



Coimisiún na Scrúduithe Stáit
State Examinations Commission

JUNIOR CERTIFICATE 2008

MARKING SCHEME

TECHNICAL GRAPHICS

HIGHER LEVEL

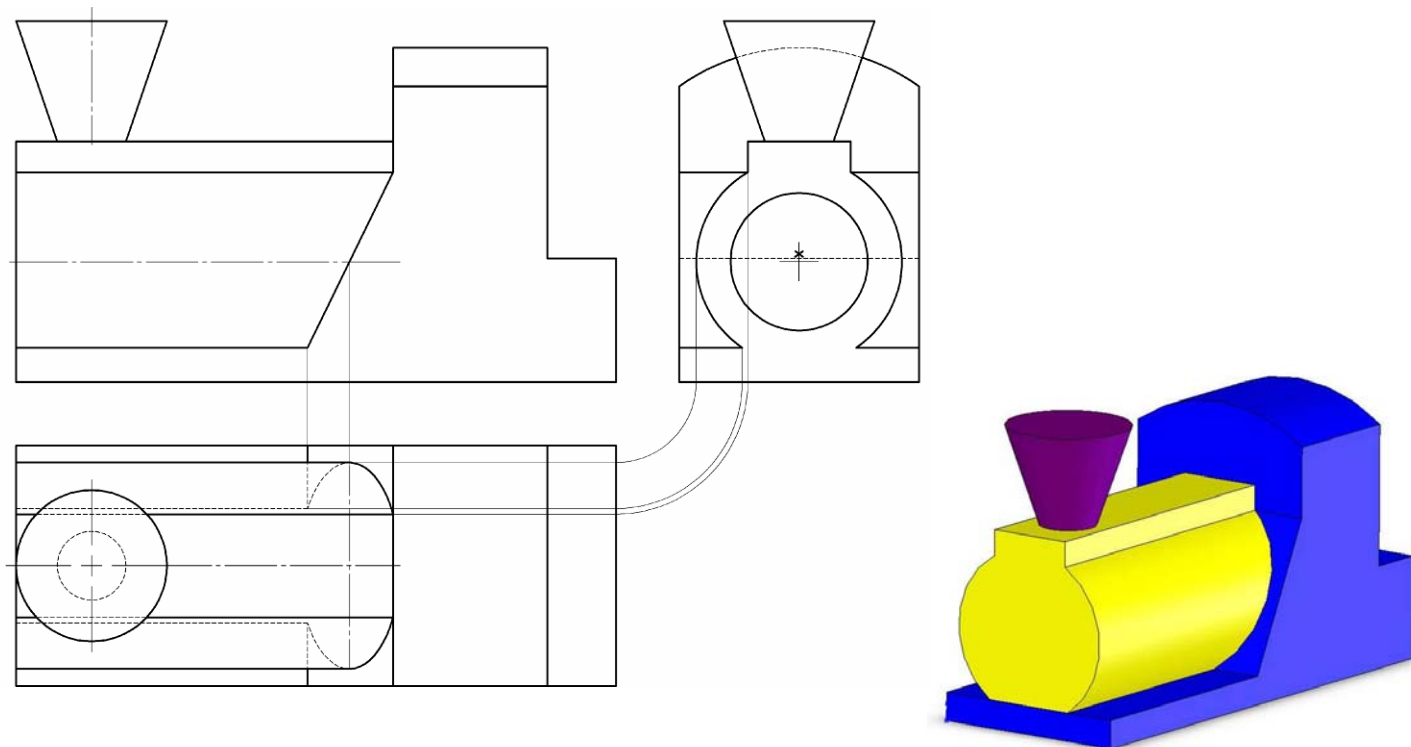
Sections A and B

Section A - any ten questions from this Section

Q1	12	Four diagrams, 3 marks for each correct label.	
Q2	12	3 height lines 3 marks, correct widths 6, completion 3 .	
Q3	12	6 lines, 2 marks each.	
Q4	4	Top pin, 4 marks.	
	6	Other pins, 4 marks and 2 marks	
	2	Complete plugtop - 2 lines, 2 marks.	
Q5	5	3 points projected from plan (5x1)	
	4	Horizontal line for apex in elevation	
	3	Completion of elevation	
Q6	9	2+1 For each of the points A, B and C.	
	3	Drawing triangle	
Q7	12	6 points of contact, 2 marks each	
Q8	8	Joystick depicted in a <u>good quality</u> freehand pictorial sketch.	
	4	Appropriate shading or colour	
Q9	12	Chamfer, Circle and Trim (4 marks for each correct term)	
Q10	6	Join centres, bisect line, draw semi-circle (2, 2, 2)	
	2	Add radii and swing arc	
	2	Normals	
	2	Tangent	
Q11	6	A equals 52°	
	6	B equals 38°	
Q12	3	Rotate P in plan	
	3	Project to great circle in elevation	
	3	Horizontal projection/section in elevation	
	3	Project P from plan, locate in elevation	
Q13	4	Project perpendicular to X_1Y_1	
	3	Heights	
	3	Complete blocks (3x1)	
	2	Hidden detail	
Q14	4	Bisect base	Bisect P.H.
	4	Perpendiculars (2, 2)	Perpendiculars (2, 2)
	4	Perpendicular height/completion	Length ab /completion
Q15	12	4 columns. 3 marks each.	

Section B - any four questions from this Section.

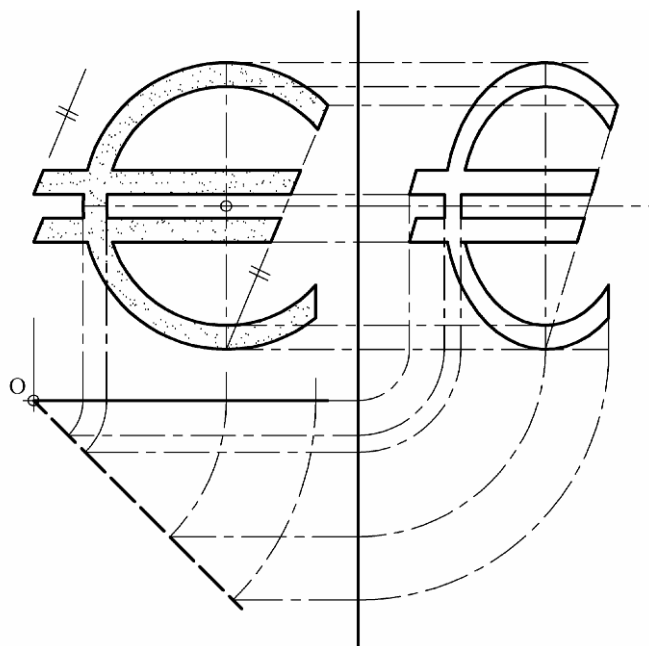
Q.1 – Orthographic projection.



Elevation (16)	
7	Lines
2	Roof
2	Sloping line
2	Boiler
3	Chimney
Plan (25)	
11	Lines
2	Chimney
6	Elliptical curve (Pts in E.V. 1, Proj. to Ele. 1, Proj. to Plan 3, draw 1)
6	Hidden detail
End View (19)	
8	Lines
3	Boiler circles (outer 2, inner 1)
4	Roof (centre 2, arc 2) If no hidden detail for arc – 1mark
3	Chimney
1	Hidden line
10	Drafting, accuracy, presentation

Total Marks 70

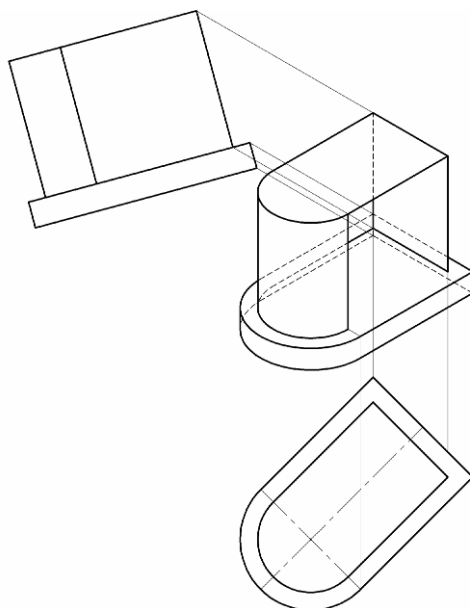
Q.2 - Orthographic, Rotation, End View.



Given Elevation (18)	
4	Circles
6	Lines (Horizontal 4, Vertical 2)
6	Sloping line, parallel lines (3, 2, 1)
2	Vertical cut off
Given Plan (6)	
2	Horizontal line
4	45° line correct length (2 incorrect length)
New Figure (36)	
3	Projection of points from elevation to plan
3	Rotation of points in plan
3	Projections from plan to new figure
3	Projections from elevation to new figure
10	Semi-elliptical curves (5 marks each)
6	Lines (Horizontal 4, Vertical 2)
6	Sloping line, parallel lines (3, 2, 1)
2	Vertical cut off
10	Drafting, accuracy, presentation

Total Marks 70

Q.3 (a) - Isometric Projection (Axonometric Axes Method)



Axonometric Axes Method	
Plan (14)	
4	Setting-up (position and orientation at 45°).
5	Outline of base
5	Outline of shelter
Side Elevation (12)	
4	Setting-up (position and orientation at 15°).
4	Base (4 lines)
4	Shelter (4 lines)
Completion of Isometric Projection (34)	
4	Rectangular portion of base
9	Curves on base (4+4+1 mark for line)
8	Rectangular portion of shelter
9	Curves on shelter (4+4+1 mark for line)
4	Completion
10	Drafting, accuracy, presentation

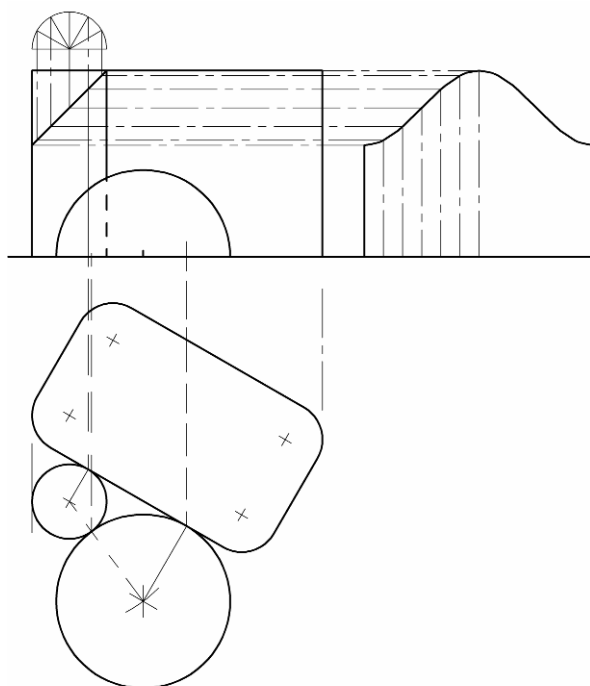
Total Marks 70

Q.3 (b) - Isometric Projection (Isometric Scale Method)

Isometric Scale Method	
Isometric Scale (8)	
4	Setting up isometric scale (2 marks for 30° line and 2 marks for 45° line)
2	Applying dimensions on 45° line
2	Projecting from 45° line onto 30° line
Projection of base and shelter (12)	
2	Apply measurements required for base/shelter
5	Construction required for semi-circles - Base (2, 2, 1)
5	Construction required for semi-circles - Shelter(2, 2, 1)
Isometric Projection (6)	
3	Direction of axes (1,1,1)
3	Axes lengths applied from isometric scale. (overall length, height, width)
Completion of Isometric Projection (34)	
4	Rectangular portion of base
9	Curves on base (4+4+1 for line)
8	Rectangular portion of shelter
9	Curves on shelter (4+4+1 for line)
4	Completion
10	Drafting, accuracy, presentation

Total Marks 70

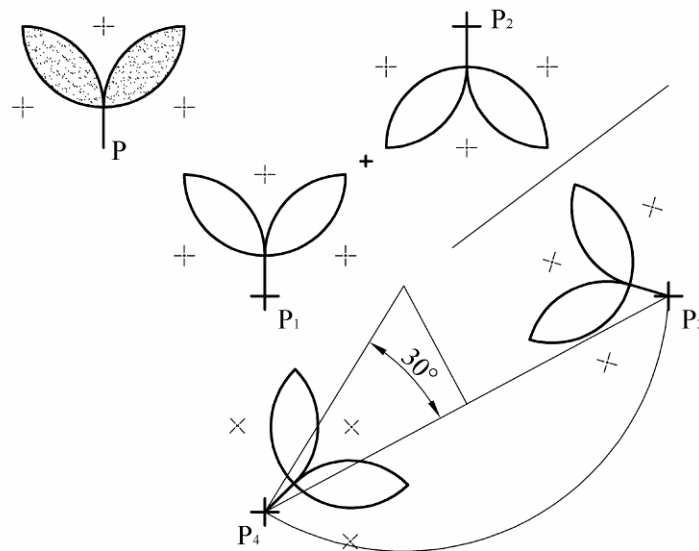
Q.4 - Development



Plan (23)	
8	Rectangular outline (4) Fillets (4)
6	Cylinder (centre 4, outline 2)
6	Hemisphere (centre 4, outline 2)
3	Points of contact
Elevation (15)	
12	Outline rectangle (4) Cylinder (4) Hemisphere (4) -1 for no hidden detail
3	Points/line of contact
Development of surface A (22)	
4	Division of circumference of circle
4	Stepping out length of developed curve (2 correct increment, 2 correct No.)
4	Projecting lengths
4	Locating points
6	Drawing the required development
10	Drafting, accuracy, presentation

Total Marks 70

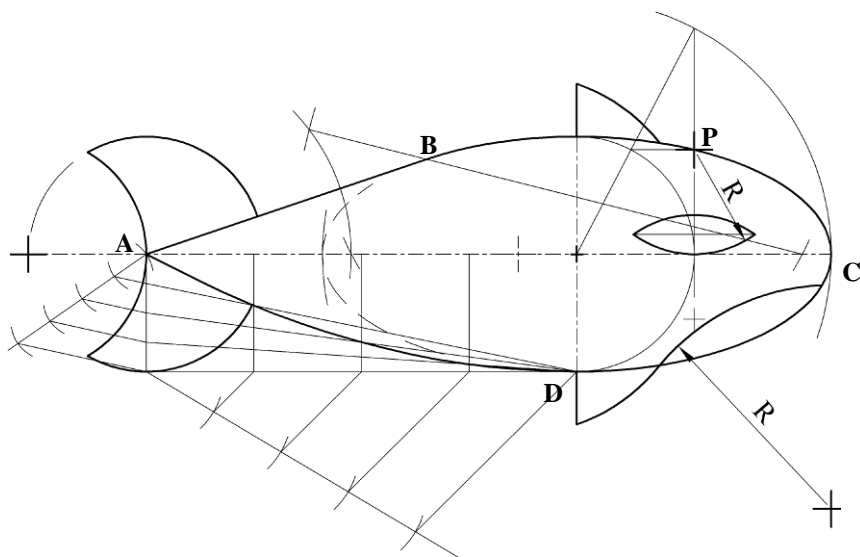
Q.5 - Transformation Geometry



Setting up (8)	
7	Drawing Arcs (3,2,2)
1	Line
Translation (12)	
4	Lines projected parallel to P –P1.
4	Locating key image points.
4	Drawing the image figure accurately.
Central Symmetry (12)	
4	Lines projected through point O
4	Locating key image points
4	Drawing the image figure accurately
Axial Symmetry (12)	
4	Projecting perpendicular to symmetry line. (Deduct 2 marks if not perp.)
4	Locating key image points.
4	Drawing the image figure accurately.
Rotation (16)	
6	Locating centre of rotation. (Joining P3 to P4 and applying 30° angle)
2	Drawing arcs
4	Locating key image points.
4	Drawing the image figure accurately.
10	Drafting, accuracy, presentation

Total Marks 70

Q.6 - Ellipse and Parabola



Setting-up (4)	
4	Points A, C, P and position of minor axis
Ellipse (22)	
4	Draw major circle
8	Identify (6) and draw (2) minor circle
6	Locating additional points on the curve (2, 2, 2)
4	Drawing the ellipse
Tangent (12)	
2	Locate focal points
2	Swing arc AF or AF₁
2	Swing major axis to cut arc
2	Locate point of contact
4	Draw tangent
Parabola (12)	
8	Construction to determine points on the parabola (2, 2, 2, 2)
4	Drawing of parabola AD
Completion (10)	
10	Tail (3) Eye (3) Fins (2) Mouth (2)
10	Drafting, accuracy, presentation

Total Marks 70