



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate 2015

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.

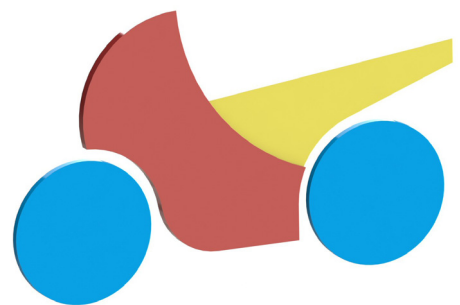
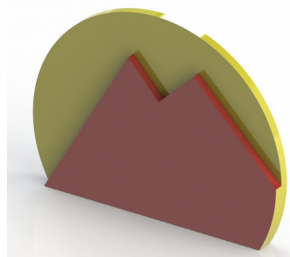
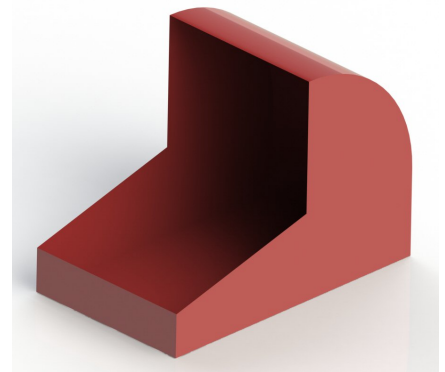
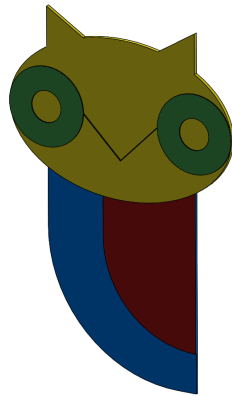
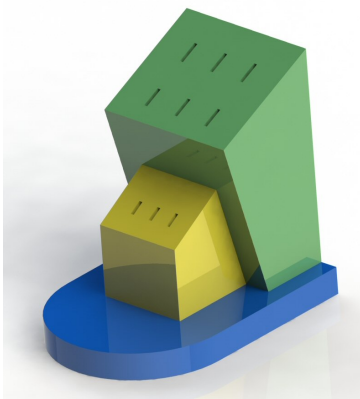
Future Marking Schemes

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.



Junior Certificate Examination, 2015

Technical Graphics
Ordinary Level



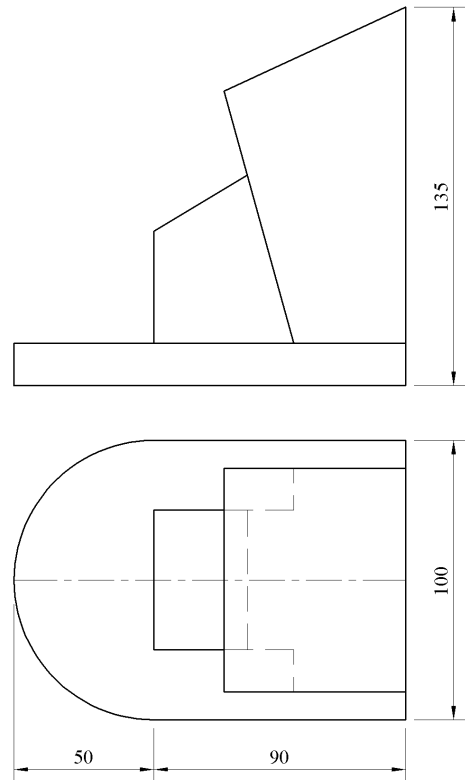
Marking Scheme
Section A and Section B

Section A - Any ten questions from this section.

Q1	2 10	Any 2 Projection lines from Elevation (2 marks) End Elevation – 5 lines – (5x2 marks) (-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	6 6	Correct device – Printer (6 marks) Correct use (6 marks)
Q4	2 5 2 3	Horizontal & Vertical lines from centre – 2 lines (2 x 1 mark) Diamond height (1 mark) Completion (4 marks) Draw circle (2 marks) Base and sloping lines (3x1 mark)
Q5	4 4 4	Correct location of F1 and F2 (2 x 2 marks) Locate position C (4 marks) Drawing rectangle ABCD (4 x 1 marks)
Q6	8 4	17 lines, half marks per line (8 marks) For colour or shading
Q7	12	39 – 41 sq. units = 12 marks (38 or 42 = 6 marks)
Q8	6 6	A = 700 mm (6 marks) B = 400 mm (6 marks)
Q9	8 4	Elevation of blocks – 4 rows 2 marks for each correct row (-1 mark each row incorrect) Good proportion
Q10	4 8	Join centre to P (2 marks), bisect line (2 marks) Semi-circle (3 marks), Draw tangent (4 marks) POC (1 mark)
Q11	12	Any two commands (2 x 6 marks) (Line, Offset, Extrude boss/base)
Q12	12	Shade three columns (3 x 4 marks)
Q13	6 2 4	Construct 25° angles from P (2 x 3 marks) Complete line extends (2 x 1mark) For colour or shading
Q14	12	6 lines – 2 marks per line (6 x 2 marks) (-1 mark each line incorrect)
Q15	6 4 2	3 Horizontal projectors and distances (3 x 2 marks) Sloping line (1mark), vertical line (1 mark), circle (2 marks) For colour or shading
Total 120		

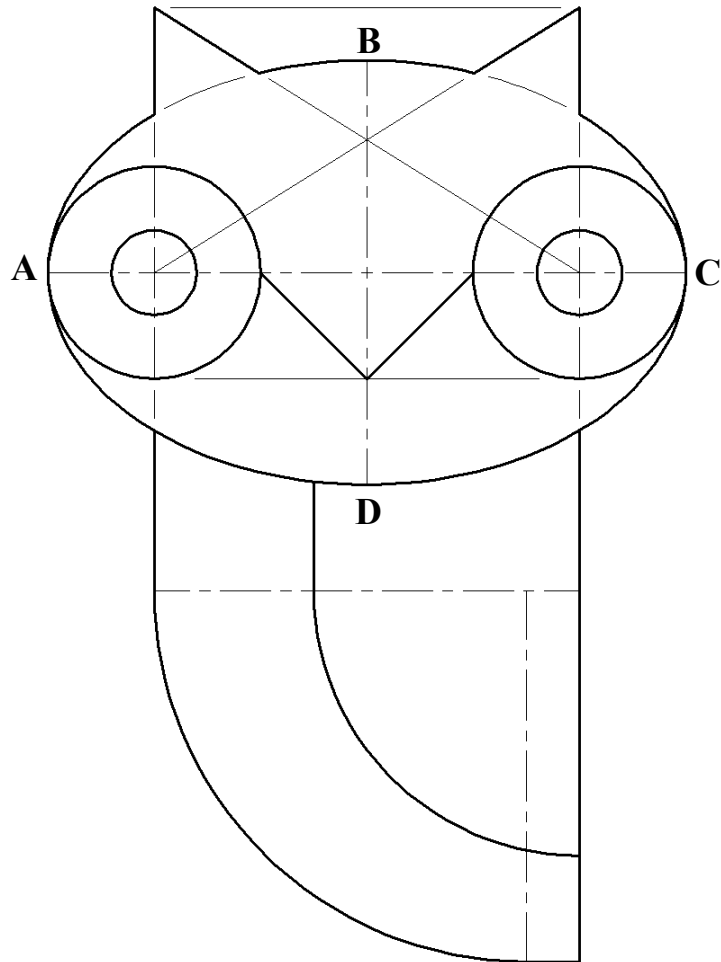
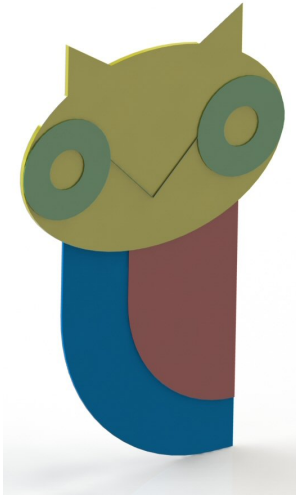
Section B – Any four questions from this section

Q1: Orthographic Projection



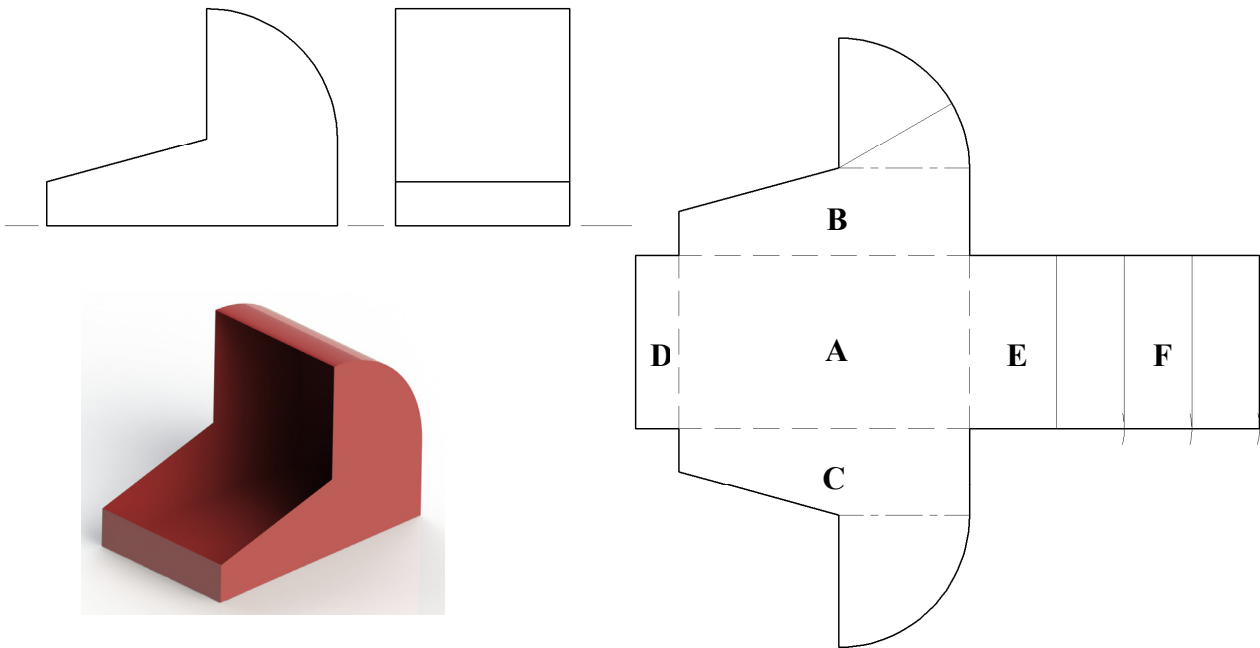
Orthographic Outline (10)	
10	Elevation and Plan positioned correctly (4 marks if incorrect position of plan, 1 view = 3 marks)
Elevation (19)	
4	2 horizontal lines (2 x 2 marks)
6	3 vertical lines (3 x 2 marks)
9	3 Sloped surfaces (3 x 3 marks)
Plan (25)	
9	Base outline – 3 lines (3 x 2 mark), semi-circle (3 marks)
6	Back knife holder – 3 lines (3 x 2 marks)
6	Front knife holder – 3 lines (3 x 2 marks)
4	Hidden detail – 4 lines (4 marks)
Dimension lines (4)	
4	1 mark per dimension (4 x 1 mark)
(12)	Drafting, accuracy and presentation
Total 70	

Q 2: Ellipse



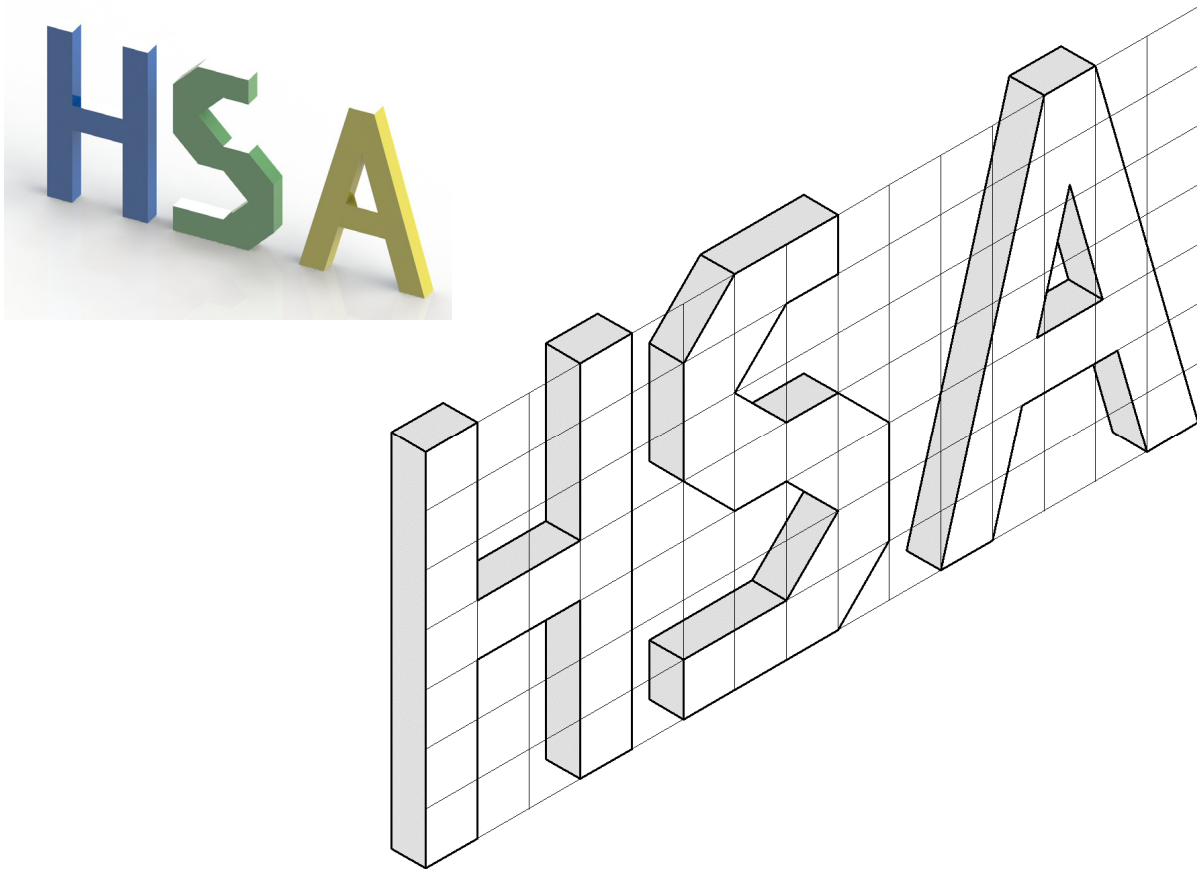
Face (44)	
8	Ellipse; Major AC; minor BD – (2 x 4 marks)
10	Construction for ellipse (incorrect application = 4 marks)
8	Drawing curve of ellipse ABCD (8,6,4, depending on quality)
12	Eyes – Centres (2x2 marks) – 4 circles (4 x 2 marks)
6	Complete face – Nose (2 marks), Ears (4 marks)
Body (14)	
5	R50 arc and position (3 marks + 2 marks)
5	R70 arc and position (3 marks + 2 marks)
4	Complete Logo – 4 lines (4 x 1 mark)
(12)	Drafting, accuracy and presentation
Total 70	

Q 3: Surface Development



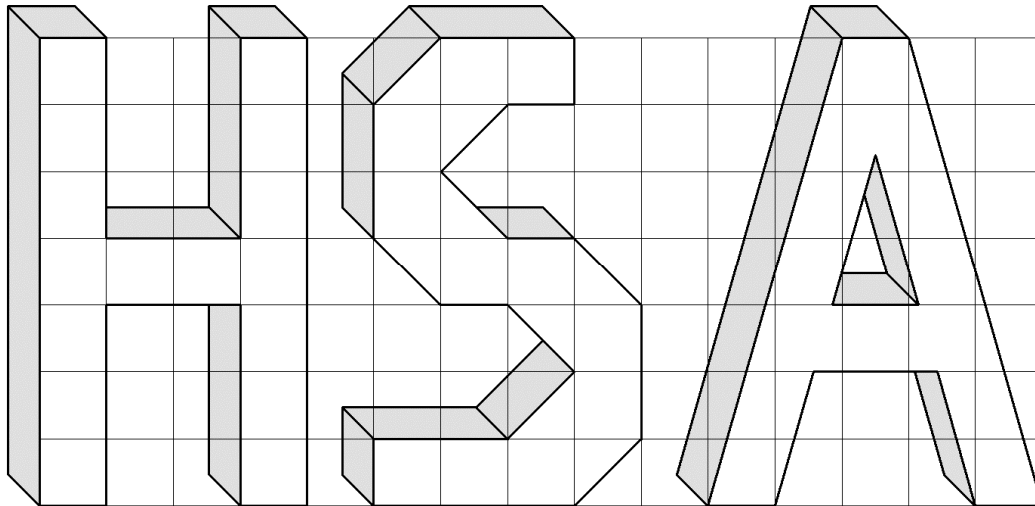
Orthographic (20)	
4	Elevation and End Elevation in correct position (End elevation in wrong location or 1 view = 2 marks)
11	Elevation: Quadrant (4 marks) , 4 lines (4 x 1 mark) sloping line (3 marks)
5	End Elevation: 5 lines (5 x 1 marks)
Development (38)	
8	Base A – 4 lines (4 x 2 mark)
14	Side B + C – 4 lines and quadrant (4 x 1 mark + 3 marks)
3	Side D – 3 lines (3 x 1 mark)
2	Side E – 2 lines (2 x 1 mark)
4	Construction for finding correct length of side F (4 marks)
3	Side F – 3 lines (3 x 1 mark)
4	Fold lines (4 x 1 marks)
(12)	Drafting, accuracy and presentation
Total 70	

Q 4: Isometric Projection



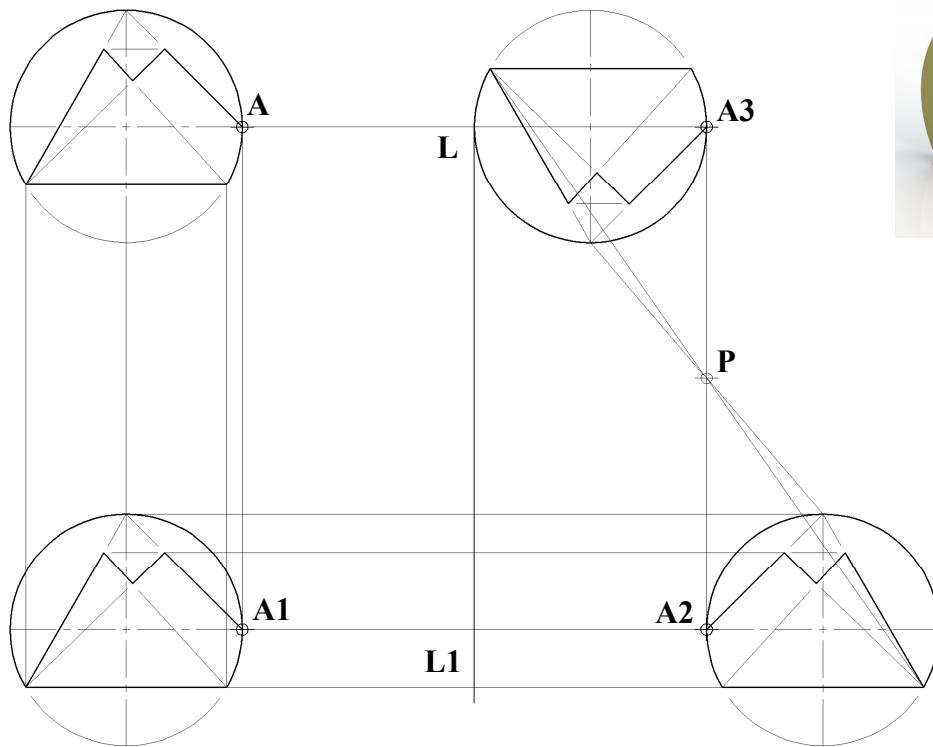
Setting Up (16)	
12	Height, length and width of grid (4+4+4 marks) (deduct 2 each if inaccurate)
4	Isometric outline (deduct 2 + 2 if 30° angles are not used)
Front Face (21)	
6	Letter H – 12 lines – (Half mark each line)
9	Letter S – 18 lines – (Half mark each line)
6	Letter A - 11 lines – (Half mark each line)
Complete width (21)	7 marks per letter (3 marks per letter if all lines are not put in)
(12)	Drafting, accuracy and presentation
Total 70	

Q 4: Oblique Projection



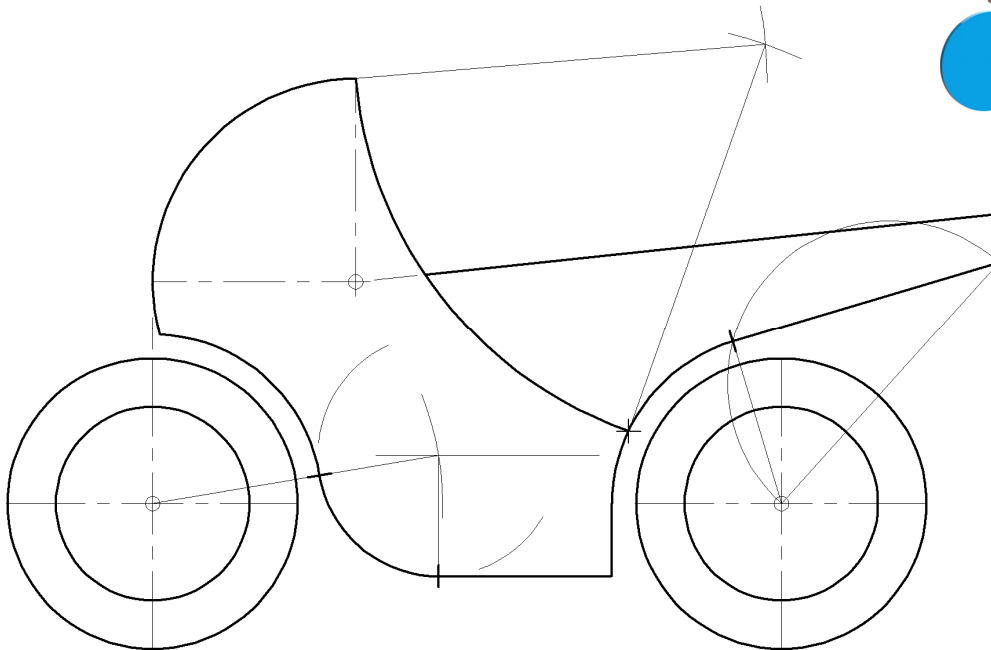
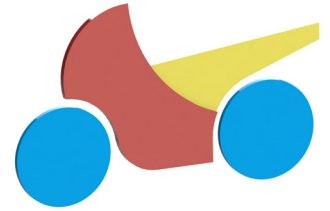
Setting Up (16)	
12	Height, length and width of grid (4+4+4 marks) (deduct 2 each if inaccurate)
4	Oblique outline (deduct 4 marks if 45° angle is not used)
Front Face (21)	
6	Letter H – 12 lines – (Half mark each line)
9	Letter S – 18 lines – (Half mark each line)
6	Letter A - 11 lines – (Half mark each line)
Complete width (21)	7 marks per letter (3 marks per letter if all lines are not put in)
(12)	Drafting, accuracy and presentation
Total 70	

Q 5: Transformation Geometry



Setting Up (16)	
10	Draw given figure: Circle (4 marks), Offsets (2 marks) 4 lines (4 x 1 mark),
4	Locate points A, A1, A2, A3 (4 x 1 mark)
2	Locate line L (1 mark) and point P (1 mark)
Translation (14)	
4	Projection parallel to A-A1 (correct position and orientation)
10	Drawing fig. as above
Axial Symmetry (14)	
4	Projection lines perpendicular to L-L1 (correct position and orientation)
10	Drawing fig. as above
Central Symmetry (14)	
4	Drawing lines through centre of point P (correct position and orientation)
10	Drawing fig. as above
(12)	Drafting, accuracy and presentation
Total 70	

Q 6 – Circles



Outline Constructions (26)	
6	Front wheel - R30 circle, inner rim R20 (3 marks + 3 marks)
10	Rear Wheel – Position, R30 circle, inner rim R20 (4 marks + 3 marks + 3 marks)
6	Front Fairing – R42 quadrant and position (4 marks + 2 marks)
4	R35 wheel arcs (2 x 2 marks)
Side Fairing (22)	
9	R85 arc – offset 15mm (2 marks), centre location construction (4 marks), Arc (3 marks)
9	R25 arc – centre location construction (4 marks), points of contact (2 marks), arc (3 marks)
4	Complete fairing – 2 lines (2 x 2 marks)
Seat (10)	
6	Tangent construction (4 marks) Tangent line (2 marks)
4	Complete seat – 2 lines (2 x 2 marks)
(12)	Drafting, accuracy and presentation
Total 70	