

GEOMETRICAL AND MECHANICAL DRAWING

GCE Ordinary Level

<p>Paper 7040/01 Plane and Solid Geometry</p>

General comments

The impression of this year's paper was that it was of the appropriate standard.

The standard of candidates was similar to that of last year.

Many candidates did not read the instructions on the front of the question paper, and consequently spent time dimensioning their answers. Some candidates answered more than three questions from **Section 2**. Many candidates failed to show their construction lines in their answers.

Comments on specific questions

Section 1

Question 1

This was the most popular question, but very few candidates constructed all the four sections of the question, i.e. **(i)** the ellipse, **(ii)** the position of the hole, **(iii)** the centre of the 115 radius, **(iv)** the tangent to two circles.

Most candidates only constructed three out of these four sections.

Question 2

This was a popular question, but it was very poorly answered. The $52\frac{1}{2}^\circ$ angle should have been constructed by bisecting angles drawn with the 45° and 60° set squares. The positioning of the angle opposite to the given side was frequently attempted by trial and error, and not found by using the circle method (angles subtended at the circumference of a circle half that at the centre of the circle).

The construction of a square equal in area to that of the triangle was generally well answered.

Question 3

This question was generally well answered by the majority of the candidates, but many candidates could not appreciate that the cross link BC was pivoted at the centre to the crank OA, and that the connecting rod was not connected directly to the rotating crank, but connected to the end of BC at C.

Section 2

Question 4

This was a popular question that was generally poorly answered. Many candidates could not visualise the shape of the hopper, which was the shape of a frustum of a cone. The development was the normal development of a cone, with two holes cut out.

Question 5

This isometric question, was not as popular as in the past, but the standard of answers was very good. The candidates were able to show the correct interpretation of the shape of the slide bracket.

Question 6

Many candidates just redrew the given views. Others drew the true shape of the sloping face, but very few candidates drew the required auxiliary plan, seen from arrow A.

Question 7

This question proved to be the most difficult question on the paper. Most candidates had difficulty in completing the given views. For those candidates who successfully completed the first part of the question, there was confusion of how the two square pipes intersected one another. Very few candidates were able to determine the points of intersection of the two pipes.

Question 8

There were very few correct answers to this question. It would appear that square threads had not been covered in the syllabus. Many candidates just drew a single helix, while others drew a square spring.

<p>Paper 7040/02 Drawing (Mechanical)</p>

General comments

Whilst there were some excellent scripts indicating a thorough understanding of the syllabus and a mastery of drafting skills, there were rather more weaker candidates who had simply spent their examination time copying out the diagrams from the examination paper, without making any attempt whatsoever to answer the set questions. It was disappointing that a number of candidates had obviously not been adequately prepared to achieve success at this level of examination.

Since only views **drawn in projection** qualify for marks in **Question 2**, those Centres supplying A4 and/or A3 sized paper, instead of the specified A2, severely lessened candidates chances of realising their potential in this examination. Additionally since it is recommended that **Question 1** and **Question 2** are answered on opposite sides of the examination paper, thin detail paper is not a realistic substitute for the thicker cartridge paper generally provided.

It is pleasing to record this year, that all scripts were well packaged and in the correct numerical order when received by Examiners.

Comments on specific questions

Question 1

Inspite of clear instructions regarding the use of instruments, many candidates continue to 'aid' their work with templates and various devices other than pencil. Since these infringements are readily spotted by the Examiners Centres should ensure their candidates are proficient at freehand and instrument drawing. Candidates should understand that any reasonable freehand sketch will always score significantly more marks than the most perfect instrument or aided drawing for this question.

The most common errors were :-

- (a)(i) - Solutions sketched in first instead of third angle projection.
- Outline of view drawn and not sectioned as specified in question.

- Candidates simply copied the pictorial drawing fig. 1 instead of converting it to an orthographic projection.
- No hatching to indicate cut surfaces.
- (ii) - Although requested, no hidden detail was included in plan view.
- Plan view turned through 90° relative to sectional view
- Slot and/or M8 threaded hole omitted from view.
- (b) - The dimensions when present, were frequently far too bold, particularly arrowheads.
- Candidates wasted time by sketching more than one example, when only one of each type of dimension was required to achieve the available 5 marks.

Dimensioning is obviously a topic that is deserving of more attention by Centres preparing candidates for this examination, since it is one of the weaker aspects examined on many of the scripts.

- (c) Very disappointing to note that only a handful of candidates completed parts lists along the lines of:-

B	Bush	Bronze	1
A	Bracket	Cast Iron	1
Reference	Name	Material	No. Off

Question 2

It was pleasing to note that the majority of candidates submitting an assembly drawing had positioned the various components correctly. However there were a number of candidates who went no further than drawing the body only. Centres are reminded of the desirability of stressing to candidates that the 10 minutes reading time should be used to organise themselves before starting on the drawing paper. Examiners noted that the candidates from several Centres attempted to draw three views (an extra plan) when only two were necessary. Consequently, without exception, these candidates failed to complete the two required elevations and achieved a lower score by disregarding the rubric.

- (a) Attempted by all but a handful of candidates, and was frequently the view scoring most highly. Several solutions were scaled and not drawn full size. Although very few solutions had incorrectly positioned components, many omitted the spring and cam lever the only two details appearing to cause sizing and drafting problems.

A number of candidates wasted valuable examination time by including hidden detail and dimensions. Pleasing to note that with only two exceptions candidates had viewed the Press in the direction of arrow F, a marked improvement over previous years.

- (b) The spring and bolt head were often drawn inaccurately although the other details including the body appeared to cause few problems. However, many candidates failed to draw a view showing the left hand as an elevation and the right as a section on SS, preferring to present a complete elevation or section thereby losing marks. Additionally many candidates worked too slowly and were unable to complete this view in the allocated time.
- (c) Many marks are squandered by the failure of candidates to include the title and scale used. Whilst most drawings included a projection symbol a number of candidates were penalised since the symbol did not correspond to the projection used to answer this question.