



**Coimisiún na Scrúduithe Stáit**  
**State Examinations Commission**

**Leaving Certificate 2015**

**Marking Scheme**

**Design and Communication Graphics**

**Higher 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**

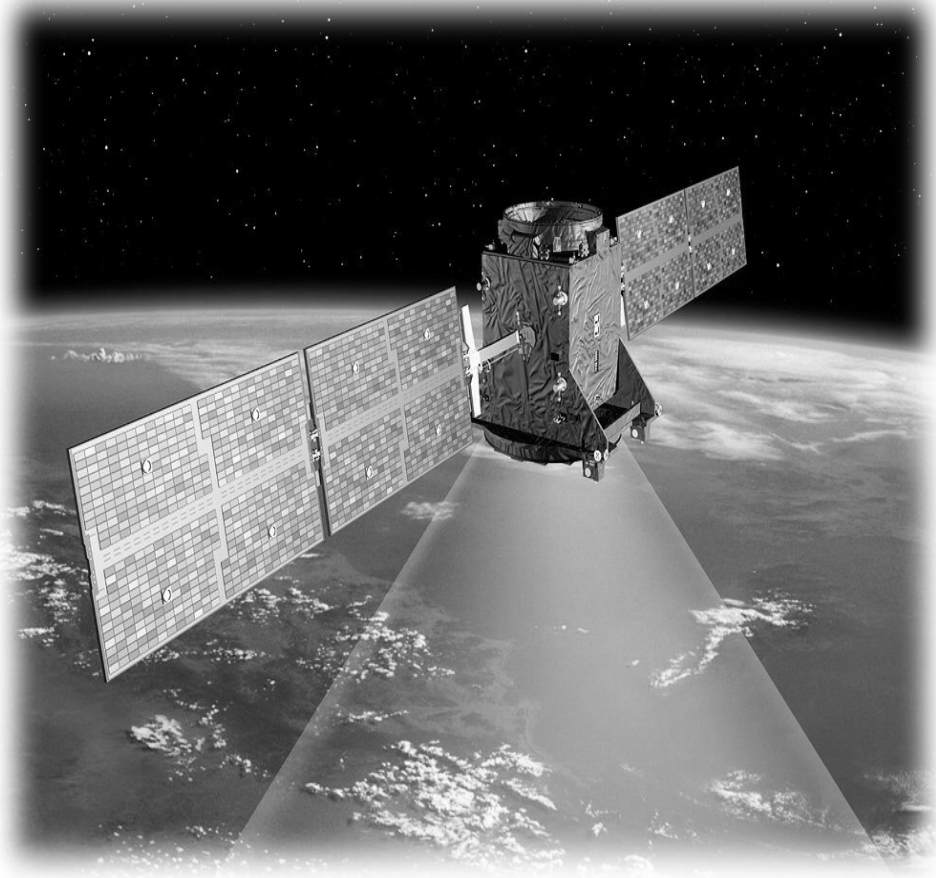
Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in 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 2015*

***Design and Communication  
Graphics  
Higher Level***



***Marking Scheme  
and Sample Solutions***

*(Other valid solutions are acceptable and are marked accordingly)*

**QUESTION A-1**

**MARKS**

- (a) Complete Plan and Elevation (10)**
- (i) Complete outline of prism in plan .....3
  - (ii) Use of appropriate solution methodology .....2
  - (iii) Establish 2 remaining heights in elevation.....2
  - (iv) Complete elevation.....3
- (b) Complete pictorial projection (6)**
- (v) Establish 2 required heights in pictorial projection....(1,1,1) .....3
  - (vi) Complete pictorial projection...(3 x 1 for each surface).....3
- (c) True length of shortest diagonal (4)**
- (vii) Identify shortest diagonal .....1
  - (viii) Determine correct true length ....(1,1,1) .....3

Total = 20

**QUESTION A-2**

**MARKS**

- (a) Parabolic curves (13)**
- (i) Establish points on one semi parabola ...(Min 5 incl. vertex and end point) .....5
  - (ii) Establish points on other half of parabola ....(mirror or otherwise) .....2
  - (iii) Establish points on 2<sup>nd</sup> parabola ....(mirror or otherwise) .....2
  - (iv) Determination of positions for points B, D, P & Q .....2
  - (v) Draw parabolic curves .....2
- (b) Tangential circle (7)**
- (vi) Draw lines from P (or Q) to foci....(2,1).....3
  - (vii) Bisect angle and draw normal through P (or Q) ...(1,1).....2
  - (viii) Establish centre and draw required circle .....2

Total = 20

**QUESTION A-3**

**MARKS**

|                |   |           |
|----------------|---|-----------|
| <b>(a)</b>     | <b>Line of intersection and dihedral angle (18)</b>   |           |
|                | (i) Establish 2 <sup>nd</sup> point on line of intersection .....                                 | 2         |
|                | (ii) Draw line of intersection in plan and elevation.....   | 2         |
|                | (iii) X <sub>1</sub> Y <sub>1</sub> parallel to line of intersection in plan (or elevation) ..... | 1         |
|                | (iv) Projection of planes onto auxiliary view .....   | 3         |
|                | (v) Drawing of planes in auxiliary view .....   | 3         |
|                | (vi) X <sub>2</sub> Y <sub>2</sub> perp. to true length of line of intersection .....             | 1         |
|                | (vii) Projection of planes onto 2 <sup>nd</sup> auxiliary view .....                              | 2         |
|                | (viii) Indication of dihedral angle .....   | 4         |
| <b>(b)</b>     | <b>Traces of plane (2)</b>  |           |
|                | (ix) Establish and draw horizontal trace .....  | 1         |
|                | (x) Draw correct vertical trace .....   | 1         |
| <b>Total =</b> |   | <b>20</b> |

**QUESTION A-4**

**MARKS**

|                |   |           |
|----------------|---|-----------|
| <b>(a)</b>     | <b>Projections of shortest horizontal distance (18)</b>   |           |
|                | (i) Creating a plane containing CD (or AB) and parallel to AB (or CD).....                      | 4         |
|                | (ii) Elevation and plan of horizontal line on parallel plane (2,1,1) .....                      | 4         |
|                | (iii) X <sub>1</sub> Y <sub>1</sub> perpendicular to plan of horizontal line .....              | 2         |
|                | (iv) Projections of lines in 1st auxiliary elevation ... (parallel) ... (1,1) .....             | 2         |
|                | (v) X <sub>2</sub> Y <sub>2</sub> perpendicular to X <sub>1</sub> Y <sub>1</sub> .....          | 2         |
|                | (vi) Identification of shortest horizontal distance in 2 <sup>nd</sup> auxiliary ... (1,1)..... | 2         |
|                | (vii) Draw req. projections (projecting or measuring to plan and elevation)...(1,1)..           | 2         |
| <b>(b)</b>     | <b>Inclination of line to V.P. (2)</b>  |           |
|                | (viii) Extend line to meet V.P. ....  | 1         |
|                | (ix) Indicate required angle .....  | 1         |
| <b>Total =</b> |   | <b>20</b> |

**QUESTION B-1**

**MARKS**

**(a) Outline Plan and Elevation (9)**

- (i) Draw outline elevation as given .....5
- (ii) Draw outline plan as given .....4

**Outline auxiliary view (6)**

- (iii)  $X_1Y_1$  parallel to centre line of beam in plan .....3
- (iv) Draw outline auxiliary view .....3

**Plan of elliptical transmission area (16)**

- (v) Draw beam extremities in auxiliary view .....3
- (vi) Draw edge view of transmission circle in auxiliary view .....2
- (vii) Establish minor axis in plan .....2
- (viii) Establish major axis in plan .....2
- (ix) Establish additional points (min. 8) on ellipse in plan .....4
- (x) Plan of ellipse .....3

**(b) Elevation of elliptical transmission area (14)**

- (xi) Establish points in elevation .....4
- (xii) Elliptical “concept” in elevation .....3
- (xiii) Use of vertical section plane to determine visibility .....2
- (xiv) Draw required curve in elevation .....3
- (xv) Hidden detail as required .....2

---

**Total = 45**

**QUESTION B-2**

**MARKS**

|   |   |
|---|---|
| <b>(a) Axonometric axes and equilateral triangle (6)</b>                          |   |
| (i) Draw axonometric axes X, Y and Z orientated as shown.....                     | 3 |
| (ii) Draw required equilateral triangle ‘abc’ .....                               | 3 |
| <b>(b) Plan and Elevation as shown (20)</b>                                       |   |
| (iii) Correct development of XZ plane in required orientation ... (1x5) .....     | 5 |
| (iv) Draw plan of square based pyramid as given .....                             | 2 |
| (v) Draw plan of hexagonal prism as given .....                                   | 3 |
| (vi) Correct development of XY plane in required orientation ... (1x5).....       | 5 |
| (vii) Draw elevation of square based pyramid as given .....                       | 2 |
| (viii) Draw elevation of hexagonal prism as given .....                           | 3 |
| <b>(c) Complete axonometric projection (16)</b>                                   |   |
| (ix) Projections from elevation and plan .....                                    | 1 |
| (x) Draw given axonometric projection (as presented) .....                        | 4 |
| (xi) Establish 3 “penetration” points in axonometric projection ... (1,2,2) ..... | 5 |
| (xii) Establish 2 “crossover” points in axonometric projection.....               | 2 |
| (xiii) Complete axonometric projection .....                                      | 4 |
| <b>Complete elevation (3)</b>   |   |
| (xiv) Establish 2 “penetration” points in elevation .....                         | 1 |
| (xv) Establish 2 “crossover” points in elevation .....                            | 1 |
| (xvi) Complete elevation .....  | 1 |

---

**Total = 45**

**QUESTION B-3****MARKS****(a) Perspective (38)**

- |        |  |   |
|--------|--|---|
| (i)    | Draw the given plan of greenhouse .....(9 x 1) .....                     | 9 |
| (ii)   | Position spectator and plan of picture plane (1, 2) .....                | 3 |
| (iii)  | Plan of vanishing points .....   | 2 |
| (iv)   | Ground line, horizon line, vanishing points in elevation (1, 1, 1) ..... | 3 |
| (v)    | Projection lines from plan to spectator .....                            | 2 |
| (vi)   | Perspective of base lines of structure ....(2x1) .....                   | 2 |
| (vii)  | Measure and apply height of front corner at "A" .....                    | 1 |
| (viii) | Establish "bottom" of roof using vanishing points .....                  | 2 |
| (ix)   | Determine auxiliary vanishing point(s) .....                             | 2 |
| (x)    | Determine "gables" of greenhouse ... (3x1).....                          | 3 |
| (xi)   | Complete perspective projection .....                                    | 9 |

**(b) Open door (5)**

- |        |  |   |
|--------|--|---|
| (xii)  | Draw plan of open door in required position .....              | 2 |
| (xiii) | Perspective of vertical (rotated) edge of open door .....      | 1 |
| (xiv)  | Perspective of top and bottom edges of door (horizontal) ..... | 2 |

**(c) Open roof window (2)**

- |      |   |   |
|------|---|---|
| (xv) | Draw perspective of 2 sloping edges and horizontal edge ..... | 2 |
|------|---|---|

---

**Total = 45**



**QUESTION C-1**

**MARKS**

|            |   |   |
|------------|---|---|
| <b>(a)</b> | <b>Earthworks for roadway and car park (30)</b>                 |   |
|            | <i>Earthworks between A and B (Level) - Embankment</i>          |   |
|            | (i) Draw parallel lines at 7.5mm intervals .....                | 4 |
|            | (ii) Identify intersections with contours and draw curve .....  | 4 |
|            | <i>Earthworks between A and B (Level) - Cutting</i>             |   |
|            | (iii) Draw parallel lines at 5mm intervals .....                | 4 |
|            | (iv) Identify intersections with contours and draw curve .....  | 4 |
|            | <i>Earthworks for edge GF of car park (Level) - Embankment</i>  |   |
|            | (v) Draw parallel lines at 7.5mm intervals .....                | 2 |
|            | (vi) Identify intersections with contours and draw curve .....  | 2 |
|            | <i>Earthworks for edge FE of car park (Rising) – Embankment</i> |   |
|            | (vii) Draw required arc .....                                   | 4 |
|            | (viii) Draw parallel lines at 7.5mm intervals .....             | 2 |
|            | (ix) Identify intersections with contours and draw curve .....  | 3 |
|            | (x) Extend curves to establish intersection point .....         | 1 |
| <b>(b)</b> | <b>Strike and dip of stratum (12)</b>                           |   |
|            | (xi) Draw triangle PQR in elevation .....                       | 5 |
|            | (xii) Draw “Strike Line” in elevation and plan ... (2,1) .....  | 3 |
|            | (xiii) $X_1Y_1$ perpendicular to “Strike Line” .....            | 2 |
|            | (xiv) Determine Dip .....                                       | 2 |
| <b>(c)</b> | <b>Depth of pipe at T (3)</b>                                   |   |
|            | (xv) $X_1Y_1$ parallel to pipe ST .....                         | 1 |
|            | (xvi) Auxiliary view of pipe ST .....                           | 1 |
|            | (xvii) Determination and indication of required depth .....     | 1 |

**Total = 45**

**QUESTION C-2**

**MARKS**

**(a) Plan (17)**

- (i) Draw plan of outline elements (parallelogram ABCD) .....4
- (ii) Draw inner elements in both directions in plan .....4
- (iii) Construction to determine points on ellipse in plan .....6
- (iv) Draw elliptical curve and extend elements in plan ... (any = 1) .....3

**(b) Elevation (12)**

- (v) Draw elevation of corresponding outline elements .....2
- (vi) Draw inner elements in elevation .....2
- (vii) Construction to determine points on upper curve in elevation .....4
- (viii) Draw upper curve in elevation ... (any = 1) .....2
- (ix) Draw lower curve in elevation ... (any = 1) .....2

**(c) Surface curvature along vertical cutting plane containing B and D (9)**

- (x) Line joining B and D in plan .....1
- (xi) Projections from intersections with elements in plan to auxiliary or end view .....2
- (xii) Establish heights in auxiliary or end view ..(incl, turning point) .....4
- (xiii) Draw required curvature .....(any = 1) .....2

**(d) Shortest distance between skew lines AB and CD (7)**

- (xiv)  $X_1Y_1$  line parallel to plan of AB and CD .....2
- (xv) Draw AB and CD as true lengths in auxiliary view.....2
- (xvi) Draw required shortest distance in plan and elevation ..(-1 if not horizontal).....3

---

**Total = 45**

**QUESTION C-3**

**MARKS**

- (a) Plan and Elevation of building (15)**
- (i) Draw square outline of building in plan .....4
  - (ii) Complete the plan .....4
  - (iii) Projections to elevation .....2
  - (iv) Apply heights and complete elevation .....(1,4) .....5
- (b) Dihedral angle between surfaces A and B (10)**
- (v)  $X_1Y_1$  parallel to line of intersection .....2
  - (vi) View of surfaces showing true length of line of intersection .....3
  - (vii)  $X_2Y_2$  perpendicular to line of intersection .....2
  - (viii) Determination of dihedral angle .....3
- (c) True shape of surface C and establishing radius of incircle (11)**
- (ix) Appropriate construction to establish true shape of surface .....3
  - (x) Draw triangular outline of surface .....3
  - (xi) Bisect two angles to determine incentre ... (2,1) .....3
  - (xii) Determine required radius .....2
- (d) Pitch of surface A and length of cable required (9)**
- (xiii) Establish viewing angle for auxiliary view .....3
  - (xiv)  $X_1Y_1$  perpendicular to viewing angle .....2
  - (xv) Edge view of surface A showing required pitch .....2
  - (xvi) Determine and indicate required length of cable (incl. scale conversion) .....2

---

**Total = 45**

**QUESTION C-4**

**MARKS**

**(a) Link mechanism (23)**

- (i) Draw circular path, link OA, line CD and point B as given .....5
- (ii) Divide circle into equal parts (min 12) .....4
- (iii) Divide CD into 6 equal parts as shown .....2
- (iv) Draw arm AB in all positions .....9
- (v) Draw required locus ....(any = 1) .....3

**(b) Cam and displacement diagram (22)**

- (vi) Draw camshaft .....1
- (vii) Establish 'nearest approach' on diagram of cam .....1
- (viii) Divide circle into 12 equal parts .....2
- (ix) Horizontal divisions on displacement diagram .....2
- (x) Construction to determine U.A.R. on displacement diagram .....4
- (xi) Show dwell on displacement diagram .....1
- (xii) Transfer of heights from displacement diagram to cam diagram .....4
- (xiii) Complete cam diagram .....3
- (xiv) Transfer of heights to displacement diagram .....2
- (xv) Complete displacement diagram .....2

---

**Total = 45**

**QUESTION C-5****MARKS****(a) Sectional elevation (40)*****Assembly (7)***

(i) Relative positioning of components .....7

***Base (8)***

(ii) Outline of section .....4

(iii) Inner detail (slots  $\times$  2, shell and fillets) .....(4 $\times$ 1) .....4***Vertical slide rods (4)***(iv) Rods  $\times$  2 .....2

(v) Threaded holes .....2

***Spindle mount (4)***

(vi) Rectangular bottom outline .....2

(vii) Circles and tangents .....(1,1) .....2

***Moving jaw (5)***

(viii) Outline of section .....4

(ix) Fillets.....1

***Pan head screws (2)***

(x) Screw heads, incl. slots .....2

***Cam handle (7)***

(xi) Large circles .....2

(xii) Outline of rectangular handle, incl. top fillet .....2

(xiii) Inner detail within handle (offset) .....1

(xiv) Inner detail within large circles (lines  $\times$  2 and fillet) .....2***Drawing completion (3)***

(xv) Presentation, hatching and centrelines ... (1,1,1) .....3

**(b) Shortest vertical distance between base and moving Jaw (5)**

(xvi) Establish centre of large circles in rotated position .....2

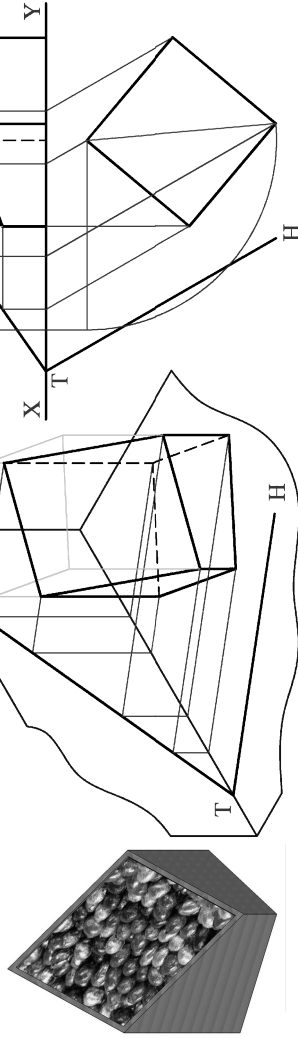
(xvii) Use of 40mm and 20mm distances to determine required vertical spacing .....3

**Total = 45**

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

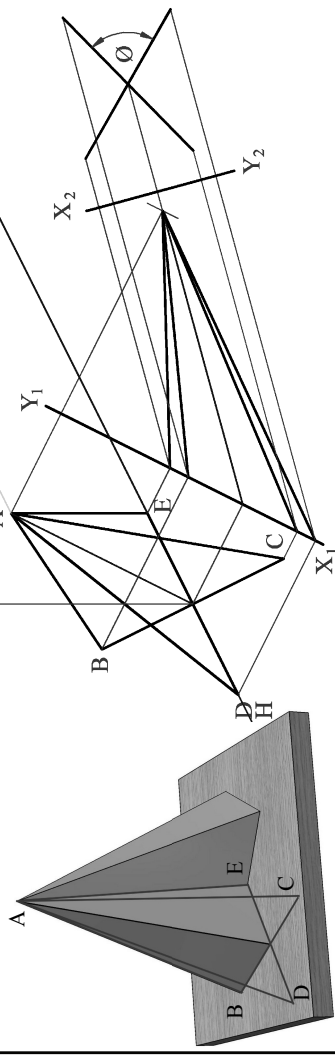
**A-1.** The 3D graphic below shows a display box, for chocolate eggs, which is based on a truncated prism. The drawing below shows the incomplete pictorial and orthographic projections of a square-based prism which has been cut by the oblique plane **VTH**.

- On the orthographic projection on the right, complete the plan and elevation of the cut prism.
- Complete the pictorial projection of the cut prism.
- On the orthographic projection on the right, determine the true length of the shorter diagonal of the cut surface.



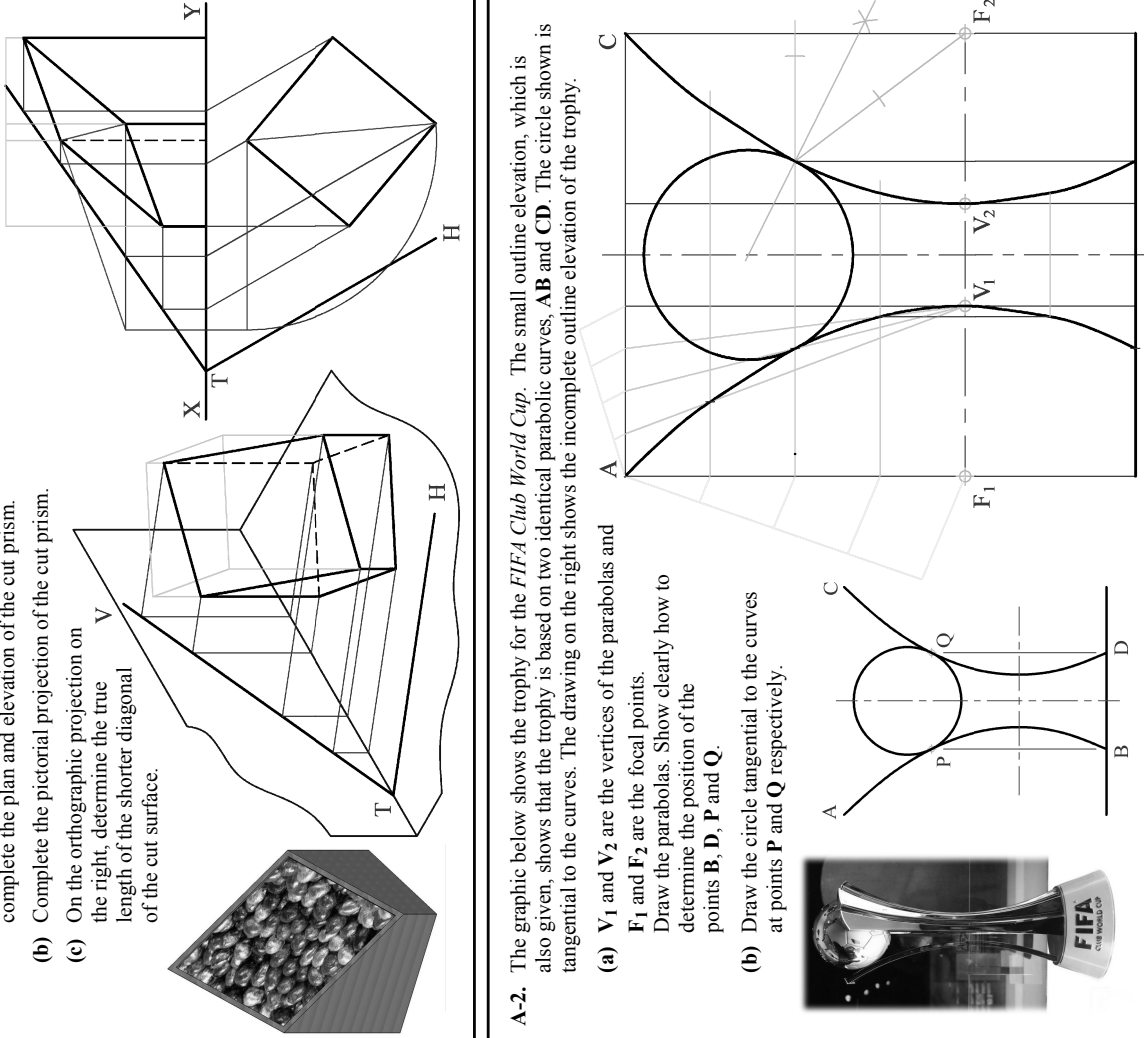
**A-3.** The 3D graphic below shows a sculpture based on intersecting planes. The drawing shows the elevation and plan of two of the intersecting planes **ABC** and **ADE**.

- Draw the plan and elevation of the line of intersection and determine the dihedral angle between the planes.
- Determine the traces of the plane **ADE**.



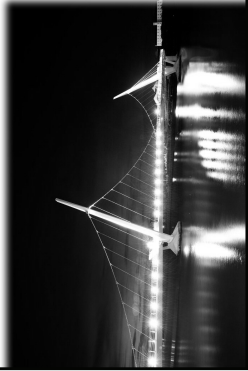
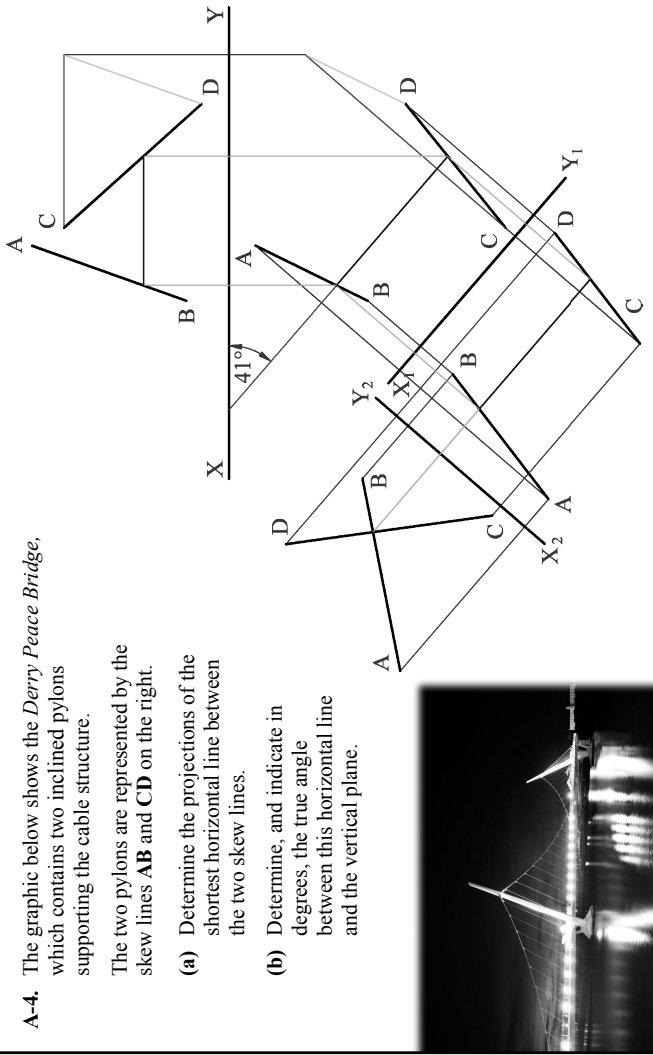
**A-2.** The graphic below shows the trophy for the *FIFA Club World Cup*. The small outline elevation, which is also given, shows that the trophy is based on two identical parabolic curves, **AB** and **CD**. The circle shown is tangential to the curves. The drawing on the right shows the incomplete outline elevation of the trophy.

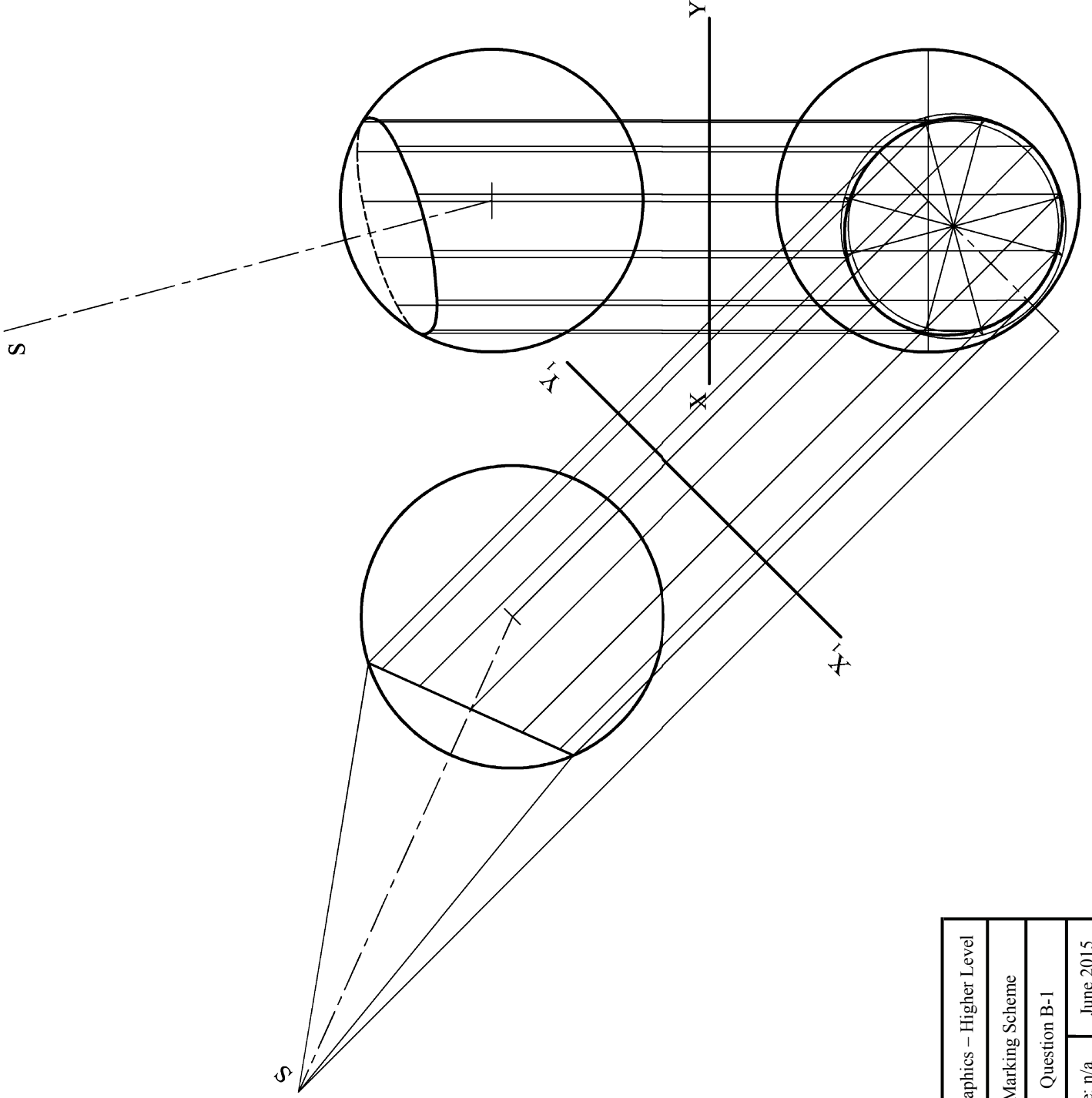
- $V_1$  and  $V_2$  are the vertices of the parabolas and  $F_1$  and  $F_2$  are the focal points. Draw the parabolas. Show clearly how to determine the position of the points **B**, **D**, **P** and **Q**.
- Draw the circle tangential to the curves at points **P** and **Q** respectively.

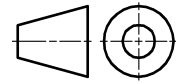


**A-4.** The graphic below shows the *Derry Peace Bridge*, which contains two inclined pylons supporting the cable structure.

- Determine the projections of the shortest horizontal line between the two skew lines.
- Determine, and indicate in degrees, the true angle between this horizontal line and the vertical plane.





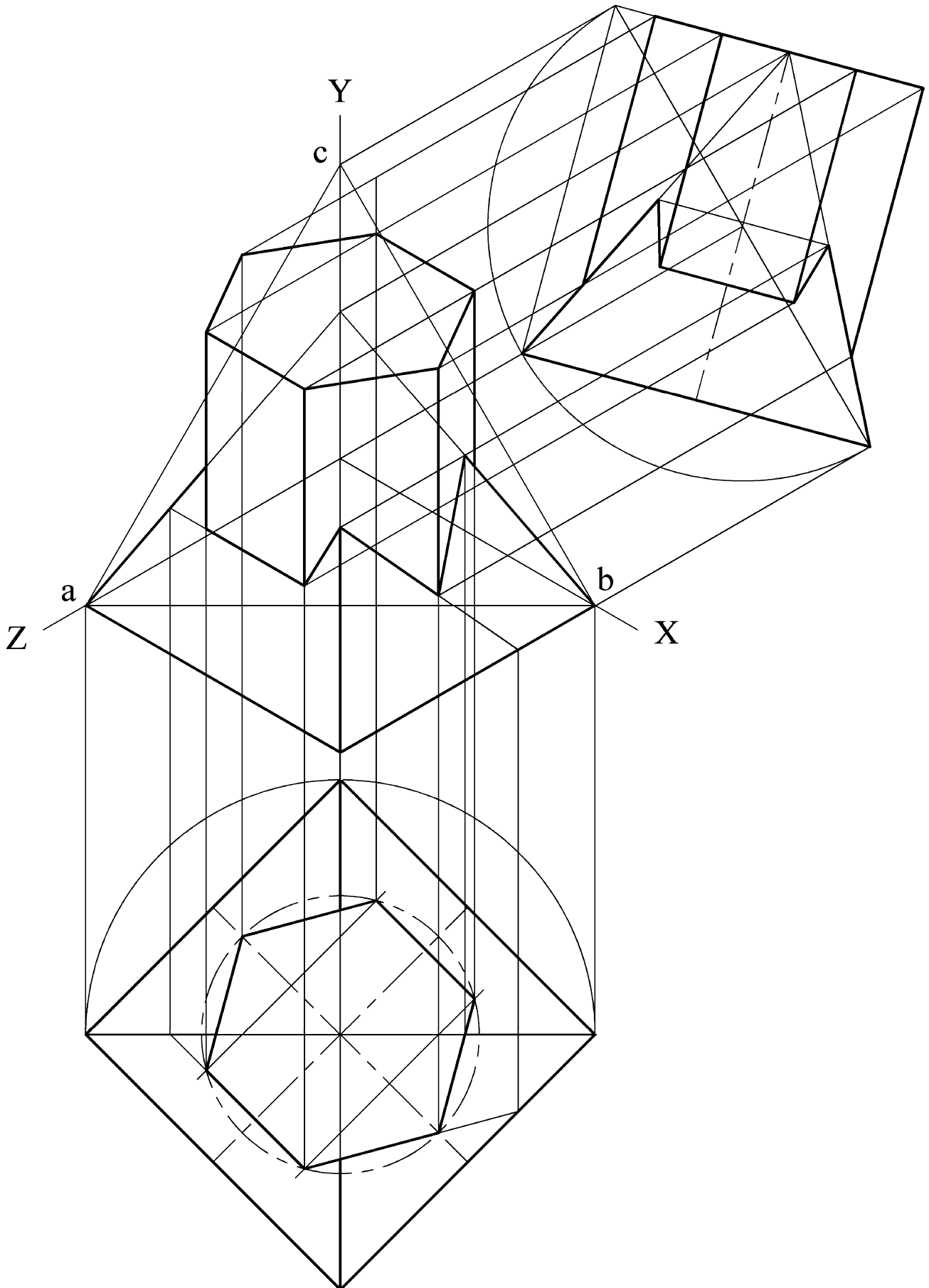


Marking Scheme

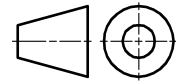
Question B-2

Scale: n/a

June 2015





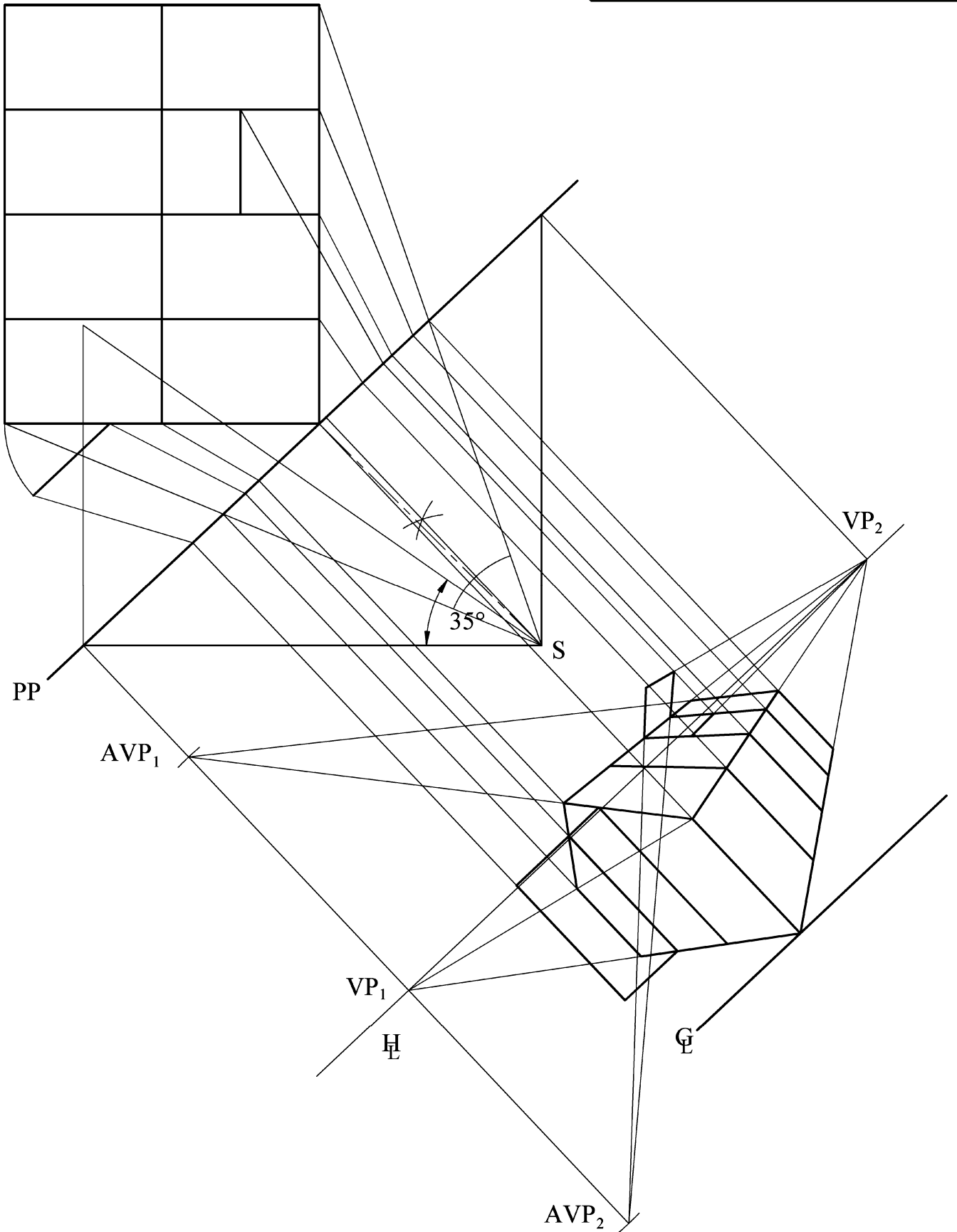


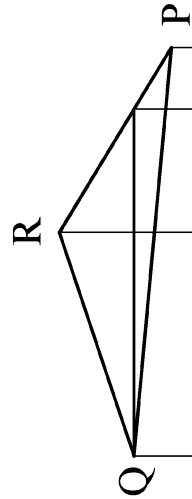
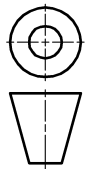
Marking Scheme

Question B-3

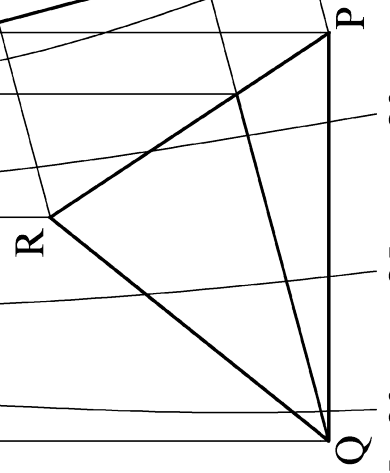
Scale: n/a

June 2015





20



X<sub>1</sub>

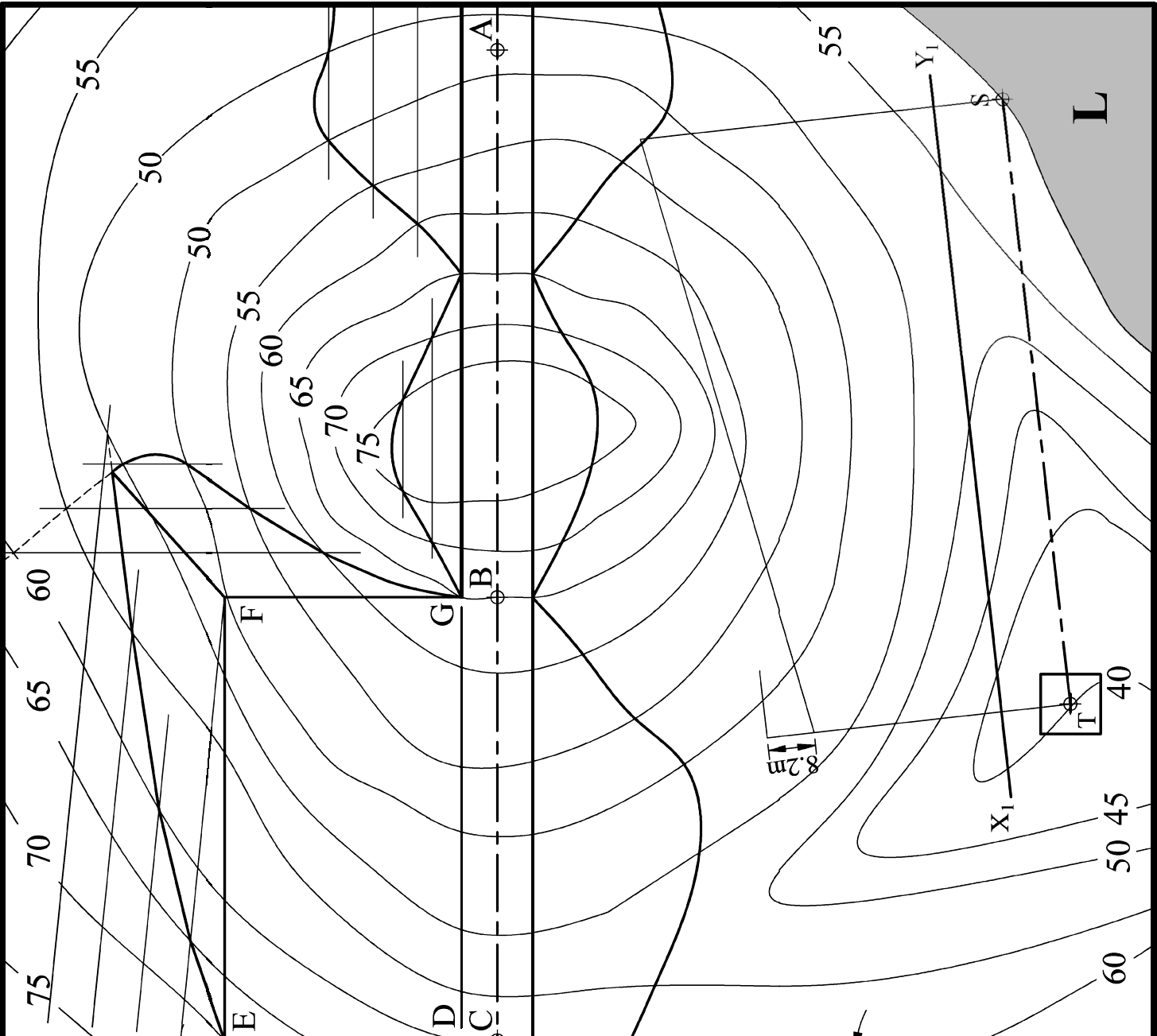
Y<sub>1</sub>

R

P

Q

$\theta$



60

65

70

75

55

50

50

55

60

65

70

75

55

Y<sub>1</sub>

S

L



X<sub>1</sub>

40

45

60

65

70

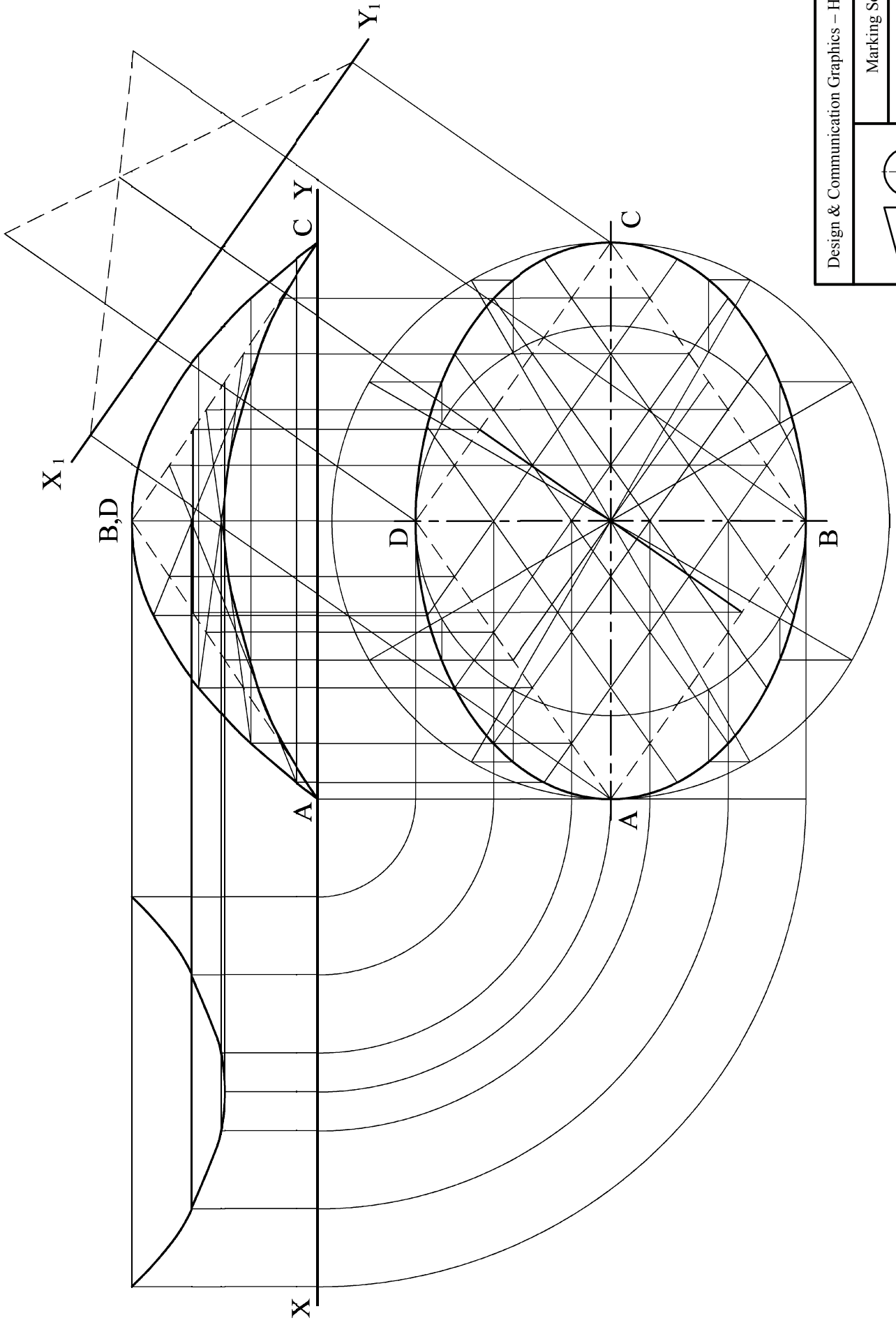
75

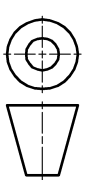
80

85

90

85



|   |           |
|---|-----------|
| Design & Communication Graphics – Higher Level                                      |           |
|  |           |
| Marking Scheme  |           |
| Question C-2  |           |
| Scale: n/a  | June 2015 |

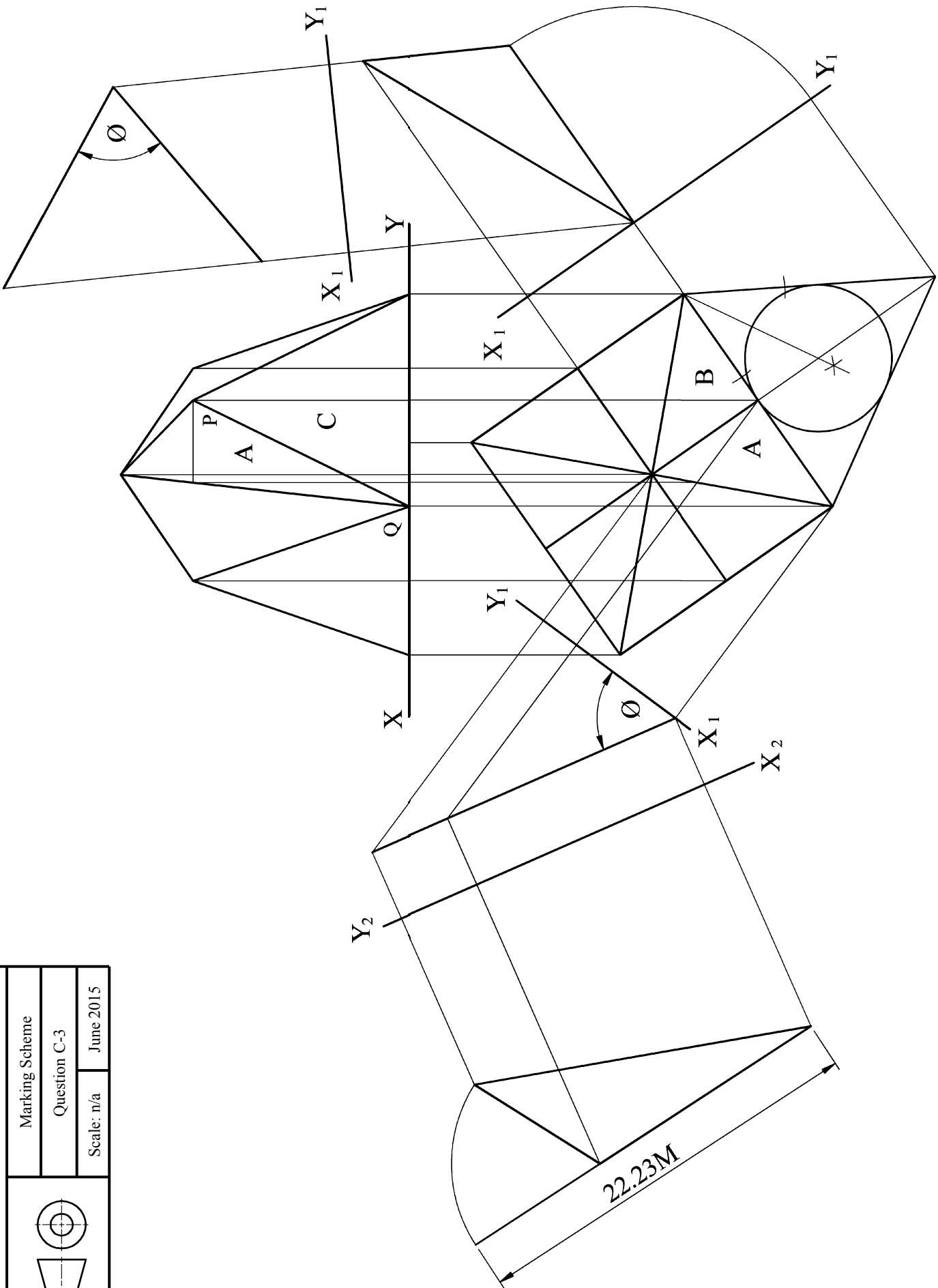


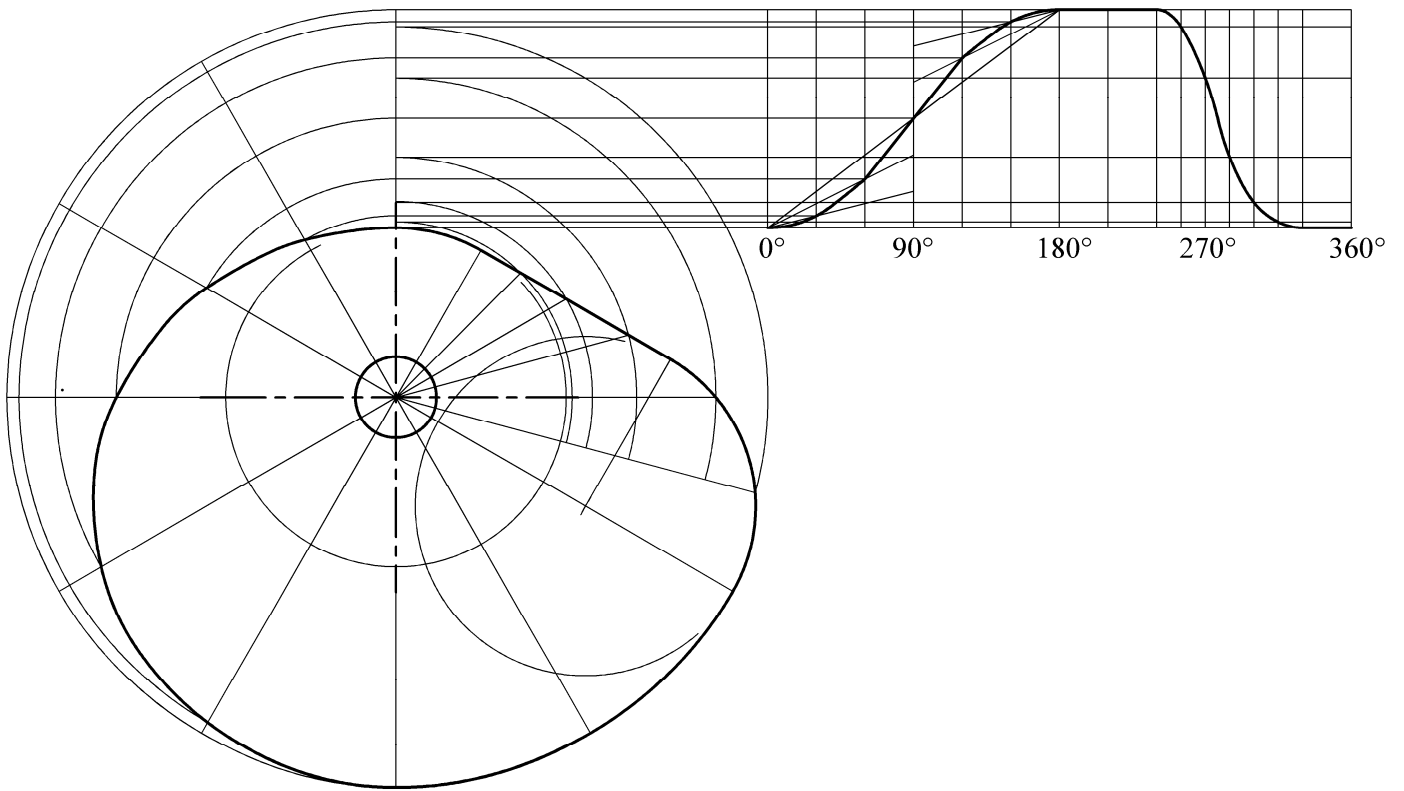
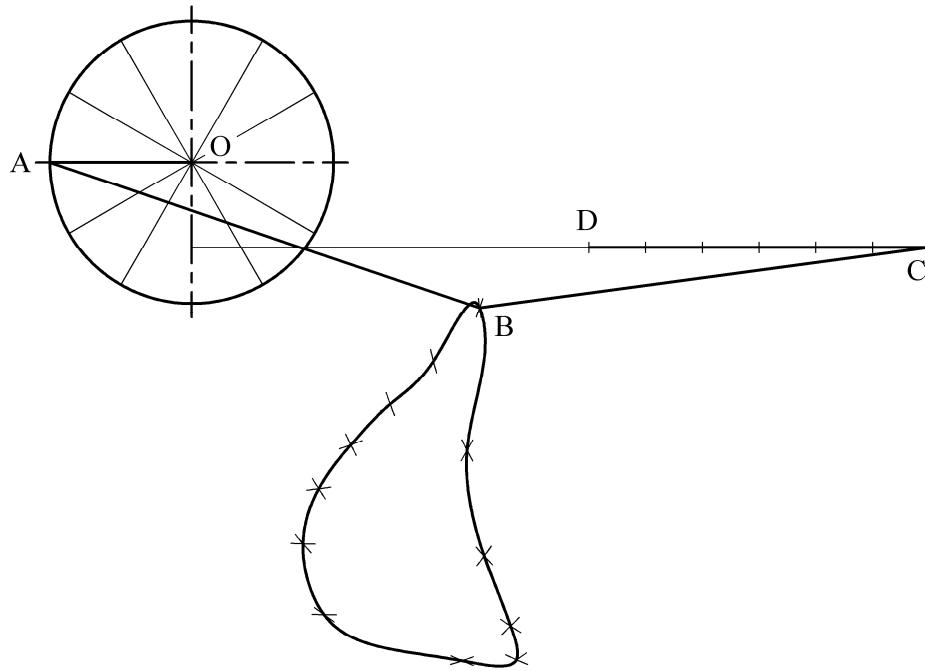
Marking Scheme

Question C-3

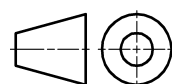
Scale: n/a

June 2015





Design & Communication Graphics – Higher Level

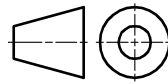


Marking Scheme

Question C-4

Scale: n/a

June 2015

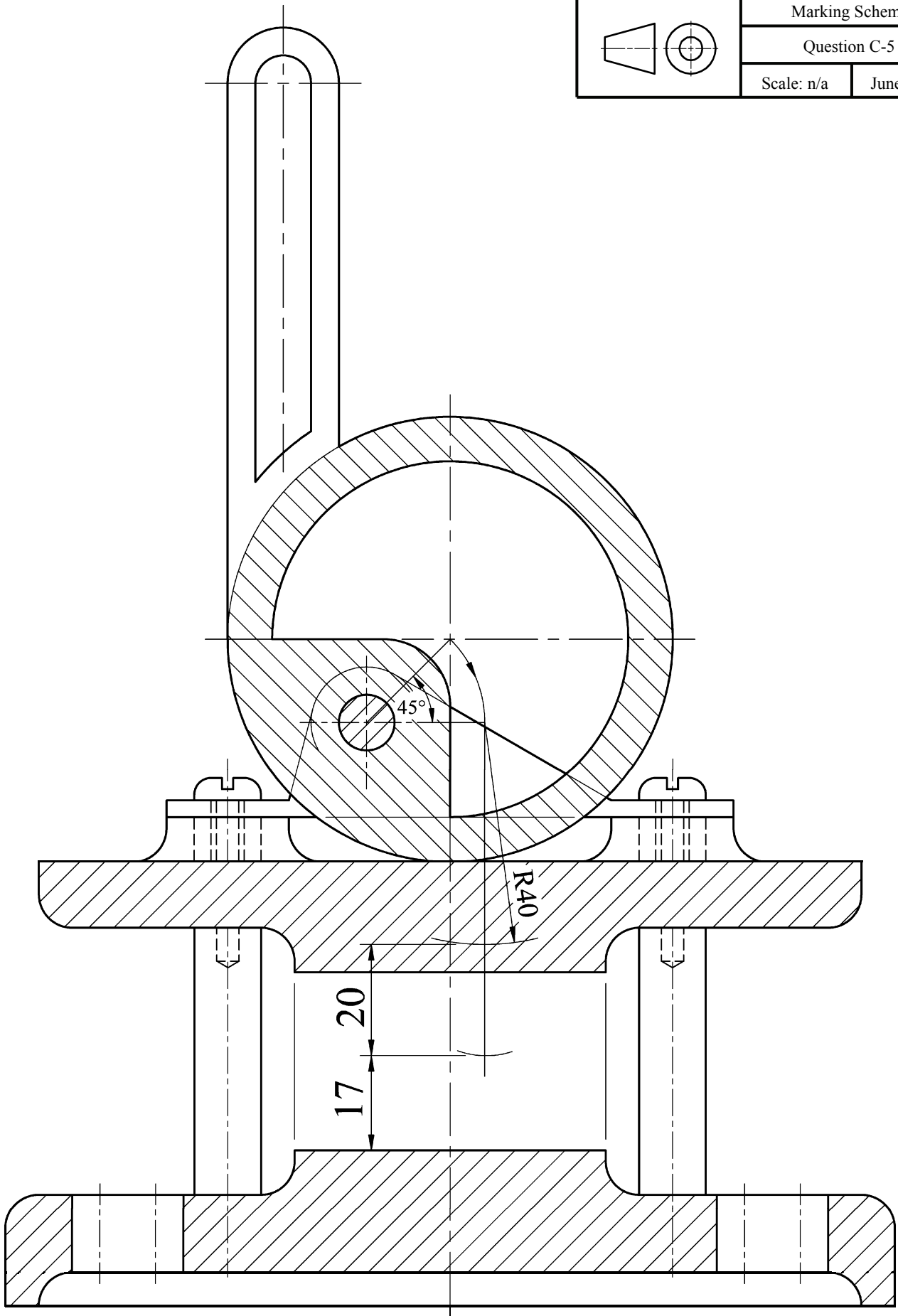


Marking Scheme

Question C-5

Scale: n/a

June 2015





# Design and Communication Graphics

## Student Assignment—Higher Level

### Assessment Sheet 2015

|                           |
|---------------------------|
| <b>Candidate Exam No.</b> |
|                           |

| Output   | Marking criteria  | Marks        |
|--|---|--------------|
| <b>1</b>   | <b>Design Research</b> - 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        |
| <b>2</b>   | <b>Design Feature Comparison</b> - 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        |
| <b>3</b>   | <b>Freehand Graphical Representation</b> – 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        |
| <b>4</b>   | <b>SolidWorks Parts, Assembly, Drawing and eDrawing files</b>   |              |
|  | • Adherence to required filing structure  | 4            |
|  | • Creation of a minimum of 5 Part files   | 2            |
|  | • 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  | 10           |
|  | • Assembly – Creation of Assembly environment; Accuracy of parts to facilitate correct assembly; Correct mating of parts; Application of appropriate appearances  | 5            |
|  | • Factor of difficulty  | 5            |
| <b>5</b>   | • eDrawing of CAD model   | 2            |
|  | <b>Hardcopy outputs from SolidWorks</b> - Detailed orthographic views of the selected artefact; Section/Detail views where appropriate; Rendered 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   |              |
|  | 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   |              |
| <b>6</b>   | <b>Photorealistic Representation</b>  |              |
|  | Produce photorealistic computer generated images of the artefact  | 7            |
| <b>7</b>   | <b>Graphical exploration of design solutions</b> - 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   | 21 - 25      |
|  | b) Most relevant criteria considered - very good presentation   | 16 - 20      |
|  | c) Some relevant criteria considered - good presentation  | 11 - 15      |
|  | d) Limited criteria considered - fair presentation  | 6 - 10       |
|  | e) At least one criterion considered - poor presentation  | 0 - 5        |
| <b>8</b>   | <b>Presentation of Modification/Concept Design</b> – 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        |
| <b>9</b>   | <b>Hardcopy outputs from SolidWorks</b> – CAD Model; Detailed orthographic views of the proposed solution; Section/Detail views where appropriate; Rendered pictorial view of the CAD model; Photorealistic image; Inclusion of main dimensions, notes and symbols; Appropriate scaling, layout and presentation to be considered |              |
|  | • Application of CAD skills   | 5            |
|  | 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   |              |
| <b>Sub-total</b>   | <b>Marks deducted for pages in excess of maximum</b>  | <b>Total</b> |

