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

FRIDAY, 18 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 measurements 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 10 m from the corner A and the horizon line is 9 m above the ground line.
 Use auxiliary vanishing points where appropriate.

Scale 1 : 100

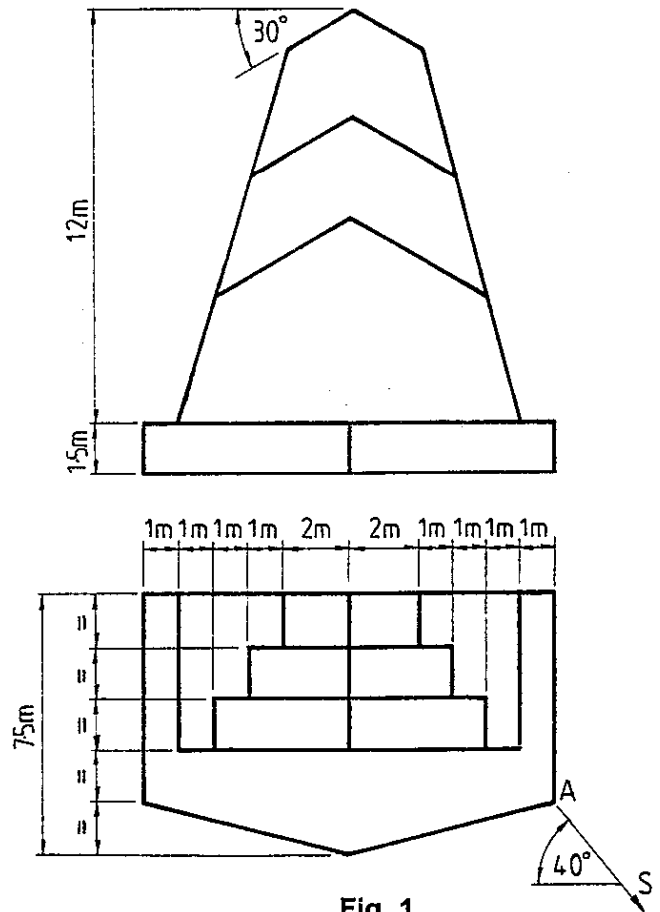


Fig. 1

2. Fig. 2 shows the outline plan and elevation of roof surfaces and a dormer window. Surface E has a pitch of 35° . The true shape of the surface A is an equilateral triangle having sides 14 m long. The dihedral angle between the surfaces B and D is 130° , and the dihedral angle between the surfaces F and G is 140° .

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

Scale 1 : 200

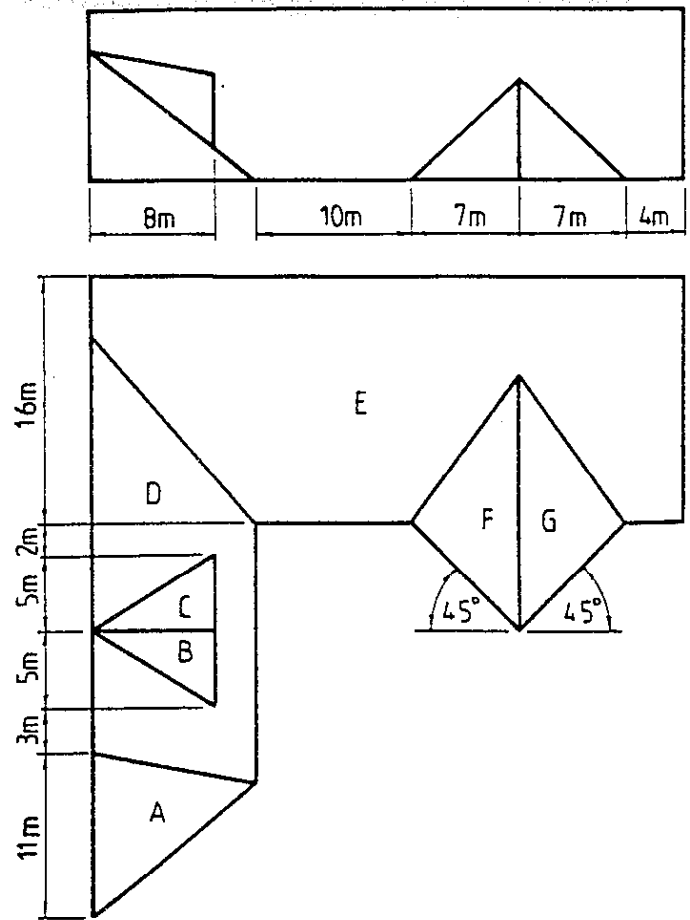


Fig. 2

3. Fig. 3 shows the outline plan and elevation of a building.

Draw the given views and determine the shadows cast in plan and elevation when the direction of the light is as shown in the figure.

Scale 1 : 100

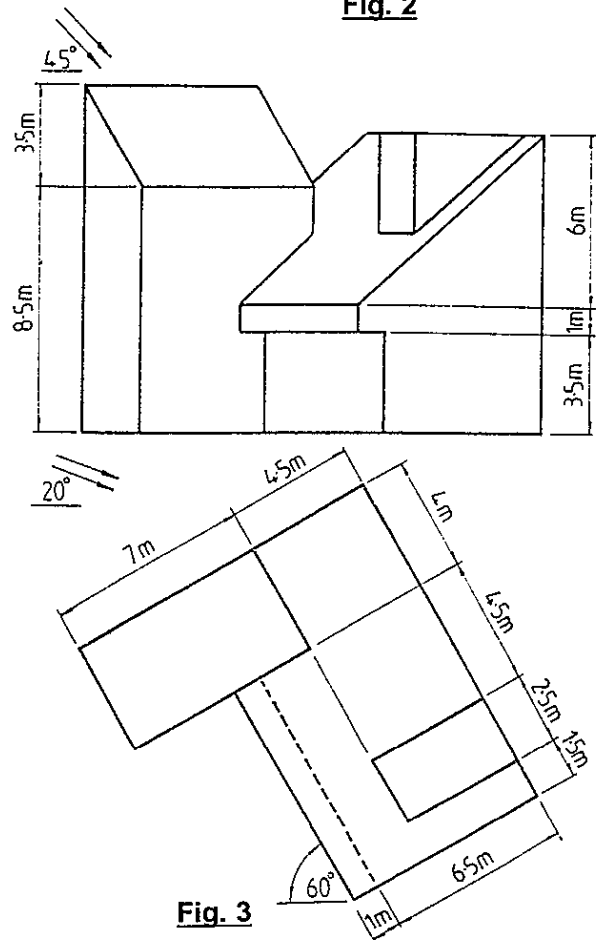


Fig. 3

4. In Fig. 4 is shown a pictorial sketch of a spectator stand for an outdoor arena. The structure has a sloping floor as shown. Also shown are the outline plan and elevation of the structure and the outline of a parabola ABC. The surface of the unit is generated by translating the parabola ABC in a vertical position along the parabola DE whose vertex is at E.

Draw the given plan and elevation and project an end elevation of the structure.

Scale 1 : 500

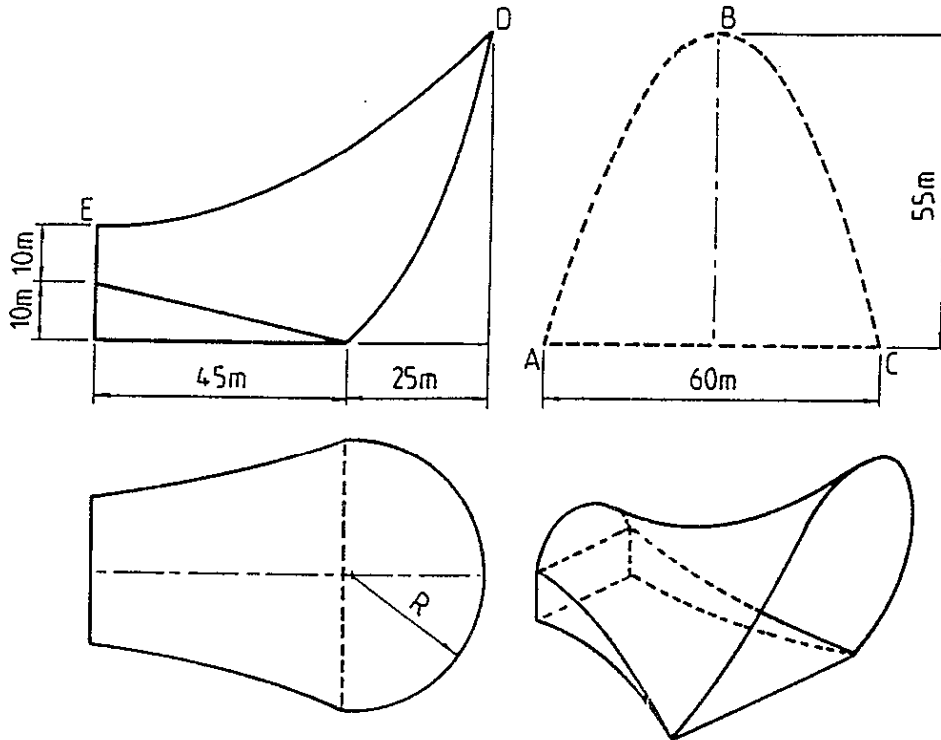


Fig. 4

5. On a contour map A and B are two points whose altitudes are 90 m and 100 m respectively. On the map A is located 65 m south of B. A skew bore-hole at A is drilled in a south-westerly direction in plan and has an actual inclination of 60° to the horizontal plane. It reveals the top and bottom surfaces of a stratum at altitudes of 60 m and 30 m, respectively.

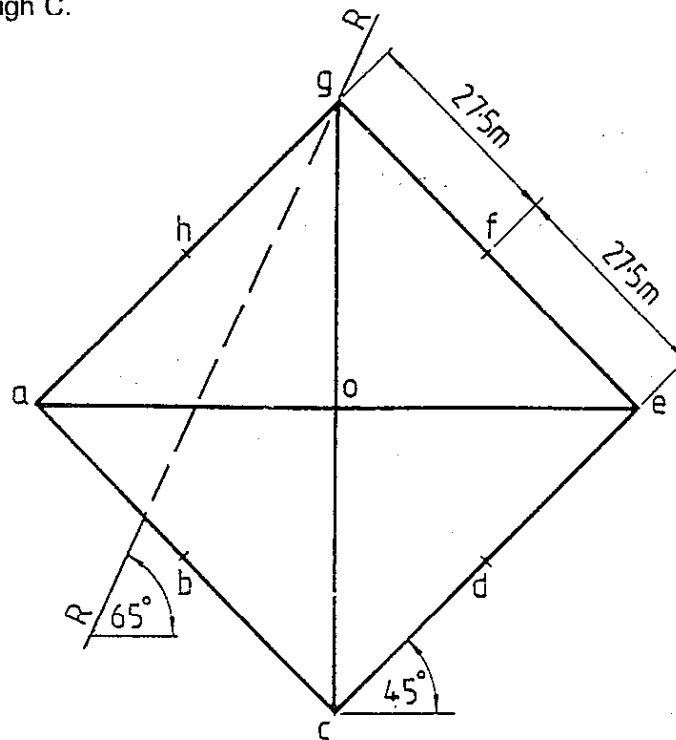
A skew bore-hole at B is drilled in a south-easterly direction in plan and has an actual inclination of 40° to the horizontal plane. It reveals the top and bottom surfaces of the stratum at altitudes of 80 m and 10 m, respectively.

- (a) Determine the dip, strike and thickness of the stratum.
- (b) Another skew bore-hole at A is drilled in a westerly direction in plan and it reaches the bottom surface of the stratum at a distance of 60 m from A. Determine the altitude at which the bore-hole reaches the top surface of the stratum and also find its true inclination to the stratum.

Scale 1 : 1000

6. Fig. 5 shows the outline plan of four adjoining hyperbolic paraboloid roof surfaces ABCO, CDEO, EFGO and GHAO. The roof perimeter is square in plan. The corners A, C, E and G are at ground level, corners B, D, F and H are 25 m above ground level, and corner O is 62.5 m above ground level.

- (a) Draw the given plan and project an elevation.
- (b) Determine the true shape of the section R-R through the roof.
- (c) Determine the traces of the plane director for the edges AB and OC of the hyperbolic paraboloid surface ABCO and having its horizontal trace passing through C.



Scale 1 : 500

Fig. 5

7. The accompanying drawing shows ground contours at five-metre vertical intervals. ABCDE is the line of a proposed roadway. O is the centre of the circular curve.

The roadway has the following specification:-

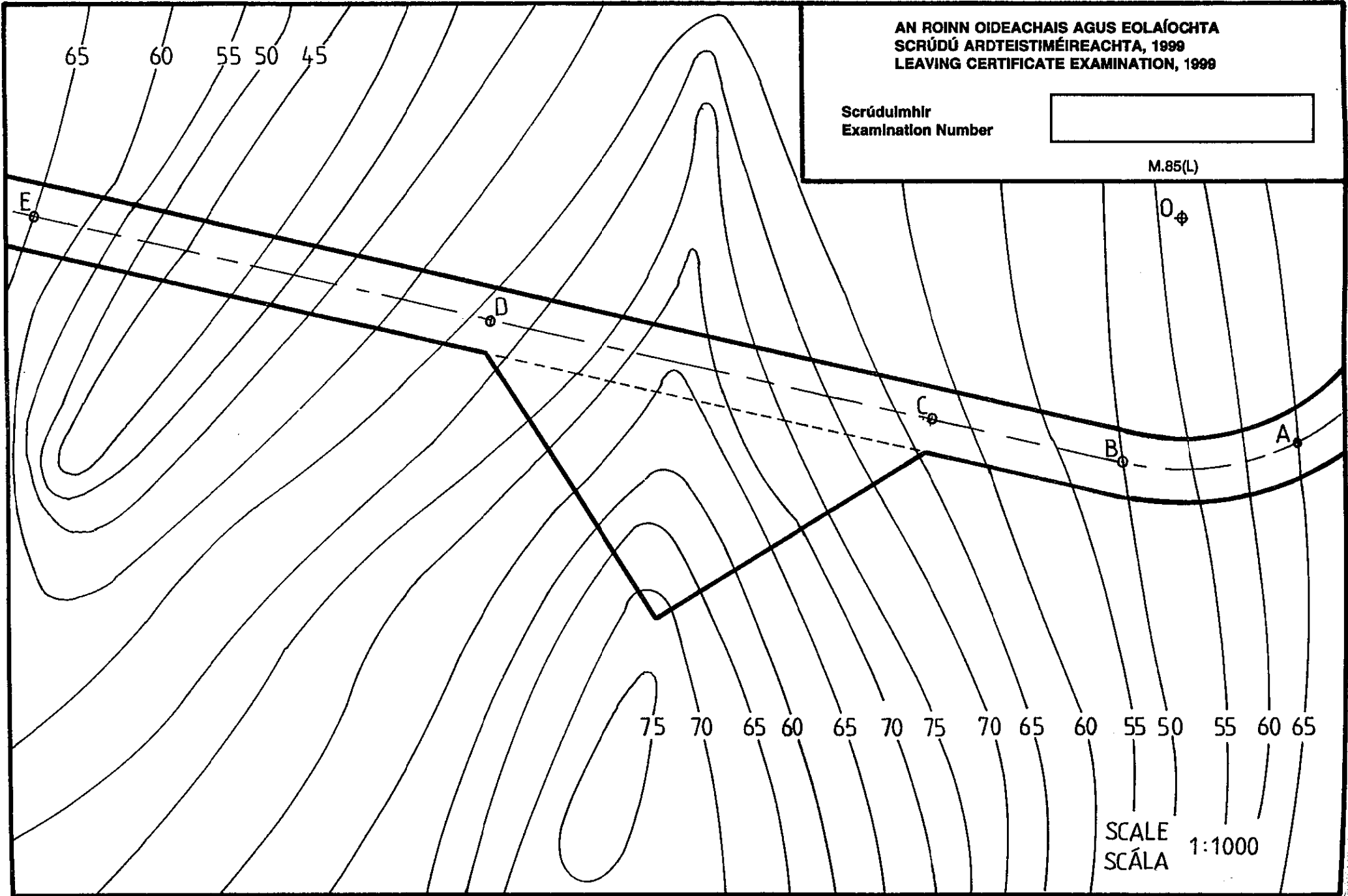
- (i) formation width from A to C and from D to E is 14 m, from C to D the road is widened as shown;
- (ii) formation level at B is 50 m;
- (iii) A to B is level; gradient from B to E is 1 in 15 rising;
- (iv) side slopes for cuttings 1 in 1.5;
- (v) side slopes for embankments 1 in 2.

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

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
SCRÚDÚ ARDTEISTIMÉIREACHTA, 1999
LEAVING CERTIFICATE EXAMINATION, 1999

Scrúduitímhír
Examination Number

M.85(L)



SCALE
SCÁLA 1:1000