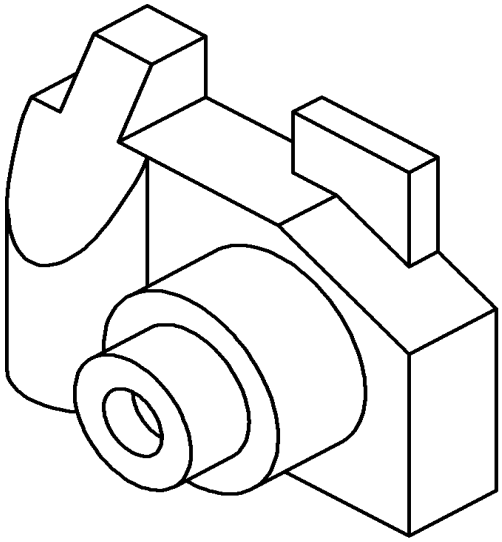
Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2004

Technical Graphics

Higher Level



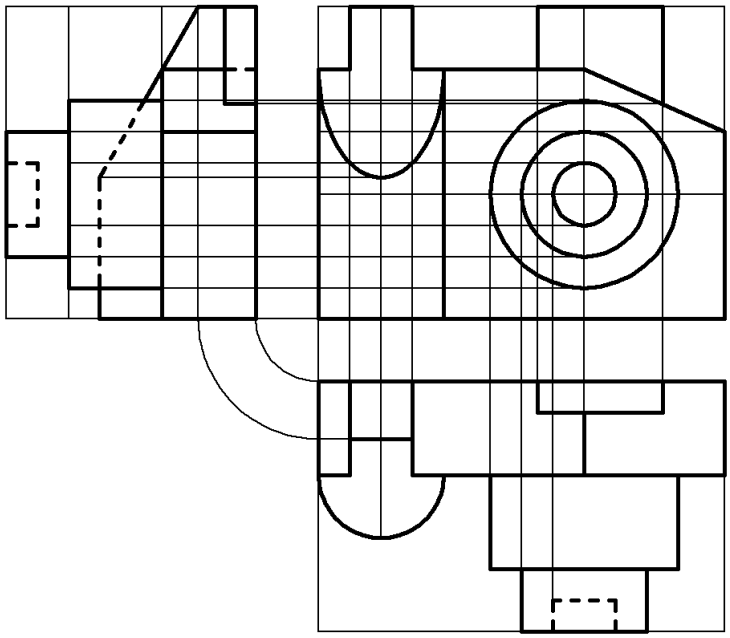
Marking Scheme

Section A

Q1.	12	Four diagrams, 3 marks for each correct label.
Q2.	12	Shading
Q3.	4	Locating centre
	4	Fixing points of contact
	4	Drawing circle
Q4.	12	75º angle ± 4º variation. (8 marks for North 75º East)
Q5.	6	Locating points of contact on small arc
	6	Locating points of contact on large arc
Q6.	12	One mark per line
Q7.	4	Radius 10 circle in plan
	4	Project position of ring to elevation
	4	Indicate position of ring in elevation
Q8.	4	Position of point P
	4	Position of point Q
	4	Position of point R
Q9.	6	Proportional division of side on large pentagon
	6	Construction of required square
Q10.	4	Heights taken from elevation
	4	Further projection lines
	4	Completion of Auxiliary Elevation
Q11.	12	Toy depicted in a <u>good quality</u> freehand pictorial sketch
Q12.	12	Fillet, Rotate and Chamfer (4 marks for each correct term).
Q13.	4	Construction of centre lines at 120º intervals
	4	Apply even spacing on either side of centre lines
	4	Completion of logo
Q14.	4	Division of base of rectangle (4:3:2:1 ratio).
	4	Constructing the divisions within the given rectangle
	4	Use of shading to enhance the presentation.
Q15.	4	Division of angle
	4	Locating centre of circle
	4	Fixing both points of contact & drawing the circle in the required position

Section B

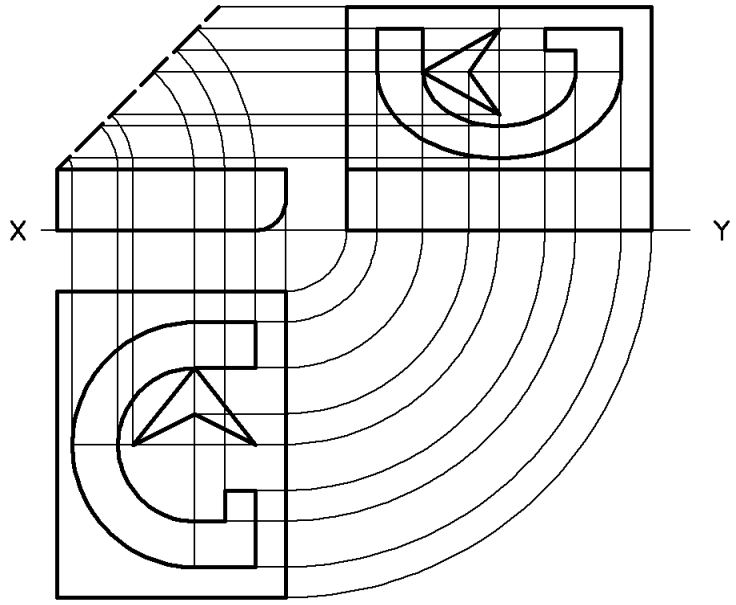
Q.1 Section B — Orthographic Projection



	Elevation (20)
13	Lines
3	Circles (1 mark each)
4	Semi-elliptical curve
	Plan (22)
21	Lines
1	Semi-circle
	End View (18)
18	Lines
10	**Drafting, accuracy, presentation**

Total marks = 70

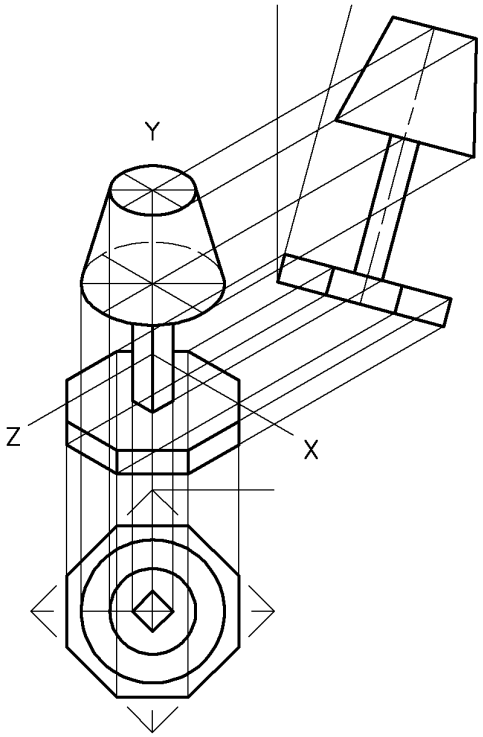
Q.2 Section B — Orthographic, Rotation, End View



	Given Plan (18)
16	Lines
2	Semi-circles
	Given Elevation (6)
5	Lines (including broken line)
1	Quarter circle
	New Figure (36)
3	Projection of points from plan to elevation
4	Rotation of points in elevation
3	Projections from elevation to new figure
3	Projections from plan to new figure
17	Lines
6	Semi-elliptical curves (3 marks each)
10	**Drafting, accuracy, presentation**

Total marks = 70

Q.3 (a) Section B — Isometric Projection (Axonometric Axes Method)



Axonometric Axes Method	
	Plan (14)
2	Setting-up (position and orientation at 45º).
8	Octagonal base
2	Square stem
2	Circles (1 mark each)
	Side Elevation (14)
2	Setting-up (position and orientation at 15º).
12	Completion of side elevation (1 mark per line).
	Completion of Isometric Projection (32)
15	Octagonal base
5	Stem
8	Projections of circular top and bottom of lamp shade.
4	Sloping lines (left and right outline of lamp shade)
10	**Drafting, accuracy, presentation**

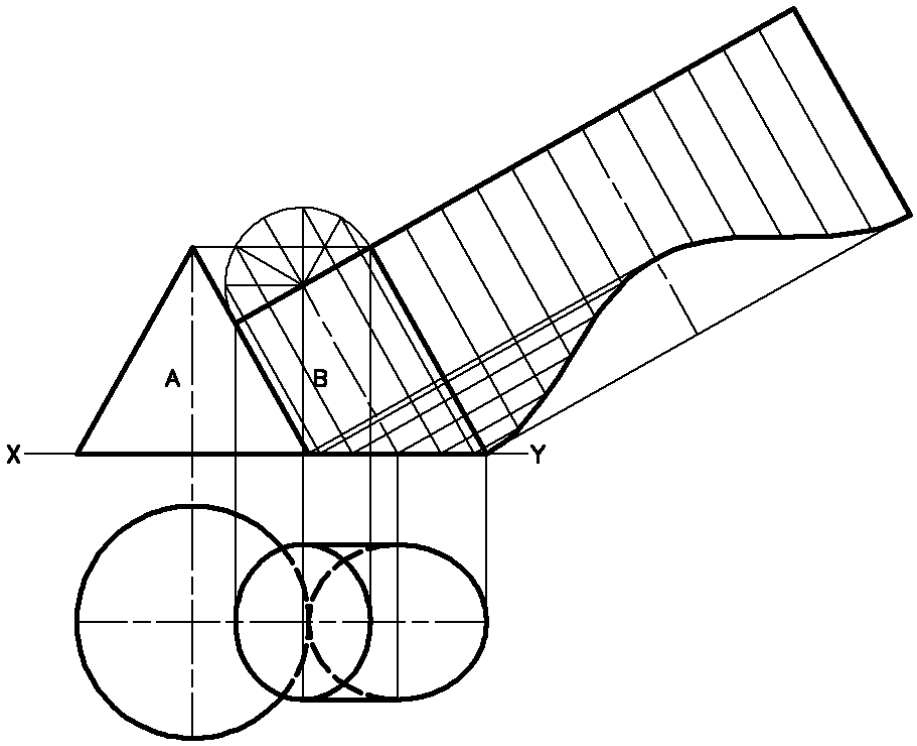
Total marks = 70

Q.3 (b) Section B — Isometric Projection (Isometric Scale Method)

Isometric Scale Method	
	Isometric Scale (12)
4	Setting up isometric scale (2 marks for 30º line and 2 marks for 45º line)
4	Applying dimensions on 45º line
4	Projecting from 45º line onto 30º line
	Projection of octagonal base and circles (10)
5	Construction required for octagon
5	Construction required for circles, radius 15 and radius 25
	Isometric Projection (6)
3	Direction of axes (1,1,1)
3	Axes lengths applied from isometric scale.
	Completion of Isometric Projection (32)
15	Octagonal base
5	Stem
8	Projections of circular top and bottom of lamp shade.
4	Sloping lines (left and right outline of lamp shade)
10	**Drafting, accuracy, presentation**

Total marks = 70

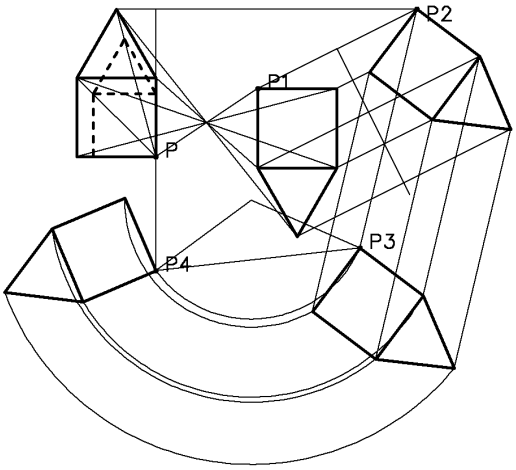
Q.4 Section B — Development



	Elevation (6)
6	Lines
	Plan (24)
4	Projections of cone (2, 2 marks)
4	Outline of cylinder (2, 2 marks)
8	Projections of base of cylinder
8	Projections of top of cylinder
	Development (30)
4	Division of circumference of top of cylinder
6	Stepping out length of developed cylinder (2, 4 marks)
6	Projecting lengths
6	Locating points
8	Drawing the required development (1, 1, 6 marks)
10	**Drafting, accuracy, presentation**

Total marks = 70

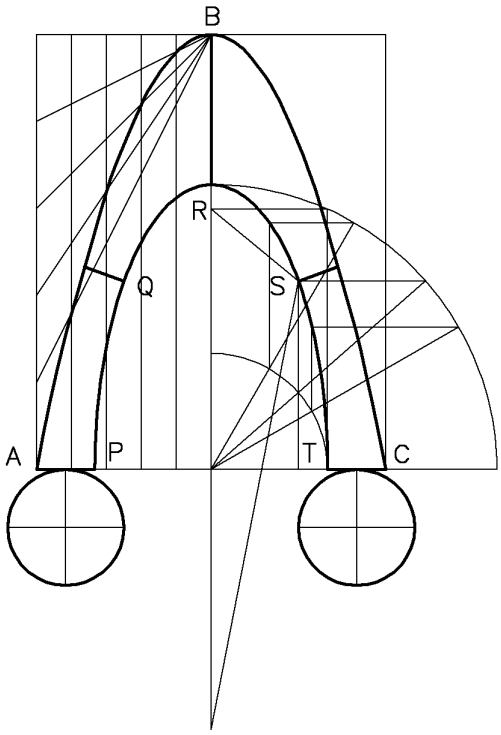
Q.5 Section B — Transformation Geometry



	Setting up (8)
4	Similar figure based on a square and an equilateral triangle
4	Enlargement of similar figure to produce required figure
	Central Symmetry (12)
4	Lines projected through point P.
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.
	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 30° angles).
4	Drawing arcs
4	Locating key image points.
4	Drawing the image figure accurately.
10	**Drafting, accuracy, presentation**

Total marks = 70

Q.6 Section B — Ellipse and Parabola



	Setting-up (8)
8	Eight key measurements as given.
	Parabola (14)
8	Construction to determine points on the parabola (2,2,2,2 marks).
6	Drawing of parabola ABC
	Ellipse (20)
10	Determining major axis
4	Locating additional points on the curve
6	Drawing the semi-elliptical curve PQRST
	Normals to ellipse at Q and S (12)
4	Locating both focal points
4	Construction required for normals
4	Drawing normals at Q and S
	Base Circles (6)
6	Drawing base circles in position
10	**Drafting, accuracy, presentation**

Total marks = 70