



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2023

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****(a) Locate points (10)**

- (i) Appropriate use of given major and minor axis1
- (ii) Required construction for additional points.....3
- (iii) Locate additional points6

(b) Draw curve (4)

- (iv) Draw curve.....4

(c) Focal points (4)

- (v) Locate required focal points4

- (vi) **Presentation**2

Total = 20**Question A-2****MARKS****Perspective (18)**

- (i) Radiate lines to correct vanishing points.....6
- (ii) Complete front RHS surface3
- (iii) Complete the top4
- (iv) Complete the LHS sloping surface5

- (v) **Presentation**2

Total = 20

Question A-3**MARKS****(a) Sphere C (8)**

- (i) Project centre from plan.....3
- (ii) Locate centre height in elevation3
- (iii) Draw sphere **C**2

(b) Sphere D (10)

- (iv) Locate centre LHS and RHS.....2
- (v) Rotation of centre in plan.....2
- (vi) Locate centre in plan2
- (vii) Projection of centre to elevation.....2
- (viii) Draw sphere **D** in elevation and plan2
- (ix) **Presentation**2

Total = 20**Question A-4****MARKS****(a) Elevation (5)**

- (i) Projection from plan to elevation2
- (ii) Complete elevation3

(b) End View (13)

- (iii) Projection from plan2
- (iv) Projections from elevation2
- (v) Points defined in end view.....4
- (vi) Complete end view4
- (vii) Complete hidden detail1
- (viii) **Presentation**2

Total = 20

Question B-1**MARKS****(a) Elevation (24)**

- (i) Draw base **13**
- (ii) Draw top **10**
- (iii) Complete elevation **1**

(b) Plan (18)

- (iv) Draw base **9**
- (v) Draw top **9**

(c) Auxiliary elevation (13)

- (vi) X_1Y_1 line parallel to plan of surface **A** **1**
- (vii) Projections from plan **1**
- (viii) Transfer of heights from elevation **3**
- (ix) Draw surface A **3**
- (x) Complete auxiliary elevation **5**

- (xi) **Presentation** **5**

Total = 60

Question B-2**MARKS****(a) Given elevation and plan (24)**

- (i) Draw the outline elevation as given7
- (ii) Complete the elevation3
- (iii) Draw the outline plan as given10
- (iv) Complete the plan as given4

(b) Interpenetration (18)***Interpenetration on Left Hand Side***

- (v) Projection from LHS of elevation2
- (vi) Locate points on LHS in plan3
- (vii) Complete LHS of plan3

Interpenetration on Right Hand Side

- (viii) Projection from RHS of elevation2
- (ix) Projection from end view2
- (x) Locate points RHS of plan3
- (xi) Complete RHS of plan3

(c) End view (13)

- (xii) Transfer of widths from plan3
- (xiii) Projection of heights from elevation2
- (xiv) End view of main structure4
- (xv) Complete the end view4
- (xvi) ***Presentation***5

Total = 60

Question B-3**(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 Outline (13)

- (ix) Projections from elevation (2) and plan (2)4
- (x) Axonometric projection of front surface3
- (xi) Axonometric projection side surface2
- (xii) Axonometric projection of roof4

(d) Axonometric Projection of semi-circular arch (22)

- (xiii) Divisions on semi-circle in elevation4
- (xiv) Corresponding divisions in plan4
- (xv) Projections from elevation (2) and plan (2)4
- (xvi) Draw semi-circular curve and front opening5
- (xvii) Complete internal seat5
- (xviii) **Presentation**5

Total = 60

Question C-1**MARKS****(a) Profile (35)**

- (i) Measure heights and draw horizontal lines **13**
- (ii) Projections from intersections between line **AB** and contours **10**
- (iii) Draw the profile **12**

(b) Earthworks for roadway (20)

- (iv) Parallel lines at 5 m intervals for cutting **6**
- (v) Identify points on cutting curve **8**
- (vi) Draw cutting curve **6**
- (vii) **Presentation** **5**

Total = 60

Question C-2**MARKS****(a) Elevation and Plan (33)**

- (i) Outline of surface **ABCD** in plan8
- (ii) Elements in plan (incl. division)7
- (iii) Outline of surface **ABCD** in elevation8
- (iv) Elements in elevation (incl. division or proj.)7
- (v) Completion of elevation (curve and hidden detail)3

(b) End view of Hyperbolic Paraboloid (22)

- (vi) Determine heights and widths for surface **ABCD**8
- (vii) Draw the outline of hyperbolic paraboloid surface6
- (viii) Draw elements5
- (ix) Completion of end view (curve and hidden detail)3
- (x) **Presentation**5

Total = 60

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

- (i) Draw the elevation **12**
- (ii) Draw end view **14**

(b) Plan (11)

- (iii) Projections from elevation and end view **5**
- (iv) Draw the plan **6**

(c) Surface Development (18)

- (v) Appropriate layout of surface development **1**
- (vi) Development of back surface **3**
- (vii) Development of LHS surface **4**
- (viii) Development of RHS surface **4**
- (ix) Development of bottom surface **2**
- (x) Development of front surface **4**
- (xi) **Presentation** **5**

Total = 60

Question C-4**MARKS****(a) Helix (26)**

- | | | |
|-------|--|-----------|
| (i) | Set up given elevation and plan (incl. points A & B) | 10 |
| (ii) | Division of circle in plan | 3 |
| (iii) | Projections from plan | 3 |
| (iv) | Draw horizontal divisions in elevation..... | 3 |
| (v) | Locate points on helix..... | 3 |
| (vi) | Draw helix in elevation | 4 |

(b) Displacement Diagram (29)

- | | | |
|--------|---|----------|
| (vii) | 360° division (widths on displacement diagram) | 5 |
| (viii) | Correct use of 60mm height | 1 |
| (ix) | Establish follower position at 0°, 90°, 180° and 360° | 7 |
| (x) | 0° to 90°, Rise 60 mm with Uniform Velocity | 4 |
| (xi) | 90° to 180°, Dwell | 4 |
| (xii) | 180° to 360°, Fall 60 mm with SHM construction..... | 4 |
| (xiii) | Complete Displacement Diagram | 4 |
| (xiv) | Presentation | 5 |

Total = 60

Question C-5**MARKS*****Assembly (14)***

- (i) Relative positioning of components **10**
- (ii) Use of Section view **4**

Base (8)

- (iii) Outline **4**
- (iv) Inner details **4**

Holder (8)

- (v) Outline **8**

Lamp (10)

- (vi) Outline **6**
- (vii) Inner details **4**

Top (8)

- (viii) Locate centre point for arc **4**
- (ix) Outline **4**

Drawing Completion (7)

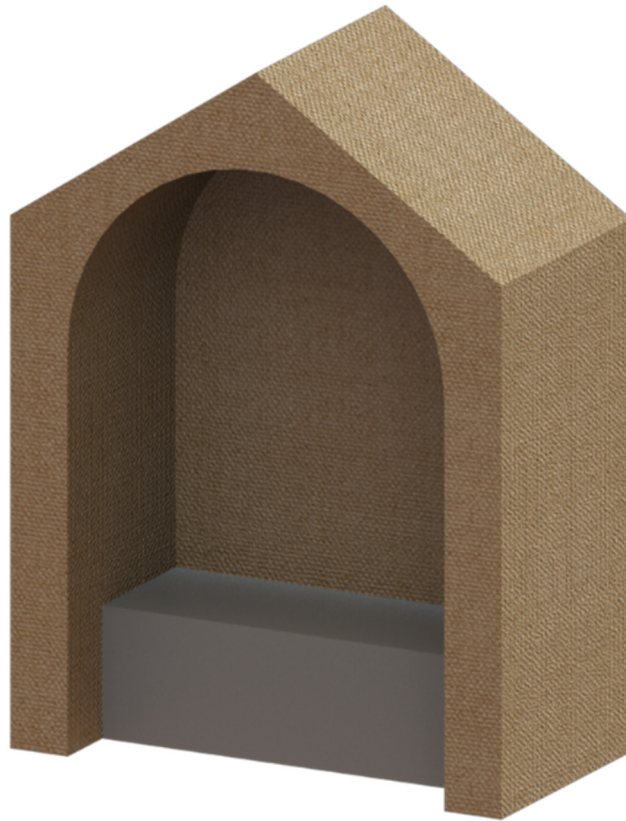
- (x) Hidden detail, Hatching and Centrelines ... (3,3,1) **7**
- (xi) ***Presentation*** **5**

Total = 60



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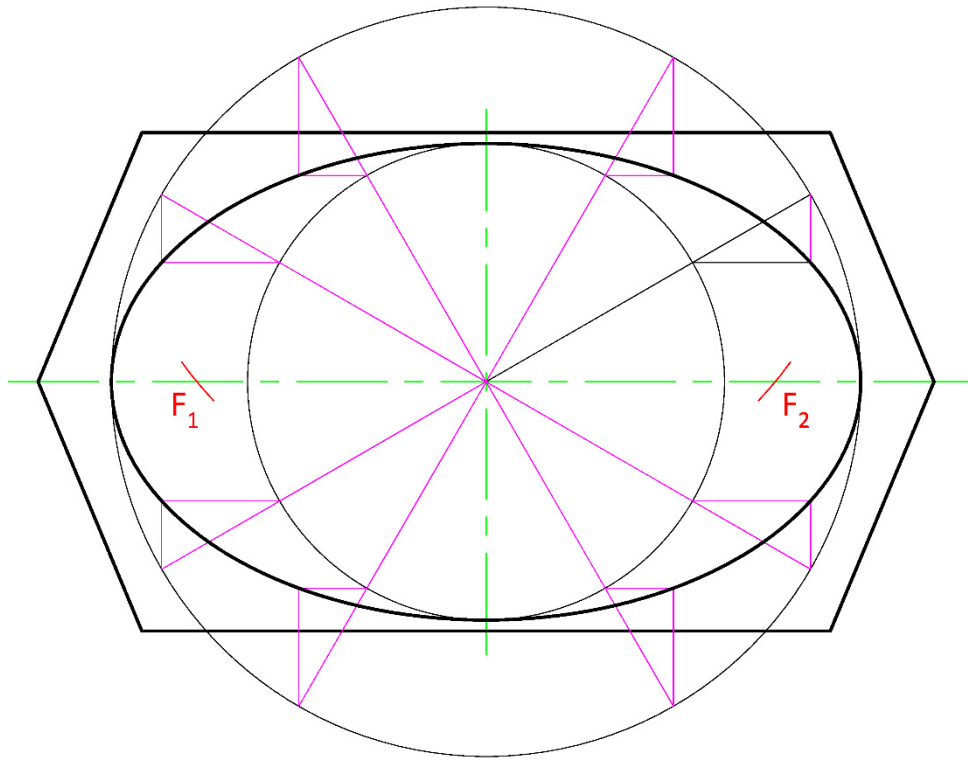
Design and Communication Graphics

Ordinary Level

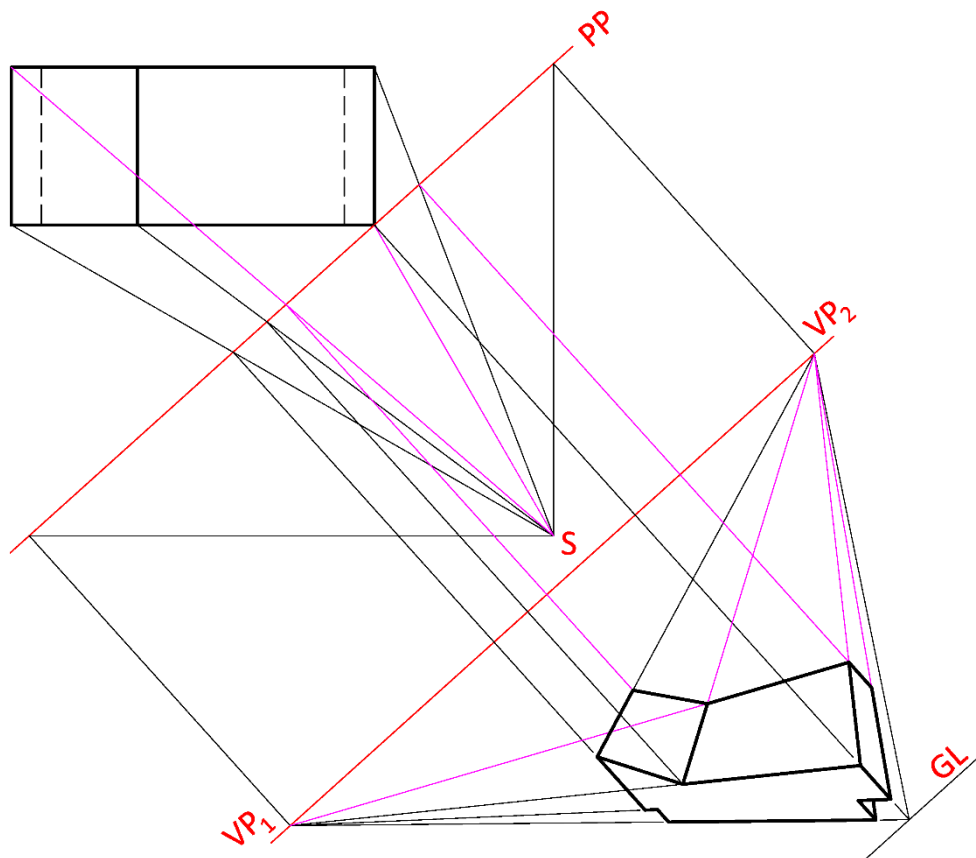
Sample Solutions

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

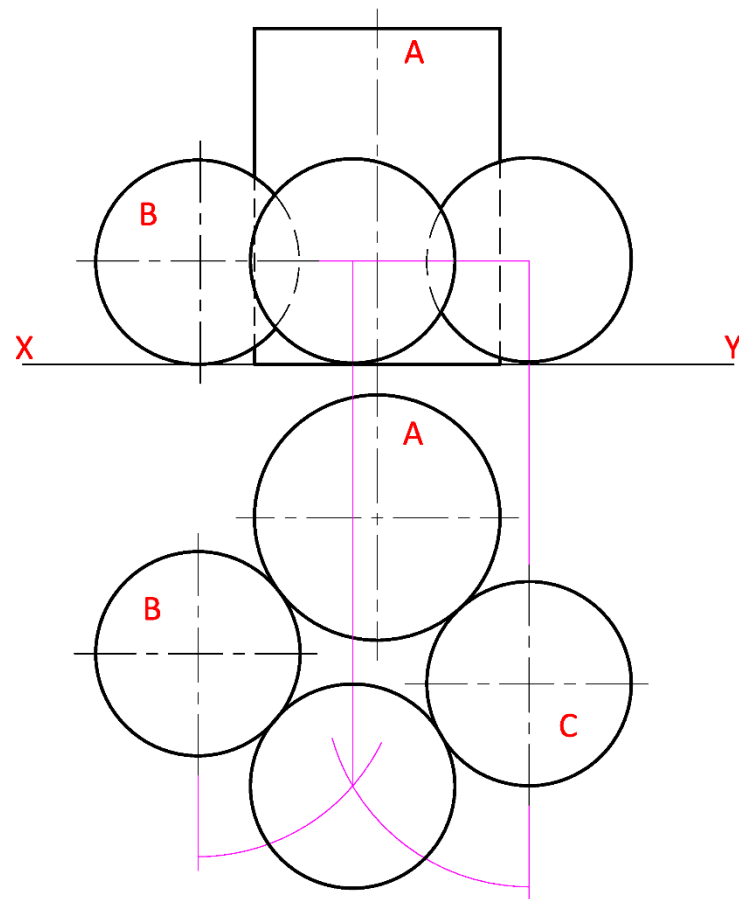
Question A-1



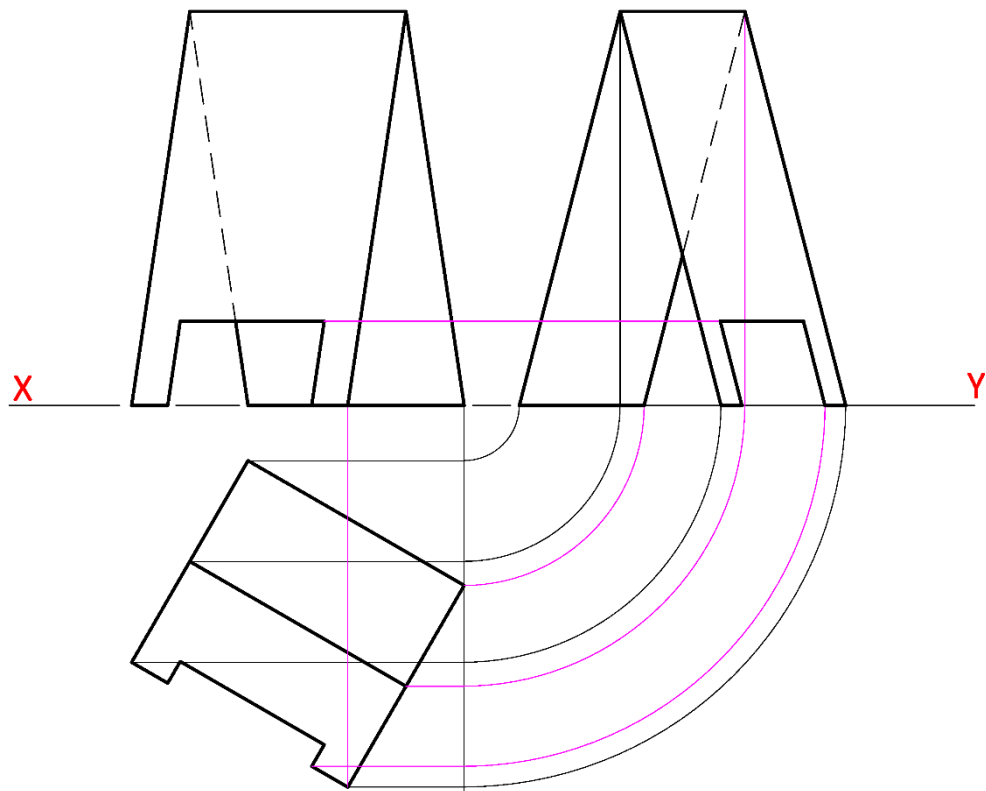
Question A-2

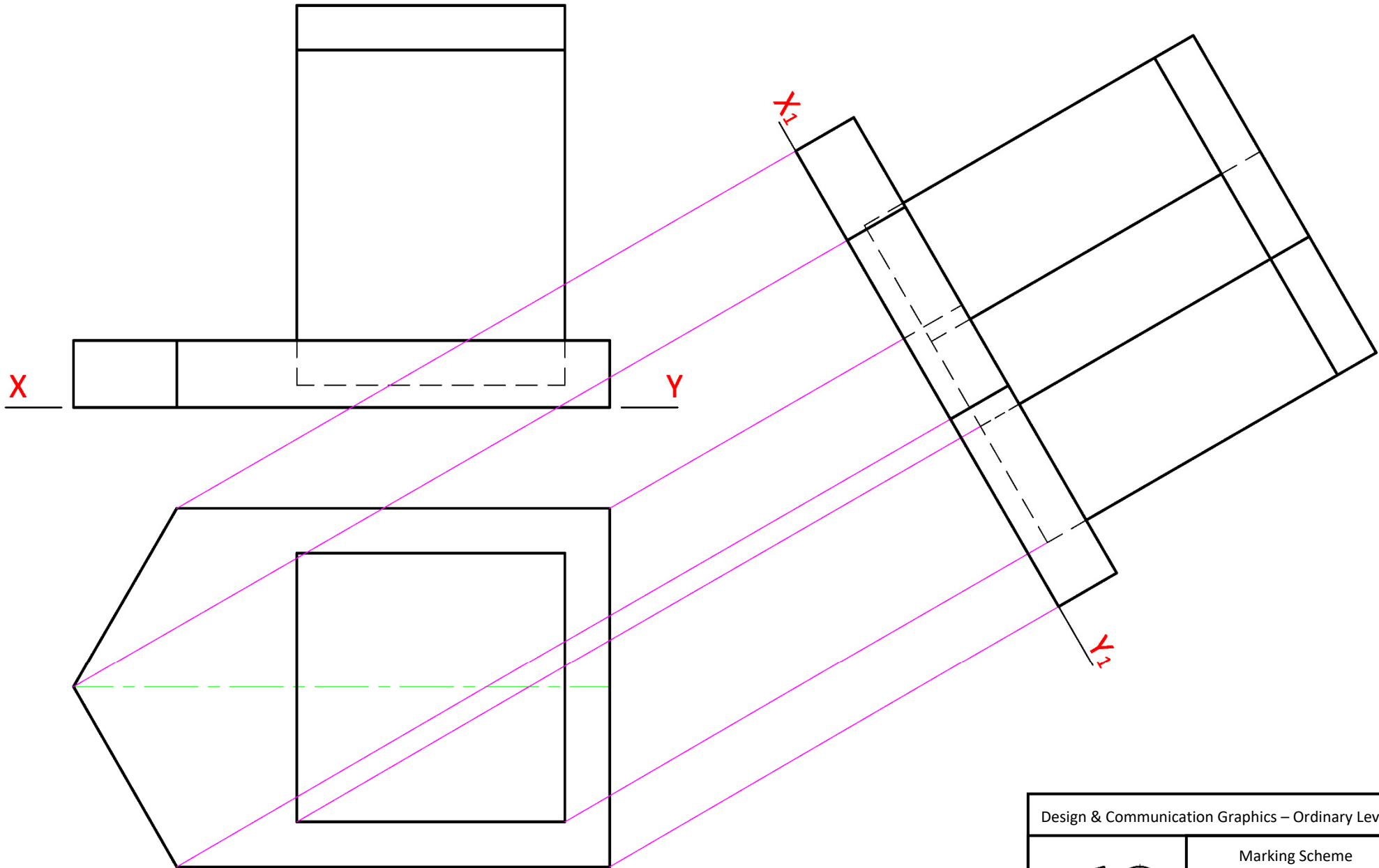


Question A-3

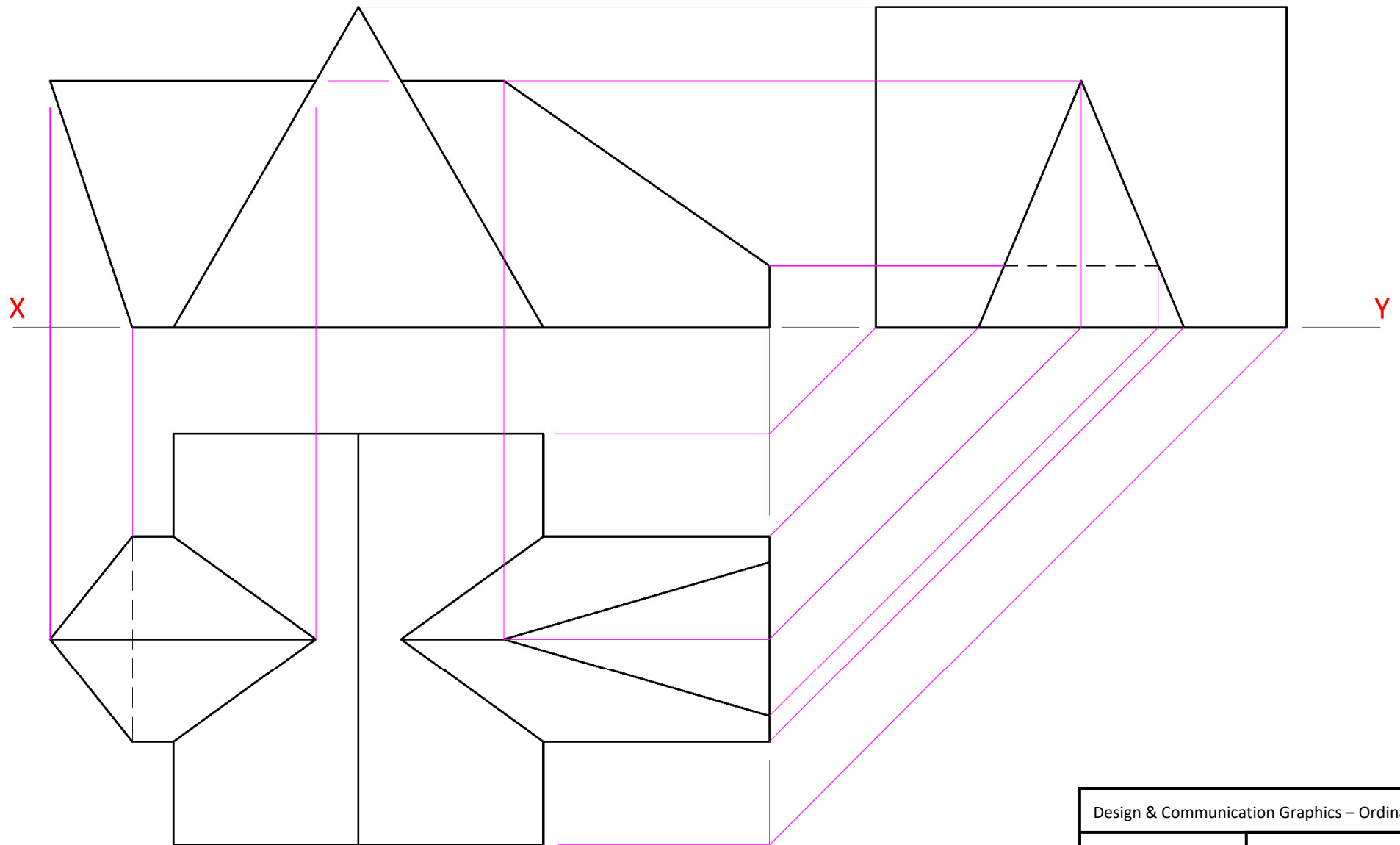


Question A-4

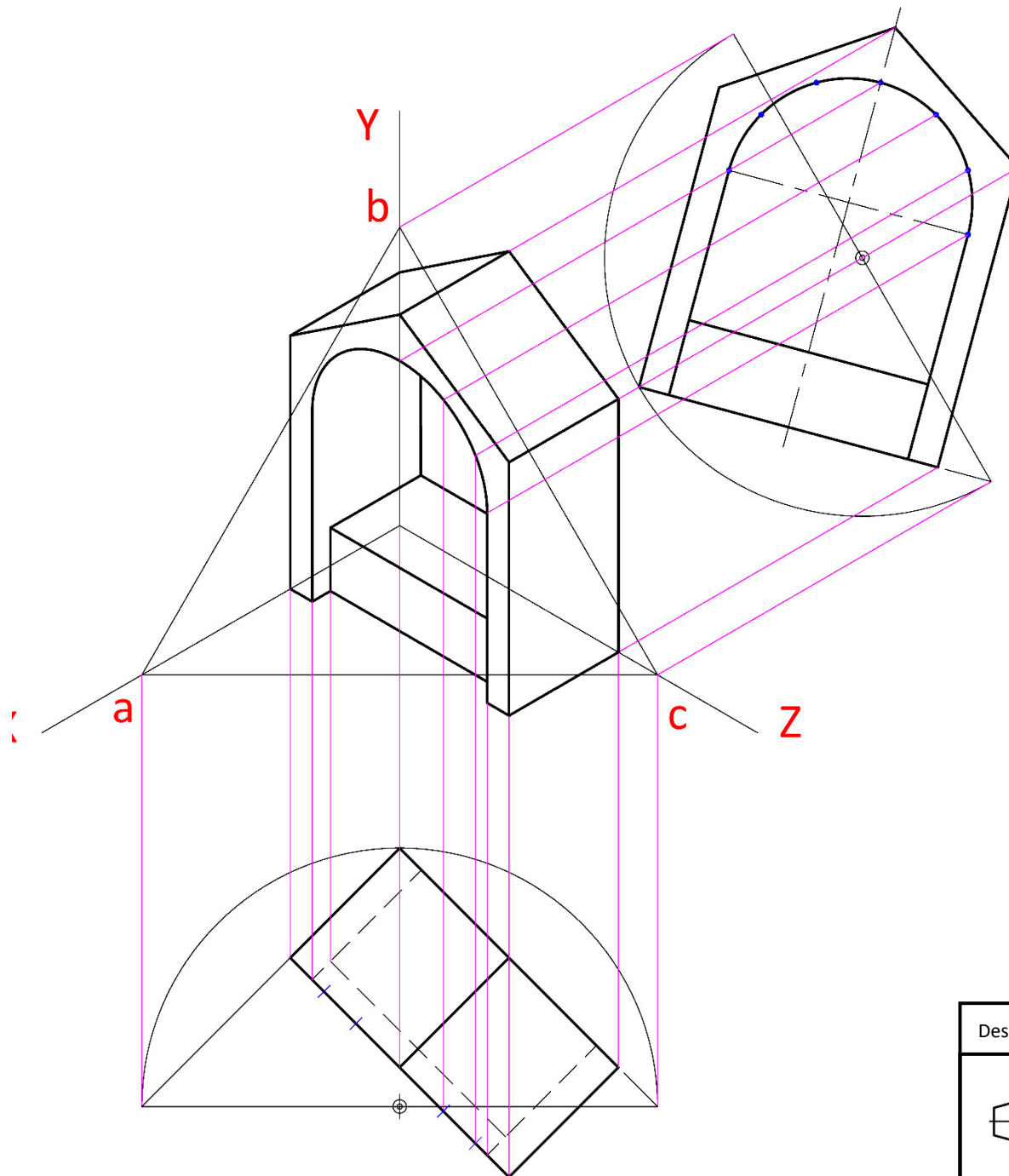




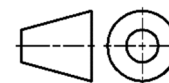
Design & Communication Graphics – Ordinary Level		
 	Marking Scheme	
	Question B-1	
	Scale: n/a	June 2023



Design & Communication Graphics – Ordinary Level		
	Marking Scheme	
	Question B-2	
	Scale: n/a	June 2023



Design & Communication Graphics –Ordinary Level

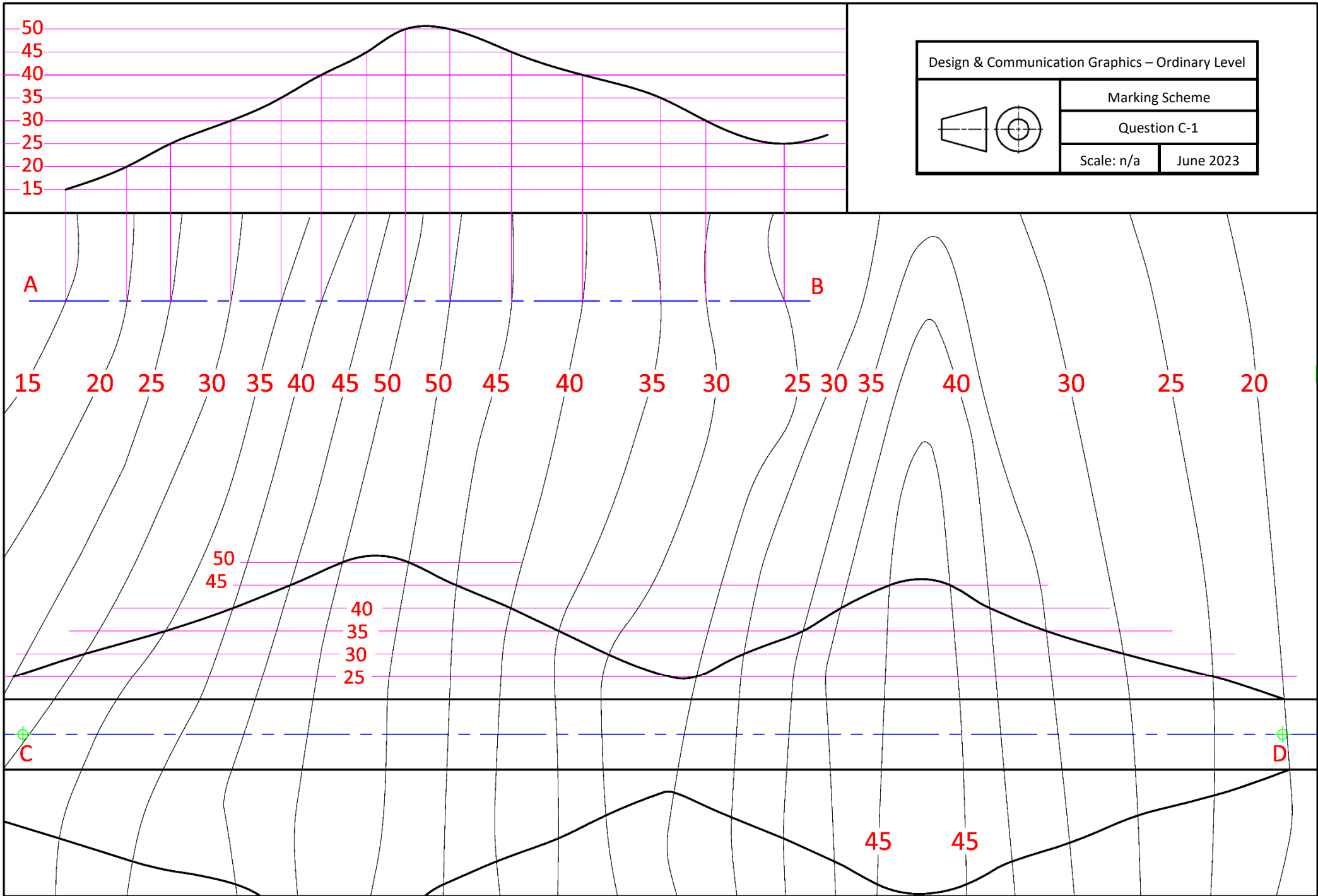


Marking Scheme

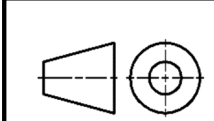
Question B-3

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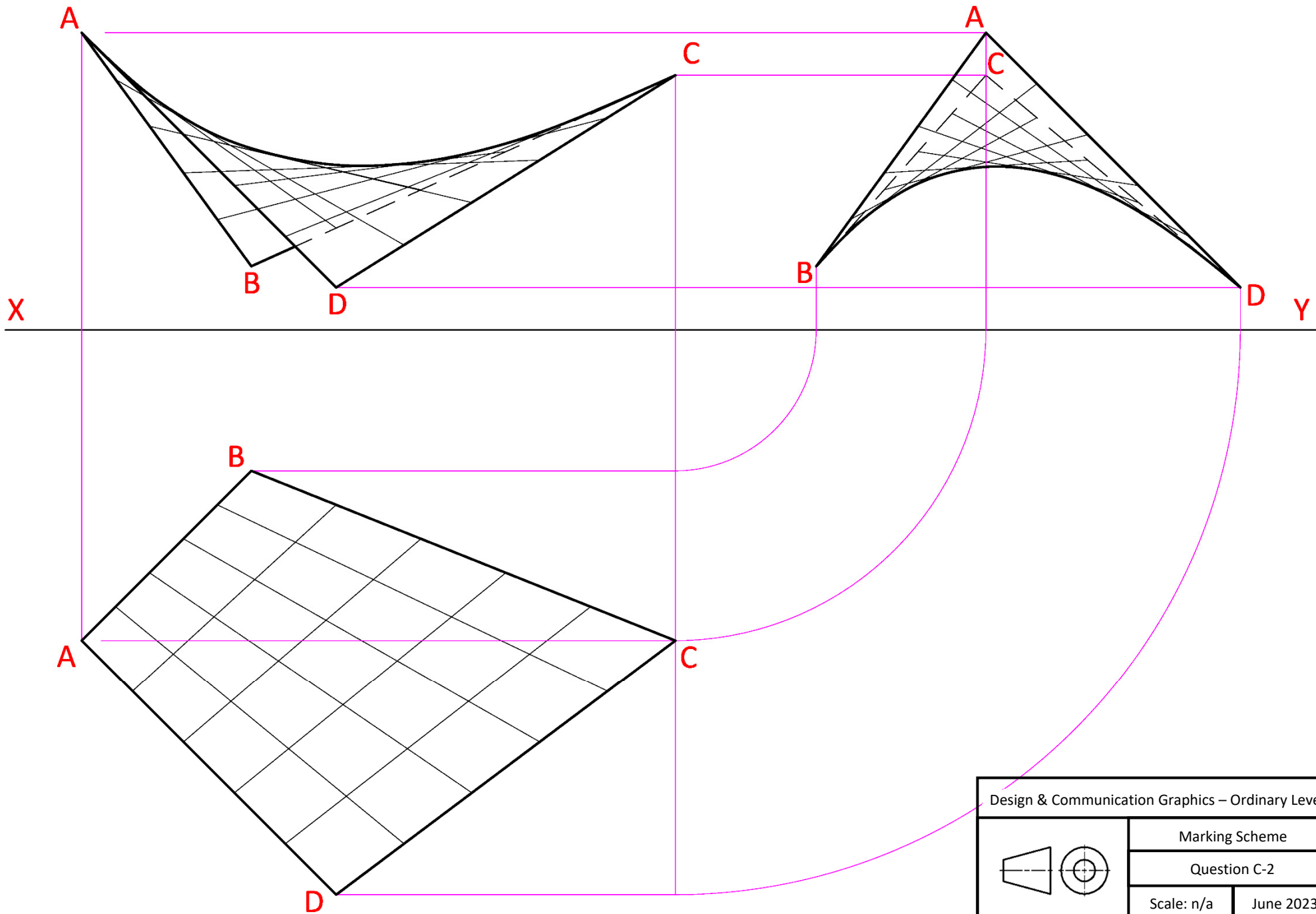


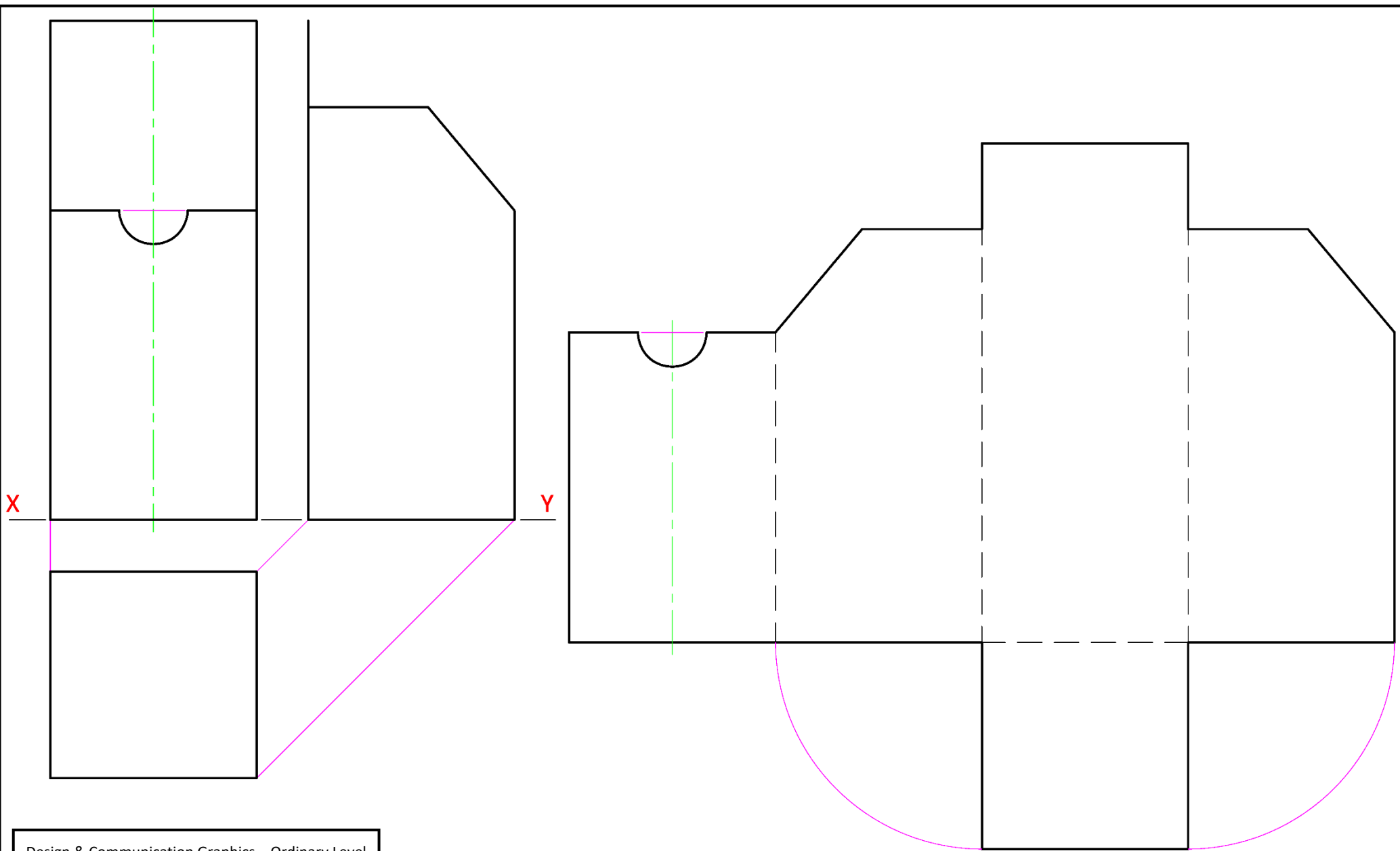
Marking Scheme

Question C-1

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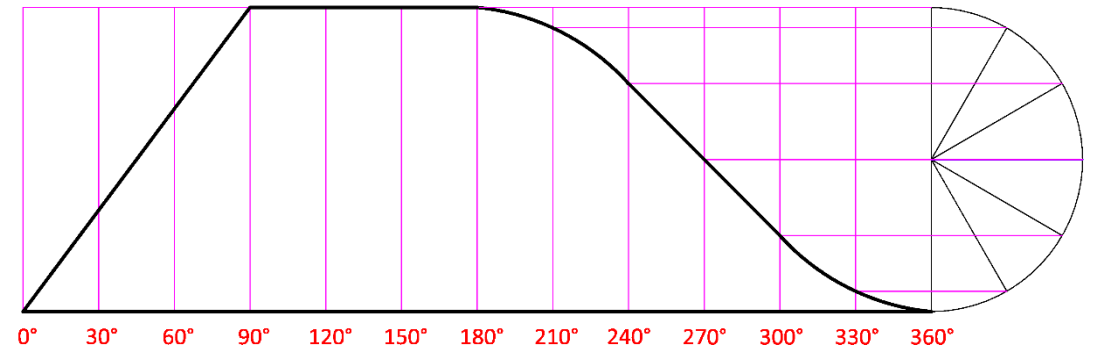
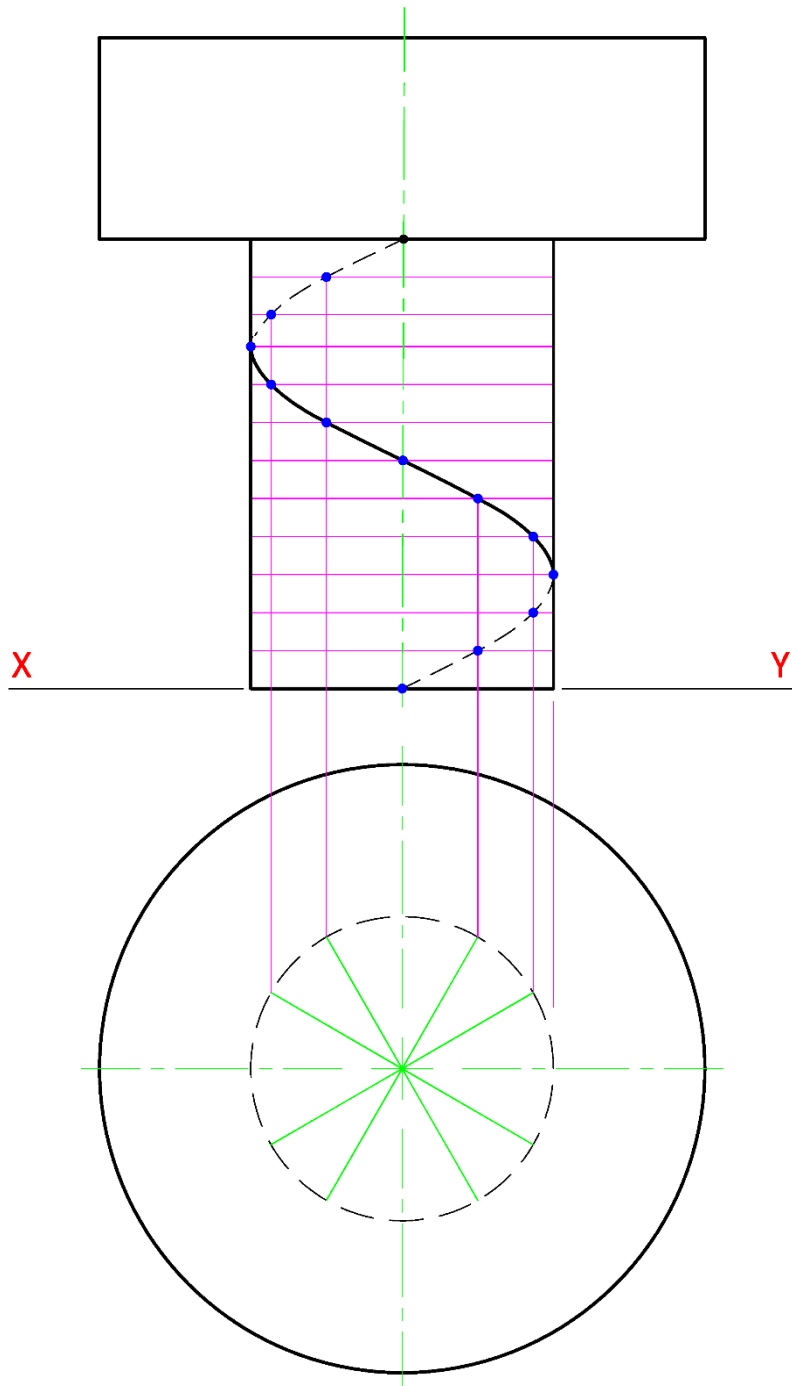


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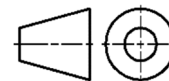
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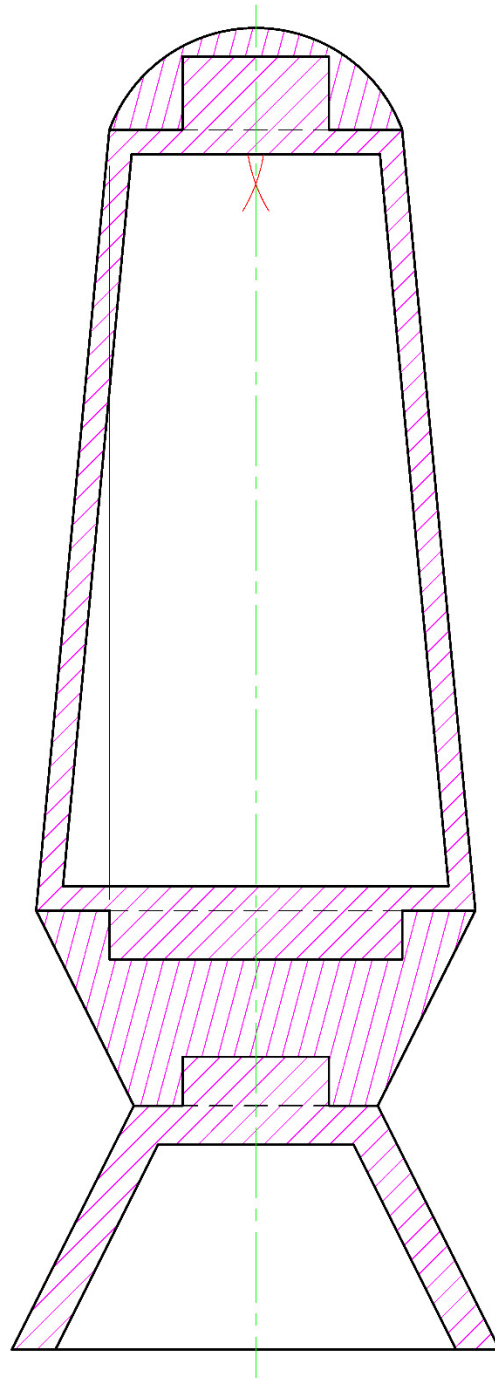


Marking Scheme

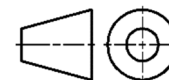
Question C-4

Scale: n/a

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Design & Communication Graphics – Ordinary Level



Marking Scheme

Question C-5

Scale: n/a

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Design and Communication Graphics
Student Assignment - Ordinary Level
Assessment Sheet 2023



Coimisiún na Scrúduithe Stáit
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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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