



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate 2018

Marking Scheme

Technical 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

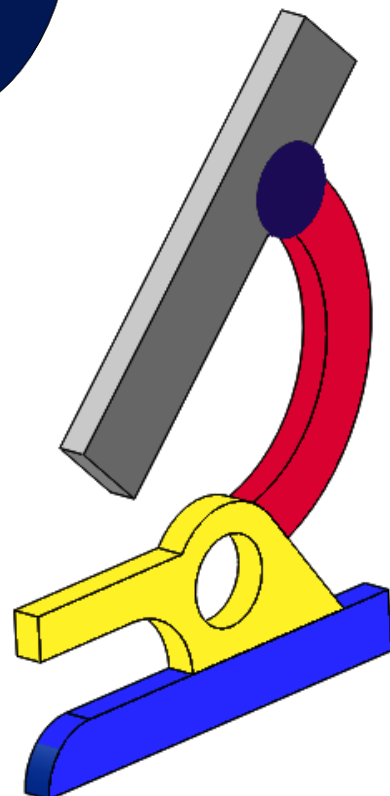
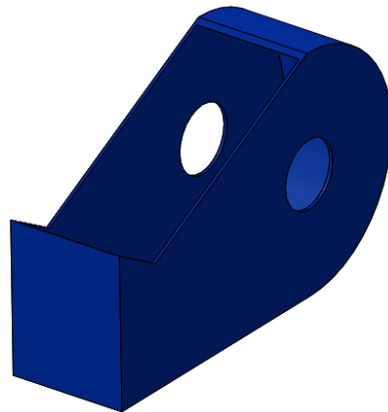
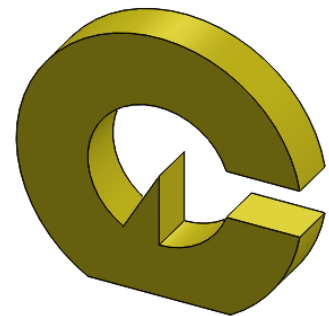
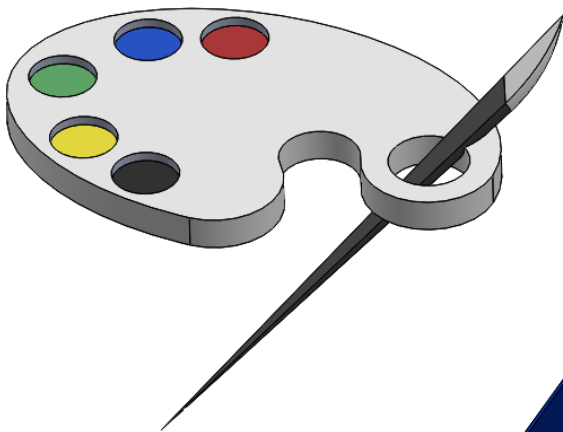
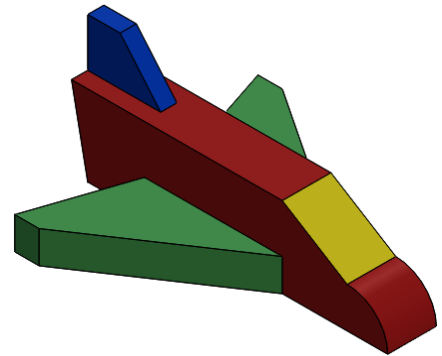
Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in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

Junior Certificate Examination 2018

Grafaic Theicniúil
Technical Graphics O.L.



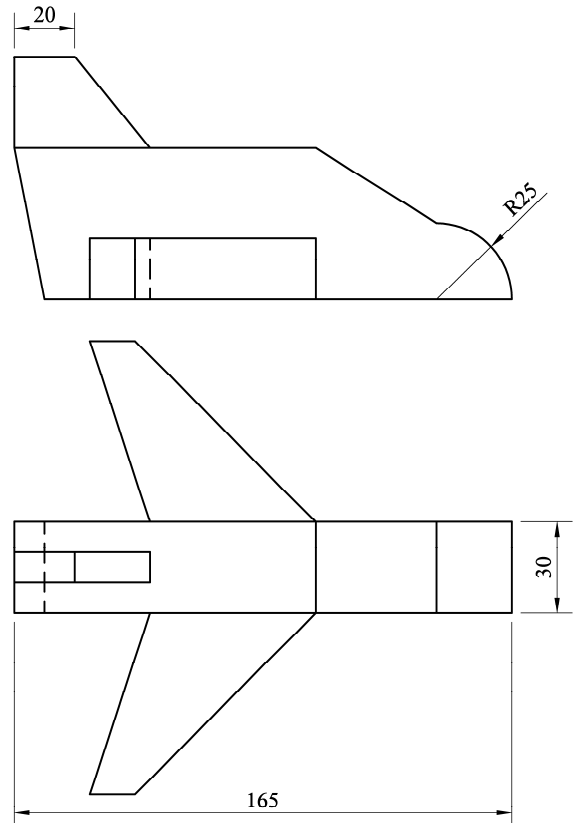
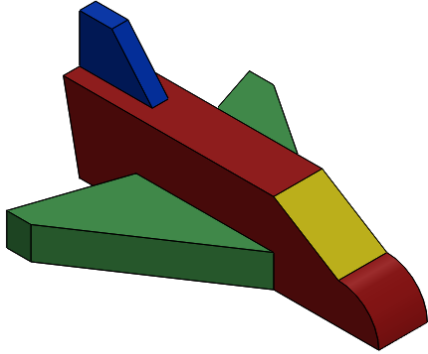
Gnáthleibhéal
Scéim Mharcála
Roinn A agus B

Section A - Any ten questions from this section

Q1	12	Elevation – 4 lines – (4 x 3 marks) (-1 mark for each line out of position, -1 mark if hidden detail is not shown)
Q2	8 4	For a good quality, well proportioned freehand pictorial sketch (5 marks for average quality or rule used) For colour or shading
Q3	2 2 2 2 2 2	Mouse – Input Device (2 marks) Keyboard – Input Device (2 marks) Monitor – Output Device (2 marks) Speakers – Output Device (2 marks) Scanner – Input Device (2 marks) Printer – Output Device (2 marks)
Q4	4 6 2	Vertical, horizontal and diagonal construction lines – 4 lines (4 x 1 mark) 3 sloping lines (3 x 2 marks) Completion of logo (2 marks)
Q5	6 2 4	Correct location of F1 and F2 (2 x 3 marks) Projection lines from focal points (2 x 1 mark) Complete bridge, 2 sloping lines (2 x 1 mark) , Horizontal line (2 marks)
Q6	8 4	Completed pictorial – 12 lines (8 marks) For colour or shading (4 marks)
Q7	12	47 - 49 sq. centimetres = 12 marks (46 or 50 = 6 marks)
Q8	6 6	A = 50 (6 marks) B = 15 (6 marks)
Q9	12	Correct Elevation = C (12 marks)
Q10	4 2 6	2 construction arcs (2 x 2 marks) Arc (2 marks) Identify points of contact (6 x 1 mark)
Q11	12	Any two commands (2 x 6 marks) Mirror, Circle, Extrude boss/base
Q12	6 6	5 squares (6 marks) 6 rectangles (6 marks)
Q13	3 9	Complete Hexagon – 3 lines (3 x 1 mark) Completion of logo – 9 lines (9 x 1 mark)
Q14	12	6 lines – 2 marks per line (6 x 2 marks) (-1 mark each line incorrect)
Q15	4 6 2	Construction for division of line (4 marks) 3 arcs (3 x 2 marks) For colour or shading (2 marks)
Total 120		

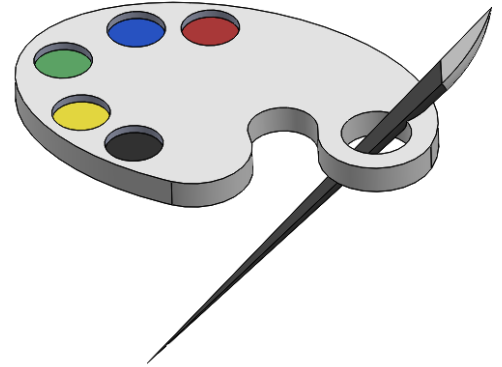
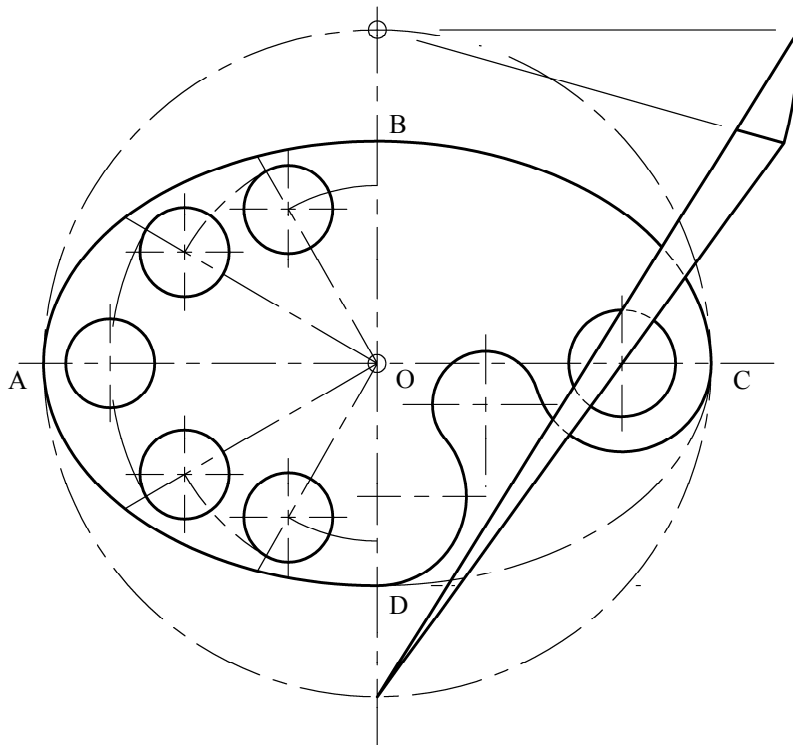
Section B - Any four questions from this section

Q1: Orthographic Projection



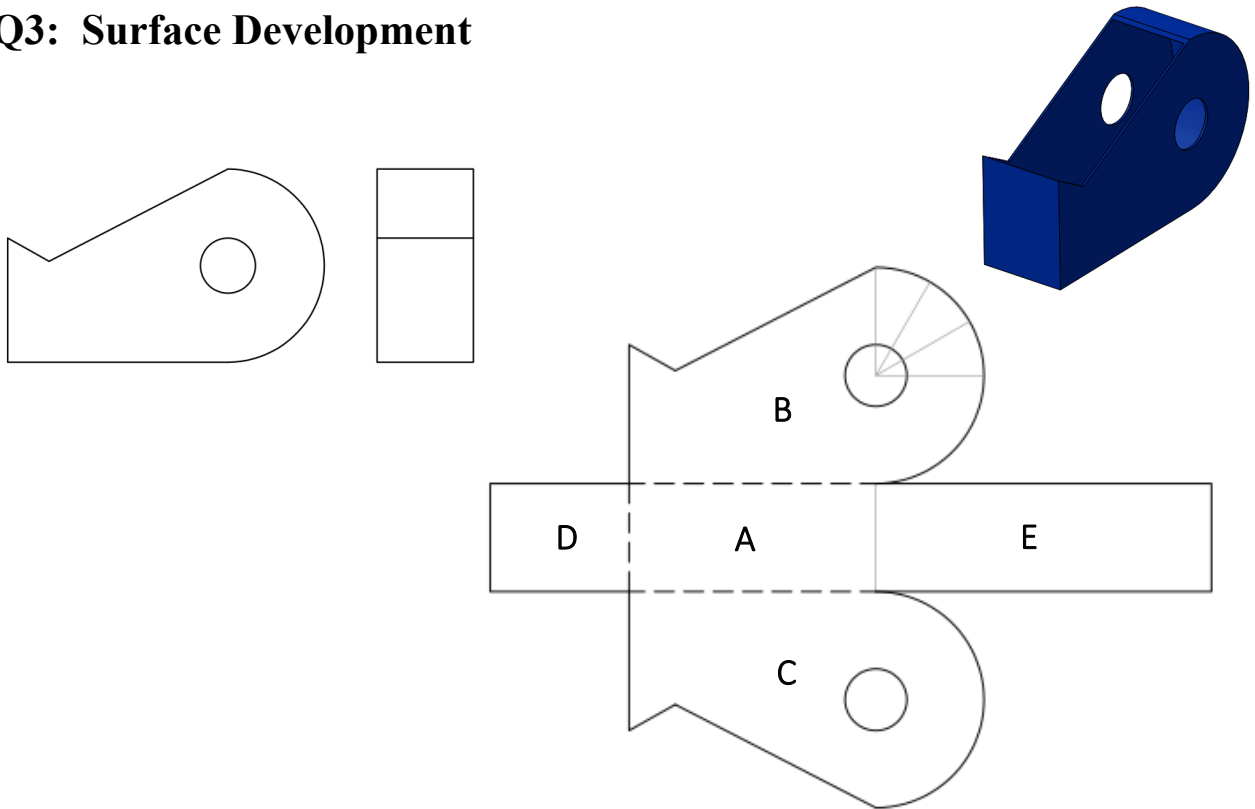
Orthographic Outline (10)	
10	Elevation and Plan positioned correctly <i>(4 marks if not aligned, 1 view = 3 marks)</i>
Elevation (26)	
4	Shuttle outline – 2 horizontal lines (2 x 2 marks)
6	2 sloped lines (2 x 3 marks)
3	R25 quadrant (1 x 3 marks)
10	Wing (5 x 2 marks) (-1 if hidden detail not in)
3	Tail Fin - 3 lines (3 x 1 mark)
Plan (18)	
8	Shuttle outline - 7 lines (7 x 1 mark), Hidden detail (1 mark)
6	Wings (6 x 1 mark)
4	Tail Fin (4 x 1 mark)
Dimension lines (4)	
4	4 Dimension lines - (4 x 1 mark)
12	Drafting, accuracy, and presentation
Total 70	

Q2: Ellipse



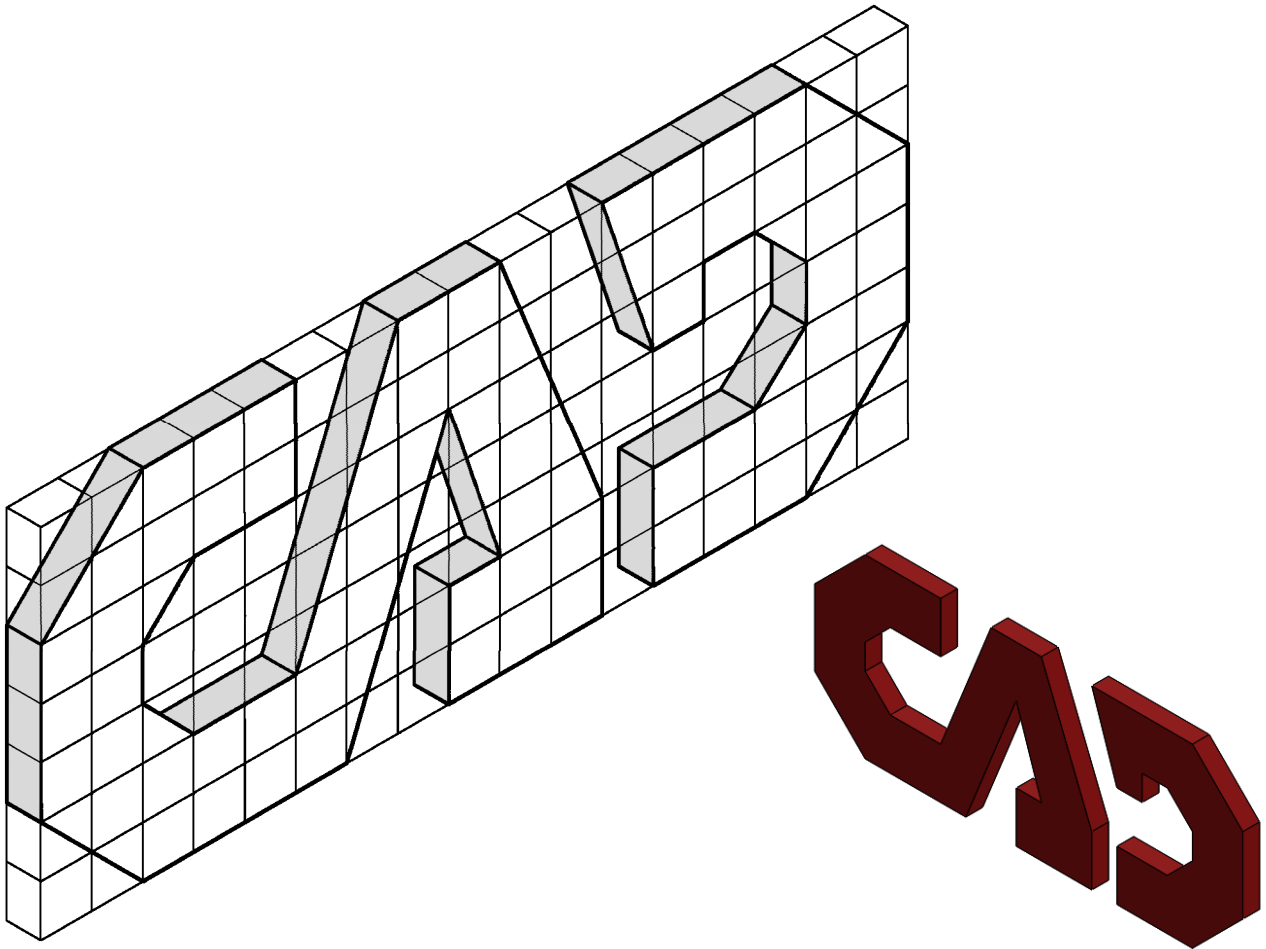
Ellipse construction (24)	
6	Ellipse; Major AC; Minor BD – (2 x 3 marks)
10	Construction for ellipse (incorrect application = 4 marks)
8	Drawing curve of ellipse ABC (8,6,4, depending on quality)
Detailing (25)	
9	Radius 20 circles (2 x 3 marks), radius 12 circle (3 marks),
6	Centre location of tangent circle (4 marks), circle (2 marks)
10	Colour pots (5 x 2 marks)
Brush (9)	
3	Radius 95 arc (3 marks)
6	3 lines (3 x 2 marks)
(12)	Drafting, accuracy, and presentation
Total 70	

Q3: Surface Development



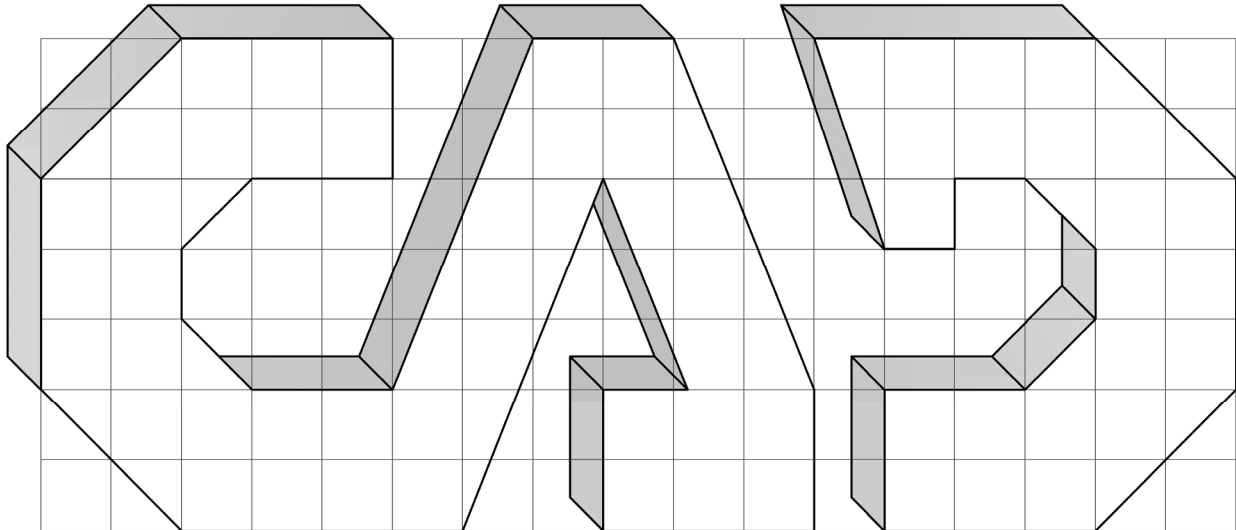
Orthographic (22)	
4	Elevation and End view in correct position (End view in wrong location or 1 view = 2 marks)
13	Elevation: semi-circle (3 marks), 4 lines (4 x 2 marks), Radius 10 circle (2 marks)
5	End view: 5 lines (5 x 1 mark)
Development (36)	
4	Base A – 4 lines (4 x 1 mark)
16	Sides B and C- 3 lines (3 x 1 mark), Semi-circle (3 marks), Radius 10 circle (2 marks)
3	Side D - 3 lines (3 x 1 marks)
7	Construction for finding correct length of side E (7 marks)
3	Side E - 3 lines (3 x 1 mark)
3	Fold lines (3 x 1 mark)
(12)	Drafting, accuracy, and presentation
Total 70	

Q4: Isometric Projection



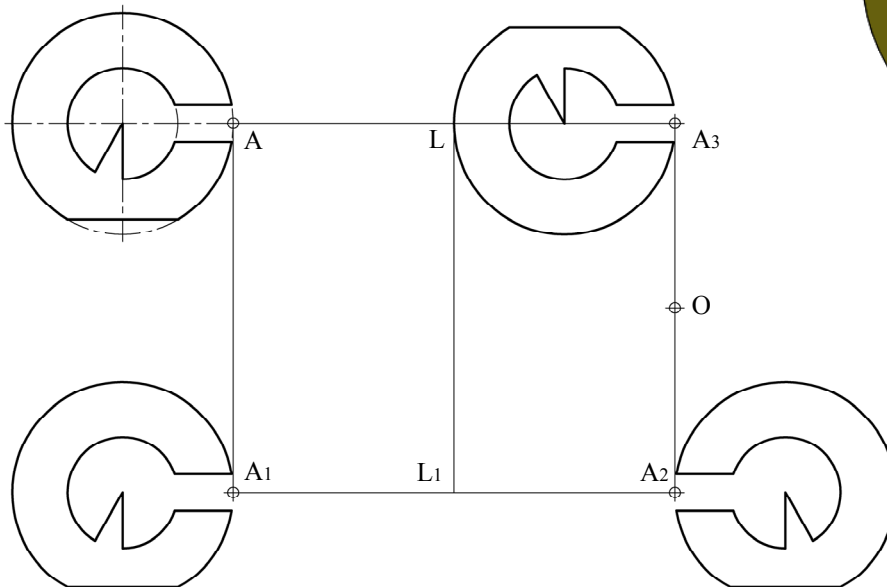
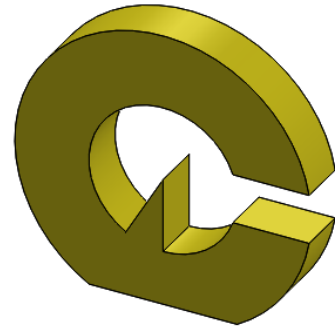
Setting Up (16)	
12	Height, length, and width of grid (4+4+4 marks) (deduct 2 each if inaccurate)
4	Isometric outline (deduct 2 + 2 if 30° angles are not used)
Front Face (24)	
8	Letter C – 11 lines
8	Letter A – 9 lines
8	Letter D – 14 lines
Complete width (18)	
18	6 marks per letter (4 marks per letter if all lines are not put in)
(12)	Drafting, accuracy, and presentation
Total 70	

Q4: Oblique Projection



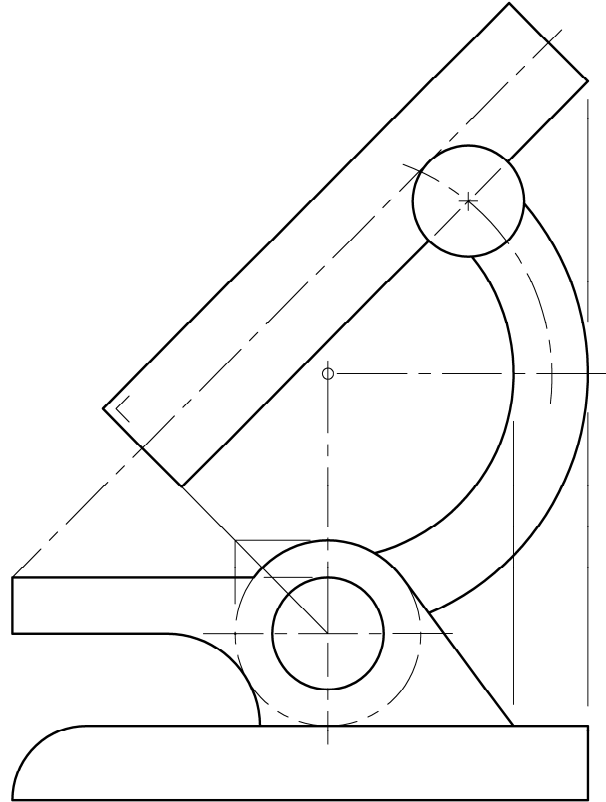
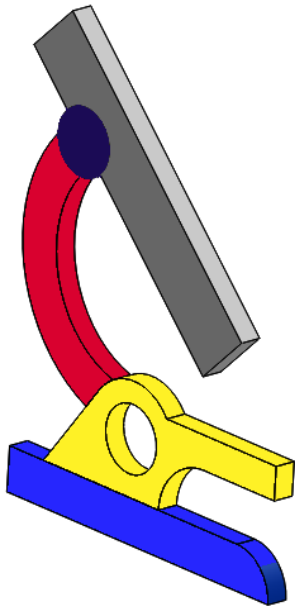
Setting Up (16)	
12	Height, length, and width of grid (4+4+4 marks) (deduct 2 each if inaccurate)
4	Oblique outline (deduct 4 marks if 45° angle not used)
Front Face (24)	
8	Letter C – 11 lines
8	Letter A – 9 lines
8	Letter D – 14 lines
Complete width (18)	
18	6 marks per letter (4 marks per letter if all lines are not put in)
(12)	Drafting, accuracy, and presentation
Total 70	

Q5: Transformation Geometry



Setting up (16)	
10	Draw figure: R30 circle (3 marks), R15 circle (2 marks) 5 lines (5 x 1 mark)
4	Locating points A, A1, A2, A3 (4 x 1 mark)
2	Locating line L-L1 (1 mark) and point O (1 mark)
Translation (14)	
4	Projection parallel to A-A1 (correct position and orientation)
10	Drawing figure as above
Axial Symmetry (14)	
4	Projection lines perpendicular to L-L1 (correct position & orientation)
10	Drawing figure as above
Central Symmetry (14)	
4	Drawing lines through centre of point O (correct position & orientation)
10	Drawing figure as above
(12)	Drafting, accuracy, and presentation
Total 70	

Q6: Circles and Tangents



Base (9)	
6	3 lines (3 x 2 marks)
3	R20 Quadrant (3 marks)
Stage (27)	
5	R25 circle and position (3 marks + 2 marks)
2	R15 circle (2 marks)
8	Tangent construction (4 marks), tangent line (2 marks), point of contact (2 marks)
6	3 lines (3 x 2 marks)
6	R25 arc - Position (2 marks), points of contact (2 marks), arc (2 marks)
Lens & Arm (22)	
8	Lens – 45° location lines (2 x 2 marks), 4 lines (4 x 1 mark)
7	R50 circle and position (3 marks + 4 marks)
4	R15 circle and position (2 marks + 2 marks)
3	R70 circle (3 marks)
(12)	Drafting, accuracy, and presentation
Total 70	