

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

**Junior Certificate 2022**

**Marking Scheme**

**Graphics**

**Common 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.

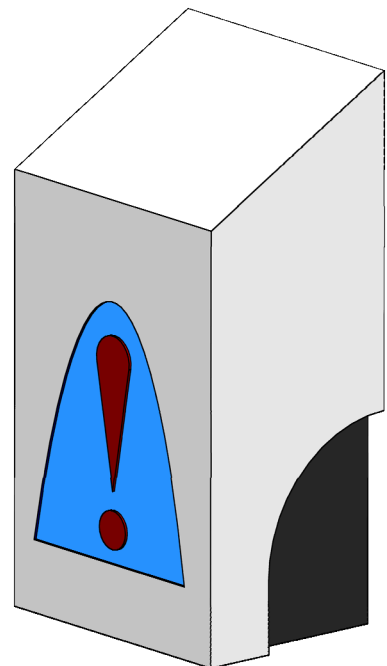
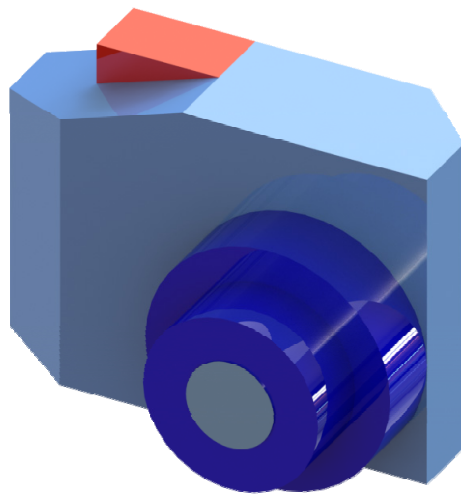
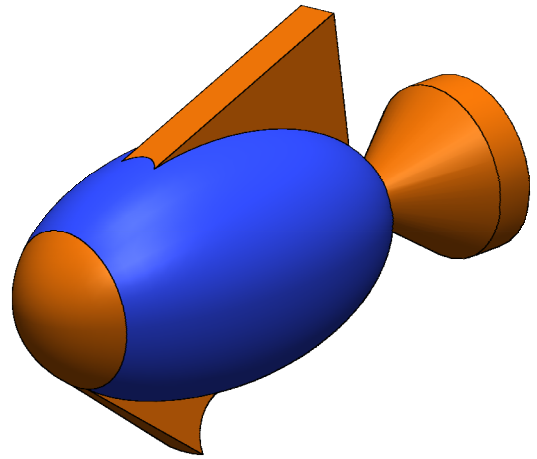
## **Future Marking Schemes**

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.



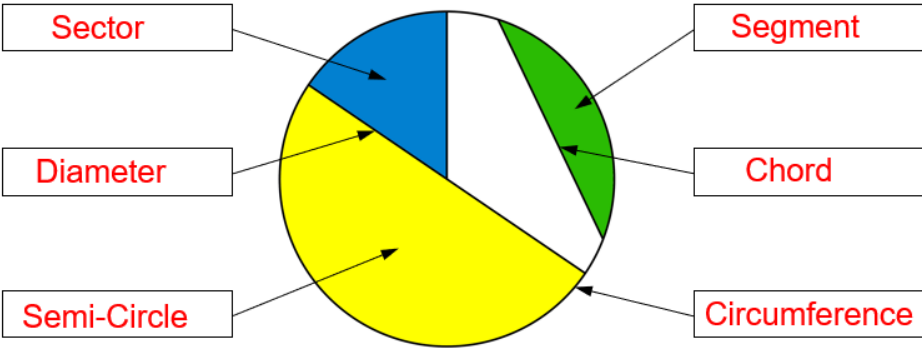
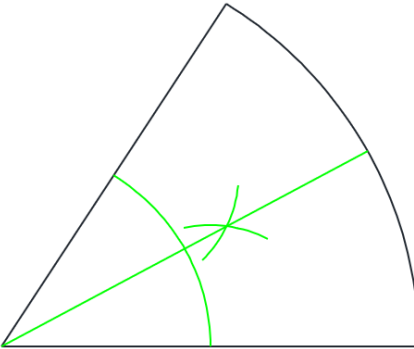
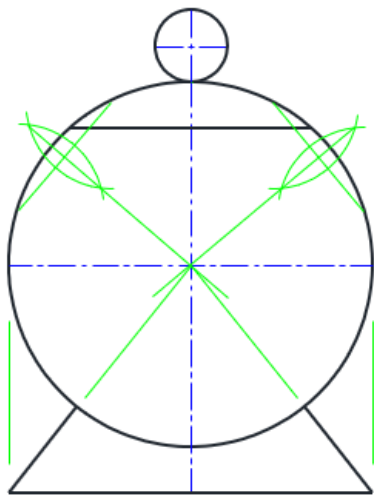
**Junior Cycle Examination 2022**

**Graphics**  
**Common Level**





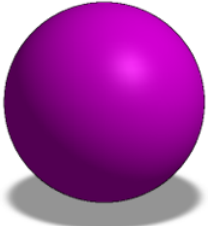
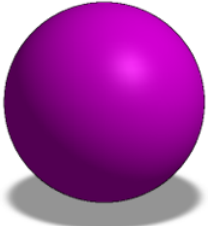
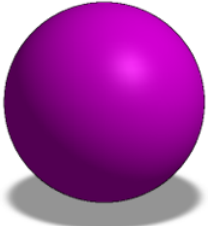
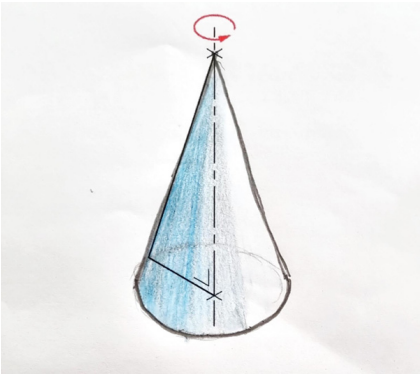



**Marking Scheme**


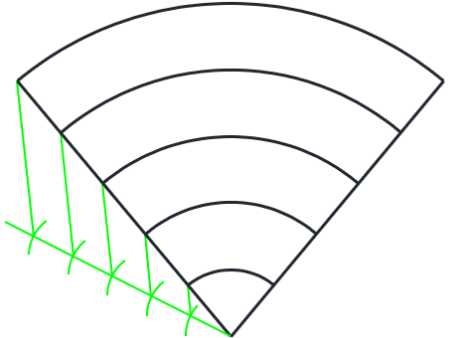
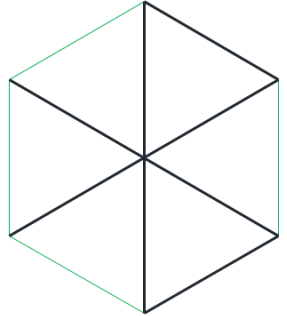
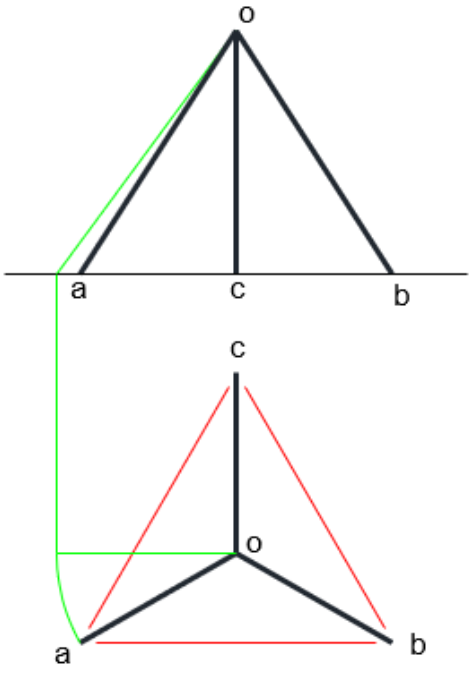
Answer *all* questions.

| Question 1         |             |  |
|--------------------|-------------|--|
| <b>Q1 (a)</b>      | 12          | <p>(2 marks each)</p>    |
| <b>Q1 (b)</b>      | 6<br><br>2  | <p>(i) Bisecting angle (6 marks)</p> <p>(ii) 6 (2marks)</p>   |
| <b>Q1 (c)</b>      | 4<br>4<br>3 | <p>Correct centre-point (4 marks)</p> <p>4 lines (4 x 1 mark)</p> <p>Circle (3 marks)</p> <p>Any centre point 1 mark</p>  |
| <b>Pg. 2 Total</b> | 31          |  |

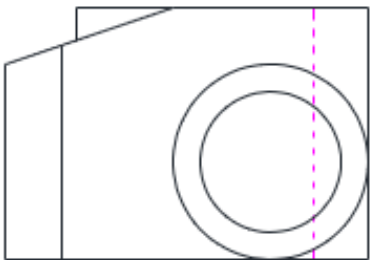
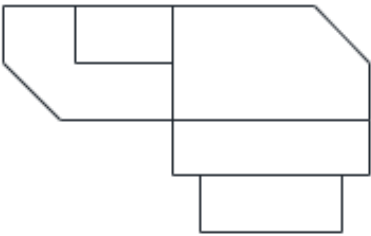
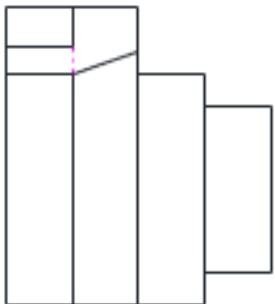
## Question 2

| <b>Question 2</b>                                   |                                     |   |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
|---|-------------------------------------|---|---|------|-------|--|---|-------------------------------------|--------------------------|---|---|-------------------------------------|--------------------------|---|--------------------------|-------------------------------------|
| <b>Q2 (a)</b>                                       | 8                                   | <p><b>(2 marks each)</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: left;"> <p><b>Name:</b><br/>Cylinder <input checked="" type="checkbox"/></p> <p>Cube <input type="checkbox"/></p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: left;"> <p><b>Name:</b><br/>Cone <input checked="" type="checkbox"/></p> <p>Cuboid <input type="checkbox"/></p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: left;"> <p><b>Name:</b><br/>Triangle <input type="checkbox"/></p> <p>Pyramid <input checked="" type="checkbox"/></p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: left;"> <p><b>Name:</b><br/>Sphere <input type="checkbox"/></p> <p>Hemisphere <input checked="" type="checkbox"/></p> </div> </div> |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| <b>Q2 (b)</b>                                       | 6                                   | <p><b>(2 marks each)</b></p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">True</th> <th style="width: 10%; text-align: center;">False</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td>(i) In elevation, a sphere appears as a circle.</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td rowspan="3" style="text-align: center; vertical-align: middle;">  </td> </tr> <tr> <td>(ii) In plan, a sphere appears as a circle.</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>(iii) In isometric, a sphere appears as an ellipse.</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </tbody> </table>  |   | True | False |  | (i) In elevation, a sphere appears as a circle. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | (ii) In plan, a sphere appears as a circle. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | (iii) In isometric, a sphere appears as an ellipse. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|   | True                                | False   |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| (i) In elevation, a sphere appears as a circle.     | <input checked="" type="checkbox"/> | <input type="checkbox"/>  |  |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| (ii) In plan, a sphere appears as a circle.         | <input checked="" type="checkbox"/> | <input type="checkbox"/>  |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| (iii) In isometric, a sphere appears as an ellipse. | <input type="checkbox"/>            | <input checked="" type="checkbox"/>   |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| <b>Q2 (c)</b>                                       | 16                                  | <p><b>(8 marks each)</b> 6 marks for sketch, 2 marks for appropriate rendering</p> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;">   </div>  |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |
| <b>Pg. 3 Total</b>                                  | 30                                  |   |   |      |       |  |   |                                     |                          |   |   |                                     |                          |   |                          |                                     |

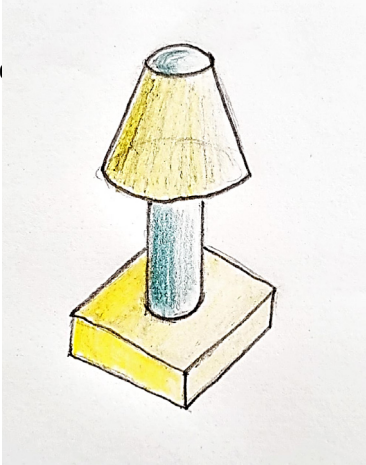
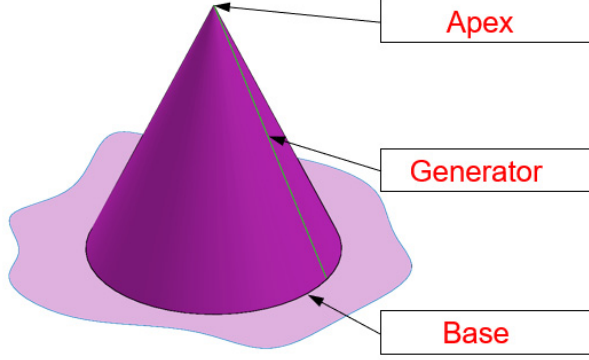
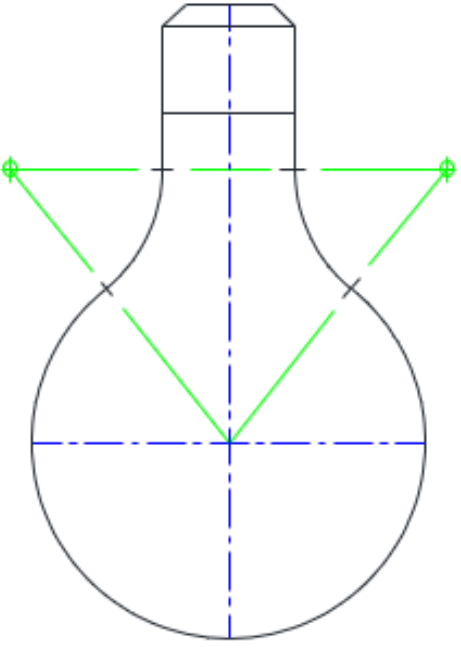
### Question 3

| Question 3         |        |  |
|--------------------|--------|--|
| <b>Q3 (a)</b>      | 4      | <p>(4 marks)</p> <div style="text-align: center; margin-top: 10px;">  </div>   |
| <b>Q3 (b)</b>      | 3<br>4 | <p>Division of line (3 marks)</p> <p>Arcs (4 marks)</p> <div style="text-align: center; margin-top: 10px;">  </div>                                     |
| <b>Q3 (c)</b>      | 3<br>4 | <p>Correct construction (3 marks)</p> <p>Completion of logo (4marks) – 1 mark per line</p> <div style="text-align: center; margin-top: 10px;">  </div> |
| <b>Q3 (d)</b>      | 4<br>3 | <p>Correct indexing (4 marks) – 1 mark e</p> <p>True length of line (3 marks)</p> <div style="text-align: center; margin-top: 10px;">  </div>         |
| <b>Pg. 4 Total</b> | 25     |  |

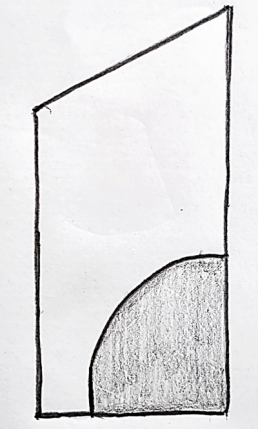
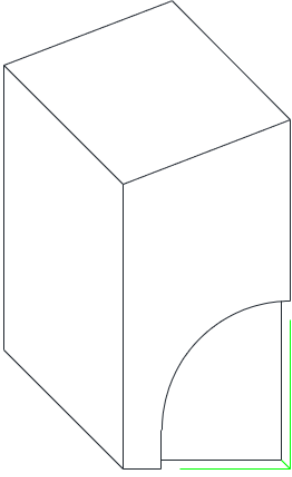
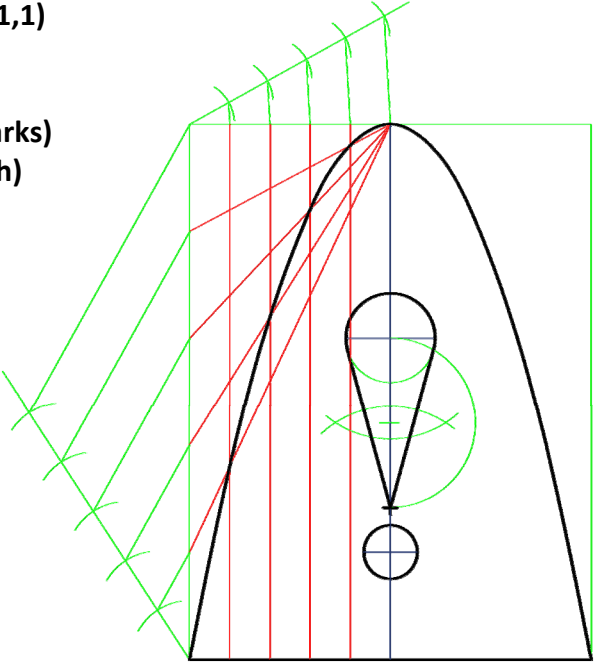
### Question 3 continued

| Question 3 continued |   |   |
|----------------------|---|---|
| <b>Q3 (e) (i)</b>    | <b>Elevation (13)</b>   |   |
|                      | 6   | Camera outline – 6 lines ( <b>6 x 1 mark</b> )  |
|                      | 2   | Button outline – 2 lines ( <b>2 x 1 mark</b> )  |
|                      | 4   | Lens outline – ( <b>4marks</b> ) 1 for <b>each</b> location, 1 for <b>each</b> circle |
|                      | 1   | Hidden Detail – 1 line ( <b>1 mark</b> )  |
|                      |    |   |
| <b>Q3 (e) (ii)</b>   | <b>Plan (15)</b>  |   |
|                      | 7   | Camera outline – 7 lines ( <b>7 x 1 mark</b> )  |
|                      | 2   | Button outline – 2 lines ( <b>2 x 1 mark</b> )  |
|                      | 6   | Lens outline – 6 lines ( <b>6 x 1 mark</b> )  |
|                      |   |   |
| <b>Q3 (e) (iii)</b>  | <b>End View (16)</b>  |   |
|                      | 7   | Camera outline – 7 lines ( <b>7 x 1 mark</b> )  |
|                      | 2   | Button outline – 2 lines ( <b>2 x 1 mark</b> )  |
|                      | 6   | Lens outline – 6 lines ( <b>6 x 1 mark</b> )  |
|                      | 1   | Hidden Detail – 1 line ( <b>1 mark</b> )  |
|                      |  |   |
| <b>Q3 (e) (iv)</b>   | <b>True Shape (6)</b>   |   |
|                      | 6   | Establish width ( <b>2</b> ), Establish height ( <b>2</b> ), Completion ( <b>2</b> )  |
|                      | 3   | Presentation ( <b>3 marks</b> )   |
| <b>Pg. 5 Total</b>   | <b>53</b>   |   |

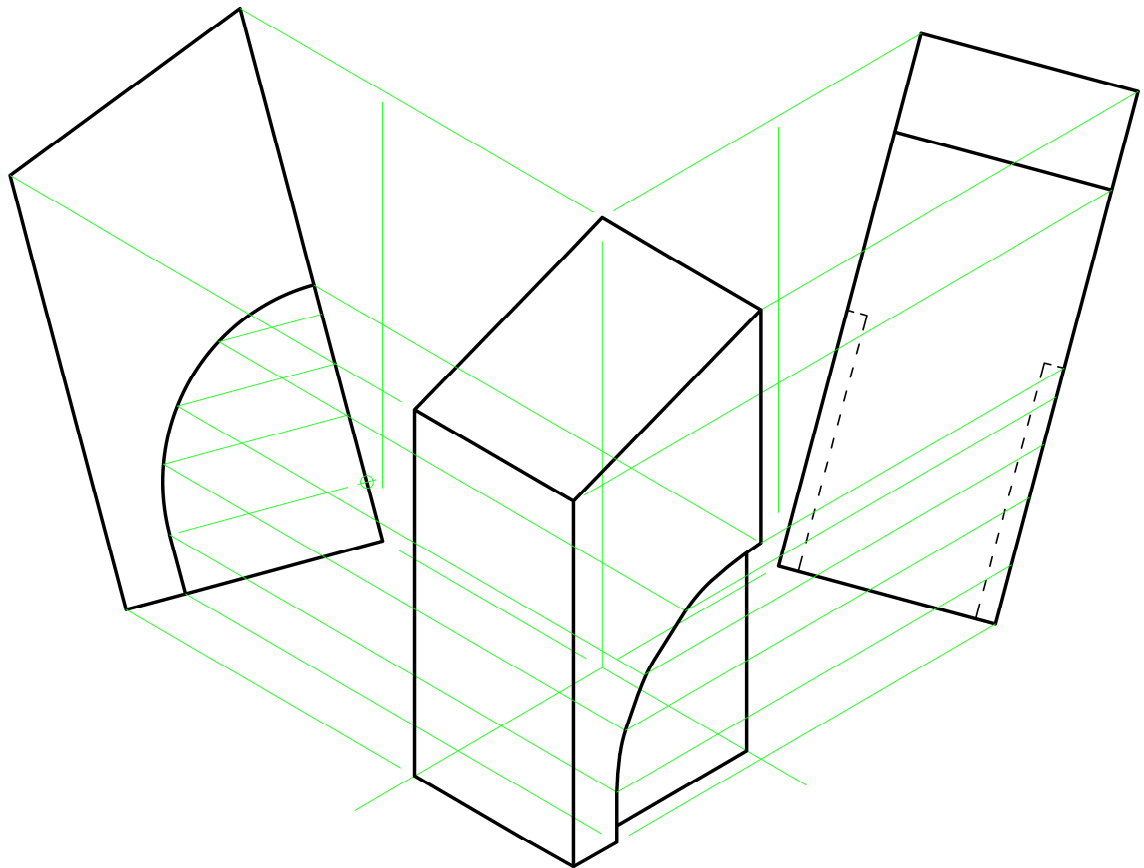
**Question 4**

|                           |                      |   |
|---------------------------|----------------------|---|
| <p><b>Q4 (a)</b></p>      | <p>6</p>             | <p><b>(6 marks)</b> 4 marks for sketch,<br/>2 marks for appropriate rendering</p>                             |
| <p><b>Q4 (b)</b></p>      | <p>6</p>             | <p><b>(2 marks each)</b></p>   |
| <p><b>Q4 (c)</b></p>      | <p>7<br/>6<br/>2</p> | <p>7 lines (<b>7 x 1 mark</b>)<br/>3 arcs (<b>2 marks each</b>)<br/>Points of contact (<b>2 marks</b>)</p>  |
| <p><b>Pg. 6 Total</b></p> |                      | <p><b>27</b></p>  |

### Question 5

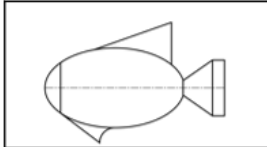
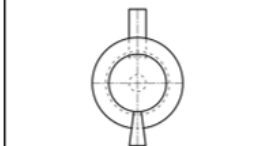
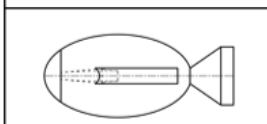
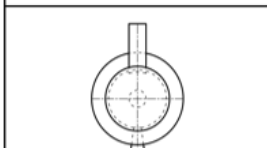
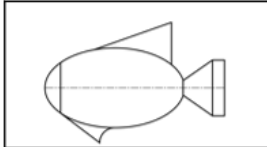
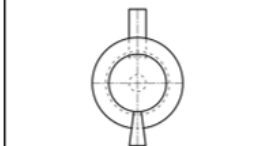
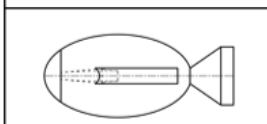
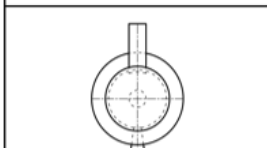
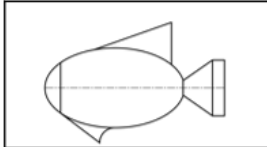
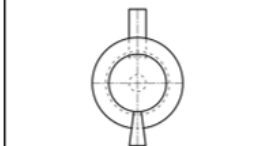
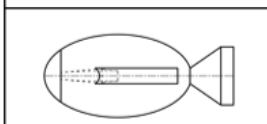
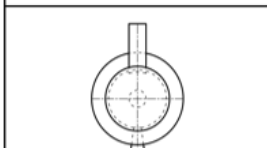
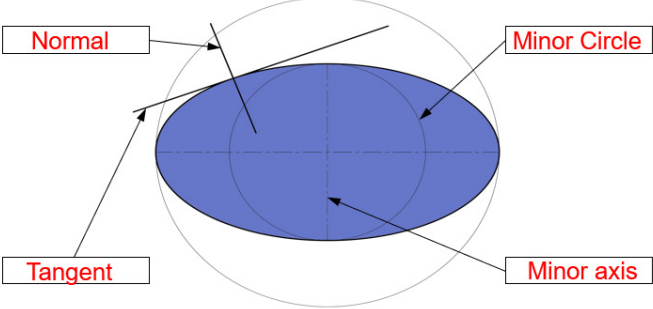
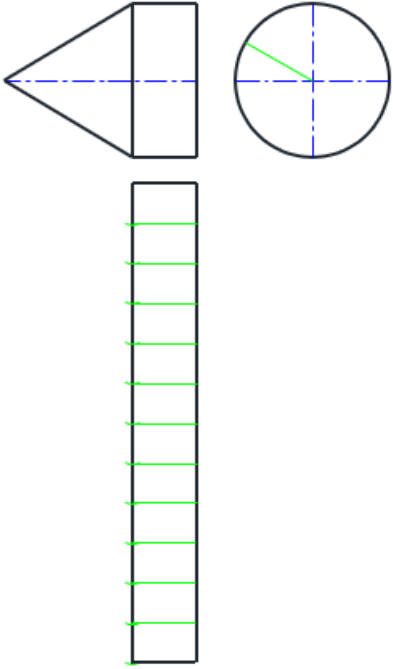
|                           |                     |   |  |
|---------------------------|---------------------|---|--|
| <p><b>Q5 (a)</b></p>      | <p>6</p>            | <p>(6 marks)</p>  |    |
| <p><b>Q5 (b)</b></p>      | <p>10</p>           | <p>5 lines (5 x 2 marks)</p>  |   |
| <p><b>Q5 (c)</b></p>      | <p>6<br/><br/>6</p> | <p>Parabola construction (1,1,1,1)<br/>draw curve (2 marks)</p> <p>Tangent construction (4 marks)<br/>Draw tangents (1 mark each)</p> |  |
| <p><b>Pg. 7 Total</b></p> |                     | <p>28</p>   |  |

**Question 5 continued**

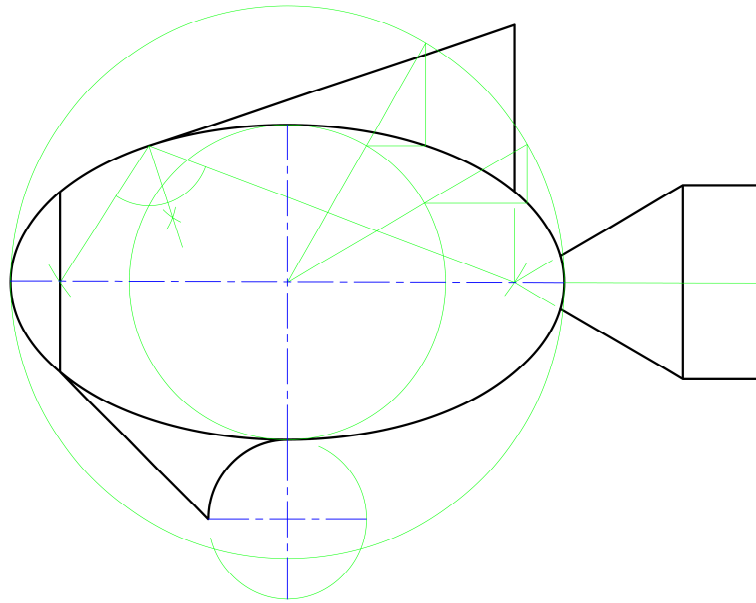


|                    |           |   |
|--------------------|-----------|---|
| <b>Q5 (d)</b>      | 6         | 3 vertical lines <b>(2 marks each)</b>                  |
|                    | 6         | 3 horizontal lines <b>(2 marks each)</b>                |
|                    | 4         | 2 sloped lines <b>(2 marks each)</b>                    |
|                    | 2         | Additional points on curve in end view <b>(2 marks)</b> |
|                    | 2         | Identify points on curve in elevation <b>(2 marks)</b>  |
|                    | 2         | Find points on curve in axonometric <b>(2 marks)</b>    |
|                    | 2         | Draw curve <b>(2 marks)</b>                             |
|                    | 3         | Presentation <b>(3 marks)</b>                           |
| <b>Pg. 8 Total</b> | <b>27</b> |   |

### Question 6

|   |                            |  |   |   |   |   |   |   |   |   |
|---|----------------------------|--|---|---|---|---|---|---|---|---|
| <b>Question 6</b>   |                            |  |   |   |   |   |   |   |   |   |
| <b>Q6 (a)</b>   | 6                          | <p>(2 marks each)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; vertical-align: middle; padding: 5px; color: red; font-weight: bold;">C</td> </tr> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; vertical-align: middle; padding: 5px; color: red; font-weight: bold;">D</td> </tr> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; vertical-align: middle; padding: 5px; color: red; font-weight: bold;">A</td> </tr> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; vertical-align: middle; padding: 5px; font-weight: bold;">B</td> </tr> </tbody> </table> |  | C |  | D |  | A |  | B |
|  | C                          |  |   |   |   |   |   |   |   |   |
|  | D                          |  |   |   |   |   |   |   |   |   |
|  | A                          |  |   |   |   |   |   |   |   |   |
|  | B                          |  |   |   |   |   |   |   |   |   |
| <b>Q6 (b)</b>   | 8                          | <p>(2 marks each)</p> <div style="text-align: center;">  </div>   |   |   |   |   |   |   |   |   |
| <b>Q6 (c)</b>   | <p>2</p> <p>4</p> <p>3</p> | <p>Divide circle (2 marks)</p> <p>Step out correct increment (4 marks)</p> <p>Complete – 3 lines (1 mark each)</p> <div style="text-align: center;">  </div>  |   |   |   |   |   |   |   |   |
| <b>Pg. 9 Total</b>  | 23                         |  |   |   |   |   |   |   |   |   |

**Question 6 continued**



|                     |           |  |
|---------------------|-----------|--|
| <b>Q6 (d) (i)</b>   |           | <b>Ellipse (14)</b>                                      |
|                     | 4         | Draw major circle, Draw minor circle <b>(2, 2)</b>       |
|                     | 6         | Locating additional points on the curve <b>(2, 2, 2)</b> |
|                     | 4         | Draw Curve   |
| <b>Q6 (d) (ii)</b>  |           | <b>Tangent &amp; Completion (19)</b>                     |
|                     | 4         | Correct location of $F_1$ and $F_2$ <b>(2 x 2 mark)</b>  |
|                     | 3         | Construction for tangent <b>(3 marks)</b>                |
|                     | 2         | Vertical line from $F_2$ line, Tangent line <b>(1,1)</b> |
|                     | 2         | Circle <b>(2 marks)</b>                                  |
|                     | 8         | 8 lines <b>(1 mark each)</b>                             |
|                     | 3         | Presentation <b>(3 marks)</b>                            |
| <b>Pg. 10 Total</b> | <b>36</b> |  |
| <b>Total 280</b>    |           |  |

# Student Project marking scheme

| Sheet 1                                   |        |           |                       |       |           |              |
|---|--------|-----------|-----------------------|-------|-----------|--------------|
| 2D & 3D Freehand sketches and annotations |        |           | Awareness of geometry |       |           | Presentation |
| 20  |        |           | 12                    |       |           | 8            |
| Fair                                      | Good   | Excellent | Fair                  | Good  | Excellent |              |
| 0 – 7                                     | 8 – 14 | 15 – 20   | 0 – 4                 | 5 – 8 | 9 – 12    |              |

| Sheet 2  |        |           |  |       |           |              |
|--|--------|-----------|--|-------|-----------|--------------|
| Appropriately detailed 2D orthographic drawing |        |           | Main dimensions & appropriate 2D conventions |       |           | Presentation |
| 20   |        |           | 12   |       |           | 8            |
| Fair   | Good   | Excellent | Fair   | Good  | Excellent |              |
| 0 – 7  | 8 – 14 | 15 – 20   | 0 – 4  | 5 – 8 | 9 – 12    |              |