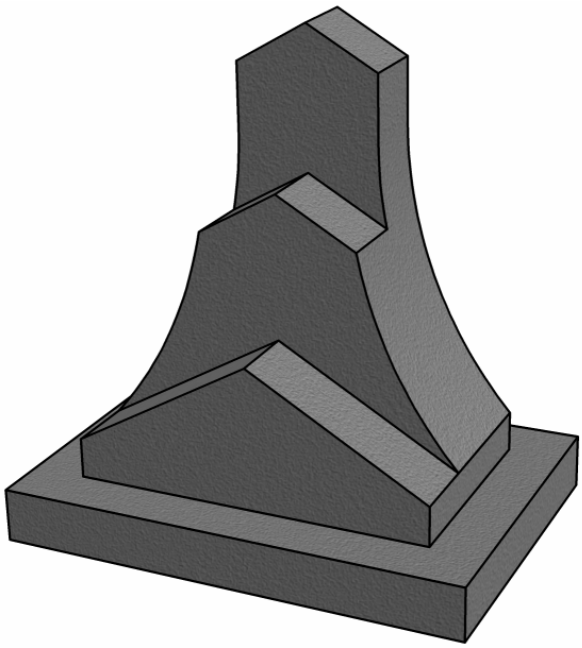
Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2006

Technical Drawing
Paper 2B - Higher Level
(Building Applications)



Marking Scheme And Sample Solutions

(Other valid solutions are acceptable and marked accordingly)

QUESTION 1

		MARKS
1.	Draw the given plan	**4**
2.	Position spectator and plan of picture plane (1, 3)	**4**
3.	Plan of vanishing points	**2**
4.	Ground line, horizon line, vanishing points in elevation (1, 1, 2)	**4**
5.	Projection lines from plan to spectator	**1**
6.	Perspective of base lines of structure (1, 1)	**2**
7.	Measure height 1 and complete perspective of base (1, 2)	**3**
8.	Determine base lines of main structure (2, 2)	**4**
9.	Measure and apply heights 2, 3, 4, 5	**4**
10.	Determine auxiliary vanishing points (or alternative)	**4**
11.	Complete perspective view of block A and base of main structure	**2**
12.	Complete straight lines on surfaces B and C (2, 2)	**4**
13.	Construction for determining points on curves	**4**
14.	Draw curves d, e, f, g, h, presentation	**3**
15.	Complete perspective view, presentation	**5**
	Total	**50**

QUESTION 2

Part (a) (21) MARKS

1. Set up given dimensions for surfaces A and B in plan **2**
2. Draw edge views of surfaces A and B (3, 3) **6**
3. Determine line of intersection between surfaces A and B in plan..... **3**
4. Complete plan, elevation and end view of surfaces A and B **3**
5. View showing true length of line of intersection..... **3**
6. Construction to find dihedral angle **3**
7. Indicating dihedral angle..... **1**

Part (b) (6)

8. Construction to determine true width for development..... **2**
9. Draw development of surface A **4**

Part (c) (9)

10. View showing true length of line of int. between surfaces B and C . **3**
11. Construction to determine trace of surface C in plan **4**
12. Complete plan and elevation of surface C..... **2**

Part (d) (14)

13. Draw end view of surface D, project to plan and elevation **3**
14. Construction to apply pitch of surface E **5**
15. Construction to find line of intersection between B and E..... **4**
16. Complete plan and elevation of surface E **2**

Total..... **50**

QUESTION 3

Given Plan and Elevation (8) **MARKS**

1. Draw the given plan and elevation (3, 3)..... **6**
2. Draw light rays in plan and elevation (1, 1) **2**

Shadow and Shade in Plan (42)

3. Determine points a, b, c on ground..... **3**
4. Draw outline shadow cast by block A on ground..... **4**
5. Determine points d, e, f, g, h on ground **5**
6. Draw outline shadow cast by block B on ground..... **7**
7. Draw outline shadow cast by block B on block A..... **3**
8. Method for determining shade and shadow of hemisphere..... **7**
9. Determine outline shadow cast by hemisphere on block A..... **5**
10. Determine outline of shade on hemisphere..... **5**
11. Complete areas of shade and shadow in plan, presentation **3**

Total.....**50**

QUESTION 4

(a) Plan and Elevation (32) **MARKS**

1.	Draw base circle in plan, base and axes in elevation.....	**2**
2.	Set up element of given true length	**2**
3.	Construction to determine size of throat circle.....	**4**
4.	Draw projections of throat circle (1, 1).....	**2**
5.	Construction to determine hyperbolic curves in elevation	**5**
6.	Draw hyperbolic curves and complete top of elevation (4, 1).....	**5**
7.	Determine width for parabola and set up const. for curve in elev…..	**4**
8.	Draw parabola in elevation	**2**
9.	Method for finding curve of int. of entrance with structure in plan ..	**4**
10.	Complete the plan	**2**

End Elevation (18)

11.	Construction and drawing hyperbolic curves in end elevation.....	**3**
12.	Draw outline of entrance in end elevation.....	**1**
13.	Method for determining points on curve A	**6**
14.	Method for determining points on curve B.....	**6**
15.	Complete end elevation, curves A and B, top.....	**2**

Total **50**

QUESTION 5

(a) Set up, Dip, Strike and Thickness of Stratun (32) MARKS

1. Outline of bore-holes in plan, points A and B in elevation **4**
2. Bore-hole A in elev., points 1 and 3 in elev. and plan (3, 2, 2)..... **7**
3. Bore-hole B in elev., points 2 and 4 in elev. and plan (3, 2, 2) **7**
4. Draw lines 1, 2 and 3, 4 on headwall and footwall in plan (1, 1)..... **2**
5. Draw lines 1, 2 and 3, 4 on headwall and footwall in elev. (1, 1)..... **2**
6. Determine a plane parallel to line in elevation **2**
7. Determine the plane in plan **2**
8. Determine strike in plan..... **1**
9. Direction of auxiliary elevation, dip and thickness (1, 3,1)..... **5**

(b) Bore-Holes R and S (18)

10. Outline of bore-holes R and S in plan and elevation..... **2**
11. Construction to determine points 1 and 3 in plan and elev. on R..... **3**
12. Point 2 on bore-hole S..... **1**
13. Set up given strike in plan..... **4**
14. Direction of auxiliary elev, set up XY line, measure 3 heights..... **4**
15. Indicate the required dip and thickness of the stratum **4**

Total **50**

QUESTION 6

(**a) Plan and Elevation (36)** **MARKS**

1.	Draw plan of edges ABCD, project outline elevation (4, 2)	**6**
2.	Draw elements on ABCD in plan, project to elevation (4, 4).....	**8**
3.	Draw line T from C for extension in elevation.....	**1**
4.	Extend elements on ABCD in elevation to line T	**2**
5.	Extend elements on ABCD in plan.....	**2**
6.	Determine points on curve ECF in plan, draw curve (2, 2).....	**4**
7.	Project intersections of horiz. line from P with elements to plan.....	**3**
8.	Find points on curves GF and PE in plan, draw curves (2, 2, 2).....	**6**
9.	60° lines from G and P in plan, proj. inter. with elements to elev	**2**
10.	Determine points on curve R in elevation, draw curve R (1,1).....	**2**

(b) Traces of Plane Director (14)

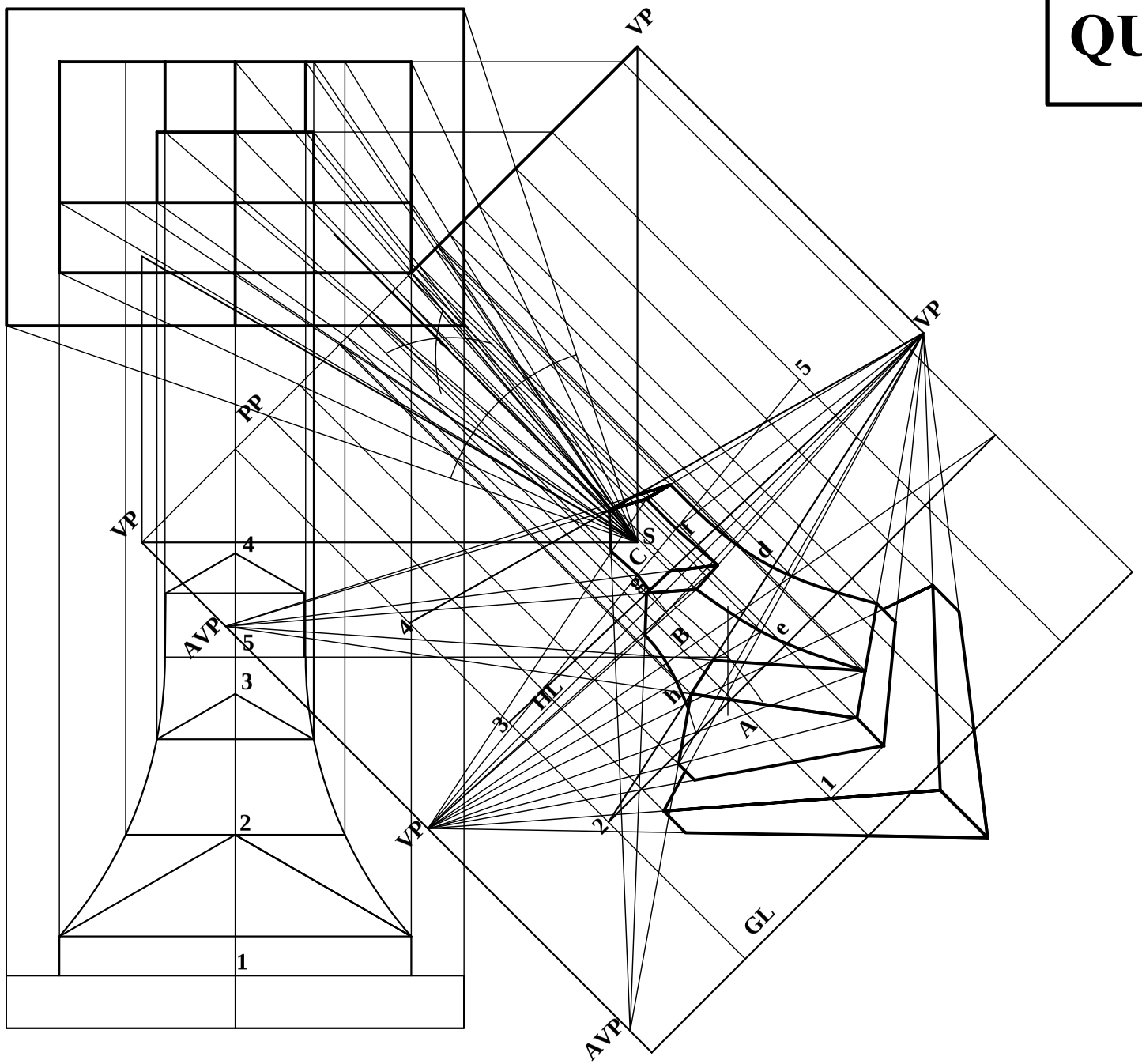
11.	Plane parallel to element in plan.....	**2**
12.	Plane parallel to element in elevation.....	**2**
13.	Determine direction of horizontal trace.....	**2**
14.	Determine direction of vertical trace	**2**
15.	Parallel projection through P	**3**
16.	Draw traces to contain P	**3**

Total **50**

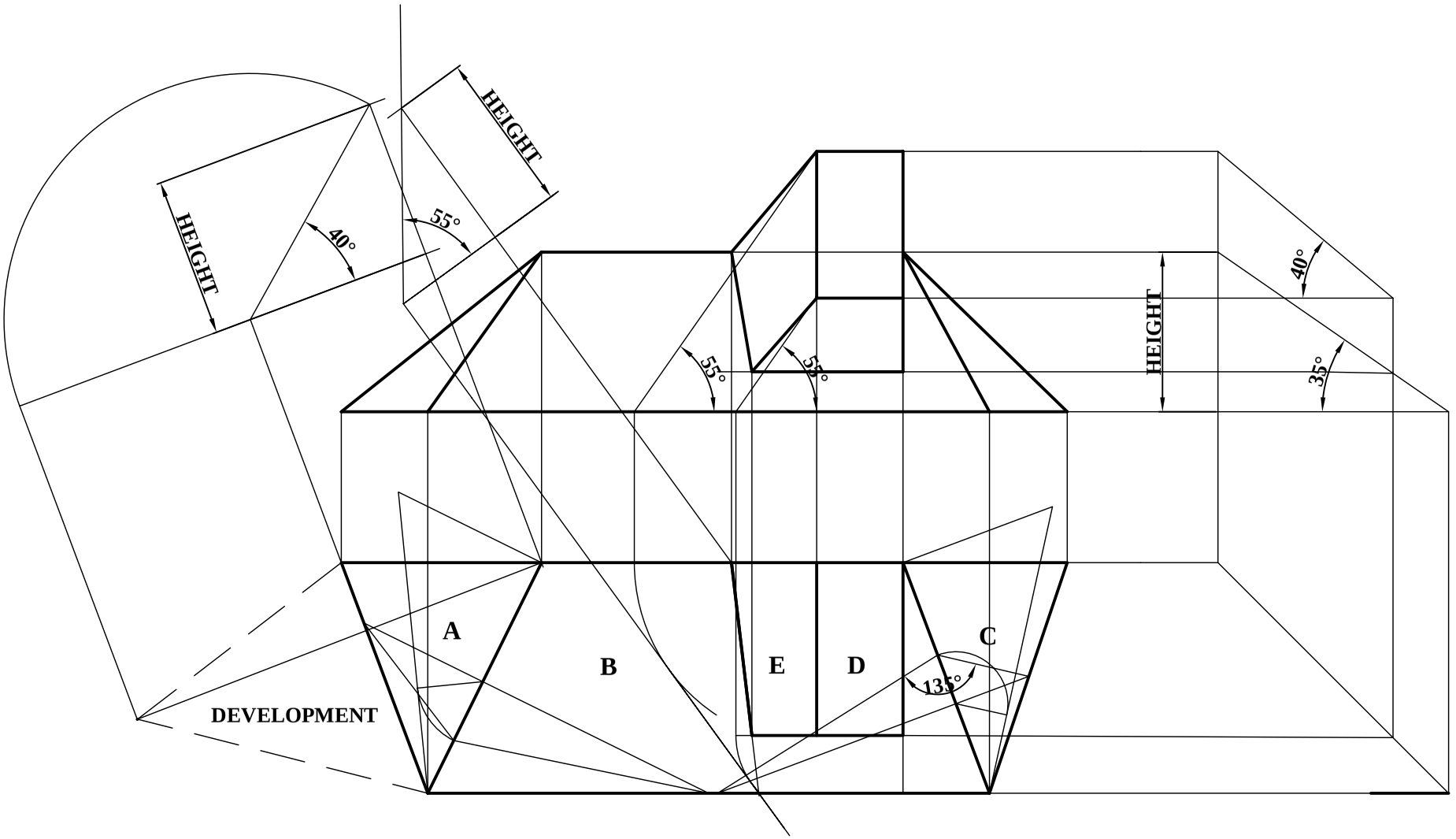
QUESTION 7

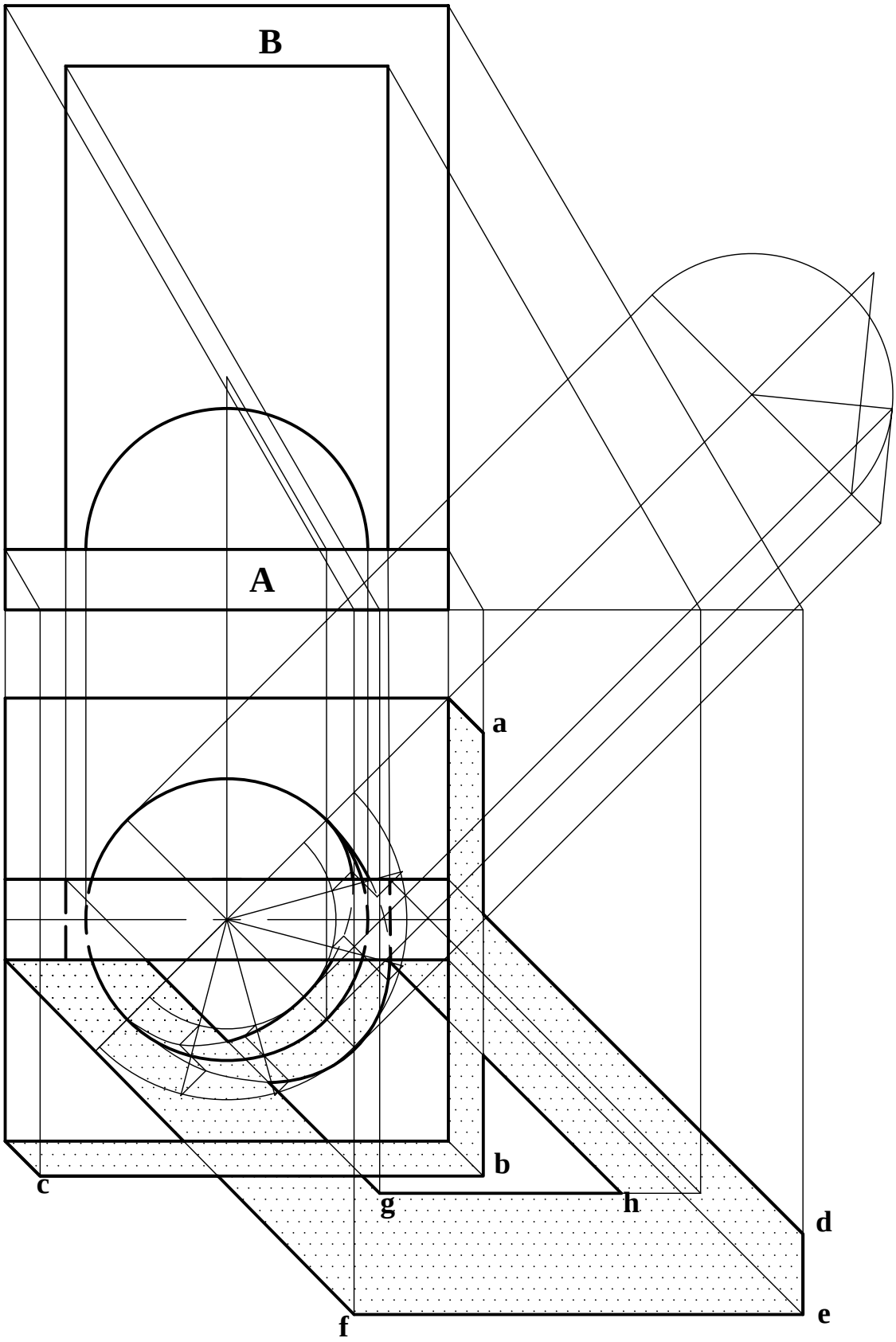
	Earthworks between A and B – Level – Cutting (6)	**MARKS**
1.	Parallel arcs at 7.5 m intervals	**3**
2.	Intersections with contours, drawing curves (1, 2).....	**3**
	Earthworks for narrow section of roadway – Embankments (9)	
3.	Determine arcs rad. 20 m at 75 m level	**3**
4.	Drawing parallel lines at 10 m intervals	**3**
5.	Intersections with contours, drawing curves.....	**3**
	Cuttings (9)	
6.	Determine arcs rad. 15 m at 65 m level, tangents from 75 m level..	**3**
7.	Determine parallel lines at 7.5 m intervals	**3**
8.	Intersections with contours, drawing curves.....	**3**
	Widening part of roadway – Embankment (6)	
9.	Determine arcs rad. 10 m at 80 m level, tangents from 75 m level...	**2**
10	Parallel lines at 10 m intervals	**2**
11.	Intersections with contours, drawing curves.....	**2**
	Wide section of roadway – Embankment (6)	
12.	Determine arcs rad. 20 m at 85 m level, tangents from 75 m level...	**2**
13.	Parallel lines at 10 m intervals	**2**
14.	Intersections with contours, drawing curves.....	**2**
	Cutting (6)	
15.	Determine arc rad. 15 m at 75 m level, tangent from 85 m level	**2**
16.	Parallel lines at 7.5 intervals	**2**
17.	Intersections with contours, draw curve	**2**
	Completion and Presentation (8)	
18.	Determine intersection of cut and fill curves, presentation (4, 4)	**8**
	Total **50**	

QUESTION 1



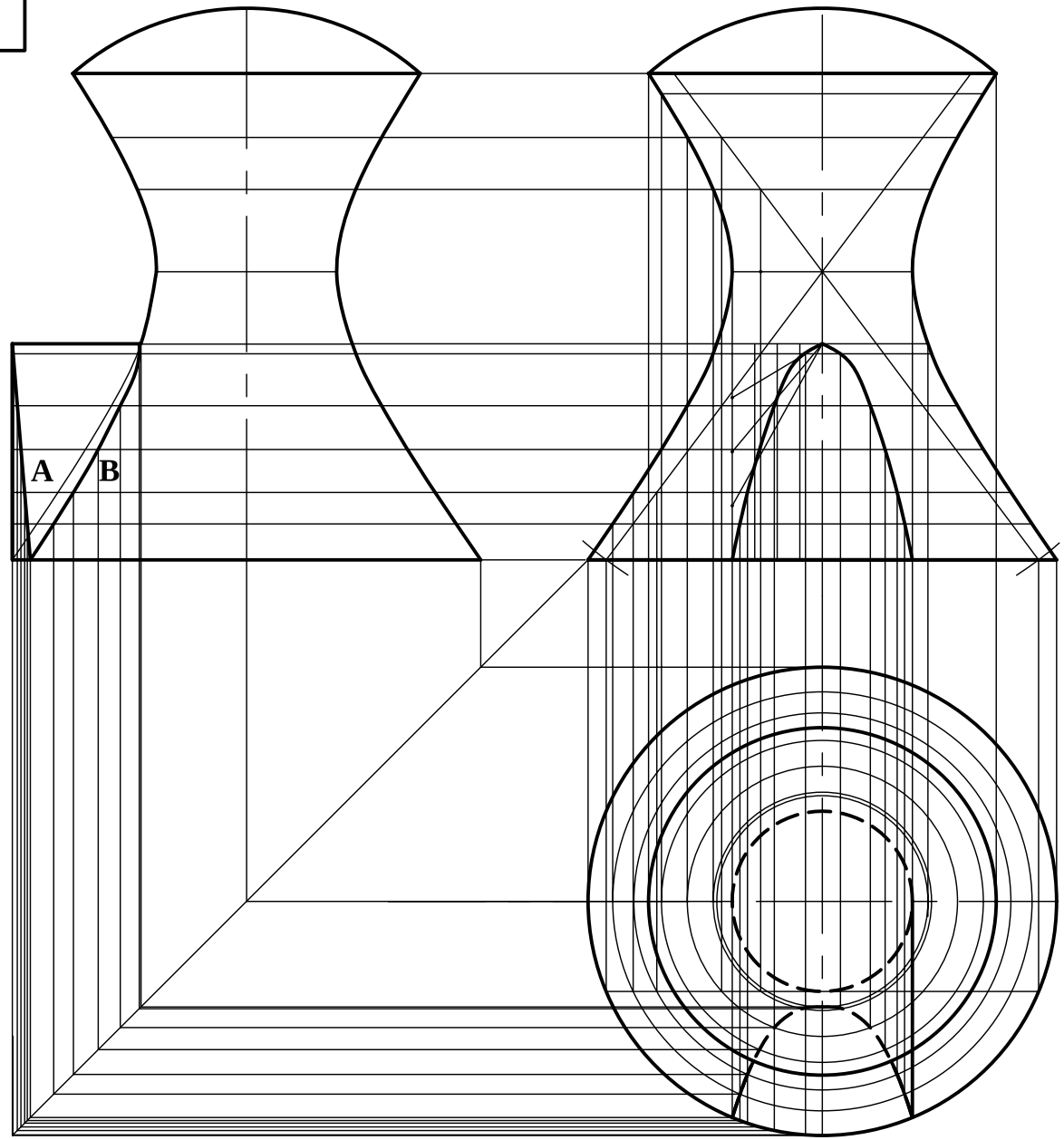
QUESTION 2



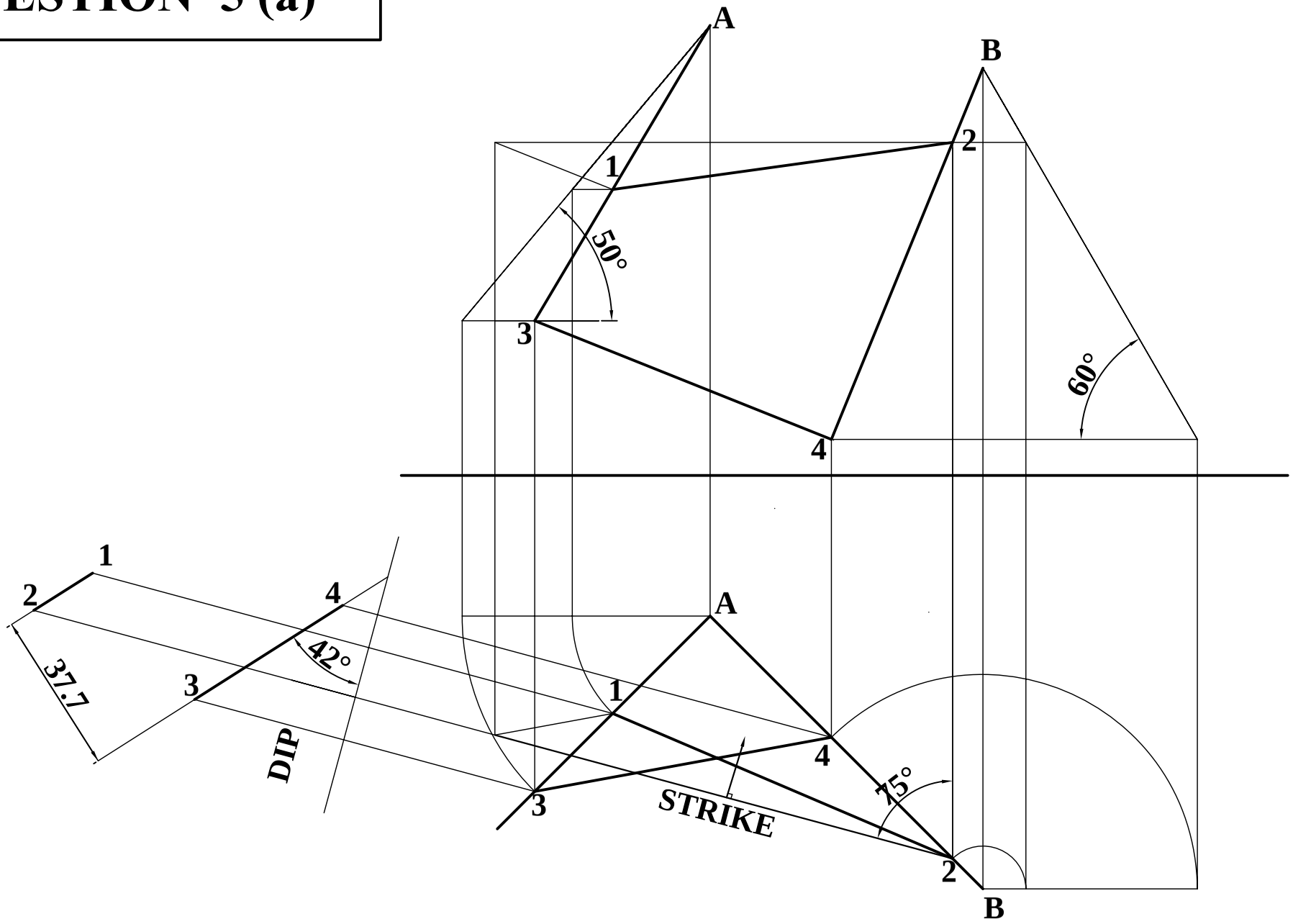


QUESTION 3

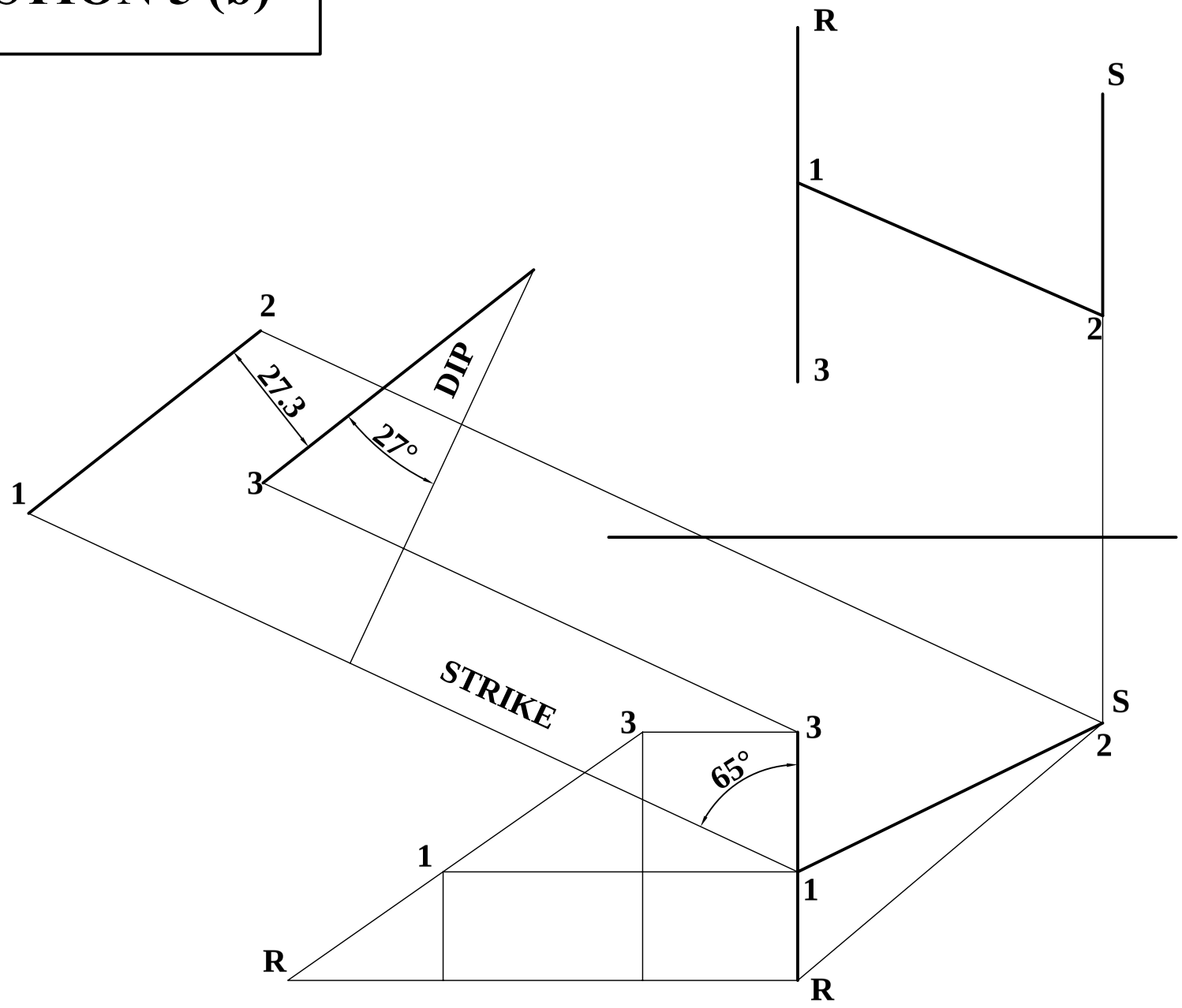
QUESTION 4

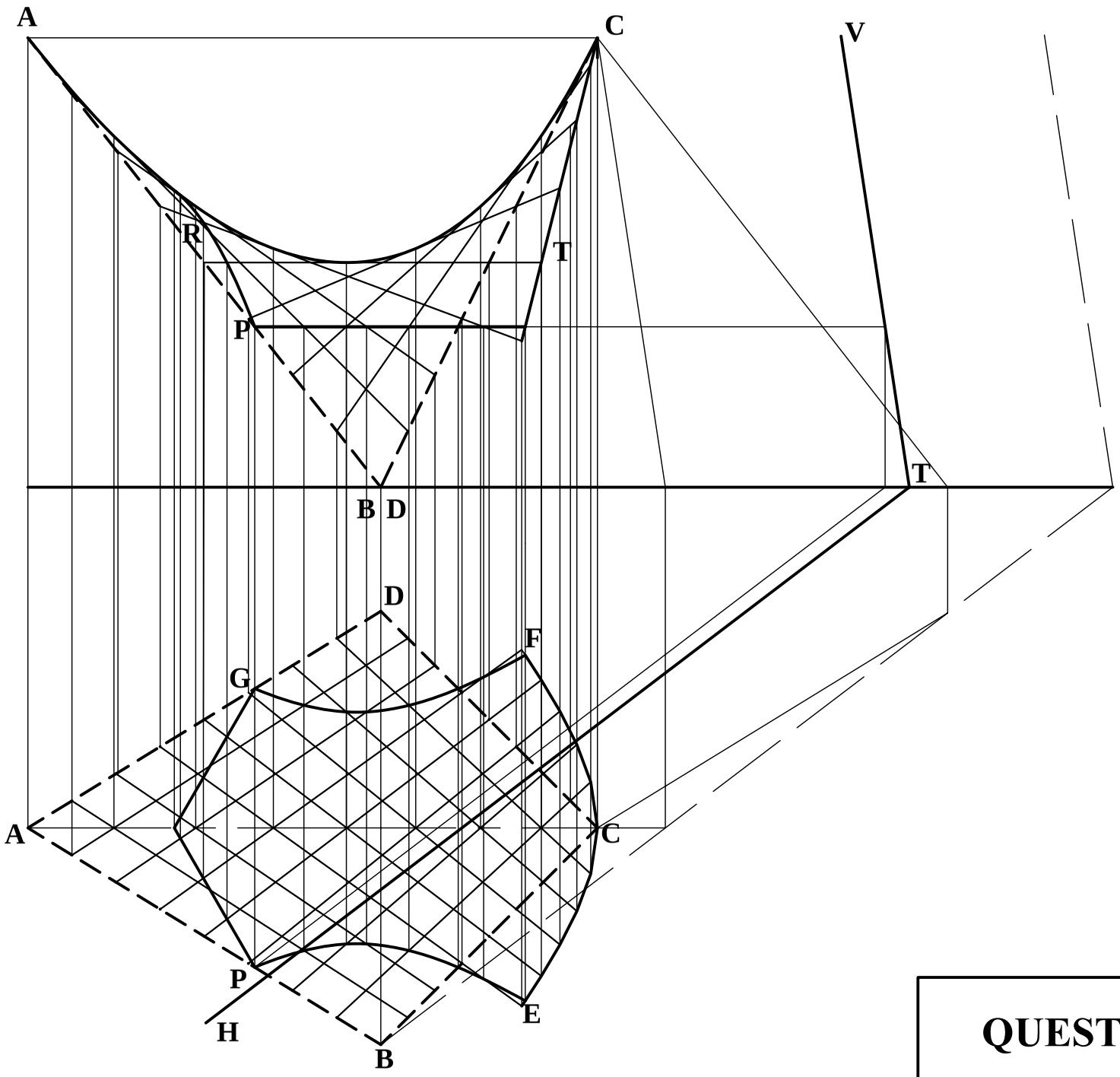


QUESTION 5 (a)

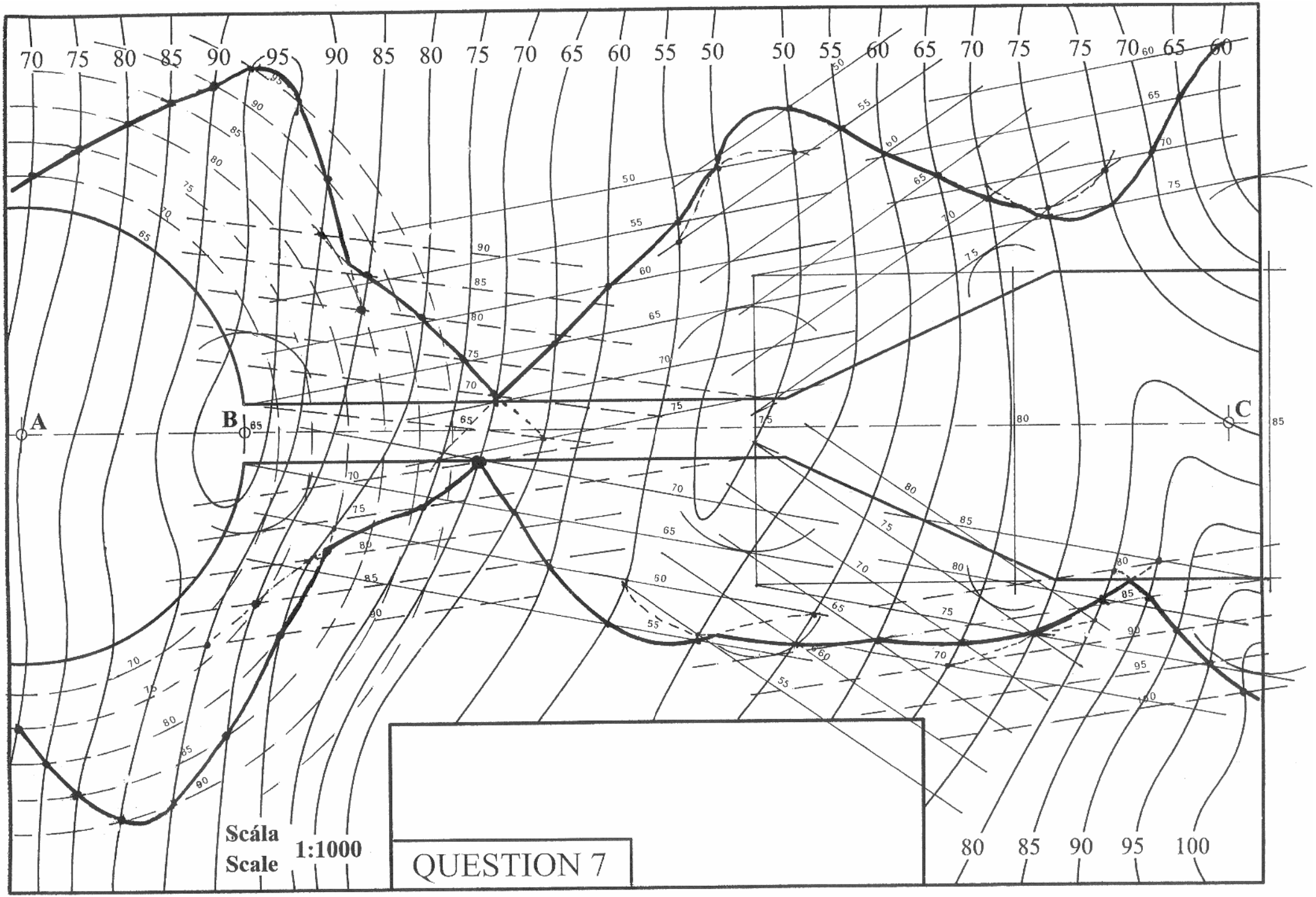


QUESTION 5 (b)





QUESTION 6


A
B
C
Scála
Scale 1:1000
QUESTION 7