

**AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA**

**LEAVING CERTIFICATE EXAMINATION, 2001**

**TECHNICAL DRAWING – HIGHER LEVEL – PAPER II (B)**  
**BUILDING APPLICATIONS**

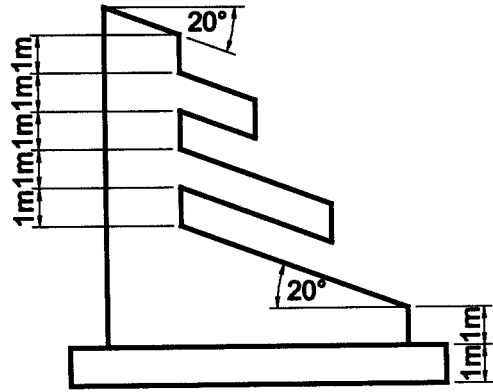
FRIDAY, 15 JUNE — AFTERNOON 2.00 p.m. to 5.00 p.m.

(200 MARKS)

**INSTRUCTIONS**

- (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) First or third angle projection may be used.
- (f) All dimensions are given in metres.

1. Draw a perspective view of the structure shown in Fig. 1. The picture plane passes through the corner A, the spectator S is 9m from the corner A, and the horizon line is 8m above the ground line. Use auxiliary vanishing points where appropriate.



Scale 1 : 100

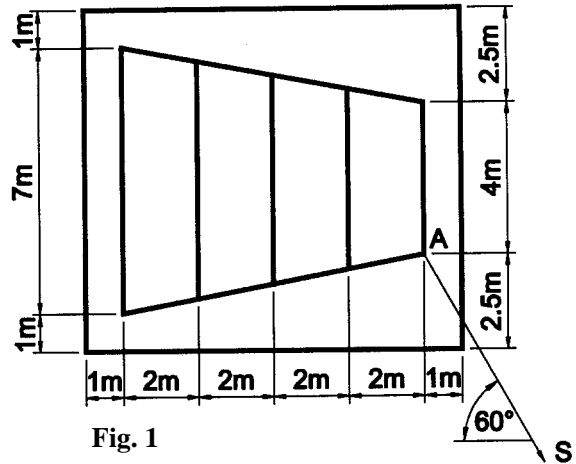


Fig. 1

2. Fig. 2 shows the outline plan, elevation and end elevation of roof surfaces and a dormer window. Surface B has a pitch of  $30^\circ$  and surface E has a pitch of  $40^\circ$ . The dihedral angle between the surfaces A and B is  $145^\circ$ . The dihedral angle between the surfaces B and C is  $140^\circ$ .

- (a) Draw the given plan, elevation and end elevation.  
 (b) Determine the dihedral angle between the surfaces B and E.

Scale 1 : 100

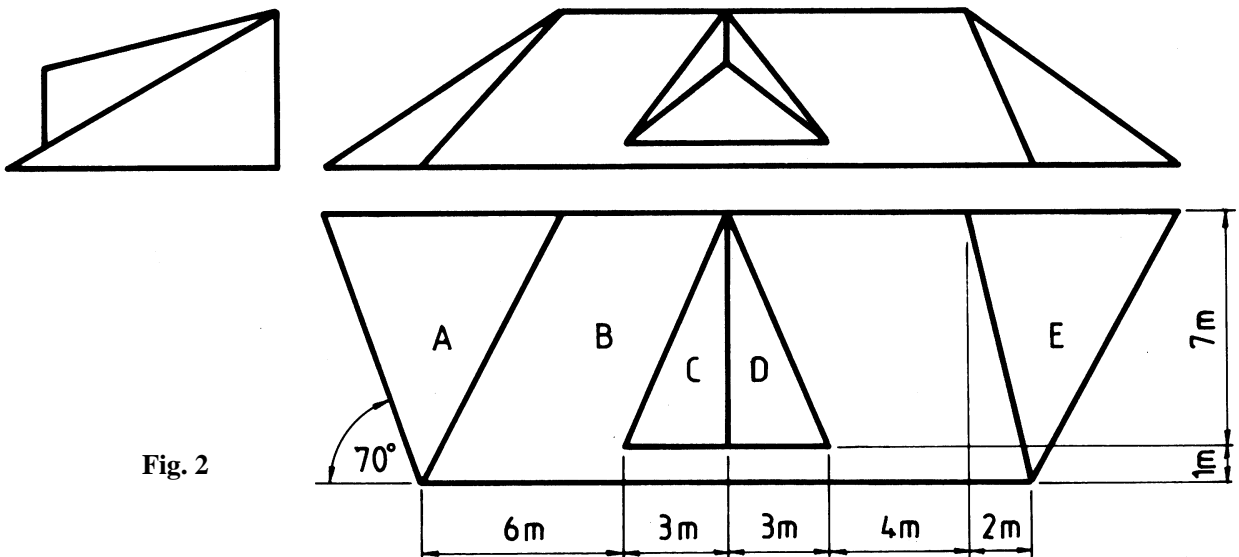


Fig. 2

3. Fig. 3 shows the outline plan and elevation of a building. Draw the given views and determine the shadows and shade in plan and elevation when the direction of the light is as shown in the figure.

Scale 1 : 200

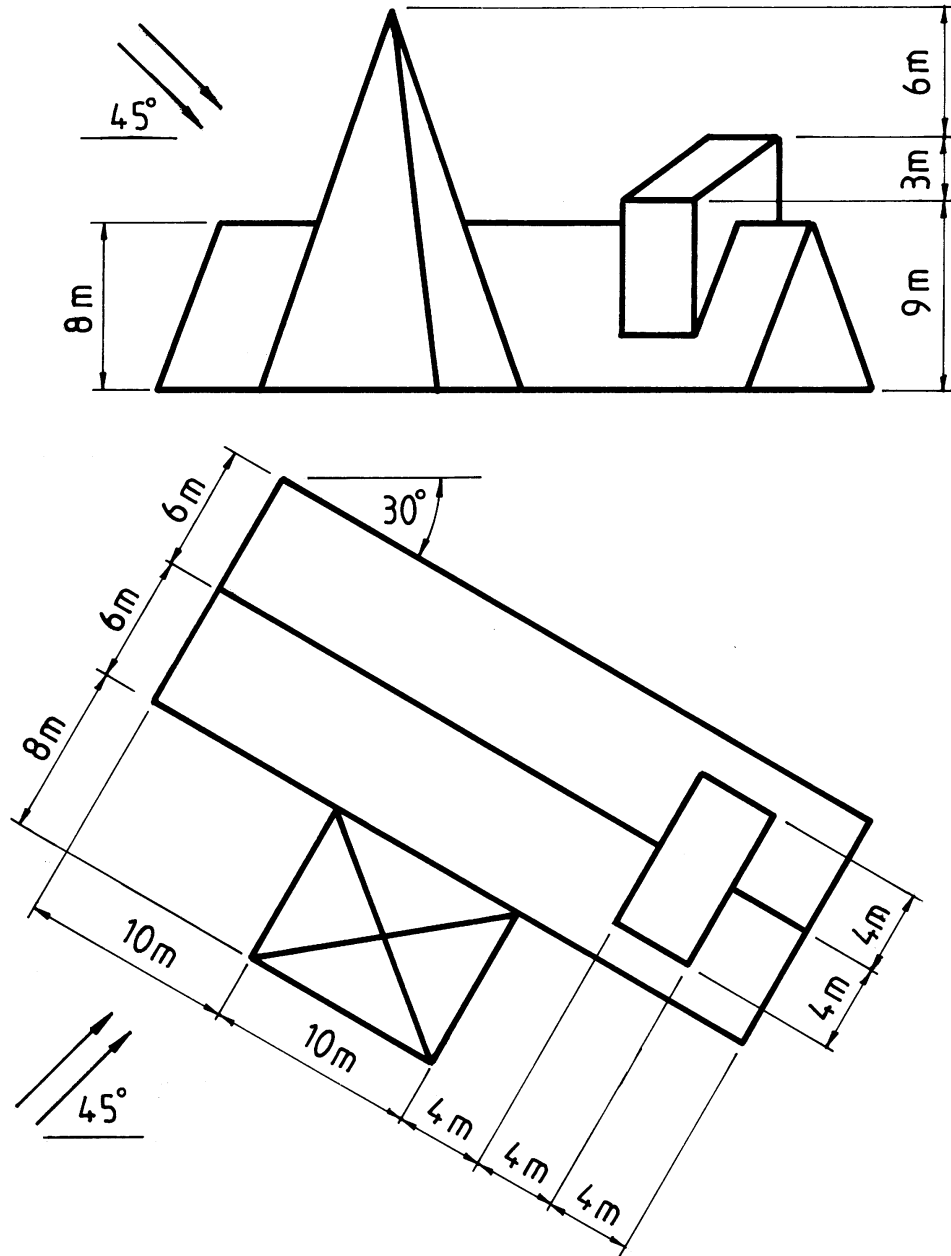


Fig. 3

4. Fig. 4 (a) shows a pictorial view of a shell structure unit. This unit is combined with four other similar units to form a total roof surface as shown in plan in Fig. 4 (b). The surface of the unit is generated by translating the parabola ABC in a vertical position along the parabola BF whose vertex is at F.

(a) Draw a plan, elevation and end elevation of the unit.

(b) Determine the true shape of the curve EF.

Scale 1 : 200

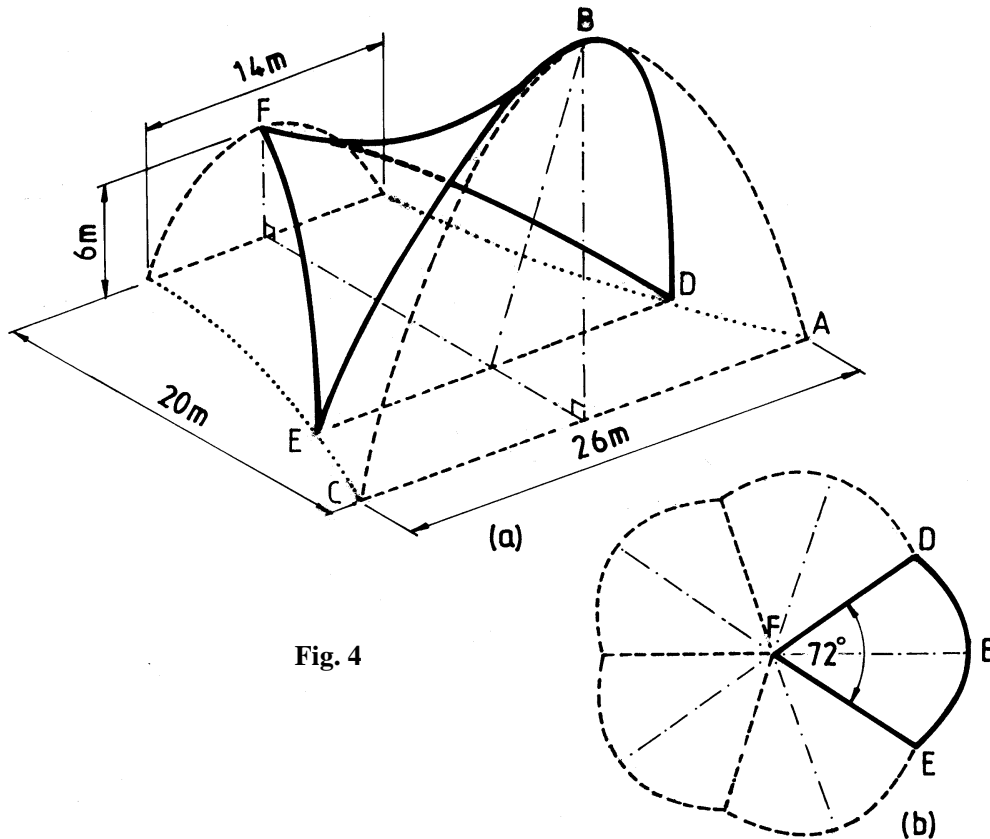


Fig. 4

5. On a contour map A and B are two points whose altitudes are 95 m and 75 m respectively. On the map B is located 115 m south-east of A. A skew bore-hole at A is drilled in a south-easterly direction in plan and has an actual inclination of  $55^\circ$  to the horizontal plane. It reveals the top and bottom surfaces of a stratum at distances of 15 m and 40 m, respectively, from A.

A skew bore-hole at B is drilled in a south-westerly direction in plan and has an actual inclination of  $50^\circ$  to the horizontal plane. It reveals the top and bottom surfaces of the stratum at distances of 40 m and 65 m, respectively, from B.

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

(b) Another skew bore-hole at B is drilled in a south-easterly direction in plan and reaches the bottom surface of the stratum at an altitude of 15 m. Determine the length of this bore-hole as it passes through the stratum.

Scale 1 : 1000

6. Fig. 5 shows the outline plan and elevation of two adjoining hyperbolic paraboloid roof surfaces ABCD and BEDC which have been shaped as shown.

- Draw the given plan and elevation.
- Determine the true shape of the section S-S through the roof.
- Determine the traces of the plane director for the edges BE and CD of the surface BEDC and having its horizontal trace passing through B.

Scale 1 : 200

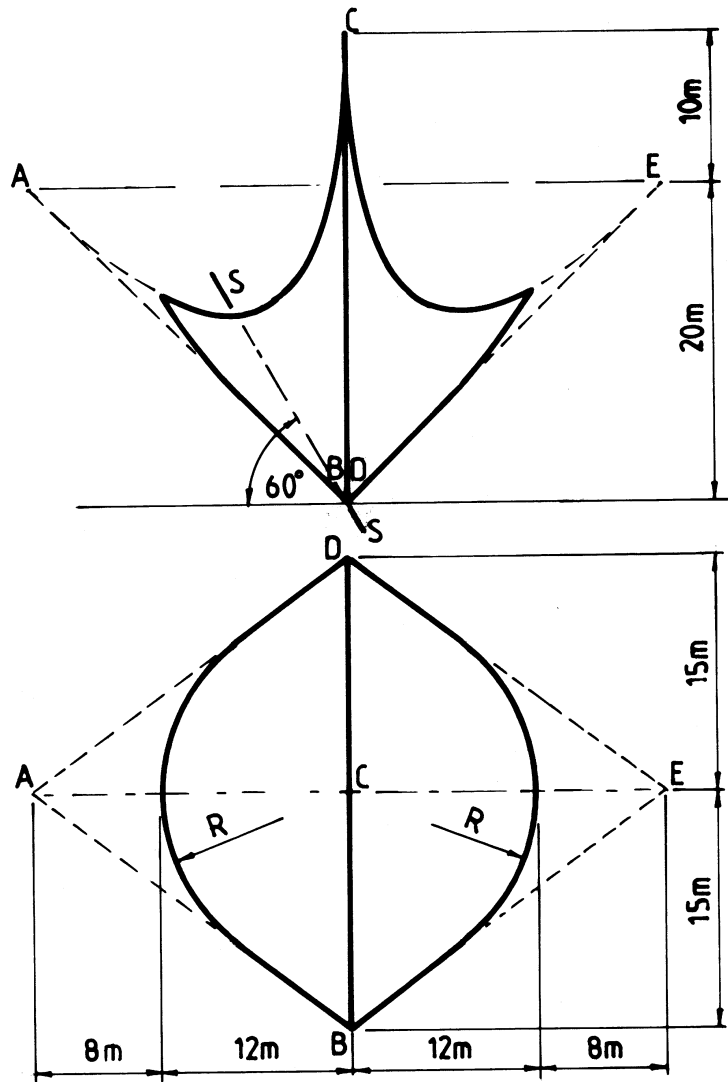


Fig. 5

7. The accompanying drawing shows ground contours at five-metre vertical intervals. AB is the line of a proposed roadway and CDEF a proposed parking area. The roadway AB has the following specification:-
- formation width from A to B is 15 m, from C to F the road is widened as shown to form the parking area CDEF;
  - formation level at A is 35 m;
  - gradient A to B is 1 in 15 falling;
  - side slopes for cuttings 1 in 1.5;
  - side slopes for embankments 1 in 2.

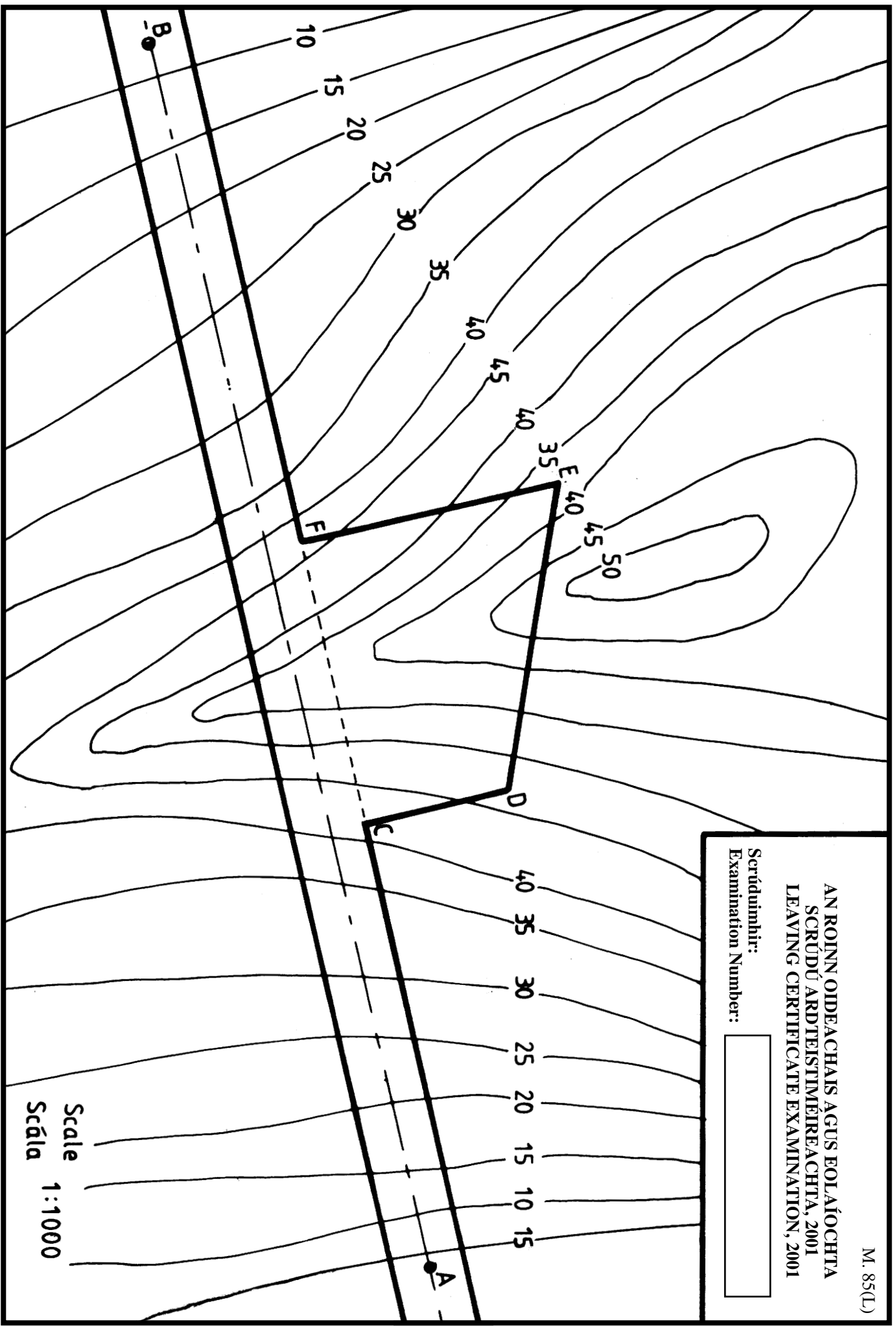
In the parking area CDEF the sides CD and FE are level and the gradient from C to F is 1 in 15 falling. The side slopes for cuttings and embankments are the same as for the roadway.

On the drawing supplied show the earthworks necessary to accommodate the roadway and parking area.

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SCRÚDÚ ARDTEISTIMEIREACHTA, 2001  
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