Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2014

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.

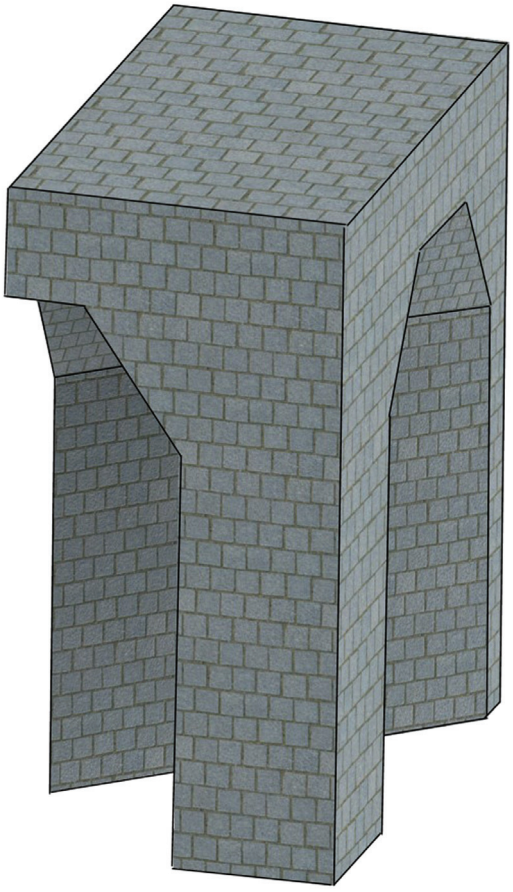
Future Marking Schemes

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.

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2014

Design and Communication Graphics
Ordinary Level



Marking Scheme and Sample Solutions

(Other valid solutions are acceptable and are marked accordingly)

QUESTION A-1

MARKS

(a) Ellipse ***(13)***

(i) Appropriate use of given axes **3**

(ii) Required constructions **2**

(iii) Locate points on curve **4**

(iv) Complete the curve **4**

(b) Focal points ***(5)***

(v) Locate focal points **5**

(vi) ***Presentation*** **2**

Total = ***20***

QUESTION A-2

MARKS

(a) End elevation of Tram ***(12)***

(i) Projections from plan **4**

(ii) Points correctly defined on the end elevation **4**

(iii) Complete end elevation of tram **4**

(b) End elevation of Connector ***(6)***

(iv) Projections from plan and elevation **2**

(v) Identify correct points **2**

(vi) Complete end elevation of connector **2**

(vii) ***Presentation*** **2**

Total = ***20***

QUESTION A-3

MARKS

(a) Sphere B *(10)*

(i) Projection from centre in elevation **3**

(ii) Locate centre in plan **3**

(iii) Draw sphere B **4**

(b) Sphere C *(8)*

(iv) Constructions in elevation **2**

(v) Projections to plan **2**

(vi) Locate centre in plan **2**

(vii) Draw sphere C **2**

(viii) ***Presentation*** **2**

Total = 20

QUESTION A-4

MARKS

Left hand side *(6)*

(i) Radiate lines to correct vanishing point **4**

(ii) Complete LHS **2**

Right hand side *(12)*

(iii) Radiate lines to correct vanishing point **4**

(iv) Complete top section **2**

(v) Complete bottom section **2**

(vi) Complete the logo **4**

(vii) ***Presentation*** **2**

Total = 20

QUESTION B-1

(a) Initial setup *(5)*

(i) Draw the equilateral triangle **3**

(ii) Draw the X, Y and Z axes **2**

(b) Elevation and Plan *(10)*

(iii) Projections to set up elevation **2**

(iv) Semicircle in elevation **1**

(v) Draw the elevation in the correct position **2**

(vi) Projections to set up plan **2**

(vii) Semicircle in plan **1**

(viii) Draw the plan in the correct position **2**

(c) Axonometric Projection of rectangular prism *(10)*

(ix) Projections from the elevation **2**

(x) Projections from the plan **2**

(xi) Draw the axonometric projection of the LHS surface **2**

(xii) Complete the axonometric projection of the bottle **4**

(d) Axonometric Projection of Semi-circular Lid *(16)*

(xiii) Constructions for lid in elevation **3**

(xiv) Constructions for lid in plan **3**

(xv) Projections from the elevation of semi-circular lid **3**

(xvi) Projections from the plan of lid **3**

(xvii) Draw axonometric projection of front surface **2**

(xviii) Complete the axonometric projection **2**

(xix) ***Presentation*** **4**

Total = 45

QUESTION B-2

MARKS

(a) Plan and Elevation ***(33)***

(i) Draw plan of the prism as given **6**

(ii) Draw the plan of the tunnel as given **5**

(iii) Draw the outline elevation of the prism as given **5**

(iv) Complete the elevation as given..... **5**

Interpenetration on Left Hand Side (LHS)

(v) Projection from LHS of plan **2**

(vi) Locate points on LHS in elevation **2**

(vii) Complete LHS of elevation **2**

Interpenetration on Right Hand Side (RHS)

(viii) Projections from RHS of plan **2**

(ix) Locate points on RHS in elevation **2**

(x) Complete RHS of elevation **2**

(b) End View (8)

(xi) Transfer of widths from plan..... **2**

(xii) Projection of heights from elevation **2**

(xiii) End view of prism **2**

(xiv) Complete end view **2**

(xv) ***Presentation*** **4**

Total = 45

QUESTION B-3

(a) Elevation ***(14)***

(i) Elevation of house **6**

(ii) Outline elevation of conservatory **4**

(iii) Complete the conservatory **4**

(b) Plan ***(12)***

(iv) Rectangular outline of house in plan **5**

(v) Complete the plan of house **3**

(vi) Draw plan of conservatory **4**

(c) Auxiliary elevation ***(15)***

(vii) X_1Y_1 parallel to plan of surface A **2**

(viii) Projections from plan **1**

(ix) Transfer heights from elevation **2**

(x) Draw surface A **4**

(xi) Complete auxiliary elevation **6**

(xii) ***Presentation*** **4**

Total = 45

QUESTION C-1

MARKS

(a) Profile ***(22)***

(i) Measure heights and draw horizontal lines **6**

(ii) Projections from intersections between line AB and contours **8**

(iii) Draw outline of profile **8**

(b) Strike and dip ***(19)***

(iv) Join points in plan.....**5**

(v) Draw triangle in elevation **4**

(vi) Horizontal line in elevation **2**

(vii) Strike in plan **3**

(viii) Viewing direction for dip **3**

(ix) Determine dip (2 heights, edge view) **2**

(x) ***Presentation*** **4**

Total = 45

QUESTION C-2

MARKS

(a) Elevation and Plan ***(25)***

(i) Outline of surface ABCD in plan **6**

(ii) Elements in plan (incl. division) **7**

(iii) Outline of surface in elevation **6**

(iv) Elements in elevation (incl. division or proj.) **4**

(v) Curve in elevation **2**

(b) End view of Hyperbolic Paraboloid ***(16)***

(vi) Determine heights and widths for surface ABCD **4**

(vii) Draw the outline of the hyperbolic paraboloid **4**

(viii) Draw the elements **6**

(ix) Curve in end view **2**

(x) ***Presentation*** **4**

Total = 45

QUESTION C-3

MARKS

(a) Elevation and End Elevation *(20)*

(i) Draw the outline elevation **6**

(ii) Complete the elevation **2**

(iii) Draw the edges of the end elevation **6**

(iv) Establish centre and draw curve ……..(4,2) **6**

(b) Surface development *(21)*

(v) Development of back surface **3**

(vi) Development of top surface **2**

(vii) Development of side surfaces **4**

(viii) Development of under surface **3**

(ix) Development of front vertical surface **3**

(x) Division of curved surface **3**

(xi) Development of curved surface **3**

(xii) ***Presentation*** **4**

Total = 45

QUESTION C-4

MARKS

(a) Link Mechanism ***(22)***

(i) Set up line diagram (O, P, Q & R) **8**

(ii) Draw circle about O **4**

(iii) Division of circle **3**

(iv) Con rod PR in rotated positions **2**

(v) Points on locus..... **2**

(vi) Draw locus **3**

(b) Helix ***(19)***

(vii) Draw the given plan **4**

(viii) Draw the outline elevation **3**

(ix) Complete division of plan **3**

(x) Complete horizontal divisions in elevation **2**

(xi) Complete projections from plan to helix **2**

(xii) Locate points in elevation **2**

(xiii) Draw the helix in elevation **3**

(xiv) ***Presentation*** **4**

Total = 45

QUESTION C-5

MARKS

Assembly (12)

(i) Relative positioning of components **9**

(ii) Use of Elevation View **3**

Tractor Bracket (11)

(iii) Outline **4**

(iv) Holes.....**6**

(v) Completion **1**

Trailer Hitch (10)

(vi) Outline **6**

(vii) Holes **4**

Connecting Pin (8)

(viii) Method of constructing hexagon **3**

(ix) Draw hexagon **3**

(x) Shaft **2**

(xi) ***Presentation*** **4**

Total = 45

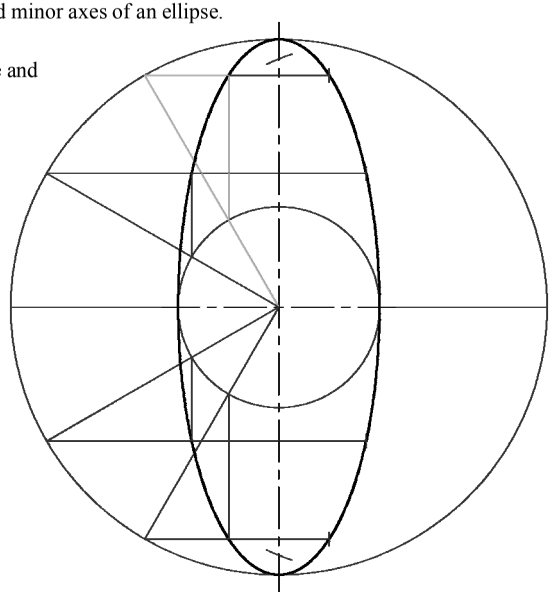
SECTION A - Core - Answer **any three** of the questions on this A3 sheet

A-1. The 3D graphic below shows a pair of earrings based on elliptical shapes.

The drawing on the right shows the major and minor axes of an ellipse.
A portion of the curve is already drawn.

(a) Locate the remaining points on the curve and draw the ellipse.

(b) Locate the focal points of the ellipse.

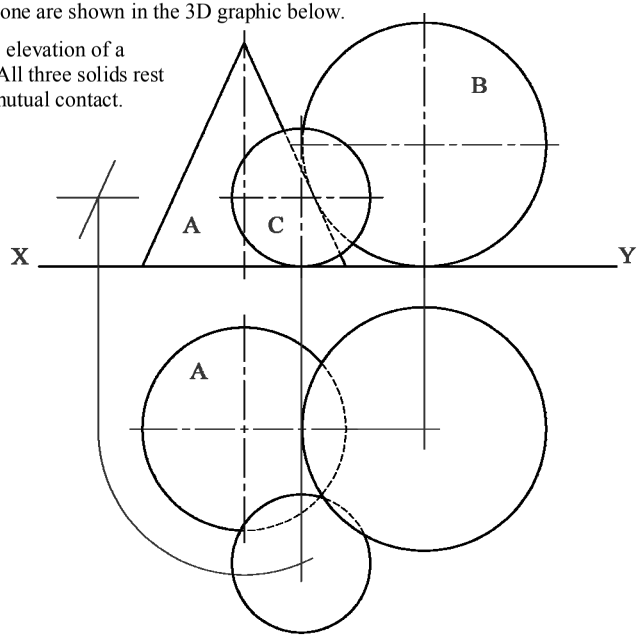


A-3. Toys in the form of spheres and a cone are shown in the 3D graphic below.

The drawing on the right shows the elevation of a cone **A** and two spheres, **B** and **C**. All three solids rest on the horizontal plane and are in mutual contact.
The plan of cone **A** is also shown.

(a) Draw the plan of sphere **B**.

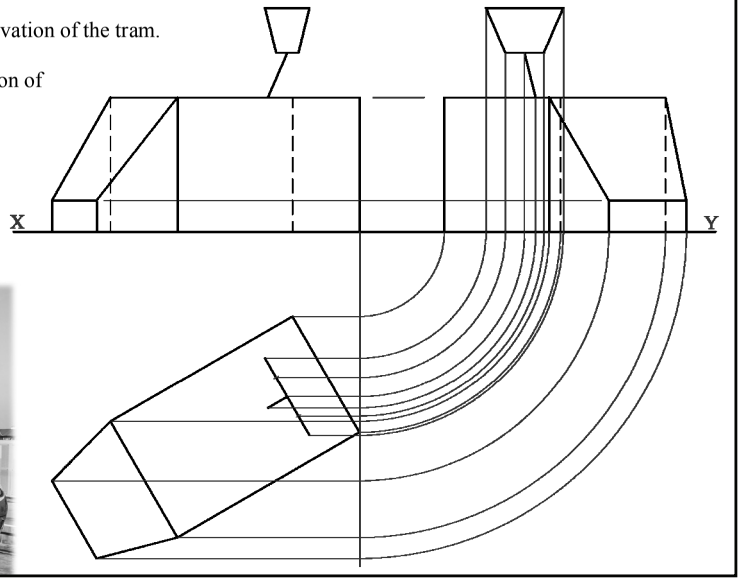
(b) Draw the plan of sphere **C**.



A-2. The 3D graphic below shows one section of a *Luas* tram. The plan, elevation and partially completed end elevation of the outline of the tram are shown on the right.

(a) Complete the end elevation of the tram.

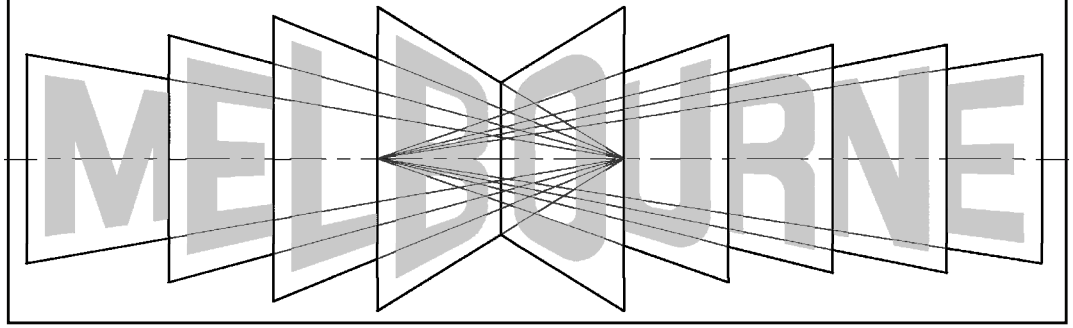
(b) Draw the end elevation of the power supply connector on the top of the tram.



A-4. The 3D graphic on the right shows the "MELBOURNE" logo displayed on a billboard during the *Australian Open* tennis championship.
The logo is designed to look like pages from a book.

The partially completed drawing below shows how the logo is constructed using two vanishing points.

Complete the drawing.



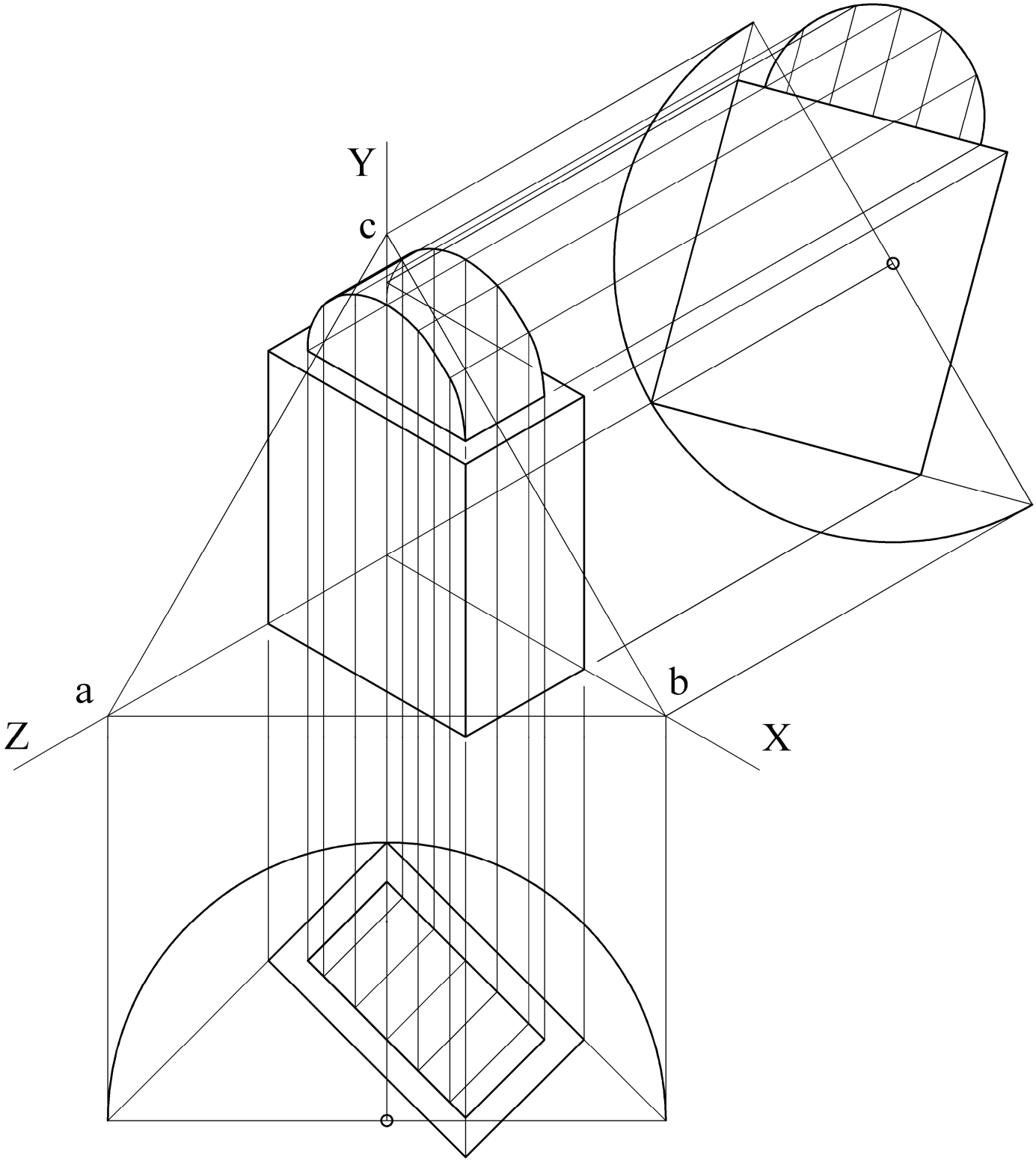
This examination paper must be returned at the end of the Examination – You must include your Examination Number on the front cover

Design & Communication Graphics – Ord. Level

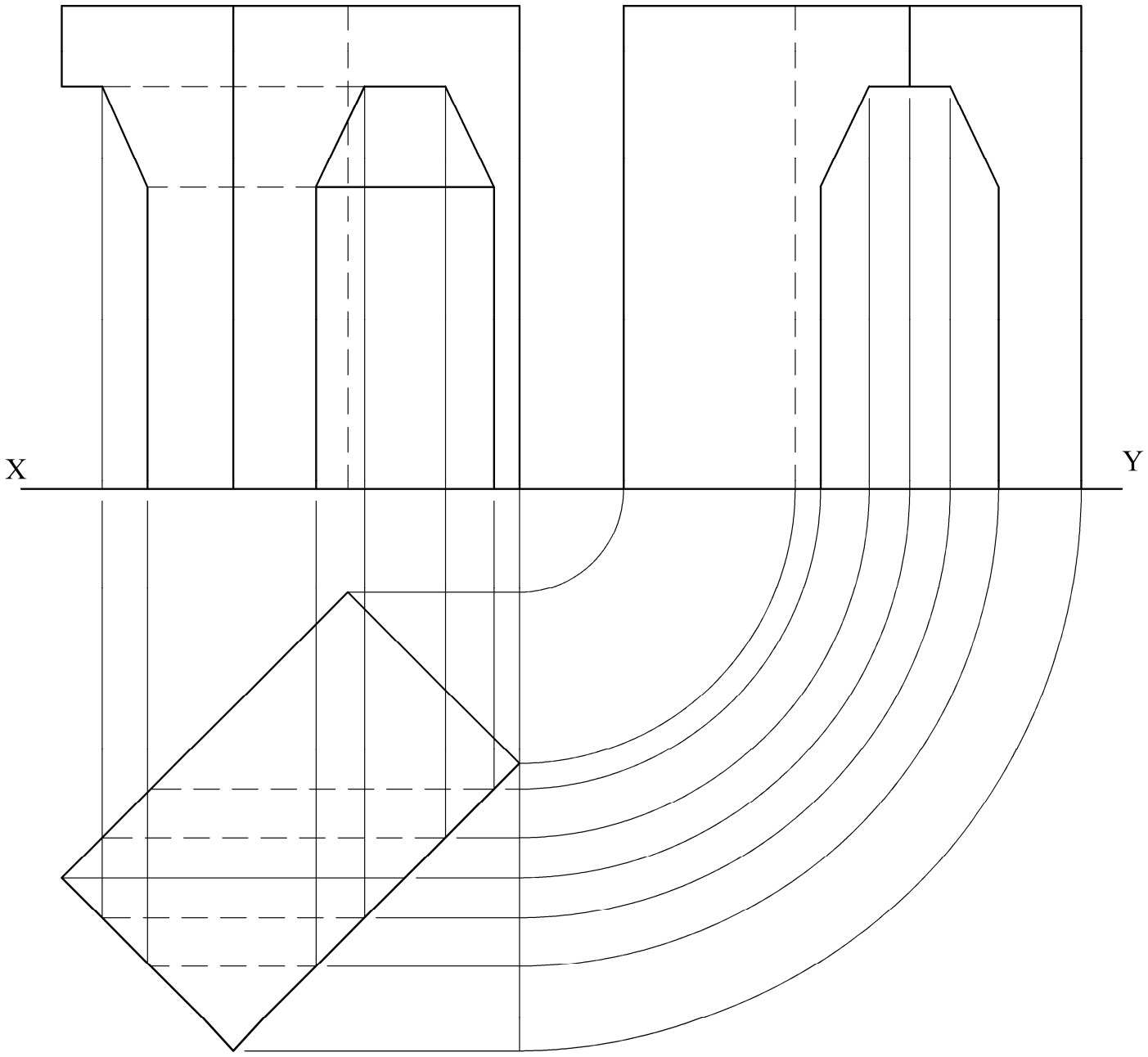
Marking Scheme

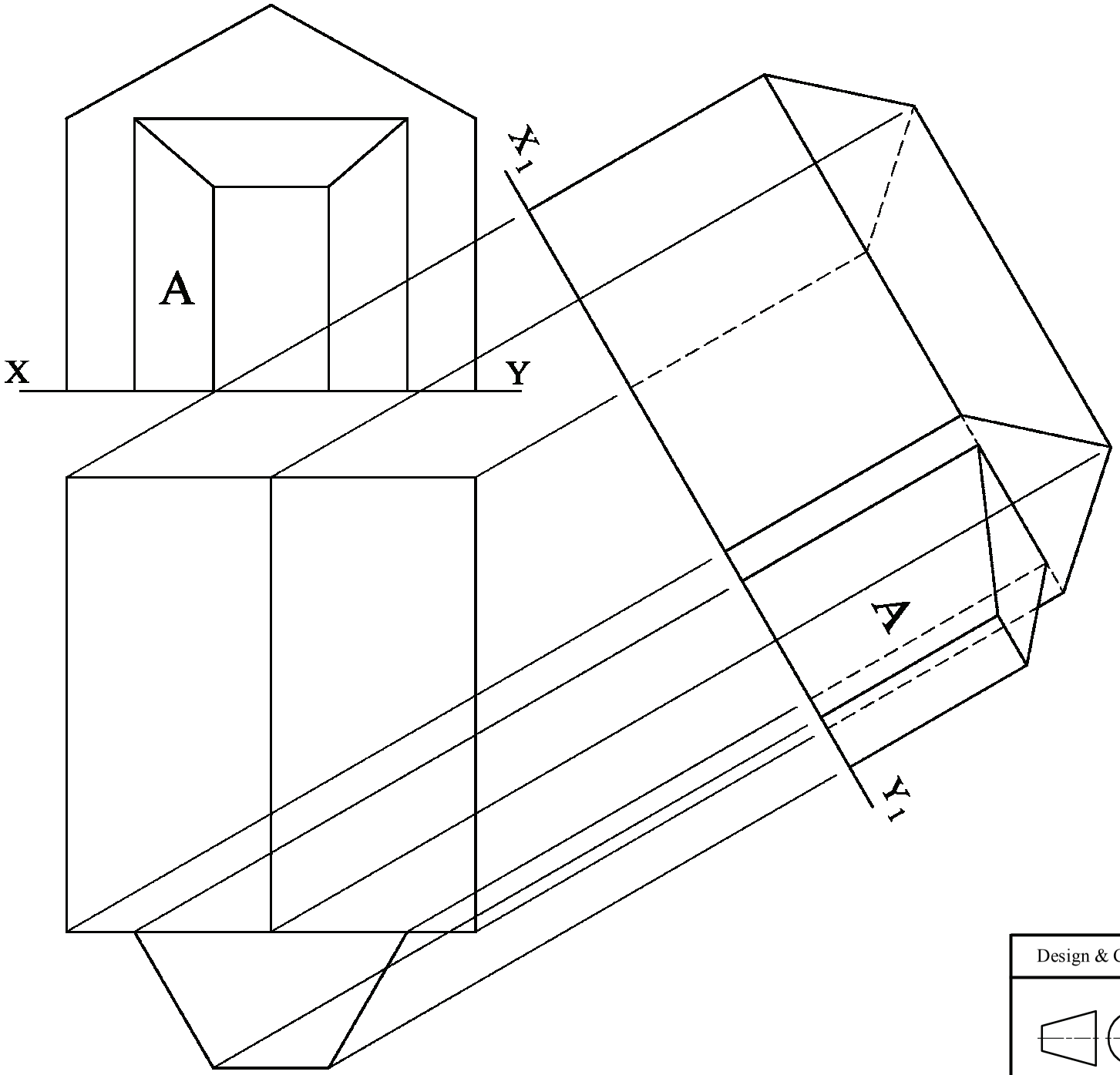
Question B-1

Scale: n/a | June 2014

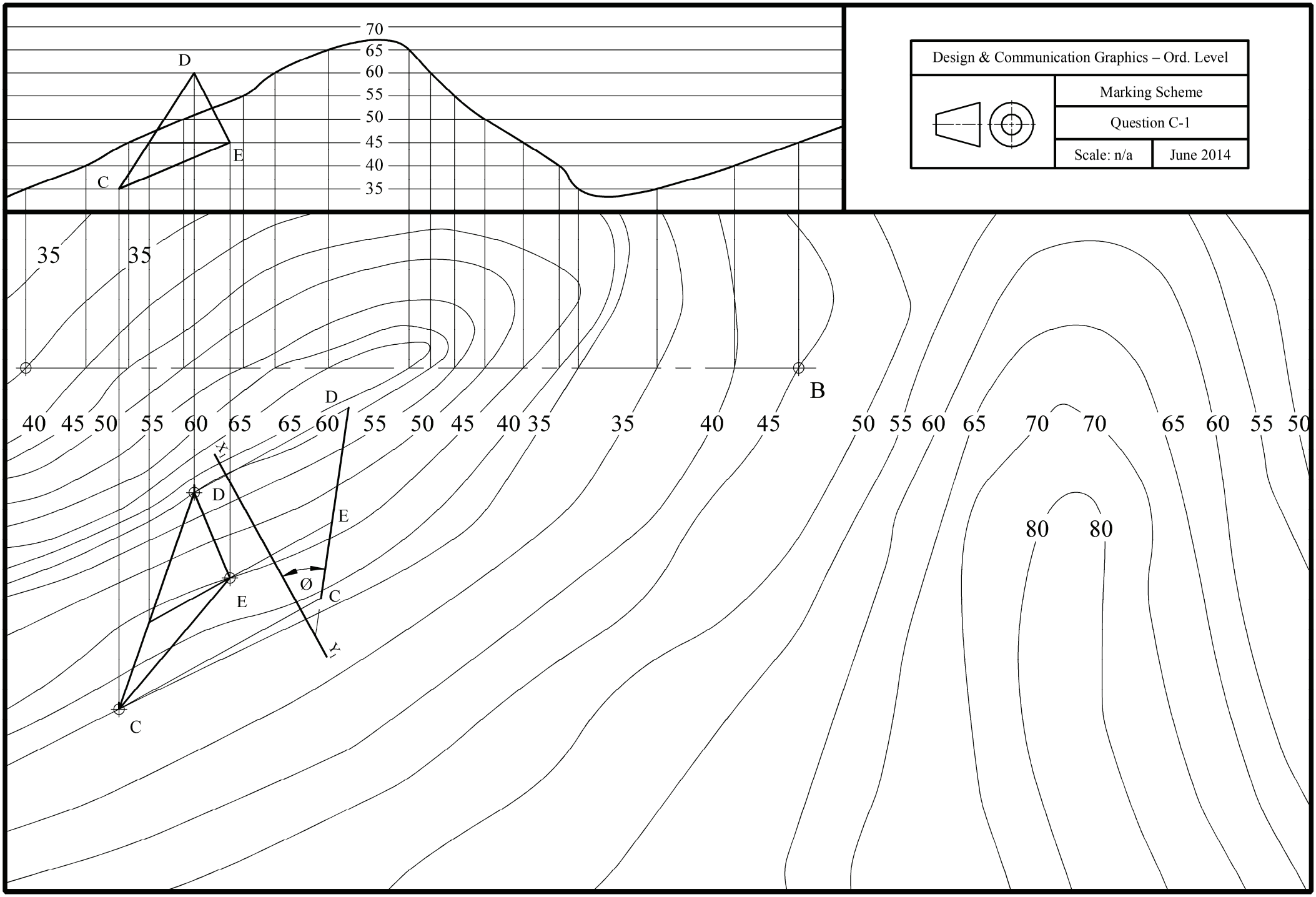


Design & Communication Graphics – Ord. Level	
	Marking Scheme
	Question B-2
	Scale: n/a — June 2014





Design & Communication Graphics – Ord. Level	
	Marking Scheme
	Question B-3
Scale: n/a	June 2014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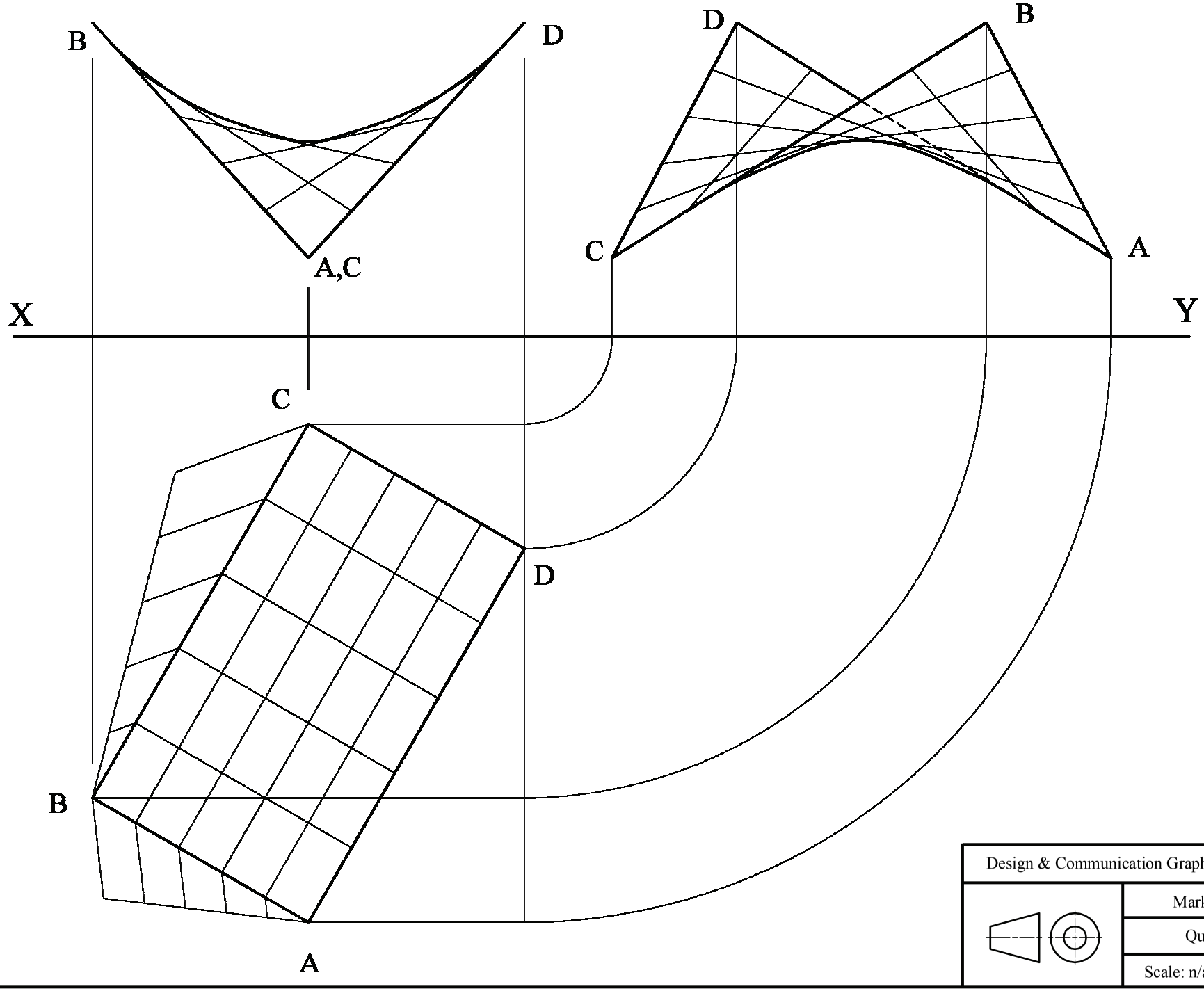
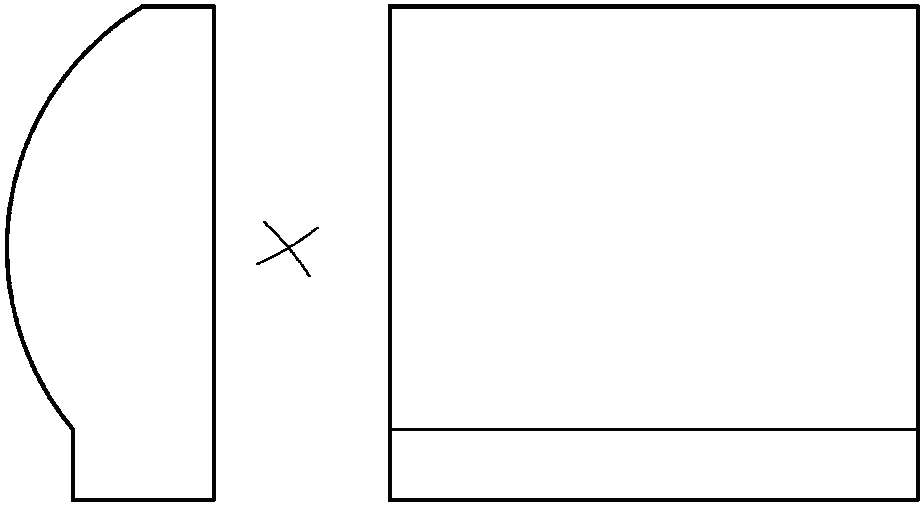
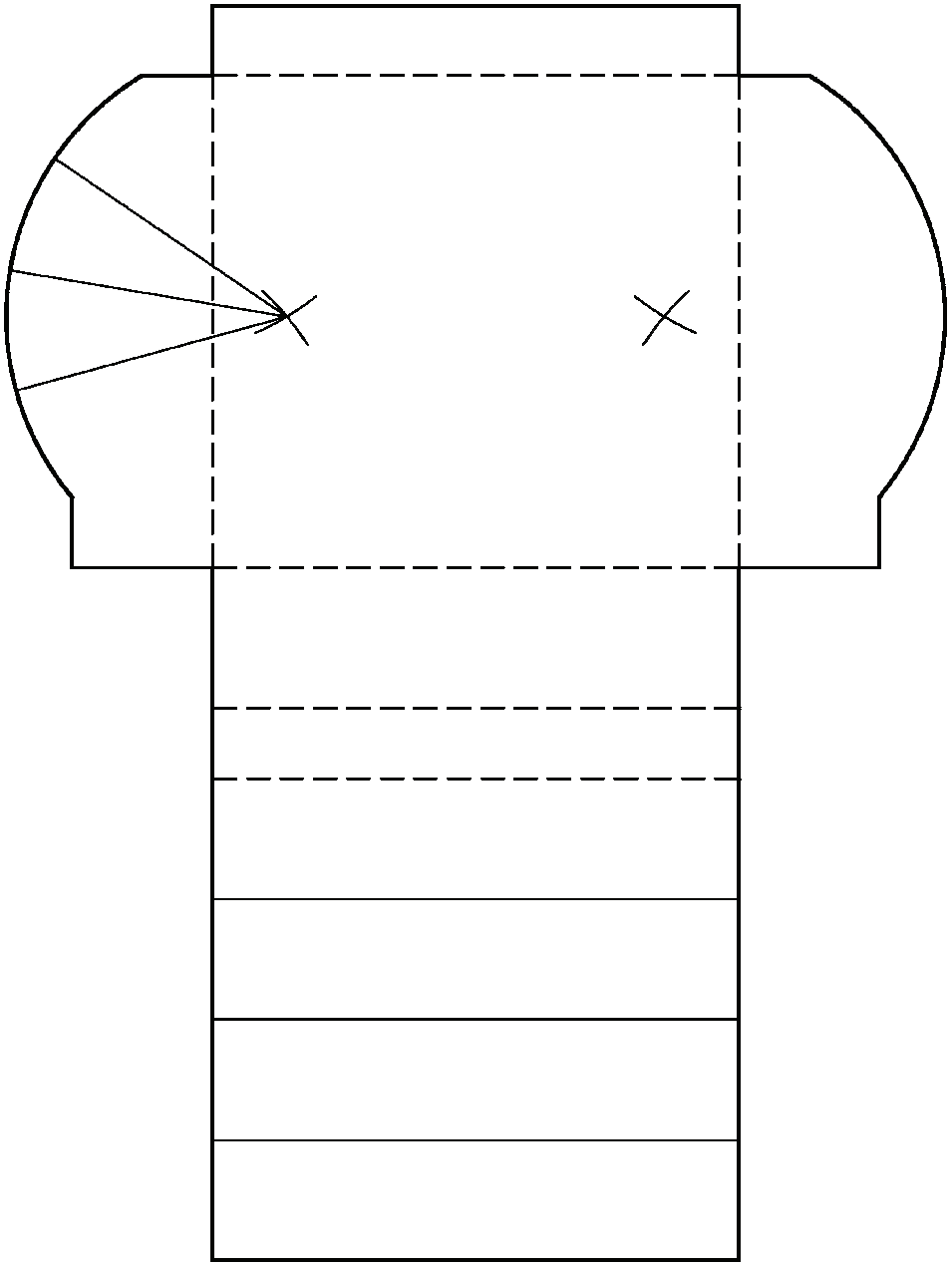
Design & Communication Graphics – Ord. Level
Marking Scheme
Question C-1
Scale: n/a
June 2014

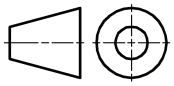


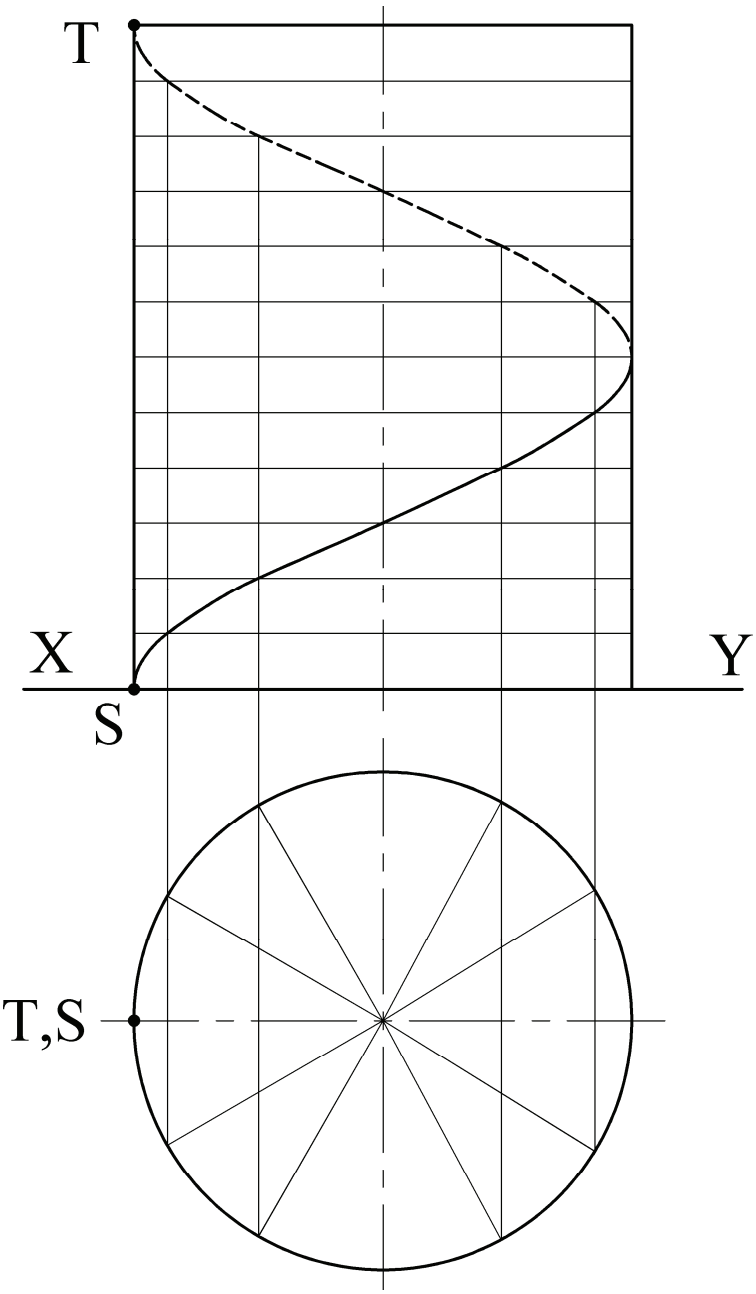
Design & Communication Graphics – Ord. Level	
	Marking Scheme
	Question C-2
	Scale: n/a — June 2014

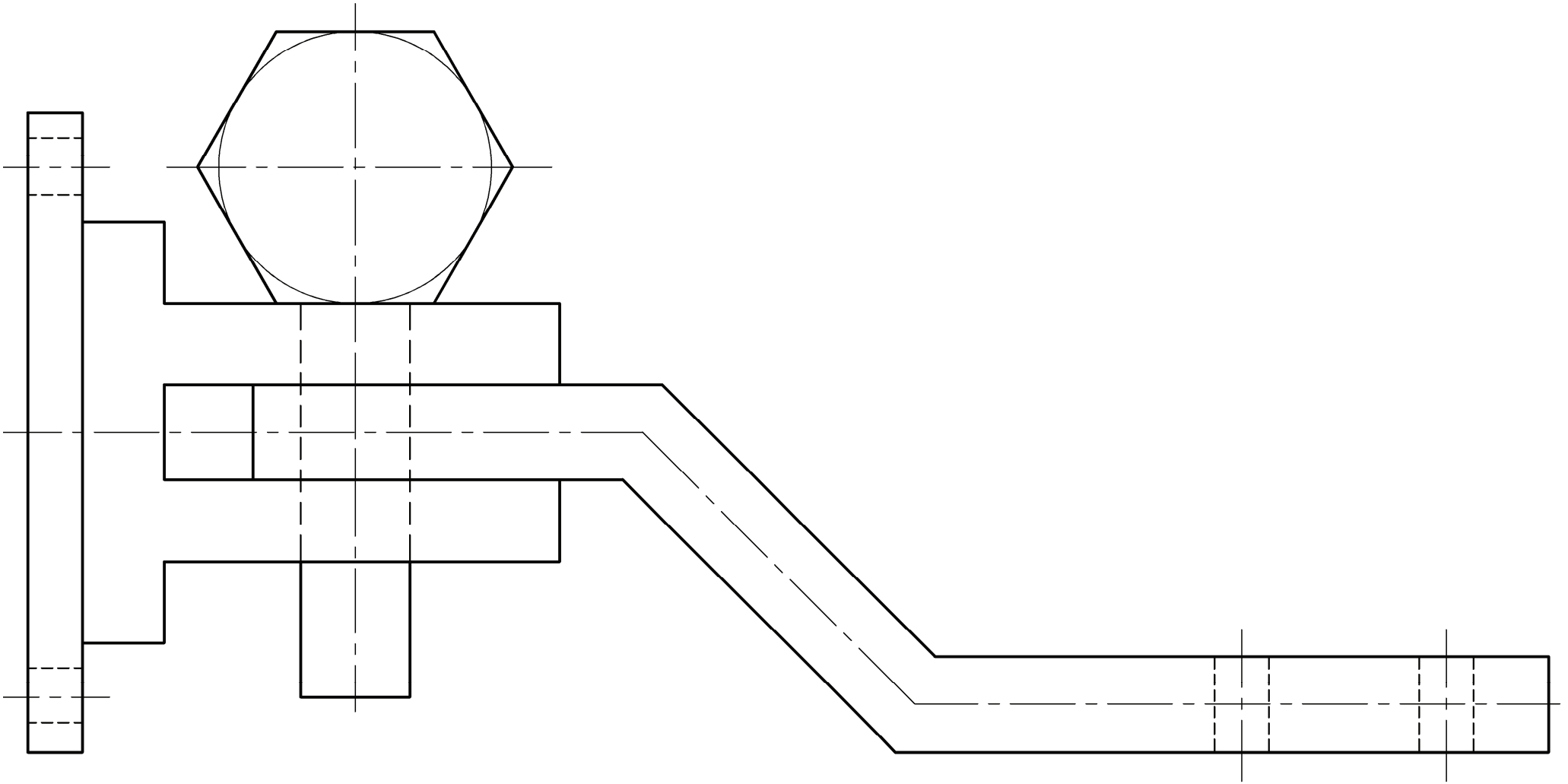
Design & Communication Graphics – Ord. Level	
	Marking Scheme
	Question C-3
Scale: n/a	June 2014





Design & Communication Graphics – Ord. Level		
	Marking Scheme	
	Question C-4	
	Scale: n/a	June 2014





Design & Communication Graphics – Ord. Level	
	Marking Scheme
	Question C-5
Scale: n/a	June 2014

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Design and Communication Graphics
Student Assignment - Ordinary Level
Assessment Sheet 2014

Candidate Exam No.

Output	Marking criteria			Marks
1	**Design Research** - Exploration of main design features using primary & secondary research; Selection of appropriate graphics; Effective layout and presentation of information combining images, sketches & annotations			
	a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**		
	b) Most relevant criteria considered - very good presentation	**10 - 12**		
	c) Some relevant criteria considered - good presentation	**7 - 9**		
	d) Limited criteria considered - fair presentation	**4 - 6**		
	e) At least one criterion considered - poor presentation	**0 - 3**		
2	**Design Feature Comparison -** Selection of two appropriate images; Main dimensions inserted; Comparison of main design features; Contrasting of main design features; Effective layout and presentation of information combining images, sketches & annotations			
	a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**		
	b) Most relevant criteria considered - very good presentation	**10 - 12**		
	c) Some relevant criteria considered - good presentation	**7 - 9**		
	d) Limited criteria considered - fair presentation	**4 - 6**		
	e) At least one criterion considered - poor presentation	**0 - 3**		
3	**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			
	a) Extensive range of relevant criteria considered - excellent presentation	**17 - 20**		
	b) Most relevant criteria considered - very good presentation	**13 - 16**		
	c) Some relevant criteria considered - good presentation	**9 - 12**		
	d) Limited criteria considered - fair presentation	**5 - 8**		
	e) At least one criterion considered - poor presentation	**0 - 4**		
4	**SolidWorks Parts, Assembly, Drawing and eDrawing files**			
	• **Adherence to required filing structure**	**4**		
	• **Creation of a minimum of 3 Part files**	**6**		
	• **Part models -** Proficiency in Parametric CAD; Selection of most appropriate profile; Sketches fully defined; Features renamed; Appropriate type of extrusions used	**12**		
	• **Assembly** – Creation of Assembly environment; Accuracy of parts to facilitate correct assembly; Correct mating of parts; Application of appropriate appearances	**6**		
	• **Factor of difficulty**	**3**		
	• **eDrawing of CAD model**	**2**		
5	**Hardcopy outputs from SolidWorks -** Detailed orthographic views of the Assembly; Rendered pictorial view of the Assembly; Exploded view of the CAD model; Inclusion of main dimensions; Scaling, layout and presentation			
	a) Extensive range of relevant criteria considered - excellent presentation	**17 - 20**		
	b) Most relevant criteria considered - very good presentation	**13 - 16**		
	c) Some relevant criteria considered - good presentation	**9 - 12**		
	d) Limited criteria considered - fair presentation	**5 - 8**		
	e) At least one criterion considered - poor presentation	**0 - 4**		
6	**Photorealistic Representation**			
	Produce photorealistic computer generated images of the artefact	**7**		
7	**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			
	a) Extensive range of relevant criteria considered - excellent presentation	**17 - 20**		
	b) Most relevant criteria considered - very good presentation	**13 - 16**		
	c) Some relevant criteria considered - good presentation	**9 - 12**		
	d) Limited criteria considered - fair presentation	**5 - 8**		
	e) At least one criterion considered - poor presentation	**0 - 4**		
8	**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			
	a) Extensive range of relevant criteria considered - excellent presentation	**9 - 10**		
	b) Most relevant criteria considered - very good presentation	**7 - 8**		
	c) Some relevant criteria considered - good presentation	**5 - 6**		
	d) Limited criteria considered - fair presentation	**3 - 4**		
	e) At least one criterion considered - poor presentation	**0 - 2**		
9	**Hardcopy outputs from SolidWorks -** CAD model; Detailed orthographic views of the proposed solution; Rendered pictorial view of the CAD model, Inclusion of main dimensions; Scaling, layout and presentation			
	• **Application of CAD skills**	**5**		
	a) Extensive range of relevant criteria considered - excellent presentation	**13 - 15**		
	b) Most relevant criteria considered - very good presentation	**10 - 12**		
	c) Some relevant criteria considered - good presentation	**7 - 9**		
	d) Limited criteria considered - fair presentation	**4 - 6**		
	e) At least one criterion considered - poor presentation	**0 - 3**		

Sub-total		Marks deducted for pages in excess of maximum		Total	