LEAVING CERTIFICATE EXAMINATION, 1996

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

### MONDAY, 17 JUNE - MORNING 9.30 to 12.30

(200 Marks)

INSTRUCTIONS

(a)   Answer <u>four</u> 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 7m from the corner A and the horizon line is 7m above the ground line.

     Scale 1 : 100

Fig. 1
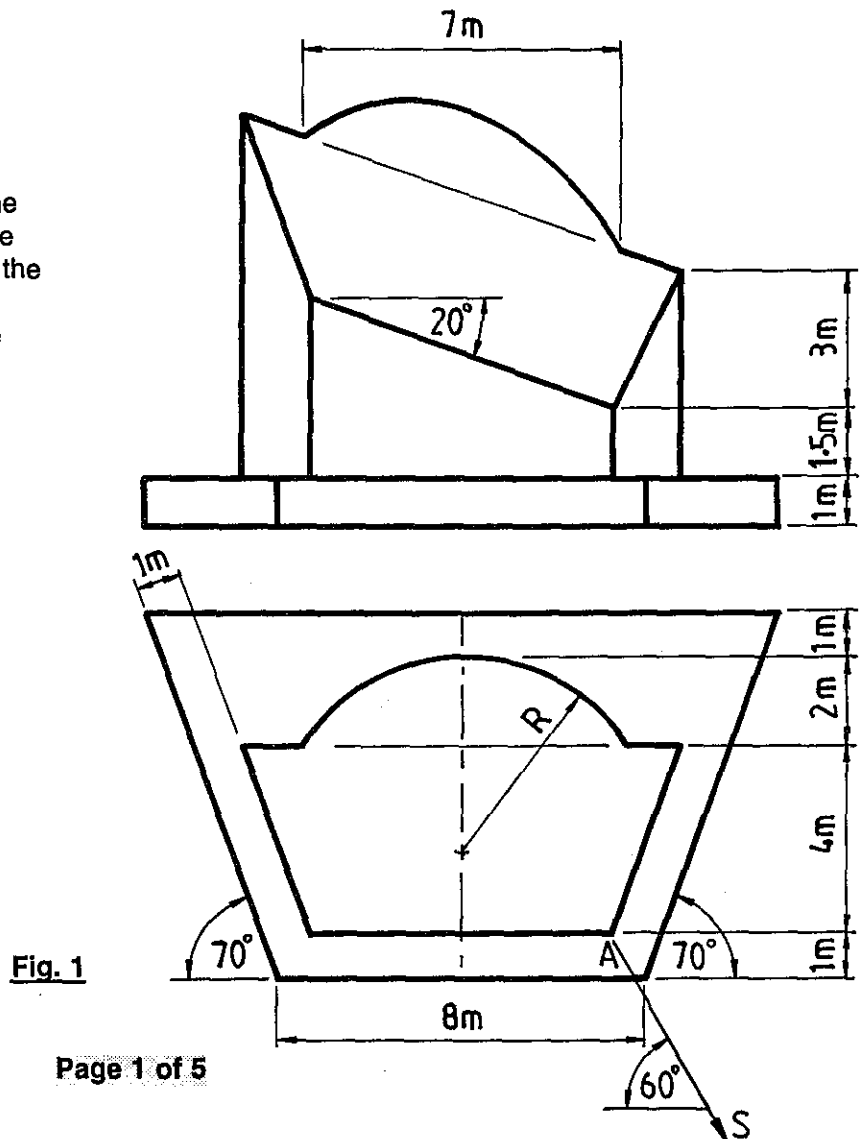
2. Fig. 2 shows the outline plan and elevation of a roof and a dormer window. The surface B has a pitch of 30° and the surface A has a pitch of 40°. The line of intersection between the surfaces B and C has a true length of 19m. The dihedral angle between the surfaces B and C is 145°. The true angle between the horizontal surface E and the sloping dormer surfaces D and F is 120°.

(a) Draw the given plan and elevation.

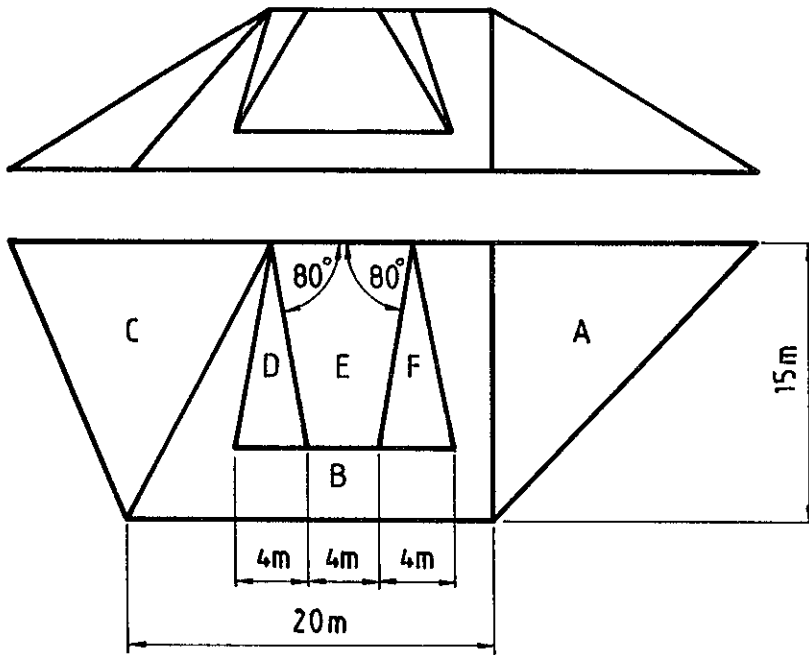(b) Determine the dihedral angle between the surfaces A and B.

Scale 1 : 200

Fig. 2

3. Fig. 3 shows the outline plan and elevation of a concrete structure. Draw the given views and determine the shadows cast in plan when the direction of the light is as shown in the figure.
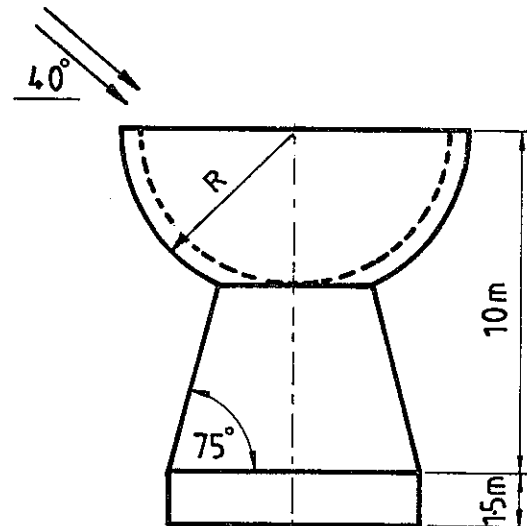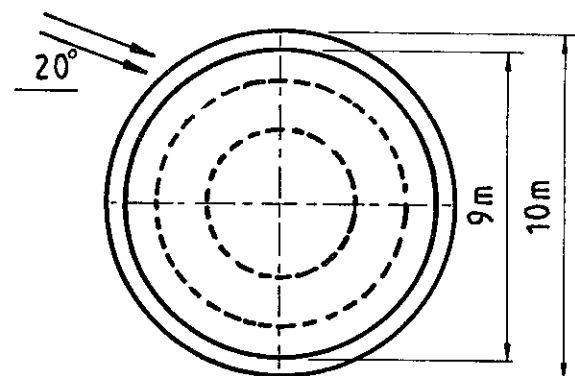
Scale 1 : 100

Fig. 3

4. Fig. 4 shows a pictorial view of a shell structure. Also shown are the outline elevation, and end elevation of the structure. The true shape of the vertical section S-S is the parabola ACB (dotted line). The surface is generated, as shown, by moving a straight line element parallel to the surfaces BDE and AGF, so that it is always in contact with the line EF and the parabola ACB.

   (a) Draw the given elevation and end elevation and project a plan.

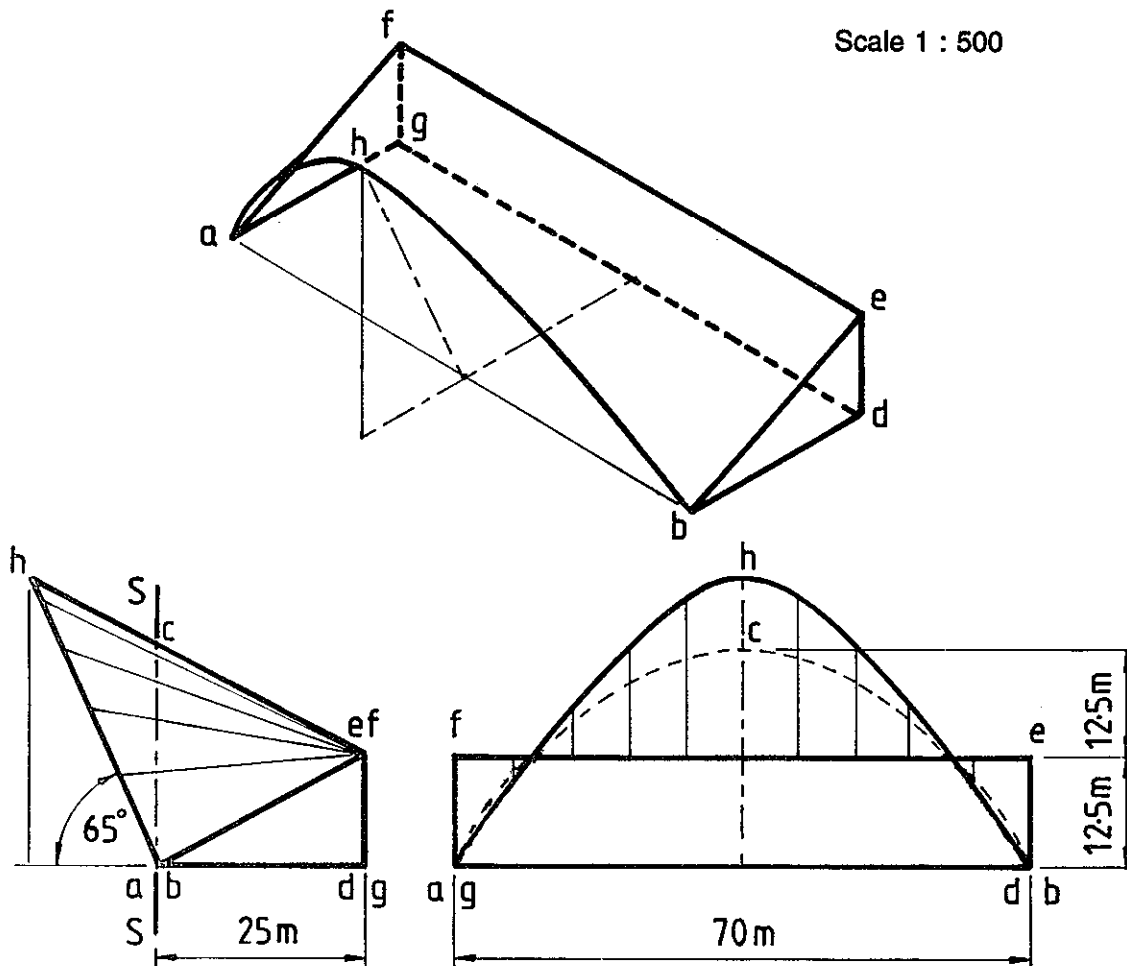   (b) Determine the true shape of the curve AHB.

Scale 1 : 500

Fig. 4

5. On a contour map A and B are two points whose altitudes are 100 m and 110 m, respectively. On the map B is located 80 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 60° to the horizontal plane. It reveals the top and bottom surfaces of a stratum at distances of 35 m and 100 m, respectively, from A.

A skew bore-hole at B is drilled in a north-easterly direction in plan and has an actual inclination of 50° to the horizontal plane. It reveals the top and bottom surfaces of the stratum at distances of 45 m and 95 m, respectively, from B.

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

   (b) Another skew borehole at A is drilled in an easterly direction in plan and meets the top surface of the stratum of a distance of 35 m from A.

   Determine the altitude at which this borehole reaches the bottom surface of the stratum.

Scale 1 : 1000

6. Fig. 5 shows the outline plan and elevation of a monument. The surfaces ABCD and EBFD are in the form of hyperbolic paraboloids.

    (a)   Draw the given plan and elevation.

    (b)   Determine the plane director for the edges AB and CD of the surface ABCD. Show the traces of the plane director having its horizontal trace passing through A.
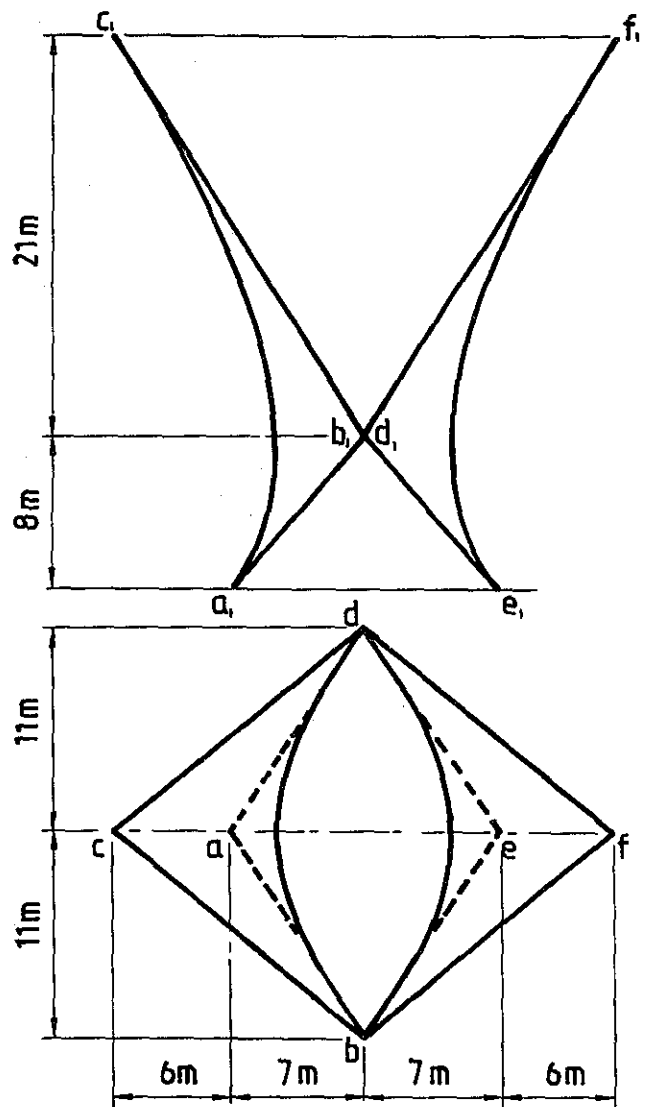
             Scale 1 : 200

Fig. 5

7. The accompanying drawing shows ground contours at five-metre vertical intervals. ABC shows the outline of a proposed roadway. The roadway has the following specification:-

    (i)   formation width is 15 m;

    (ii)   formation level at A is 105 m;

    (iii)   A to B is level, gradient B to C is 1 in 12 falling;

    (iv)   side slopes for cuttings 1 in 1;

    (v)   side slopes for embankments 1 in 2;

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

AN ROINN OIDEACHAIS

SCRÚDÚ ARDTEISTIMEIREACHTA, 1996
LEAVING CERTIFICATE EXAMINATION, 1996

Scrúduimhir
Examination Number

M.85 (L)

A

B

C

85 90 95 100 105 110 115 120 125 125 120 115 110 105 100 95 90 85 80 85 90 85 80 75

Scale 1:1000
Scála