Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination, 2005

Technical Drawing

Paper II(B) – Higher Level
(Building Applications)

(200 Marks)

Friday 17 June
Afternoon, 2.00 to 5.00

(a) *Answer **four** questions.*
(b) *All questions carry equal marks.*
(c) *Construction lines must be shown on all solutions.*
(d) *Write the number of the question distinctly on the answer paper.*
(e) *Work on one side of the paper only.*
(f) *All dimensions on the question paper are given in metres or millimetres.*
(g) *First or third angle projection may be used.*

1. Draw a perspective view of the structure shown in Fig. 1. The picture plane passes through the corner A, the spectator S is 10m from the corner A and the horizon line is 10m above the ground line.

Use auxiliary vanishing points where appropriate.

Scale 1 : 100

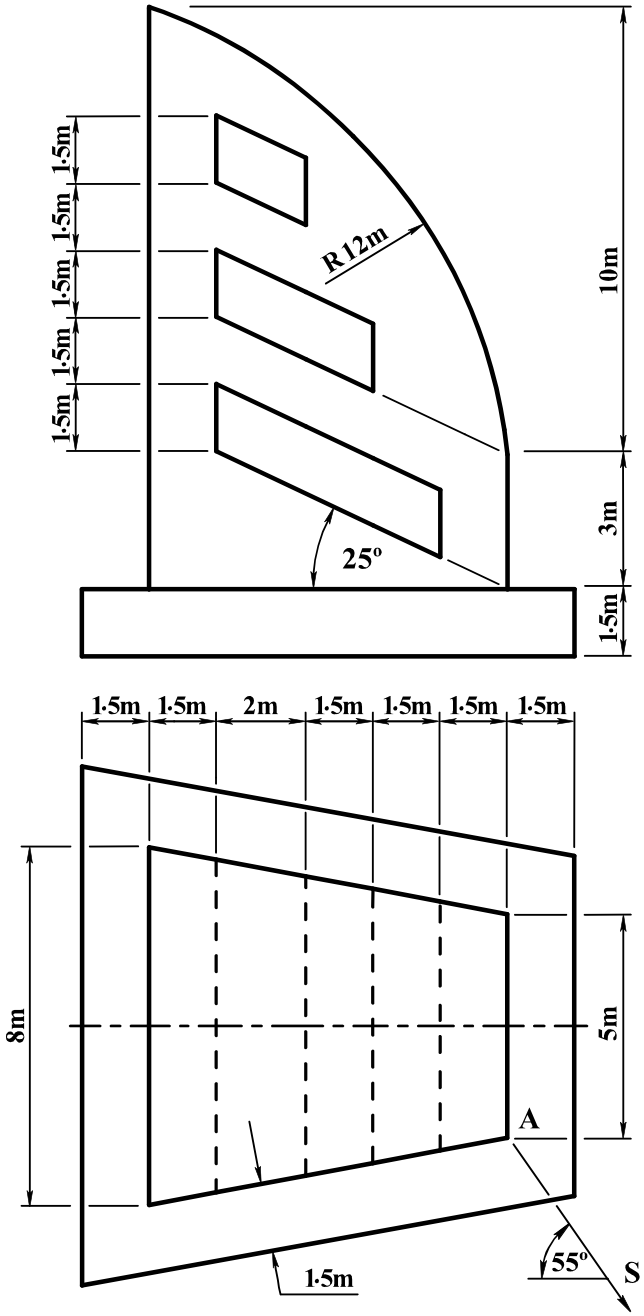


Fig. 1

2. Fig. 2 shows the outline plan and elevation of roof surfaces and a dormer window.

(a) Surfaces A and B have pitches of 50° and 45° respectively. Draw the plan and elevation of these two surfaces and determine the dihedral angle between them.

(b) The line of intersection between surface C and the dormer surface E has a true length of 7m. The dihedral angle between the surfaces A and D is 135°.

Complete the plan and elevation of the roof and dormer window.

(c) Develop the surface C.

Scale 1 : 100

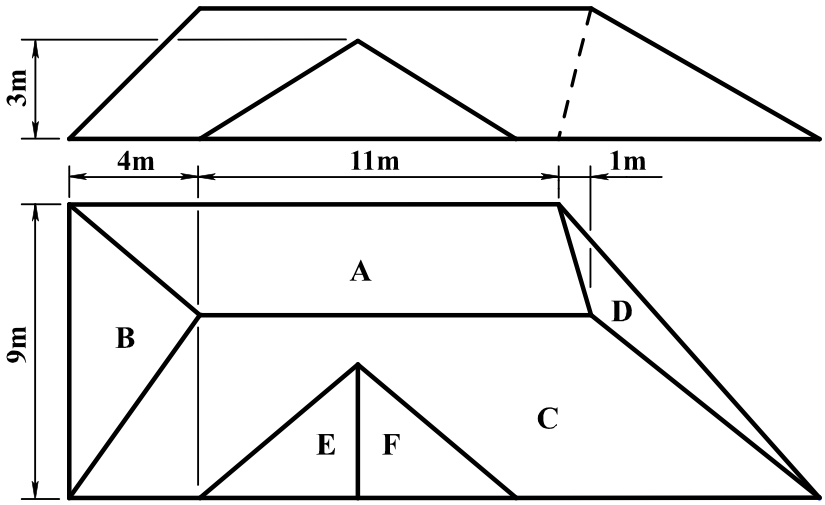


Fig. 2

3. Fig. 3 shows the plan, elevation and end elevation of two adjacent buildings.
Draw the given plan and elevation. Determine the shadows and shade in plan and elevation when the direction of the light is as shown.

Scale 1 : 200

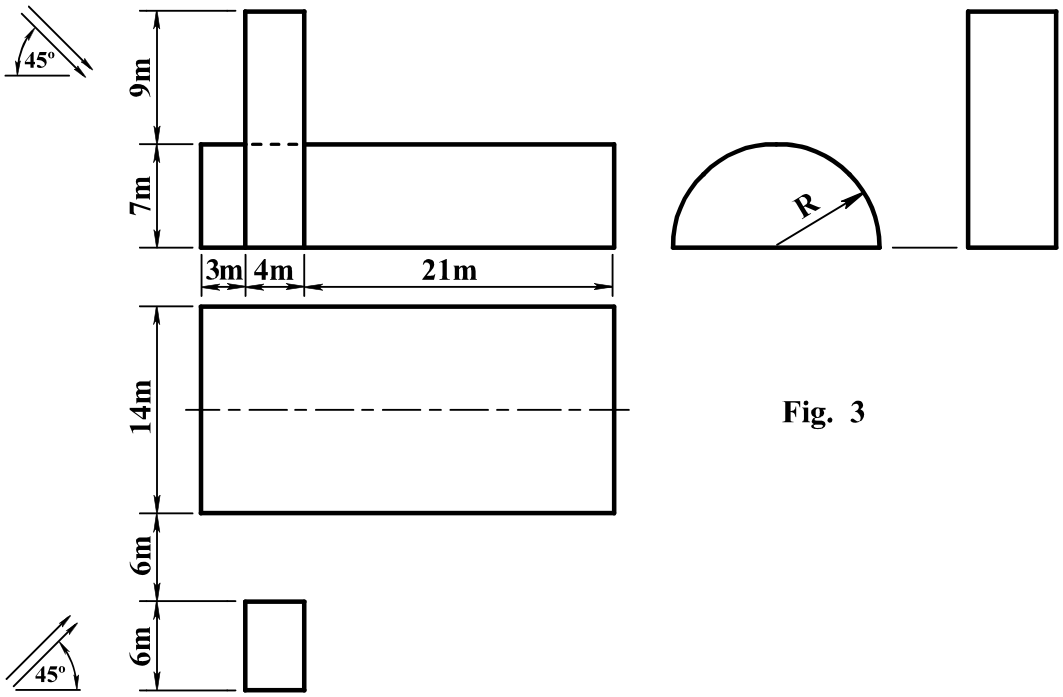
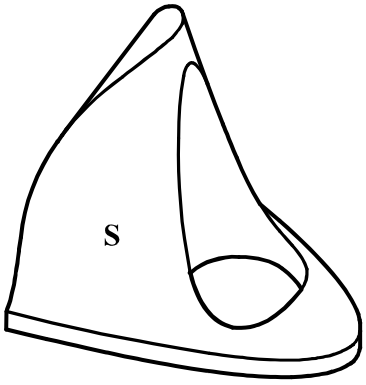


Fig. 3

4. Fig. 4 shows the plan, elevation and pictorial sketch of a sculpture. The surface S is generated by translating the horizontal parabola ABC upwards along the parabola BD. B is the vertex of the parabola BD.
The sculpture incorporates a cylindrical hole as shown.

Draw the given plan and elevation of the sculpture.

Scale 1 : 100



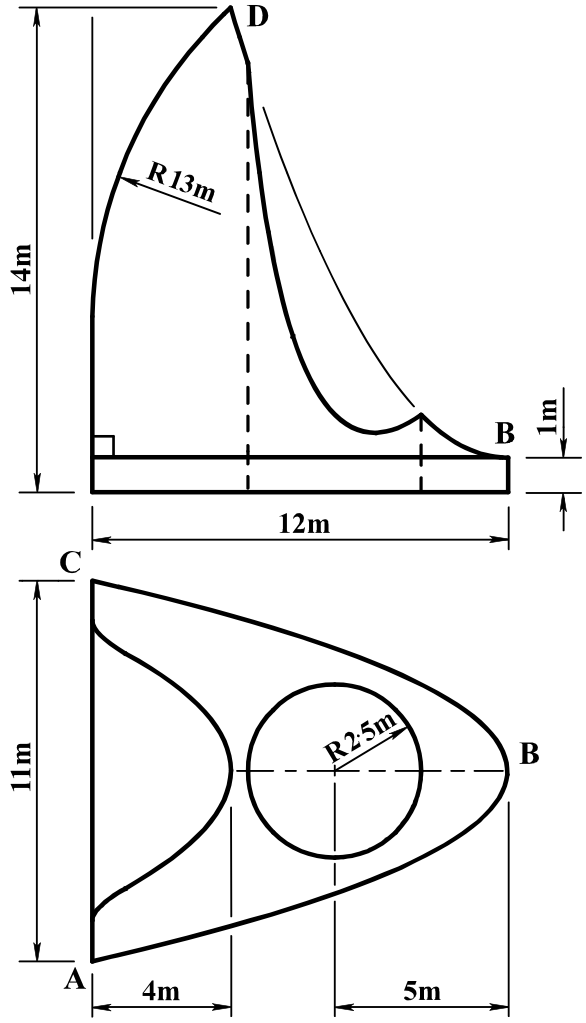


Fig. 4

5. On a contour map A and B are two points whose altitudes are 115m and 95m respectively. On the map B is located 105m south-east of A. A skew bore-hole at A is drilled in a southerly direction in plan and has an actual inclination of 45° to the horizontal plane. It reveals the top and bottom surfaces of a stratum at distances of 20m and 95m, respectively, from A.

A skew bore-hole at B is drilled in a north-easterly direction in plan and has an actual inclination of 65° to the horizontal plane. It reveals the top and bottom surfaces of the stratum at distances of 55m and 80m, respectively, from B.

(a) Determine the dip, strike and thickness of the stratum.

(b) Another skew bore-hole at B is drilled in a northerly direction in plan. It reveals the bottom surface of the stratum at a distance of 70m from B. Determine the altitude at which the bore-hole reaches the top surface of the stratum.

(c) Determine the true angle between the two bore-holes drilled at B.

Scale 1 : 1000

6. Fig. 5 shows the outline plan and elevation of a hyperbolic paraboloid roof. The perimeter of the roof is a rectangle in plan. The roof is formed by extending the hyperbolic paraboloid surface ABCD.

(a) Draw the given plan and elevation.

(b) Project an end elevation.

(c) A plane director for the elements AD and BC is positioned so that it contains point D. Draw the traces for this plane director.

Scale 1 : 200

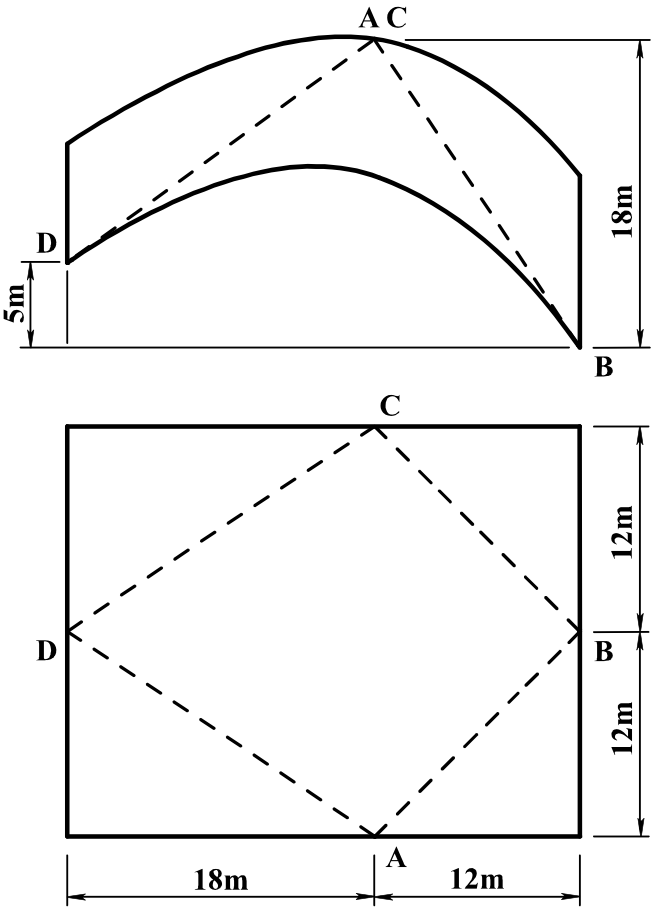


Fig. 5

7. The accompanying drawing shows ground contours at five-metre vertical intervals. ABCDE is the line of a proposed roadway which is widened between C and D.

The roadway has the following specification:-

(i) formation widths are as shown;

(ii) formation level at B is 60m;

(iii) A to B is level;

(iv) gradient B to E is 1 in 13 falling;

(v) side slope for cuttings is 1 in 1;

(vi) side slope for embankments is 1 in 2.

On the drawing supplied, show the earthworks necessary to accommodate the roadway.

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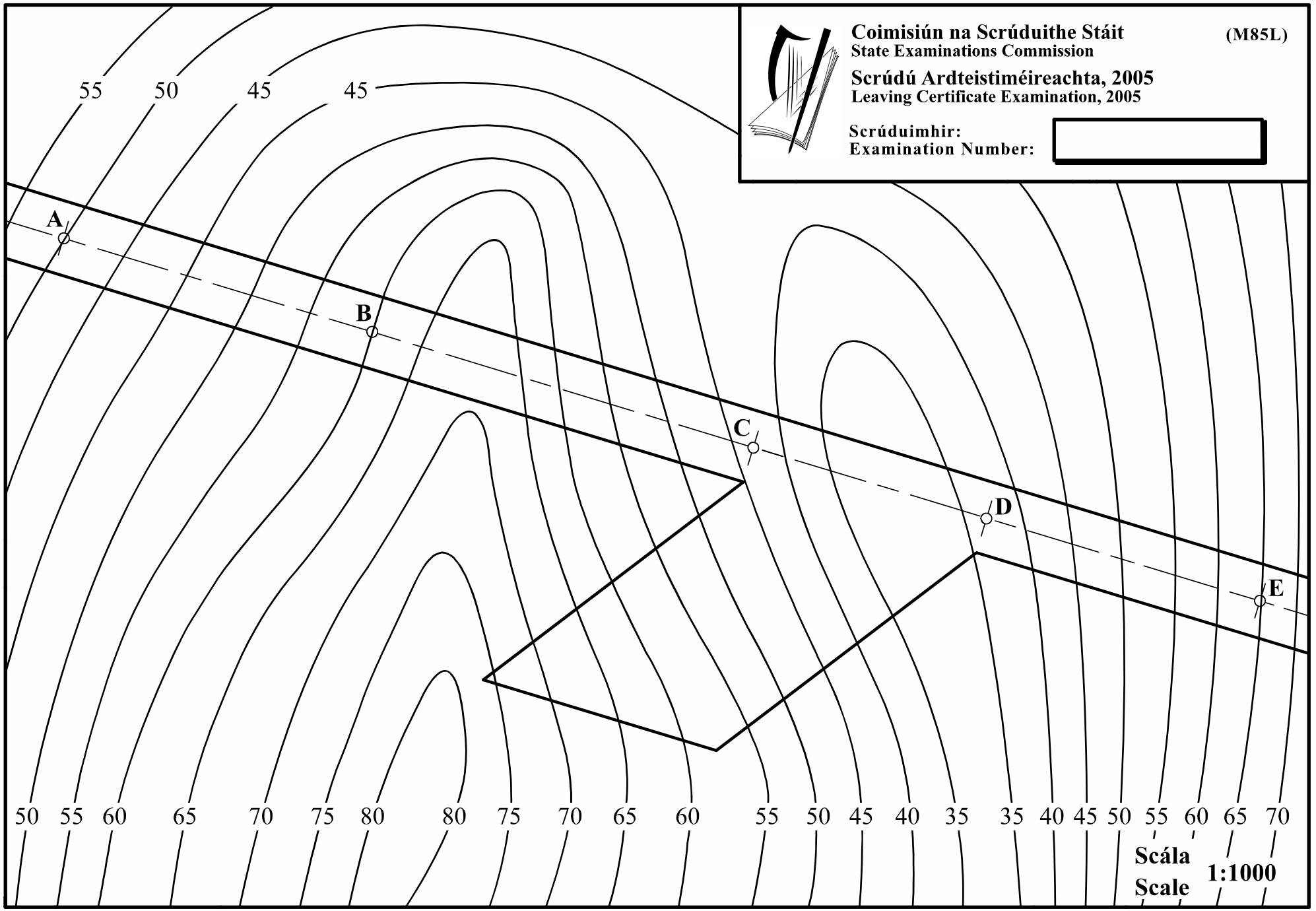
Coimisiún na Scrúduithe Stáit
State Examinations Commission
(M85L)
Scrúdú Ardteistiméireachta, 2005
Leaving Certificate Examination, 2005
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