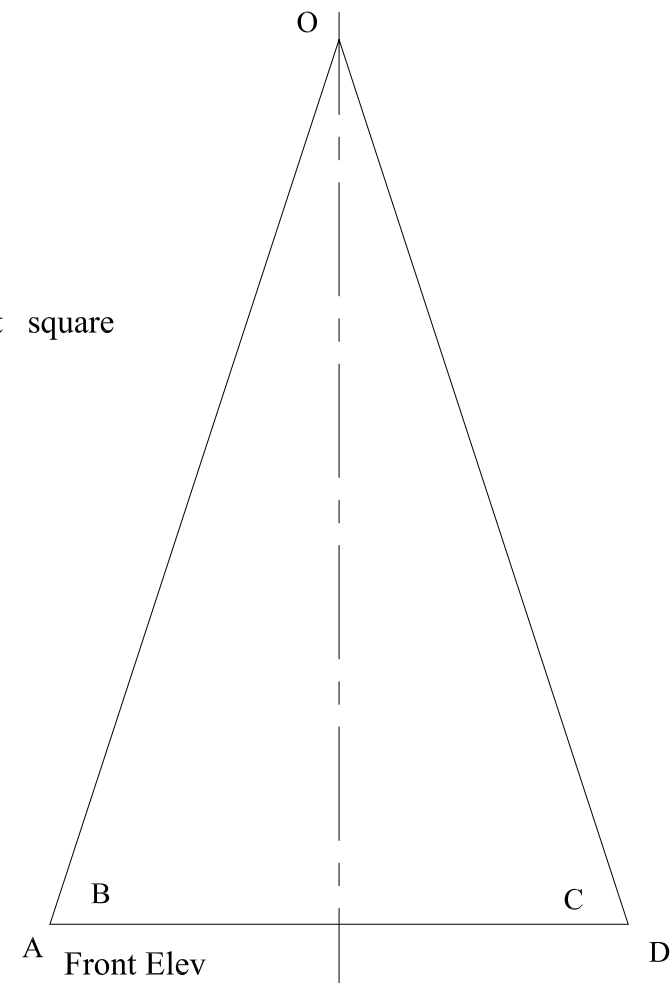
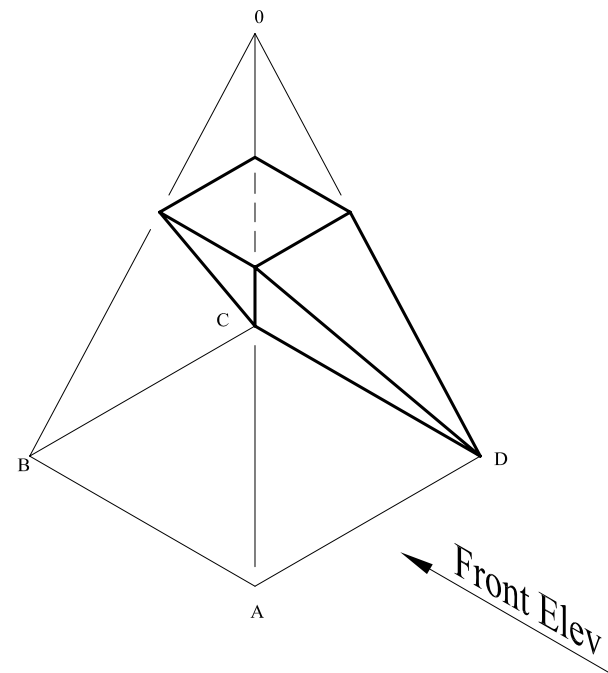
Plan view

SECTION A - A

6. The figures on the right show an **incomplete front elevation**, a **complete plan** and below, a **pictorial** view of a small scoop.



The scoop is part of the development of a right square pyramid, as shown below.



Draw the following:

- Complete the given front elevation
- Draw a one piece development of the scoop, including the closed top.

20 marks