



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2022

Marking Scheme

Design and Communication Graphics

Ordinary Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.



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Note: Other valid solutions are acceptable and are marked accordingly.

Question A-1**MARKS****Perspective (18)**

- (i) Radiate lines to correct vanishing points (3 lines)3
- (ii) Complete the bunker outline6
- (iii) Projections from plan or radiated lines2
- (iv) Radiate line to correct vanishing point for bunker division.....1
- (v) Complete bunker division.....6
- (vi) **Presentation**2

Total = 20**Question A-2****MARKS****(a) Points on left hand side (11)**

- (i) Complete division of line AB4
- (ii) Complete division of line BV3
- (iii) Construction lines (2 sets)2
- (iv) Identify remaining points on LHS2

(b) Points on right hand side (3)

- (v) Locate points on RHS curve3

(c) Parabolic curve (4)

- (vi) Complete curve on LHS2
- (vii) Draw curve on RHS2
- (viii) **Presentation**2

Total = 20

Question A-3**MARKS****(a) Plan of sphere C (15)**

- (i) Constructions in elevation4
- (ii) Projections to plan2
- (iii) Locate centre point in plan3
- (iv) Draw sphere C6

(b) Complete plan and hidden detail (3)

- (v) Complete cone A2
- (vi) Hidden detail1
- (vii) **Presentation**2

Total = 20**Question A-4****MARKS****(a) Elevation (8)**

- (i) Projections from plan2
- (ii) Complete the elevation6

(b) End view (10)

- (iii) Projections from plan3
- (iv) Identify correct points2
- (v) Complete the end view.... (incl. Hidden detail)5
- (vi) **Presentation**2

Total = 20

Question B-1**MARKS****(a) Initial setup (7)**

- (i) Draw equilateral triangle4
- (ii) Draw X, Y and Z axes3

(b) Elevation and Plan (13)

- (iii) Projections to set up elevation3
- (iv) Semi-circle in elevation.....1
- (v) Draw elevation in the correct position3
- (vi) Projections to set up plan3
- (vii) Semi-circle in plan (or 45° lines).....1
- (viii) Draw plan in the correct position2

(c) Axonometric Projection of rectangular outline (15)

- (ix) Projections from elevation3
- (x) Projections from plan2
- (xi) Axonometric projection of front surface5
- (xii) Axonometric projection of the top surface2
- (xiii) Axonometric projection of right vertical surfaces3

(d) Axonometric Projection of central semi-circular cut-out (20)

- (xiv) Divisions on semi-circle in elevation5
- (xv) Corresponding divisions in plan5
- (xvi) Projections from elevation2
- (xvii) Projections from plan2
- (xviii) Draw axonometric projection of the semi-circular curves4
- (xix) Complete the axonometric projection.....2
- (xx) **Presentation**5

Total = 60

Question B-2**MARKS****(a) Given Elevation and Plan (25)**

- (i) Draw the outline elevation as given10
- (ii) Complete the elevation4
- (iii) Draw the outline plan as given6
- (iv) Complete the plan as given5

(b) Interpenetration (16)***Interpenetration into ramp***

- (v) Projection from elevation1
- (vi) Locate points in plan2
- (vii) Complete the plan4

Front ramp cut

- (viii) Projection from elevation2
- (ix) Projection from end view2
- (x) Locate points in plan2
- (xi) Complete the plan3

(c) End View (14)

- (xii) Transfer of widths from plan3
- (xiii) Projection of heights from elevation2
- (xiv) End view of main structure (incl. hidden detail).....5
- (xv) End view of ramp.....4
- (xvi) ***Presentation***5

Total = 60

Question B-3**MARKS****(a) Draw elevation of the birdhouse (18)**

- (i) Draw base of birdhouse6
- (ii) Outline of top4
- (iii) Complete elevation8

(b) Plan (18)

- (iv) Draw base6
- (v) Outline of top4
- (vi) Complete plan8

(c) Auxiliary elevation (19)

- (vii) X_1Y_1 line parallel to plan of surface A.....1
- (viii) Projections from plan1
- (ix) Transfer of heights from elevation4
- (x) Draw surface A4
- (xi) Complete auxiliary elevation9

- (xii) **Presentation**5

Total = 60

Question C-1

	MARKS
(a) Profile (28)	
(i) Measure heights and draw horizontal lines	10
(ii) Projections from intersections between line AB and contours	8
(iii) Draw the profile	10
 (b) Earthworks for roadway (27)	
(iv) Parallel lines at 5m intervals for embankments	4
(v) Identify points on embankment curve	4
(vi) Draw embankment curve	5
(vii) Parallel lines at 10m intervals for cuttings	4
(viii) Identify points on cutting curve.....	5
(ix) Draw cutting curves.....	5
 (x) Presentation	5
	Total = 60

Question C-2**MARKS****(a) Elevation and Plan (32)**

- (i) Outline of surface ABCD in plan.....8
- (ii) Elements in plan (incl. division)6
- (iii) Outline of surface in elevation8
- (iv) Elements in elevation (incl. division or proj.)6
- (v) Completion of elevation (vertical legs).....4

(b) End view of Hyperbolic Paraboloid (23)

- (vi) Determine heights and widths for surface ABCD8
- (vii) Draw the outline of hyperbolic paraboloid surface6
- (viii) Draw elements5
- (ix) Completion of end view (vertical legs)4
- (x) **Presentation**5

Total = 60

Question C-3**MARKS****(a) Elevation and plan (26)**

- (i) Draw straight edges in elevation8
- (ii) Determine centre and draw semi-circle4
- (iii) Draw outline plan6
- (iv) Complete plan8

(b) End view (10)

- (v) Correct heights and widths for end view.....4
- (vi) Draw the end view.....6

(c) Surface Development (19)

- (vii) Appropriate layout of surface development1
- (viii) Development of bottom surface4
- (ix) Development of front surface3
- (x) Development of back surface3
- (xi) Division of arc2
- (xii) Development of curved surface4
- (xiii) Division of top surface2

- (xiv) **Presentation**5

Total = 60

Question C-4**MARKS****(a) Displacement Diagram (29)**

(i)	360° division (widths on displacement diagram)	5
(ii)	Correct use of 70mm height	1
(iii)	Establish follower position at 0°, 90°, 120°, 180° and 360°	7
(iv)	0° to 90°, Rise 70mm with Uniform Velocity.....	3
(v)	90° to 120°, Dwell	3
(vi)	120° to 180°, Fall 20mm with Uniform Velocity.....	3
(vii)	180° to 360°, Fall 50mm with Simple Harmonic Motion.....	3
(viii)	Complete Displacement Diagram	4

(b) Helix (26)

(ix)	Draw circle in plan	4
(x)	Draw outline elevation	4
(xi)	Division in plan	3
(xii)	Draw horizontal divisions in elevation.....	3
(xiii)	Complete projections from plan of helix	2
(xiv)	Locate points in elevation	6
(xv)	Draw helix in elevation	4
(xvi)	Presentation	5

Total = 60

Question C-5**MARKS*****Assembly (8)***

- (i) Relative positioning of components8

Base (10)

- (ii) Base outline.....8
- (iii) Hidden detail2

Main Body (25)

- (iv) Locate width of hexagons3
- (v) Body outline10
- (vi) Handle7
- (vii) Spout2
- (viii) Complete body3

Lid (12)

- (ix) Bottom outline6
- (x) Handle3
- (xi) Complete lid (incl. hidden detail)3

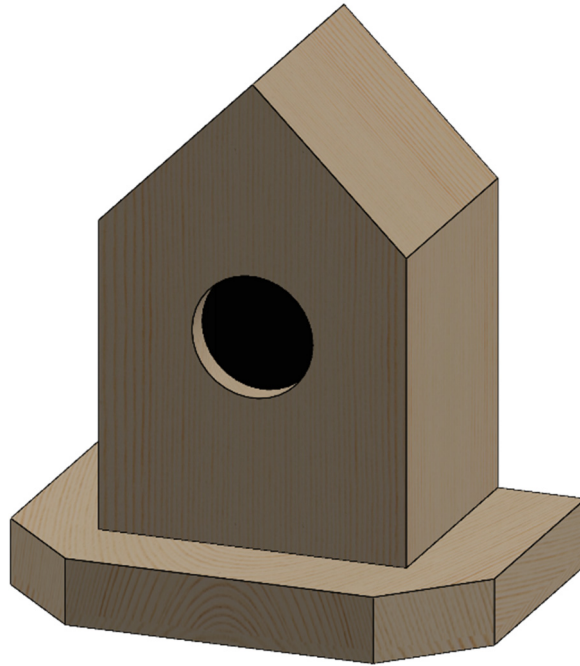
- (xii) ***Presentation***5

Total = 60



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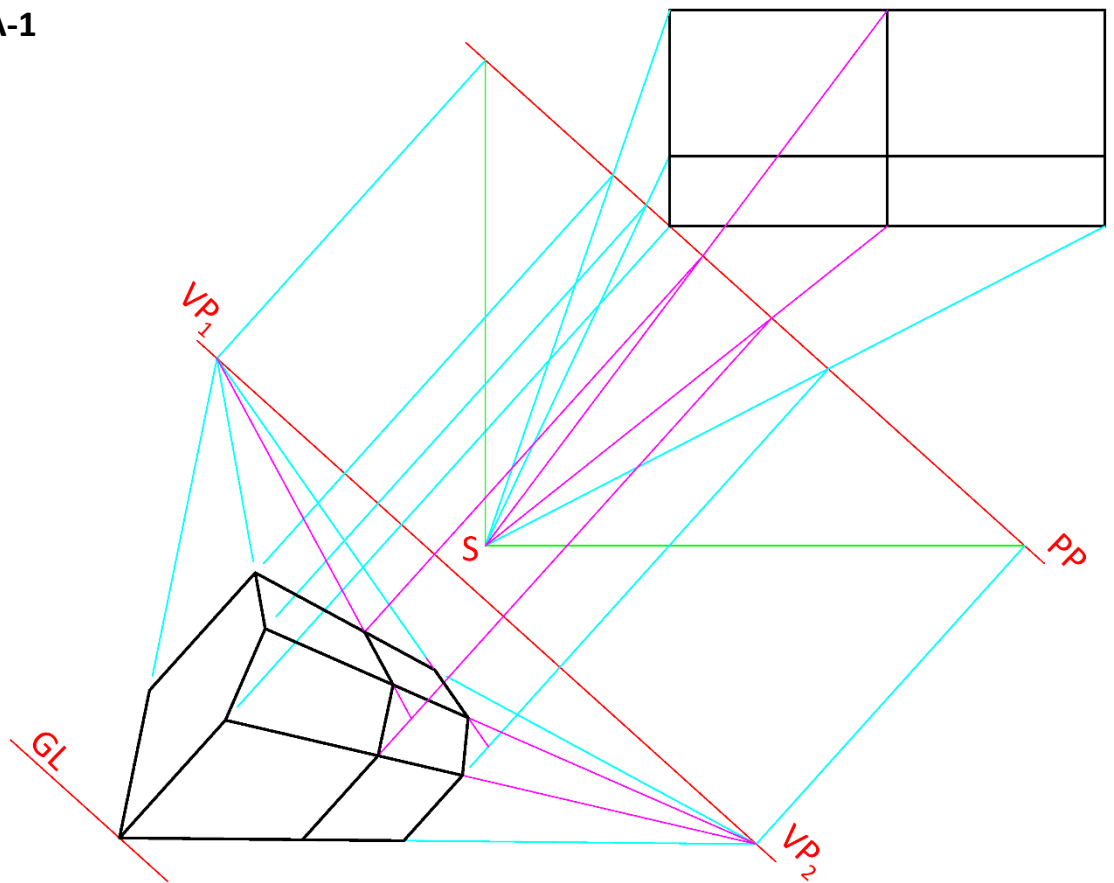
Design and Communication Graphics

Ordinary Level

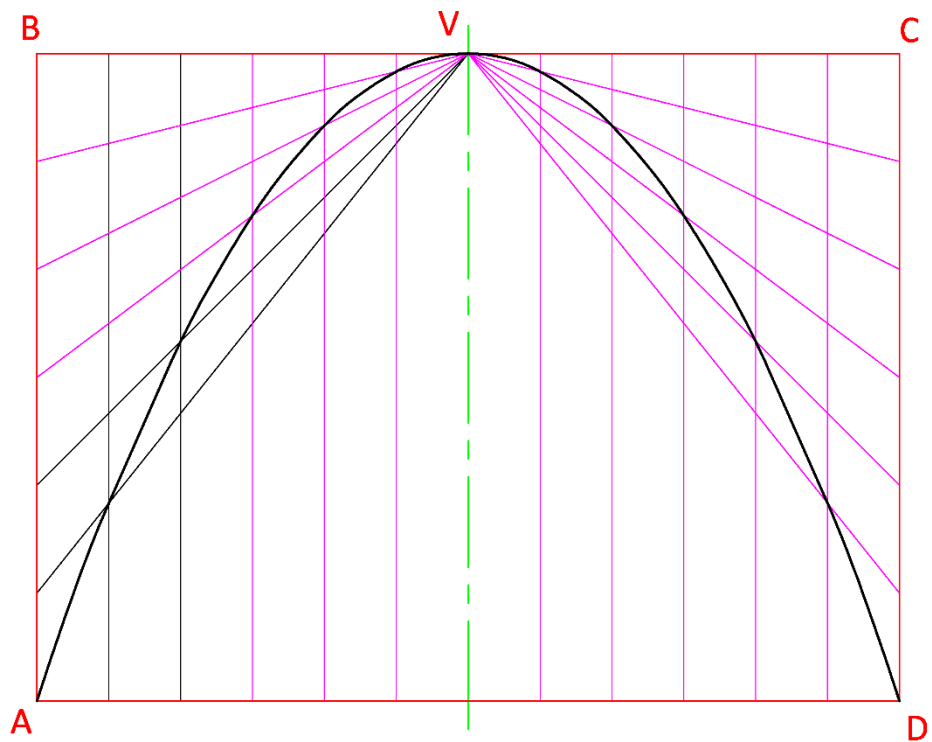
Sample Solutions

Note: Other valid solutions are acceptable and are marked accordingly.

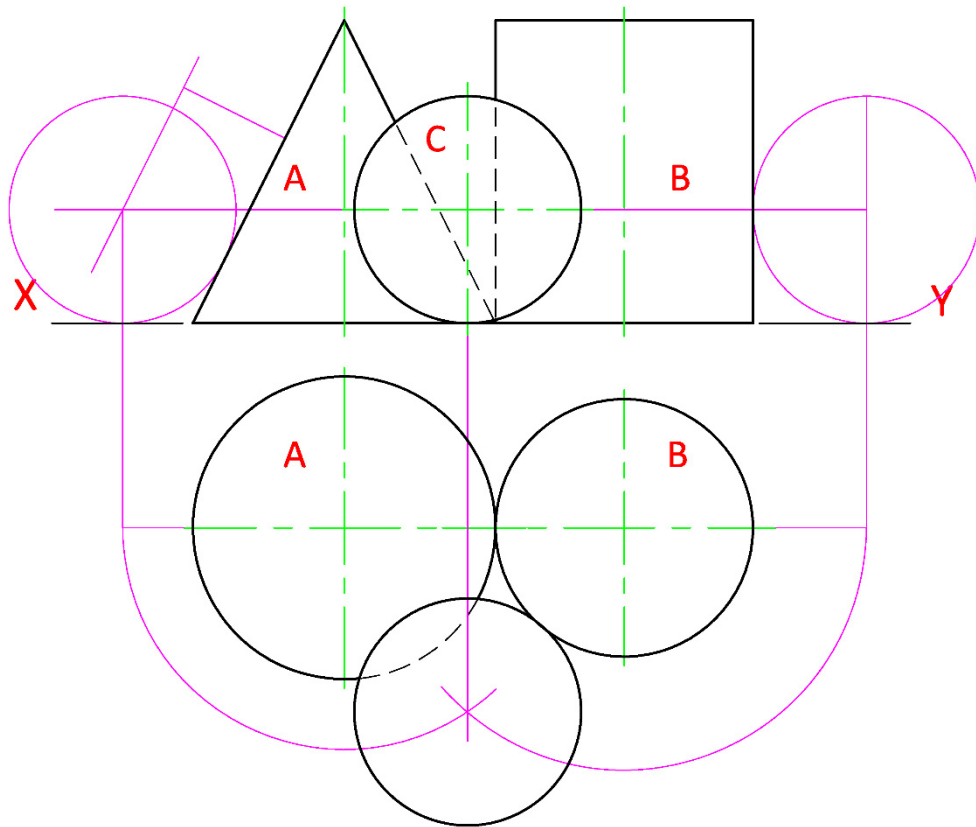
Question A-1



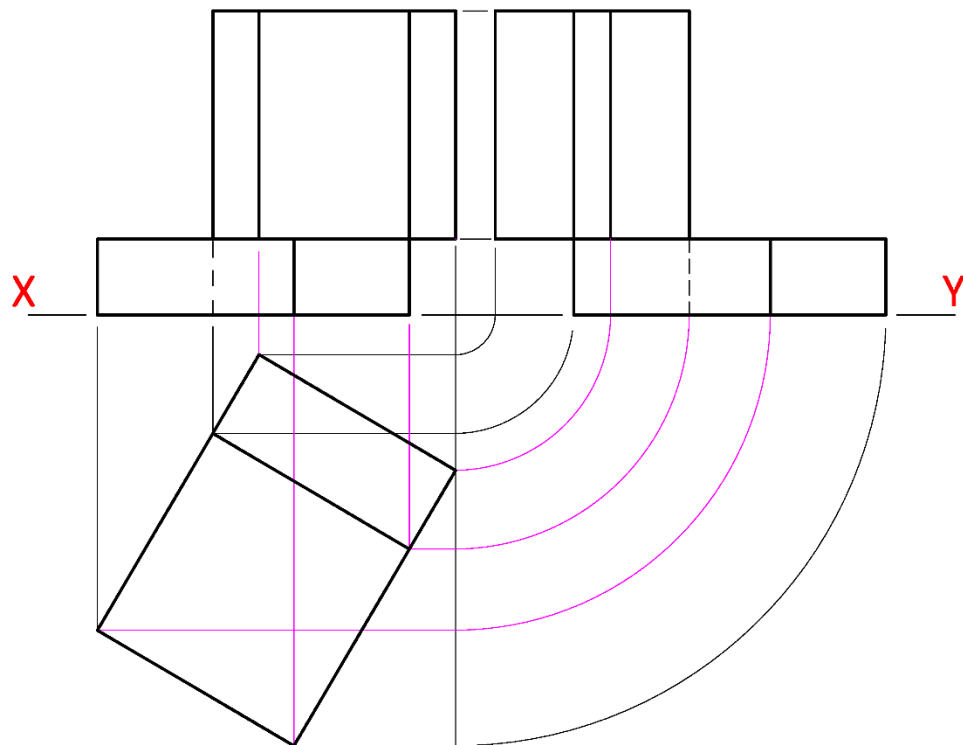
Question A-2

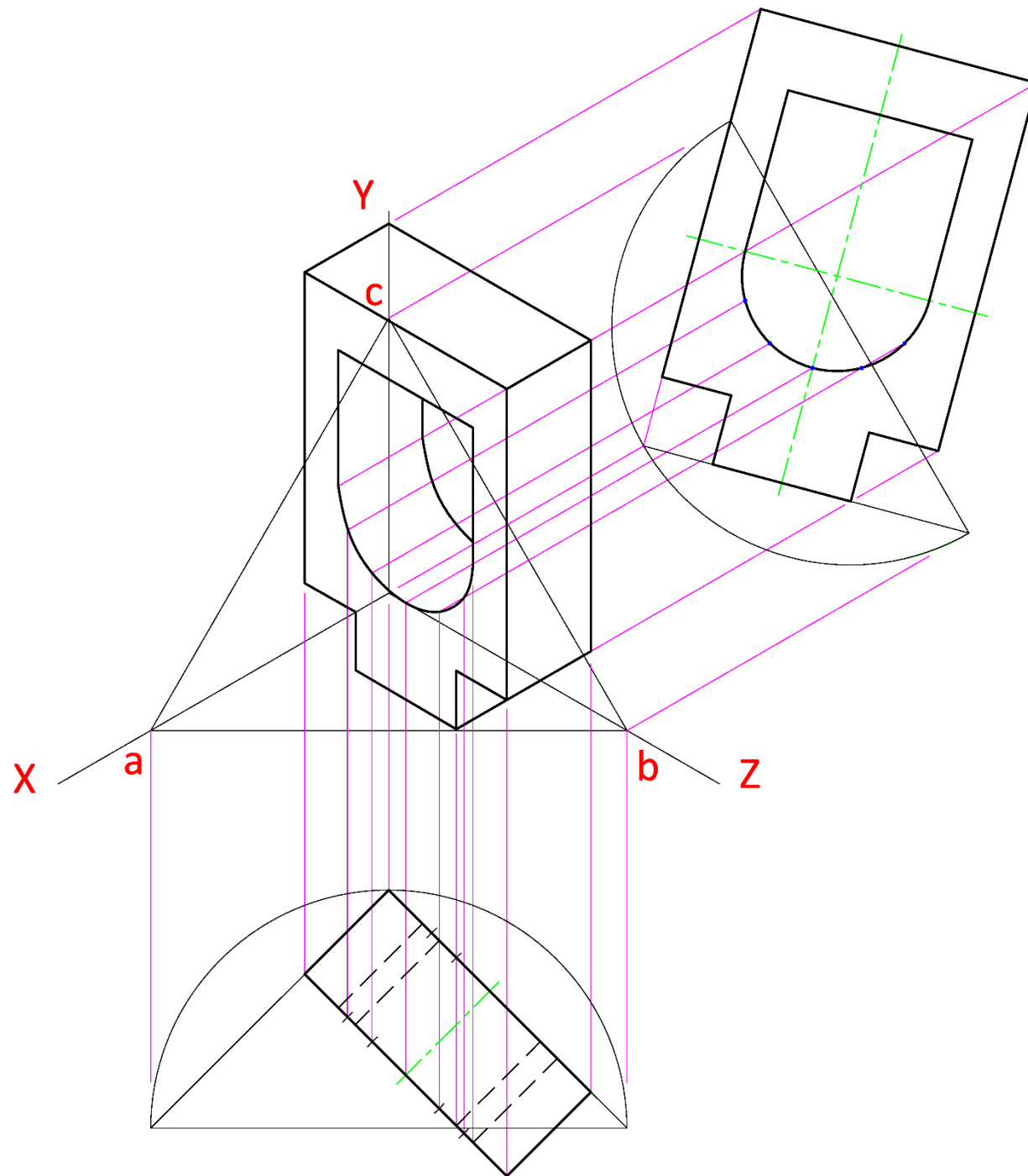


Question A-3

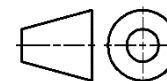


Question A-4





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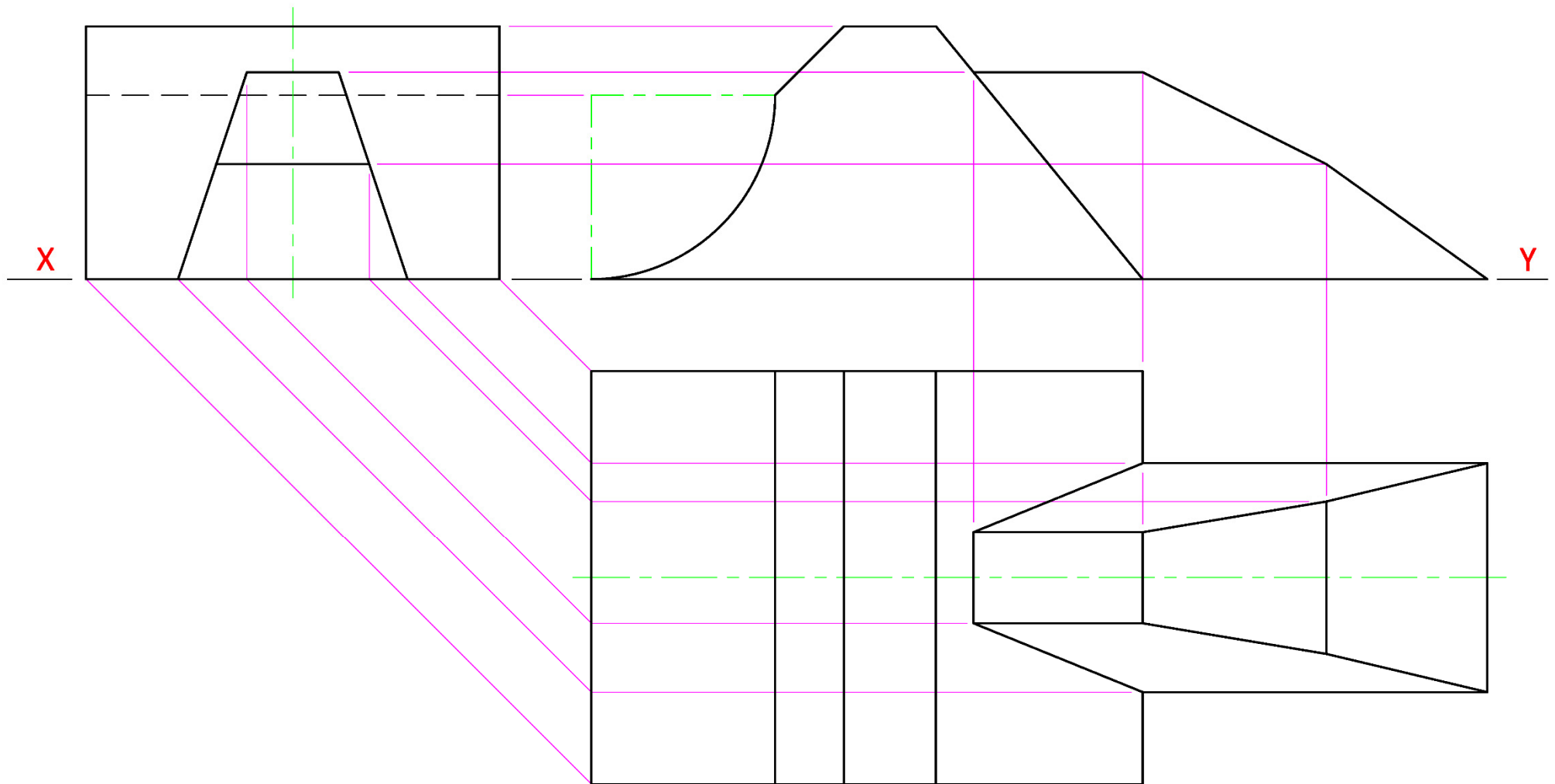


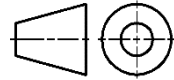
Marking Scheme

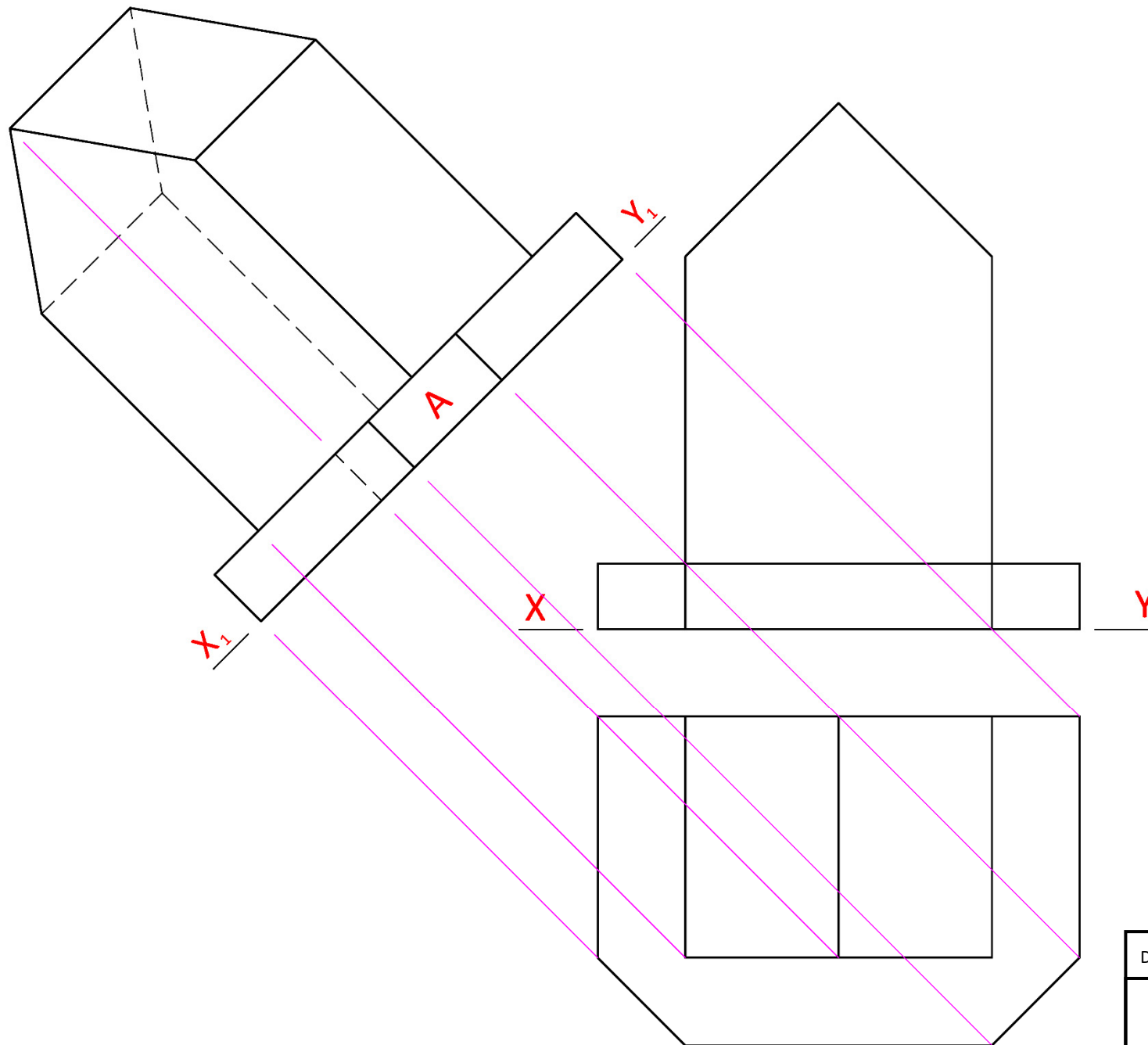
Question B-1

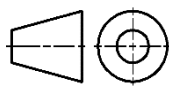
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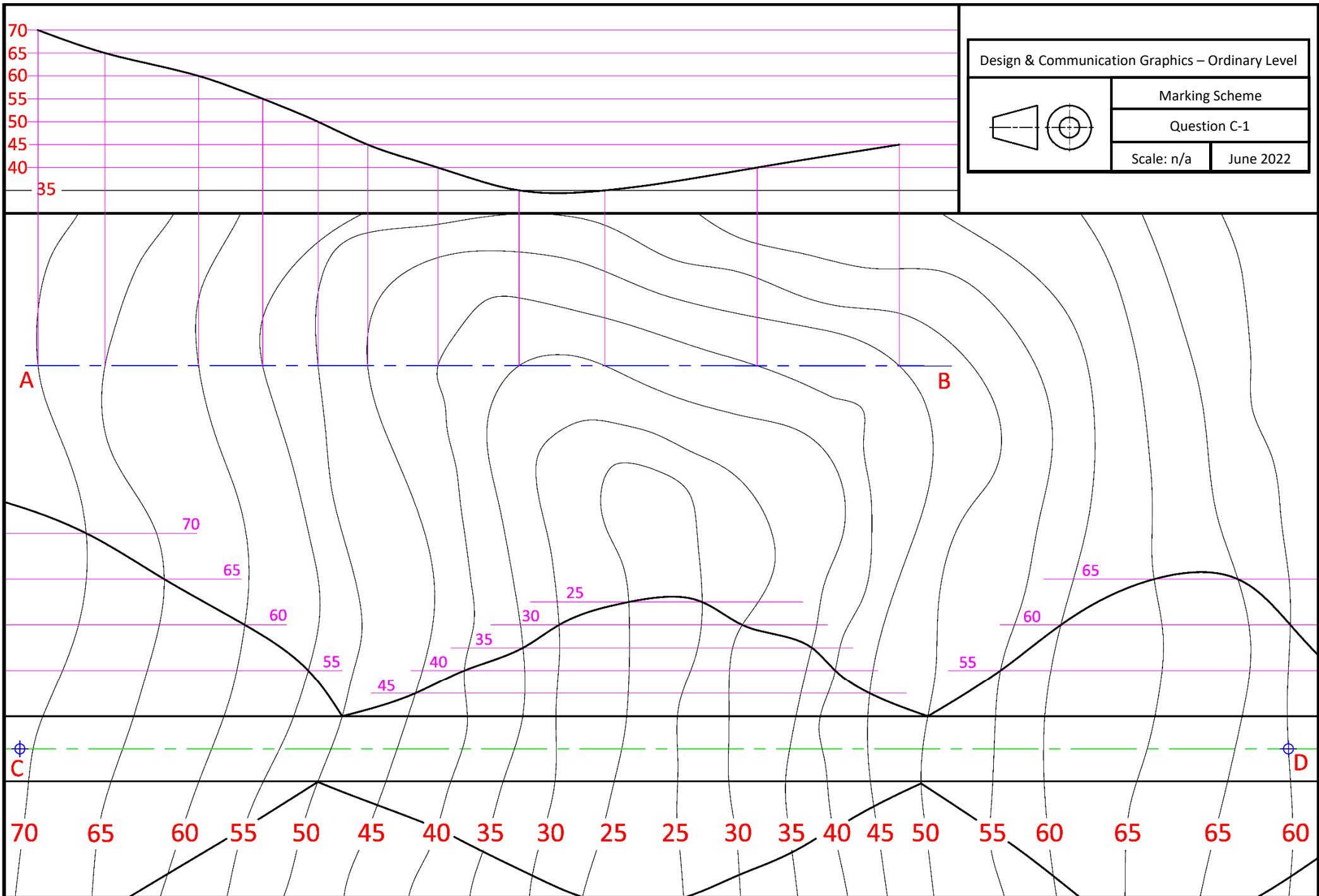
June 2022

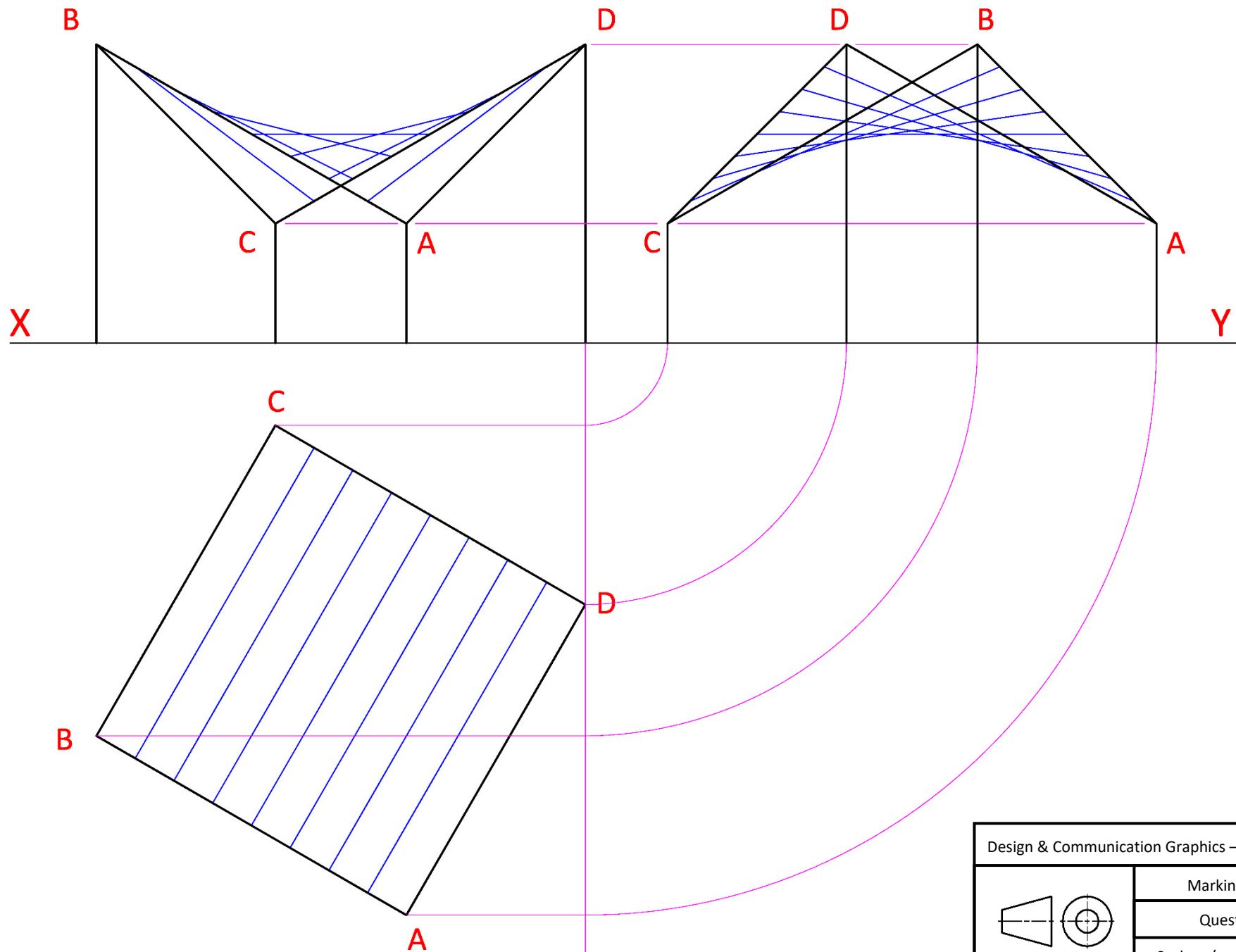


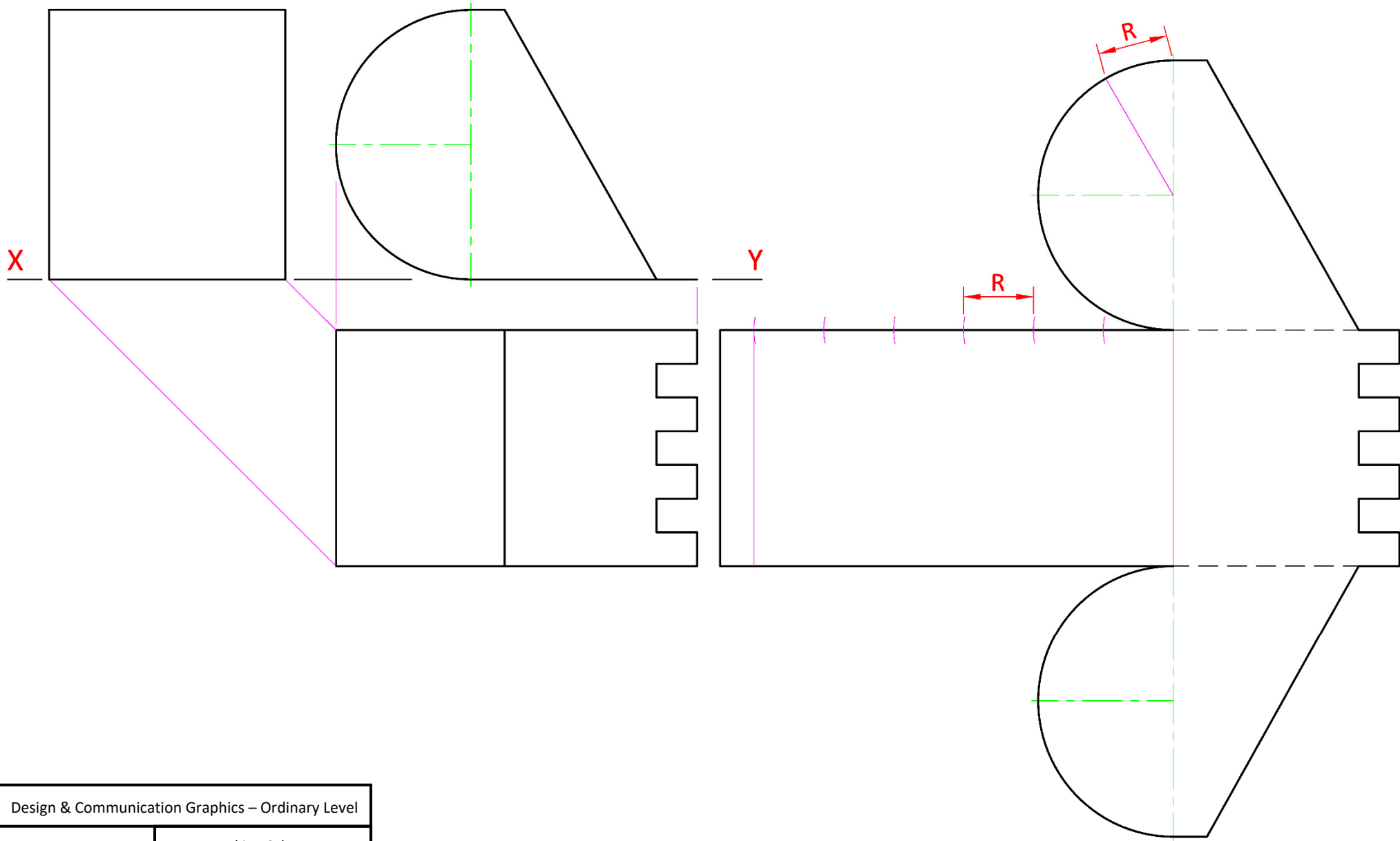
Design & Communication Graphics – Ordinary Level		
	Marking Scheme	
	Question B-2	
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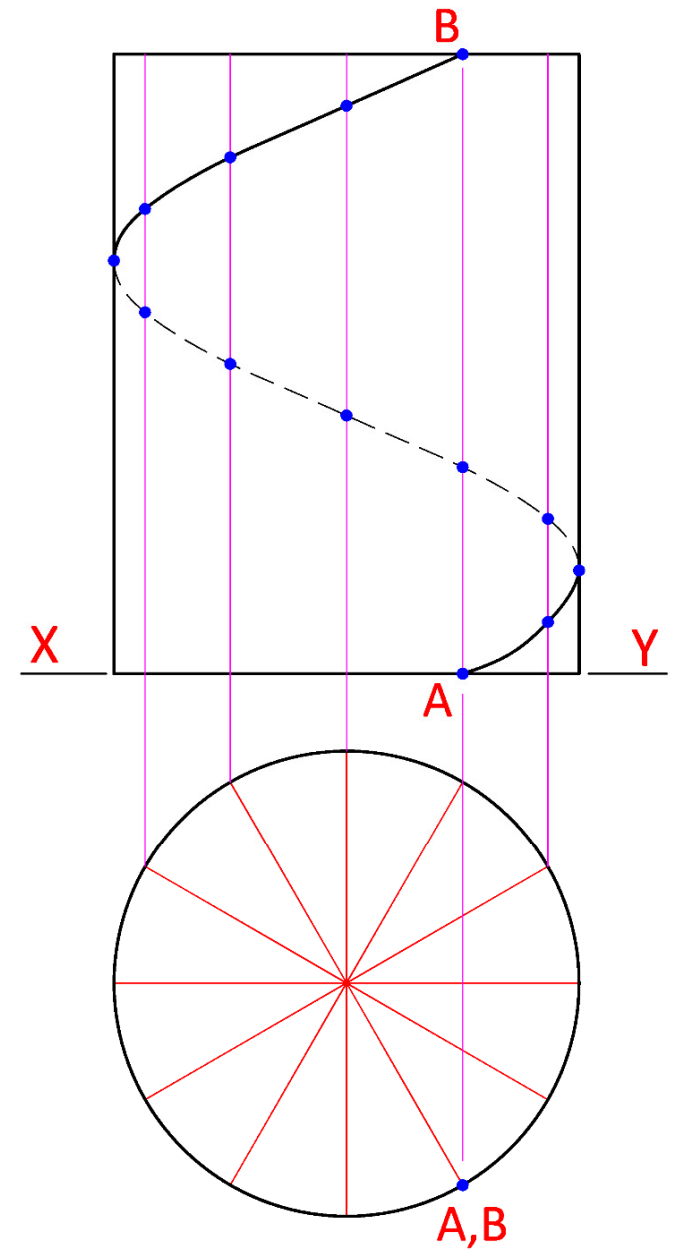
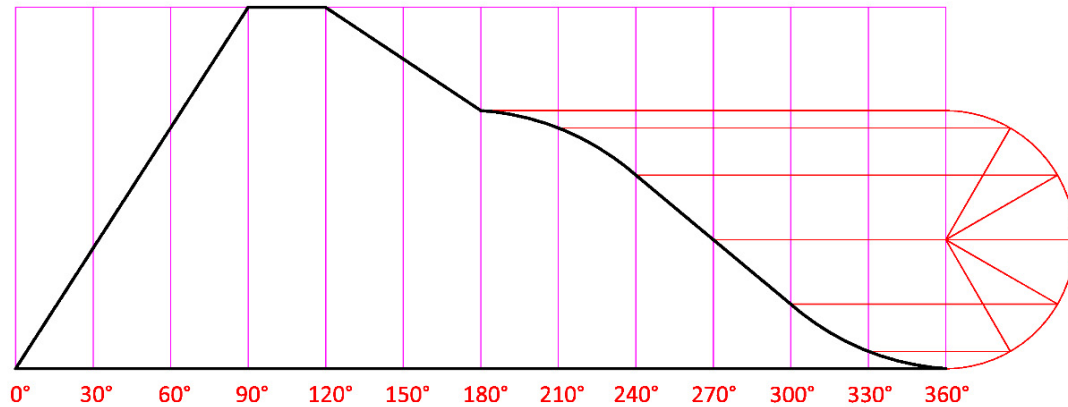


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	Marking Scheme		
	Question B-3		
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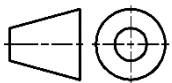








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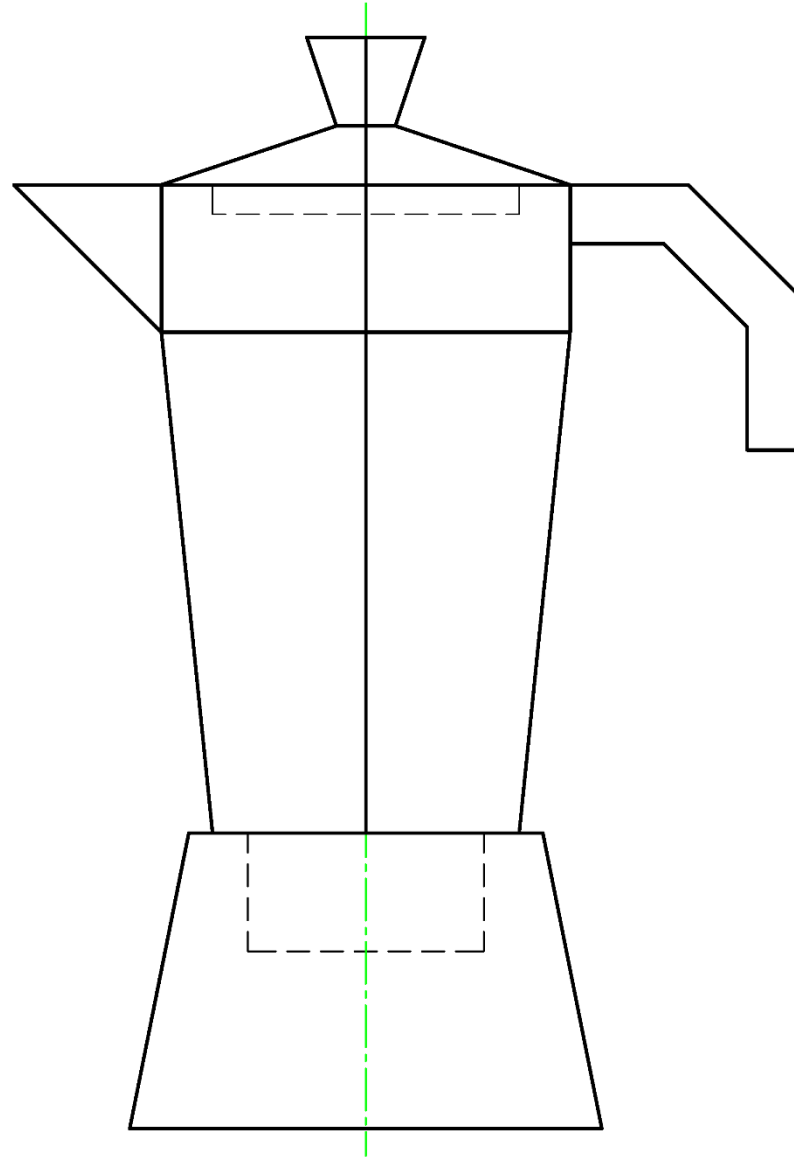
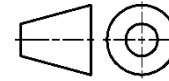


Marking Scheme

Question C-4

Scale: n/a

June 2022



Design and Communication Graphics
Student Assignment - Ordinary Level
Assessment Sheet 2022



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Candidate Examination No.

Output	Marking criteria					Marks
1	Design Research & Design Feature Comparison					
	Exploration of brief and presentation of existing artefacts in graphic format. Select 2 images and illustrate/explain the main design features. Insert the main dimensions. Compare and contrast the main design features of both using suitable freehand sketches and other presentation techniques.				30	
2	Freehand Graphical Representation					
	Proportion; Form/Volume; Use of Tone/Line for effective rendering; Detailed communication of main design features to include 3D presentation quality drawing; Layout & presentation				20	
3	SolidWorks Parts, Assembly, Drawing and eDrawing files					
	Adherence to required filing structure			35	4	
	Creation of a minimum of 3 Part files				6	
	Part models - Proficiency in Parametric CAD, including economy of design and design intent; Selection of most appropriate profiles; Sketches fully defined; Features renamed; Appropriate type of extrusions/end conditions used				14	
	Factor of difficulty/Design intent				3	
	Assembly - Creation of Assembly; Accuracy of parts to facilitate correct assembly; Correct mating of parts; Application of appropriate appearances				6	
	eDrawing of CAD model				2	
4	Hard Copy outputs from SolidWorks					
	Detailed orthographic views of the selected artefact; Section/Detail views where appropriate; pictorial view of the Assembly; Exploded view of the CAD model; Inclusion of main dimensions, notes and symbols; Appropriate scaling, layout and presentation to be considered				25	
5	Graphical exploration of design solutions					
	Exploration of theme/possible solution(s); Justification of chosen solution(s); Use of appropriate images/graphics; Effective layout and presentation of information combining images, sketches & annotations				20	
6	Presentation of Modification/Concept Design					
	Proportion; Form/Volume; Use of Tone/Line for effective rendering; Detailed communication of modified/concept design features; Layout and presentation				10	
7	Hard copy outputs from SolidWorks					
	CAD Model, factor of difficulty/design intent			20	7	
	Detailed orthographic views of the proposed solution; Section/Detail views where appropriate; Rendered pictorial view of the CAD model; Photorealistic images; Inclusion of main dimensions, notes and symbols; Appropriate scaling, layout and presentation to be considered				13	
Sub-total						
Marks deducted for pages in excess of maximum						
Assignment Total						

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