LEAVING CERTIFICATE EXAMINATION, 1985

TECHNICAL DRAWING - HIGHER LEVEL - PAPER II(B)

BUILDING APPLICATIONS

(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 or millimetres.

1. Fig 1 shows the outline plan and elevation of a pitched roof with a central square turret. The surfaces A and B have a pitch of 45°.

   (a) Draw the plan and elevation of the roof.

   (b) Determine the pitch of surface C.

   (c) Determine the dihedral angle between surfaces A and C.

   (d) Find the true angle between the roof surface A and the vertical surface D.

   Scale 1 : 200.

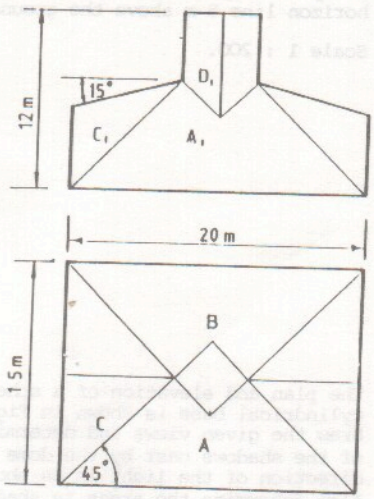


Fig. 1

2. Fig. 2 shows the outline plan of a hyperbolic paraboloid roof shell having AB and CD as directrices. The corners A, B, C and D are 1 m, 22 m, 4 m and 16 m above ground level, respectively.

   (a) Draw the plan and elevation of the roof.
   (b) Draw an elevation of the roof in which the true length of the element BC will be seen.
   (c) Draw a plan of the roof in which the element BC will be seen as a point.
   (d) Show the curvature of the roof along the diagonal BD.

   Scale 1 : 200.

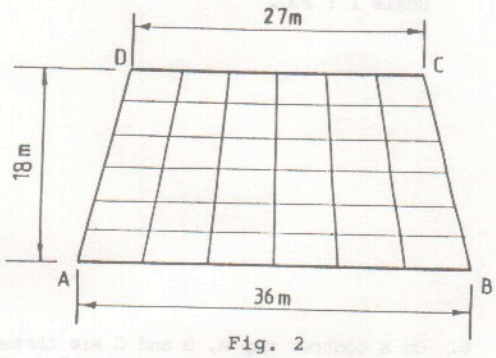


Fig. 2

3. Fig. 3 shows the plan and elevation of a building in the form of a hyperboloid of revolution. The outline of an entrance which projects from the main building is also shown.

   (a) Draw the plan and elevation of the building.
   (b) Draw an end elevation of the building.
   (c) Show the true shape of the curved surface A.

   Scale 1 : 200

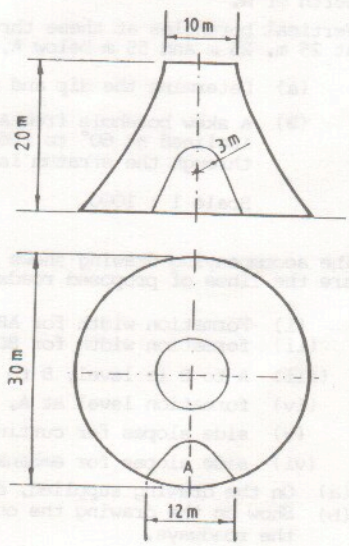


Fig. 3

4. Fig. 4 shows the outline plan and elevation of a building in which four solar panels are incorporated in the roof.

   Draw a perspective view of the building when the position of the spectator is 20 m from corner A, the picture plane touching the corner A and the horizon line 5 m above the ground line.

   Scale 1 : 200.

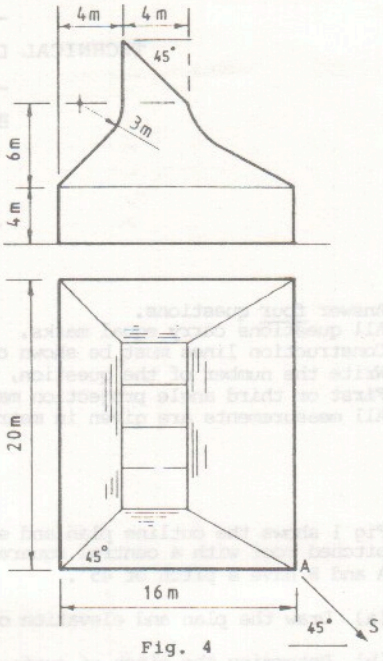


Fig. 4

5. The plan and elevation of a spherical dome on a cylindrical base is shown in Fig. 5.
   Draw the given views and determine the outline of the shadows cast by the dome and base when the direction of the light is as shown.
   Also determine the areas in shade in plan and elevation.

   Scale 1 : 200.

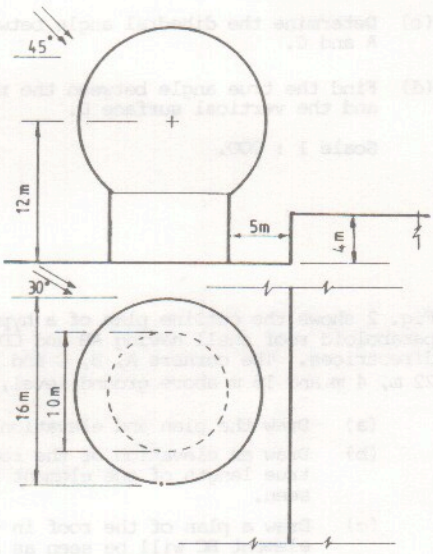


Fig. 5

6. On a contour map A, B and C are three points whose altitudes are 100 m, 130 m and 80 m respectively. On the map B is located 110 m east of A and C is located 95 m north of A.

   Vertical boreholes at these three points reveal the top surface of a stratum of ore at 25 m, 25 m and 55 m below A, B and C, respectively.

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

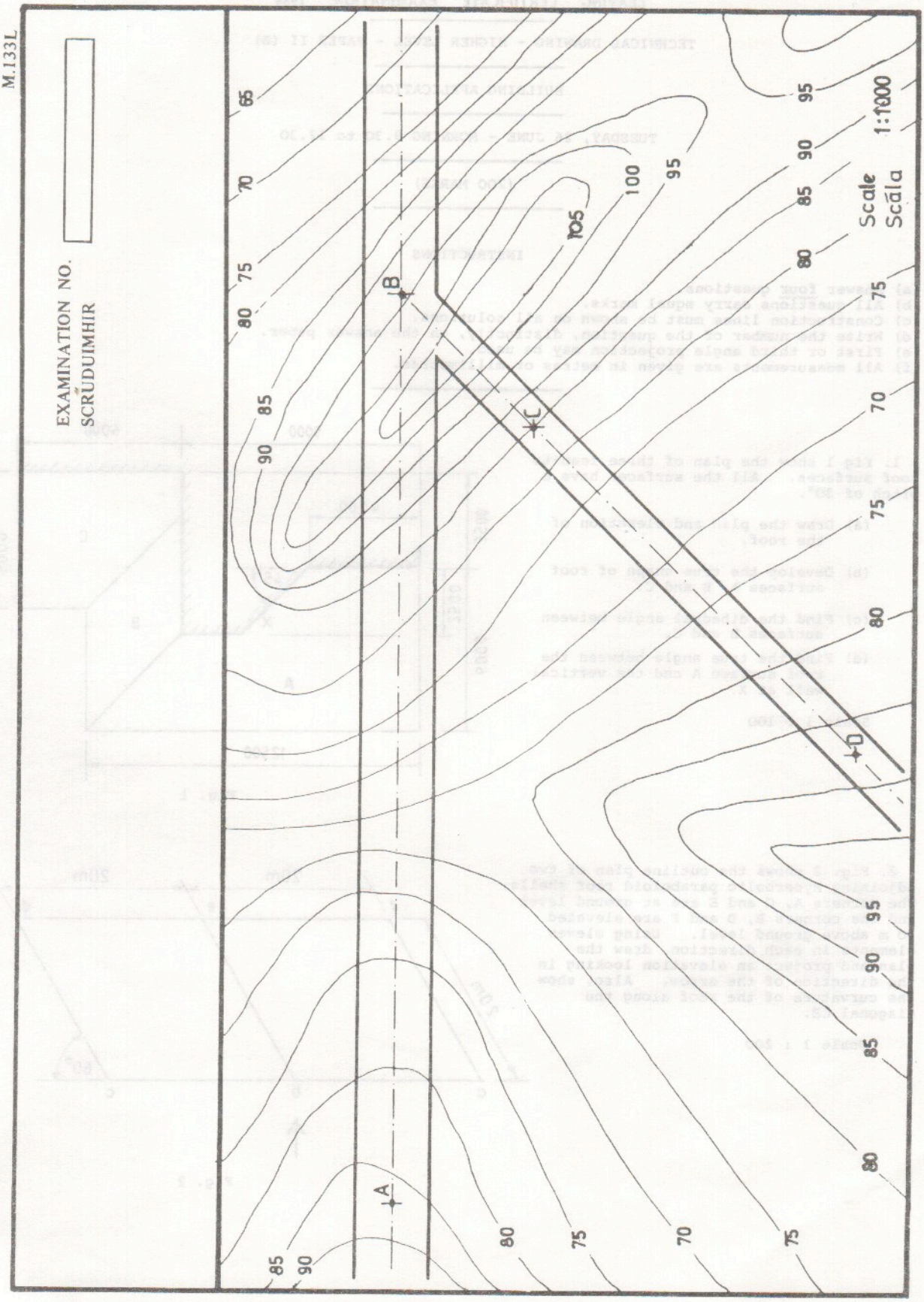
   (b) A skew borehole from A is drilled in a north-easterly direction in plan and is inclined at 60° to the horizontal in elevation. The length of this hole through the stratum is 20 m. Find the actual thickness of the stratum.

   Scale 1 : 1000.

7. The accompanying drawing shows ground contours at 5 m vertical intervals. AB and BD are the lines of proposed roadways having the following specifications:

   (i) Formation width for AB 16 m;
   (ii) formation width for BD 10 m;
   (iii) A to B is level, B to C is level, gradient C to D is 1 in 20 rising:
   (iv) formation level at A, B and C is 85 m;
   (v) side slopes for cuttings 1 in 1;
   (vi) side slopes for embankments 1 in 1.5.

   (a) On the drawing supplied, draw a profile on the line A-B.
   (b) Show on the drawing the outline of the earthworks necessary to accommodate the roadways.


M.133L
EXAMINATION NO.
SCRÚDUIMHIR
Scale 1:1000
Scála
A
B
C
D
65
70
75
80
85
90
95
100
105