Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate 2011

Marking Scheme

Technical Graphics

Higher Level

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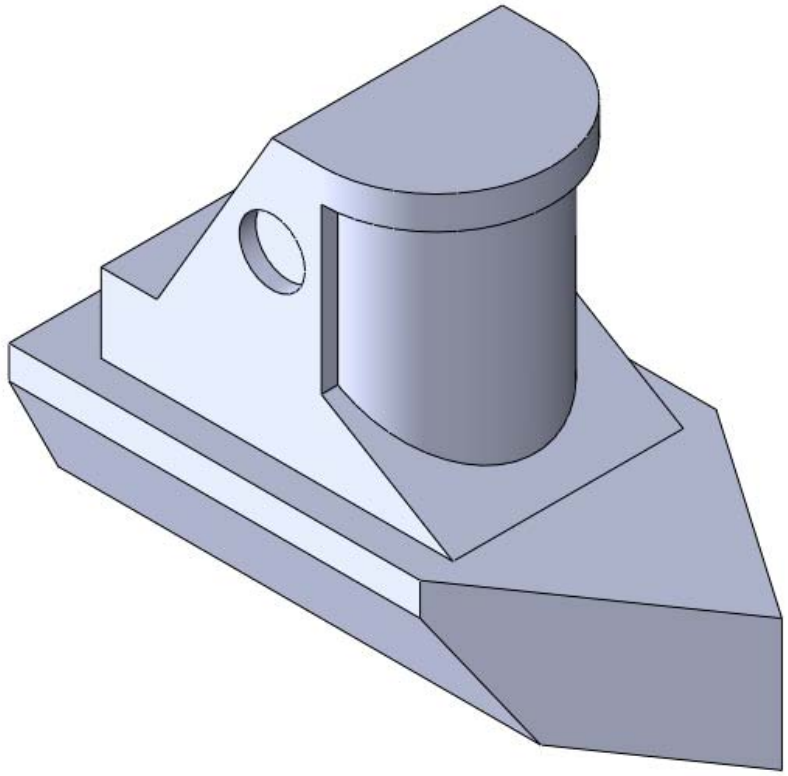
Technical Graphics



Higher Level
Marking Scheme

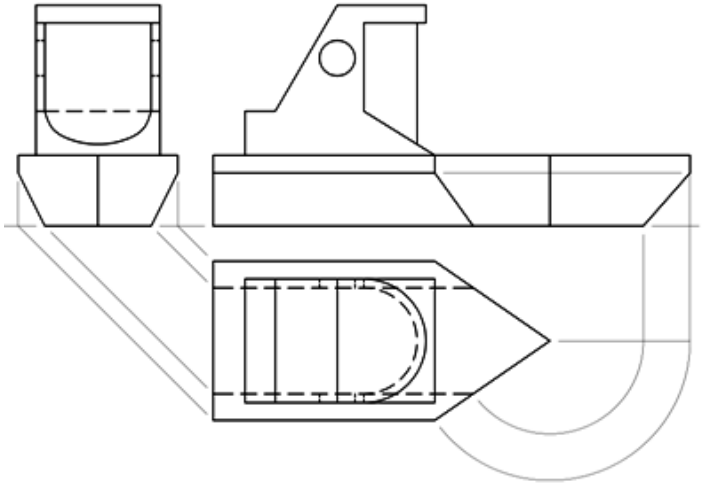
Section A and B

Section A – *any* ***ten*** *questions from this section*

Q1	12	Four diagrams, 3 marks for each correct label.
Q2	2	Projection lines from elevation to plan
	2	Rotate lines in plan
	4	Project to elevation
	4	Complete figure
Q3	2	Dividing surface
	10	Five lines, 2 marks each.
Q4	3	Base
	4	Fire surround and hearth
	3	Mantel
	2	Shade or Colour
Q5	4	Line through C parallel to BD
	4	AD extended
	4	Completion
Q6	9	Line (3), seven equal divisions (3), parallel lines (3)
	3	Applying equal divisions to gate
Q7	4	Projecting points through P
	4	Marking distances from P
	4	Drawing completed logo
Q8	8	Whistle depicted in good quality freehand pictorial
	4	Appropriate shading or colour.
Q9	12	Extend, Trim, Extrude, Fillet (4 marks for correct term)
Q10	12	24 cubes
Q11	4	A = 112°
	4	B = 60°
	4	C = 64°
Q12	4	Locating focal points.
	2	Lines from focal points through P.
	3	Bisection of angle.
	3	Drawing aerial.
Q13	3	Projecting perpendicular to X1Y1.
	3	Marking heights in auxiliary view.
	5	Completing speaker.
	1	Hidden detail
Q14	4	Internal circle (2), Circle (2)
	4	Normals and lines parallel to normals.
	4	Tangents.
Q15	10	Five correctly sized bars
	2	Shade or Colour

Section B – *any* ***four*** *questions from this section*

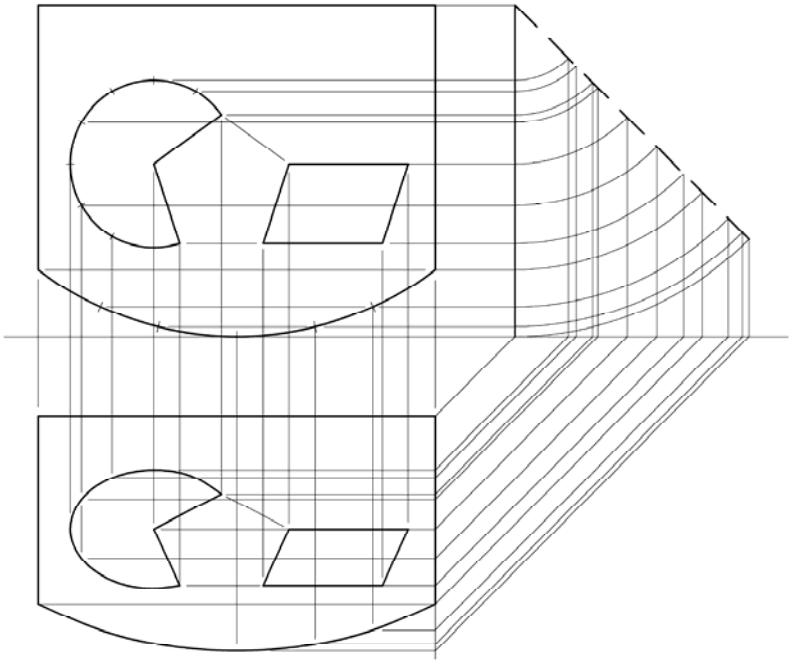
Q.1 – Orthographic projection.



	Elevation (18)	
6	Hull	
8	Tower	
1	Cylinder	
1	Circle	
2	Front edge of hull	
	Plan (15)	
5	Hull	
6	Tower	
2	Circles	
2	Hidden detail	
	End View (19)	
7	Hull	
2	Tower	
2	Cylinder	
2	Hidden detail	
6	Elliptical curve: Points in plan, project to elev, project to EV, Draw (1,1,2,2)	
8	**True Shape (8)**	
	Rotate in plan	Project perpendicular
	Project from plan (4), project from elev (2), completion (2)	New xy lines (4), transfer heights (2), completion (2)
10	**Drafting, accuracy, presentation**	

Total Marks 70

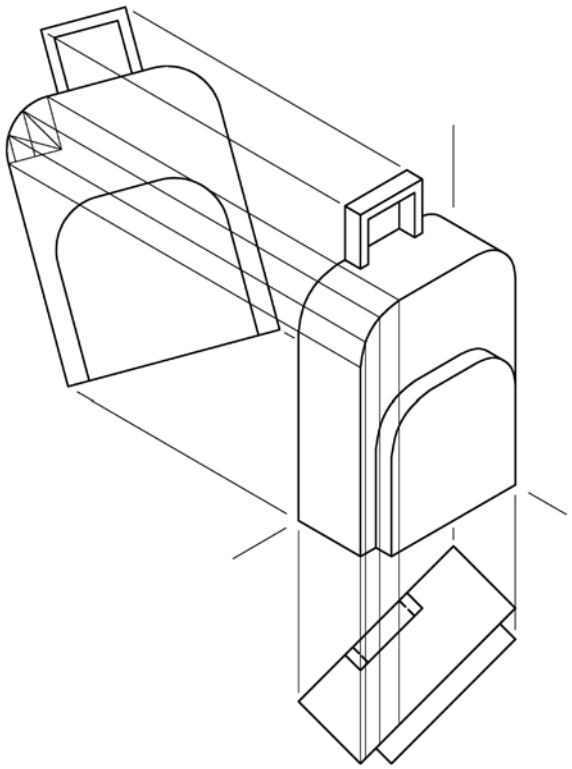
Q.2 - Orthographic, Rotation, End View.



	Given Elevation (18)
3	Draw outline (three lines)
2	Circular arc
8	Pentagon (five lines, correct size)
2	Sector of circle
3	Parallelogram
	Given End View (6)
2	Vertical line
4	45° angle (2), correct length (2)
	New Figure (36)
3	Projection of points to end view
3	Rotation of points in end view
3	Projections from end view to new figure in plan
3	Projections from elevation to new figure in plan
3	Outline
5	Elliptical edge
12	Portion of ellipse
4	Parallelogram
10	**Drafting, accuracy, presentation**

Total Marks 70

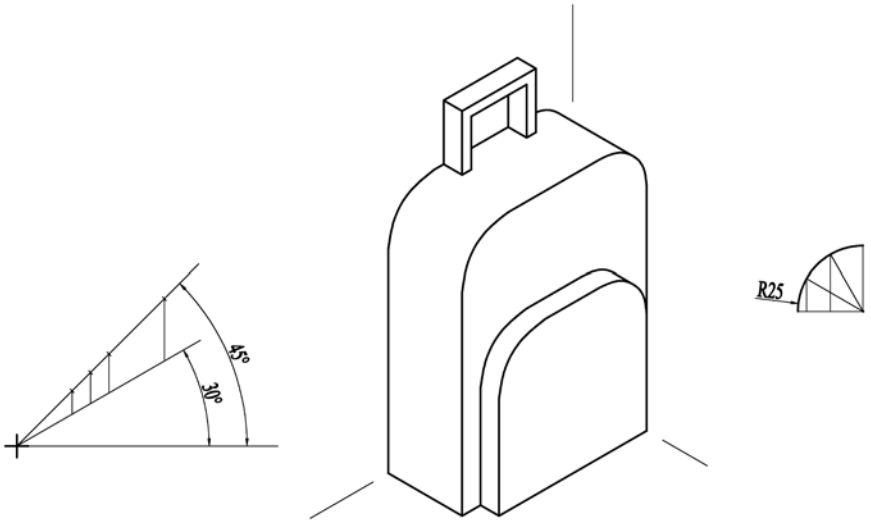
Q.3 (a) - Isometric Projection (Axonometric Axes Method)



Axonometric Axes Method	
	Plan (12)
4	Bag outline
6	Handle (3), front pocket (3)
2	Hidden detail
	Elevation (14)
2	Bag outline
2	Front pocket
4	Circular arcs
6	Handle
	Completion of Isometric Projection (34)
6	Bag outline
6	Front pocket
8	Bag curves
8	Pocket curves
6	Handle (2,2,1,1)
10	**Drafting, accuracy, presentation**

Total Marks 70

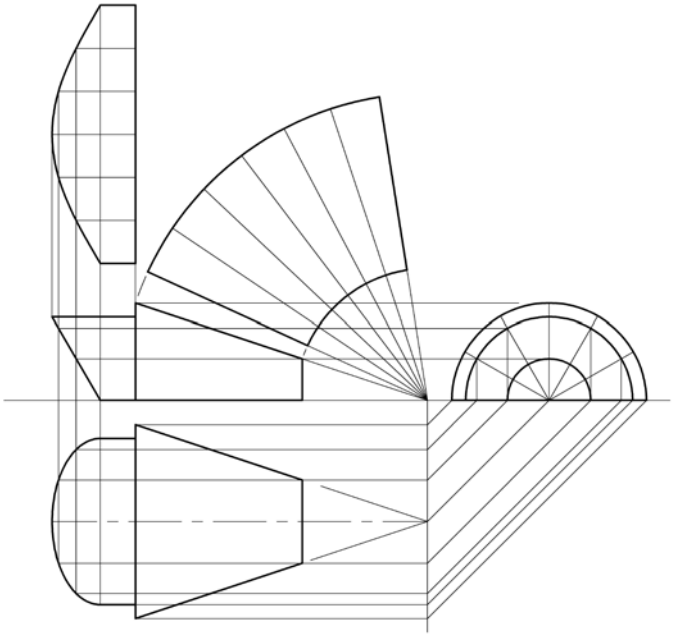
Q.3 (b) - Isometric Projection (Isometric Scale Method)



	Isometric Scale Method
	Isometric Scale (11)
4	Setting up isometric scale (2 marks for 30º line and 2 marks for 45º line)
4	Applying dimensions on 45º line
3	Projecting from 45º line onto 30º line
	Construction of trolley bag (9)
3	Apply scaled measurements required for trolley bag
6	Construction required for arcs (2,2,2)
	Isometric Projection (6)
6	Direction of axes (2,2,2)
	Completion of Isometric Projection (34)
6	Bag outline
6	Front pocket
8	Bag curves
8	Pocket curves
6	Handle (2,2,1,1)
10	**Drafting, accuracy, presentation**

Total Marks 70

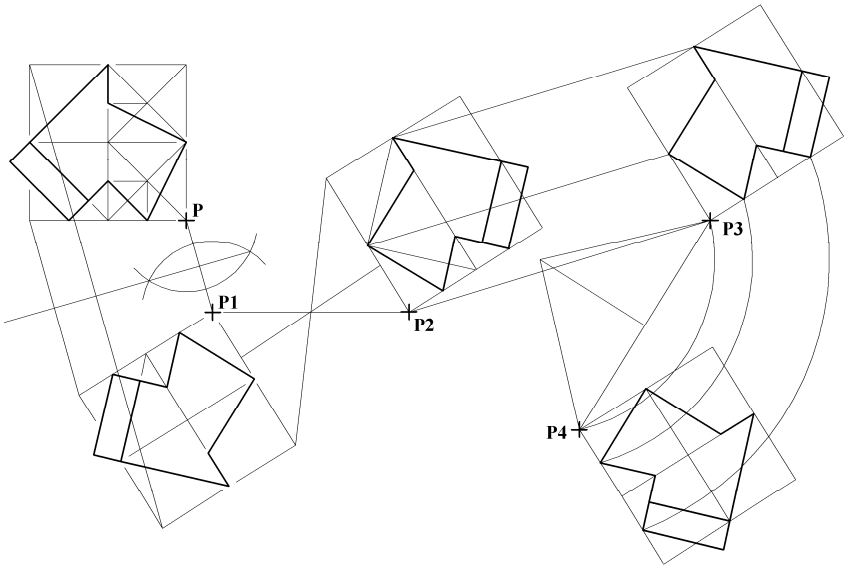
Q.4 - Development



	Elevation (7)
3	Cylinder
4	Cone
	Plan (12)
6	Six lines
6	Elliptical curve: Points in EV, project to elev, project to plan, draw (1,1,2,2)
	End Elevation (4)
4	Three circles (3), line (1)
	Development of surface A (17)
2	Swing arc equal to extreme generator
6	Stepping out length of developed curve (3 correct increment, 3 correct No.)
3	Swing arc equal to frustrum
6	Drawing the required development
	Development of surface B (20)
6	Stepping out length of development curve(3 correct increment,3 correct No)
4	Projecting lengths
4	Locating points
6	Drawing the required development
10	**Drafting, accuracy, presentation**

Total Marks 70

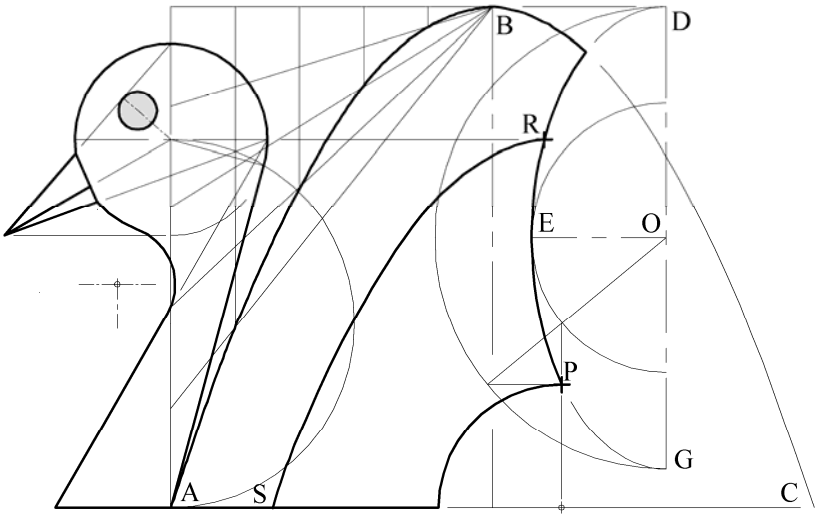
Q.5 - Transformation Geometry



	Setting up (8)
4	Construction grid
4	Drawing figure
	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.
	Central Symmetry (12)
4	Locate point **O** (2), Project lines through **O** (2)
4	Locating key image points
4	Drawing the image figure accurately
	Translation (12)
4	Lines projected parallel to **P2 –P3**.
4	Locating key image points.
4	Drawing the image figure accurately.
	Rotation (16)
4	Locating centre of rotation. (Joining **P3** to **P4** and applying 45° angles).
4	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



	Parabola (12)	
8	Construction to determine points on the parabola (2,2,2,2)	
4	Drawing of parabolic curve **AB** -C	
	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 curve	
	Head and neck (15)	
4	Circle and beak (1,3)	
4	Tangent to circle from **A**: Bisect, semi-circle, tangent, poc (1,1,1,1)	
6	60° line, parallel line, radius offset from circle, arc, poc's (1,1,1,1,2)	
1	Eye	
	Curve RS (9)	
1	Locate **R**	
6	Locate ordinate 95mm from vertex, identify vertical and horizontal distances for other points (2,2,2)	Translate points parallel to **BR**.
2	Draw the curve **RS**	
	Completion (2)	
1	Arc through **P**	
1	Complete logo base	
10	**Drafting, accuracy, presentation**	

Total Marks 70