LEAVING CERTIFICATE EXAMINATION, 1995

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

MONDAY, 19 JUNE - MORNING 9.30 to 12.30

(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.

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1. Draw a perspective view of the structure shown in Fig. 1. The picture plane passes through the corner A, the spectator S is 7m from the corner A and the horizon line is 7m above the ground line.
Use auxiliary vanishing points where appropriate.

Scale 1 : 100

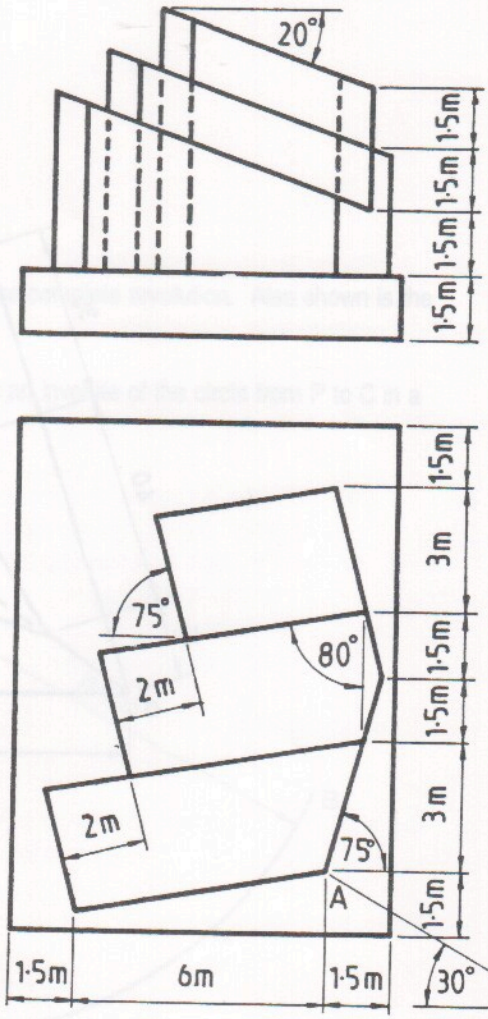


Fig. 1

2. Fig. 2 shows the outline plan and elevation of a roof. Surface B has a pitch of 45°, surface C has a pitch of 30° and surface D has a pitch of 40°. The dihedral angle between surfaces A and B is 160°.

(a) Draw the given plan and elevation.

(b) Determine the dihedral angle between the surfaces C and D.

Scale 1 : 100

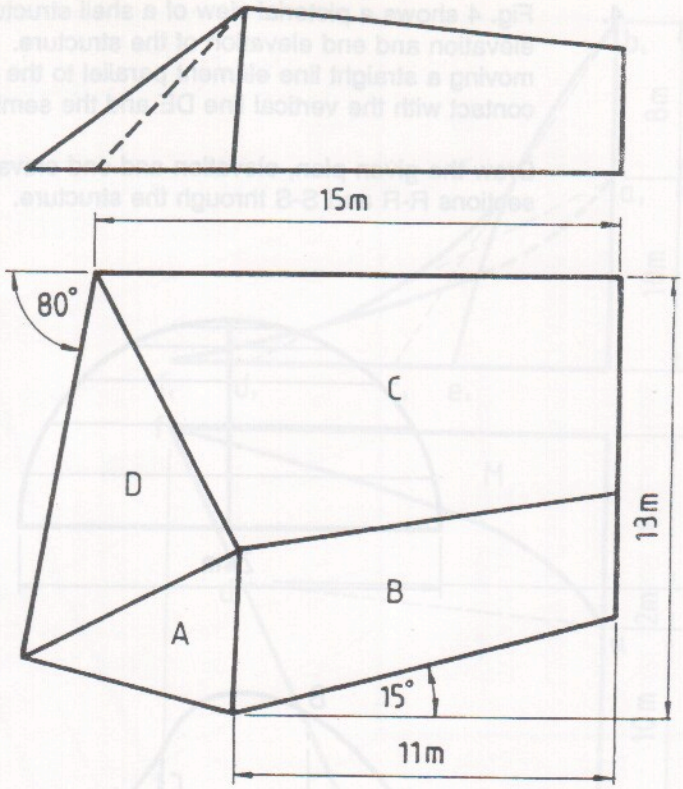


Fig. 2

3. Fig. 3 shows the outline projections of a structure in stone. Draw the given plan and elevation and determine the shadows and shade on the elevation of the structure when the direction of the light is as shown in the figure.
(Note: The shadows cast on the ground are not required.)

Scale 1 : 20

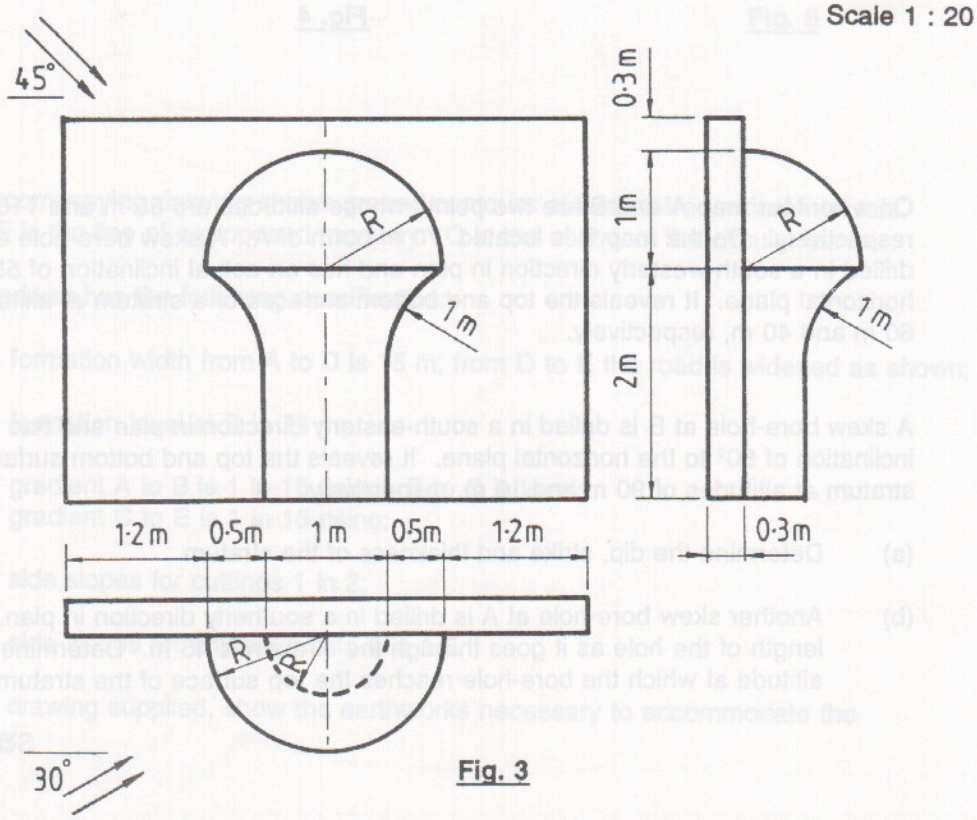


Fig. 3

4. Fig. 4 shows a pictorial view of a shell structure. Also shown are the outline plan, elevation and end elevation of the structure. The surface is generated, as shown, by moving a straight line element parallel to the horizontal plane, so that it is always in contact with the vertical line DE and the semi-circle ABC.

Draw the given plan, elevation and end elevation and determine the true shape of the sections R-R and S-S through the structure. Scale 1 : 200

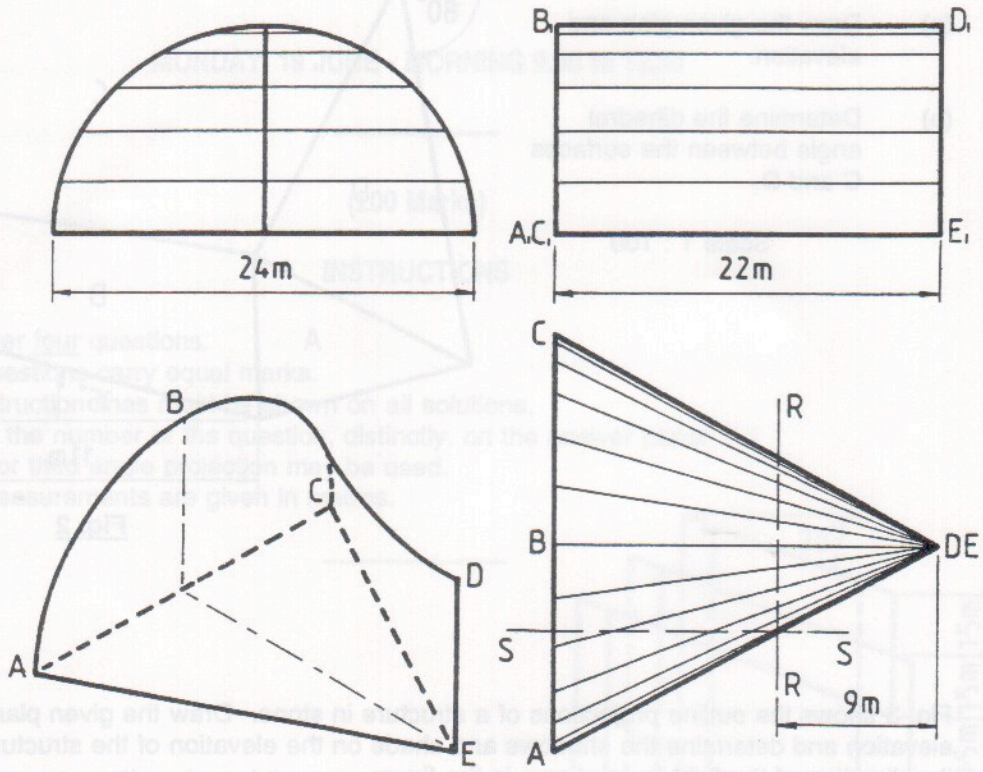


Fig. 4

5. On a contour map A and B are two points whose altitudes are 85 m and 110 m, respectively. On the map B is located 70 m north of A. A skew bore-hole at A is drilled in a south-westerly direction in plan and has an actual inclination of 55° to the horizontal plane. It reveals the top and bottom surfaces of a stratum at altitudes of 60 m and 40 m, respectively.

A skew bore-hole at B is drilled in a south-easterly direction in plan and has an actual inclination of 60° to the horizontal plane. It reveals the top and bottom surfaces of the stratum at altitudes of 90 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 southerly direction in plan. The length of the hole as it goes through the stratum is 45 m. Determine the altitude at which the bore-hole reaches the top surface of the stratum.

Scale 1 : 1000

6. Fig. 5 shows the outline plan and elevation of a roof. The hyperbolic paraboloid surface ABEF is an extension of the smaller hyperbolic paraboloid surface ABCD. M and N are plane pitched roof surfaces.

(a) Draw the given plan and elevation.

(b) Determine the plane director for the elements AD and BC.

(c) Determine the curvature of the roof surface ABCD along a line from D to B.

Scale 1 : 200

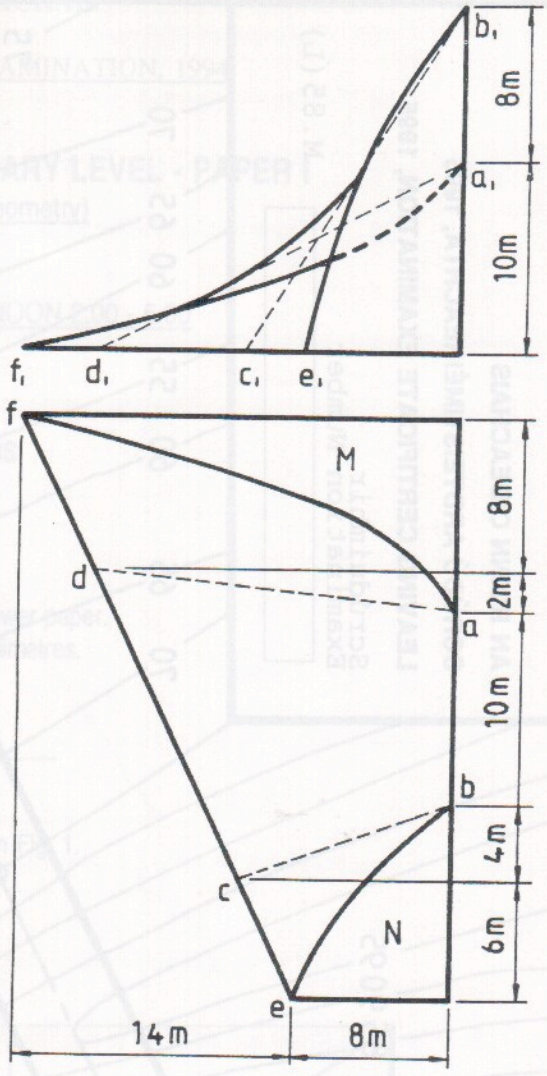


Fig. 5

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

The roadway has the following specification:-

(i) formation width from A to D is 15 m; from D to E the road is widened as shown;

(ii) formation level at B is 75 m;

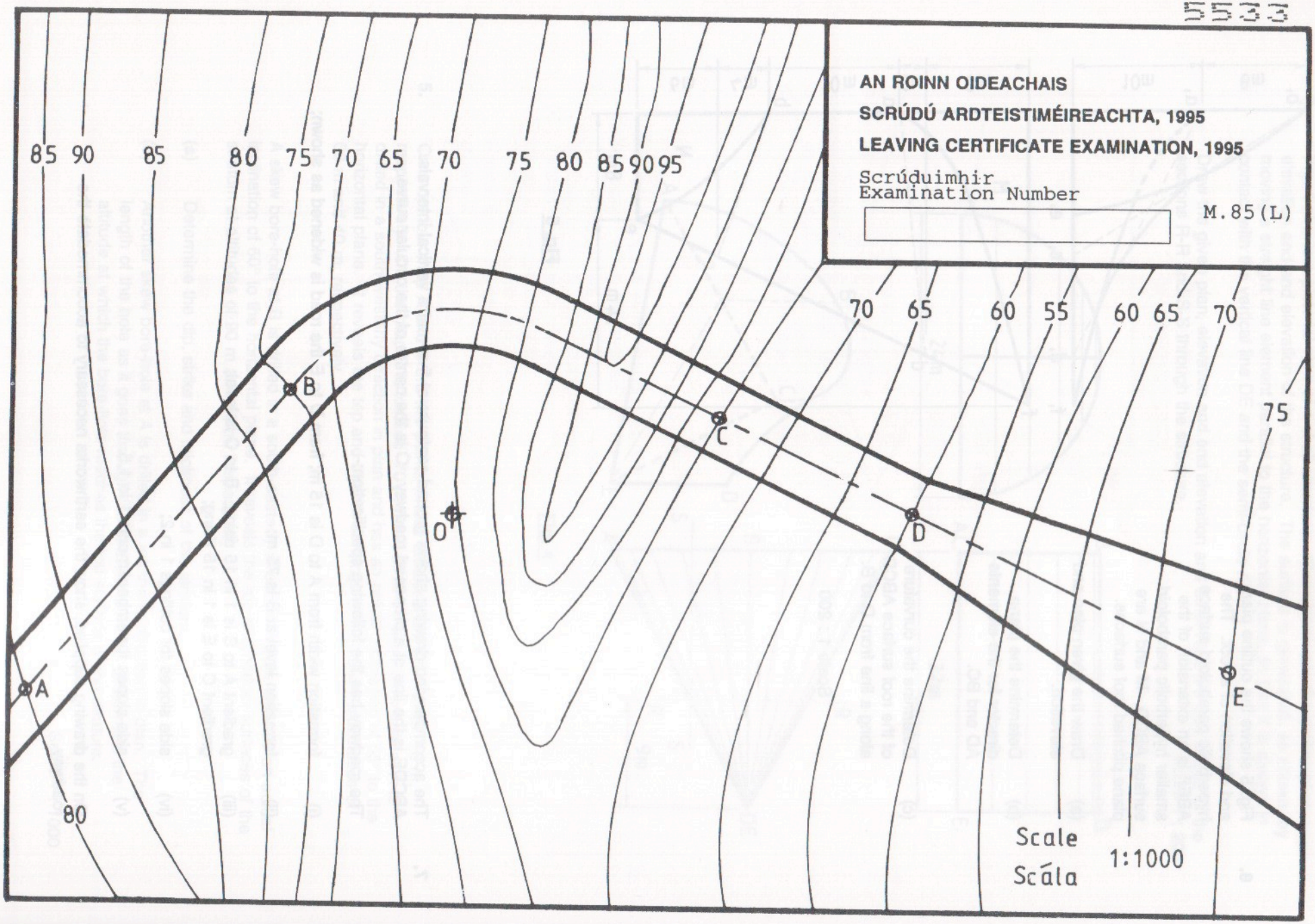
(iii) gradient A to B is 1 in 15 rising; B to C is level; gradient C to E is 1 in 15 rising;

(iv) side slopes for cuttings 1 in 2;

(v) side slopes for embankments 1 in 1.5.

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

5533


AN ROINN OIDEACHAIS
SCRÚDÚ ARDTEISTIMÉIREACHTA, 1995
LEAVING CERTIFICATE EXAMINATION, 1995
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Examination Number
M.85(L)
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