

## Technical Graphics



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## Pre-Junior Certificate Examination, 2016

## Technical Graphics

Ordinary Level

## Section A

(120 marks)

Time : $\mathbf{2 ½}^{1 / 2}$ Hours

## Instructions

(a) Answer any ten questions in the spaces provided. All questions carry equal marks.
(b) Construction lines must be clearly shown.
(c) All measurements are in millimetres.
(d) This booklet must be handed up at the end of the examination.
(e) Write your name, school's name and teacher's name in the boxes provided below and on all other pages used.



| Question | Mark |
| ---: | :--- |
| Section A |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| TOTAL |  |
| GRADE |  |

4. Fig. 1 shows a transport logo inscribed in the square ABCD
Draw the enlarged logo in the given square $\mathbf{A B C D}$ in Fig. 2.


MARKING SCHEME construction lines ( $6 \mathbf{m}$ ) logo (6m)

5. Fig. 1 shows the outline of a doll's face based on an ellipse and two circles. Locate the focal points of the ellipse in Fig. 2 and complete the doll's face by drawing the eyes to the given dimensions, as shown.

6. The elevation and plan of a paperweight are shown.

Make a well proportioned freehand sketch of the paperweight in the space provided.

Colour or shade the completed
sketch.

7. The outline of garden pond is shown.

Write down the area of the lake in square units.

1 square $=1$ square unit.

| Area of the pond: $\quad \mathbf{3 9}$ square units. |
| :--- |
| MARKING SCHEME <br> $=38$ to $40 \mathrm{~cm}^{2}(\mathbf{1 2 m})$ <br> $* *$ Award 6 marks for 37 or 41. |


8. Using the scale provided measure and write down the dimensions $\mathbf{A}$ and $\mathbf{B}$ for the dog kennel shown.

A: $\qquad$
B: $\qquad$


MARKING SCHEME
A -225 mm ( 6 m )
B $-300 \mathrm{~mm}(6 \mathrm{~m})$

| 100 | 0 | 100 | 200 | 300 | 400 | 500 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |

9. The figure shows a set of blocks.

Draw, in the space provided, the elevation of the blocks in the direction of the arrow.

10. Draw a line from $C$ which will divide the area of the triangle $\mathbf{A B C}$ into two equal parts.

> MARKING SCHEME $-\quad$ accurate bisect A B (6m) - line from C ( $\mathbf{6 m} \mathbf{~}$ ** Award 3 marks for inaccu

11. Write down any two CAD commands used to produce the drawing.


| MARKING SCHEME <br> Any 2: $(\mathbf{2} \times \mathbf{6 m})$ <br> - mirror // <br> - circle // <br> - extrude boss |
| :---: |

12. The graphic shows a trophy.

Draw the shadow cast by the trophy when the light source is parallel to the direction of the arrow.

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MARKING SCHEME
    - projection (4m)
    solution (8m)
** Award 4 marks for incomplete outline
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PLAN

MARKING SCHEME
Total (70)
Orthographic Outline ( $\mathbf{1 0 m}$ )
(a) Elevation (21m)

- trailer body ( 8 m )
- wheel (2m)
- tow bar lines ( 6 m )
hidden details ( 5 m )
(b) Plan (24m)
- trailer body $(10 \mathrm{~m})$
- tow bar ( 8 m )
wheels ( 6 m )
(c) Dimensions (4m)

Accuracy / draughtsmanship (11m)

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| Pre-Junior Certificate Examination, 2016 |  |  |
| Ordinary Level - Section B |  |  |
| J. 60 | Scale 1:1 | Question 1 |



MARKING SCHEME
Total (70)
Ellipse (30m)
major axis (4m)

- minor axis ( 4 m )
- elliptical constructions (12m) curve ( 10 m )

Arcs and Circles (28m)
semi-circle ( 4 m )
arcs for centre point ( 6 m )
drawing arc ( 2 m )
two straight lines at base ( 4 m )
correct centre points ( 6 m )
correct circles ( 6 m )
Accuracy / draughtsmanship (12m)


Pre-Junior Certificate Examination, 2016
Ordinary Level - Section B



MARKING SCHEME
Total (70)
(a) Isometric or (b) Oblique

Set-up (13m)
height, length, width (9m)
outline (4m)
Front Face (23m)
G-21 lines ( 10 m )
A - 11 lines ( 6 m )
P-13 lines ( 7 m )
Complete Projection ( $\mathbf{2 4 m}$ )

- 8 marks per letter

Accuracy / draughtsmanship (10m)
Note: Solution scale 1:2, Student scale 1:1

| $\sqrt{7} \begin{aligned} & \text { exams } \\ & \text { ex } \end{aligned}$ |  | Centre, <br> 3/4, <br> 伍 Business Park <br> ill Road, <br> 22. <br> (01) 6166262 <br> (01) 6166263 |
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| Pre-Junior Certificate Examination, 2016 |  |  |
| Ordinary Level - Section B |  |  |
| J. 60 | Scale: see note | Question 4 |




## Pre-Junior Certificate Examination, 2016

Pre-Junior Certificate Examination, 2016

## Technical Graphics

Higher Level
Section A
(120 marks)

Time : 3 Hours

Instructions
(a) Answer any ten questions in the spaces provided. All questions carry equal marks.
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(c) All measurements are in millimetres.
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(e) Write your name, school's name and teacher's name in the boxes provided below and on all other pages used.



| Question | Mark |
| ---: | ---: |
| Section A |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| TOTAL |  |
| GRADE |  |

4. The elevation and plan of a lamp are shown on the square grid. MARKING SCHEME | Make a freehand pictorial sketch of the lamp. | - front $(\mathbf{4 m})$ |
| :--- | :--- |
| Colour or shade the sketch. | $-\operatorname{depth}(\mathbf{4 m})$ |
|  | $-\operatorname{completion}(\mathbf{4 m})$ |

(4ion (4m)

5. The figure shows the outline of a square window. This window is to be replaced by a new square window twice its area.
Draw an outline of the new square window showing all construction.

## MARKING SCHEME

- answer as shown (12m)

Or

- two squares to make rectangle ( $\mathbf{6 m}$ )

Or

- Pythagoras theorem ( $\mathbf{6 m}$ ) Square (6m)

6. Draw an internal tangent between the given circles. Show all construction and points of contact.


7. The figure shows the outline of an arcade game.
Draw a new arcade game similar to the given arcade game, with length $\mathbf{A B}$ increased to $\mathbf{A B}_{1}$
Colour or shade the new arcade game

8. The elevation and plan of a traffic cone are shown.
In the space provided, draw a freehand pictorial sketch
of the traffic cone.
Colour or shade the sketch.

9. Write down any three CAD commands used in the sequence.

10. A 3D graphic shows a $t$-shirt. The sleeve is based on a truncated cylinder. The figure shows the elevation and plan of the sleeve

Draw a development of the sleeve.


MARKING SCHEME divide circle (2m) project to elevation ( $\mathbf{2 m}$ ) transfer heights and widths (2m) development ( $\mathbf{6 m}$ )
11. The figure shows the plan of a garden containing a wall and a circular pond A 3D graphic of the garden is also shown.
Locate a point in the plan which is 15 mm from line $\mathbf{A B}$ and 25 mm from the circumference of the circle.

12. The figure shows the location of two houses, $\mathbf{A}$ and $\mathbf{B}$, and a water main, line $\mathbf{S}$. A 3D graphic is also shown.
Locate a point $\mathbf{P}$ on the line $\mathbf{S}$ so that the least amount of pipe is used to connect house $\mathbf{A}$ and house $\mathbf{B}$ to the water main.

13. The figure below shows the major axis and half of the minor axis of an ellipse Locate a point on the ellipse on the line AB. Note: It is not necessary to draw the ellipse. ( major semi circle ( $\mathbf{2 m}$ ) minor semi circle ( $\mathbf{2 m}$ ) line from centre point $(\mathbf{4 m})$ line from major circle ( $\mathbf{4 m}$ )

14. The figure shows the plan and elevation of a paperweight. A 3D graphic of the paperweight is also shown. Draw the end view of the paperweight

15. Twenty students were surveyed about
their preferred device for watching videos, television shows and movies. Shown below are the results of the survey:

MARKING SCHEME - correct division ( $\mathbf{4} \times \mathbf{2 m}$ ) colour / shading (4m)
Tablet -5 students
Laptop -5 students
Phone -9 students
Television- 2 students

Television- 2 students
Divide the given circle to represent this information graphically as a pie chart.
Colour or shade the completed pie chart.








