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FOREWORD

This booklet contains reports written by Examiners on the work of candidates in certain papers. **Its contents are primarily for the information of the subject teachers concerned.**



GEOMETRICAL AND MECHANICAL DRAWING

GCE Ordinary Level

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

General comments

The standard of candidates was similar to that in the past, and the paper was of suitable standard.

Comments on specific questions

Section A

Question 1

This was a very popular question, and was well answered by the candidates.

The majority of candidates were able to construct the pentagon given the length of the side, and construct the circumscribing circle.

The construction of the semi-ellipse was well answered.

The construction for the tangent from the edge of the ellipse to the circle was only attempted by a few candidates. The majority of candidates simply drew a straight line from the corner of the ellipse to the circumference of the circle.

Question 2

The construction of the given figure was generally well answered, but this was all many candidates attempted.

The construction of a similar figure reduced in area was very badly answered. Many candidates reduced the figure linearly, but some candidates drew a similar figure to mathematically calculated sizes. It was obvious that this part of the syllabus had not been covered.

Question 3

This question was either extremely well answered, or some candidates did not appreciate that the disc rolled along the horizontal plane, but drew the locus for the point revolving about a stationary centre. Most candidates had adequately covered this part of the syllabus.

Section B**Question 4**

Unfortunately many candidates attempted to solve the question as a truncated open-ended pyramid, and did not appreciate that the correct development of the sides could be found by determining the true lengths of the sides and diagonal distances across the corners of the various sides of the extractor hood.

Question 5

Most candidates who attempted this question were unable to visualise the plan view of a cone, which is lying on its side on a horizontal plane. The plan views varied from a large circle to a rectangular block. Consequently the candidates were unable to construct the required plan showing the outline of the cone, and the constructed views of the ellipse and the parabola.

Question 6

This isometric view was very well answered. The candidates were able to interpret the correct shape of the casting.

Question 7

A well answered question. Most candidates were able to construct the required interpenetration of two pipes. Some candidates divided the larger pipe into twelve divisions instead of the smaller pipe, had a general understanding of the question, but were unable to draw the correct curve of inter penetration.

Question 8

The majority of candidates that attempted this question did not draw the shape of the octagon, which was necessary to determine the size of the octagon in the given view. Many candidates drew a hexagon instead of the octagon.

There were very few correct solutions to this question.

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

General comments

The majority of Centres entering candidates for this examination are to be congratulated on the diligent manner in which they collate and package their candidates' examination scripts. Unfortunately there are a few Centres who are far too casual about this aspect of the examination with the result that scripts arrive badly creased.

It would be much appreciated if Invigilators in Centres where candidates use draughting or sellotape for the temporary fixing of paper to the drawing boards, could take steps to ensure that the tape is removed prior to placing in the plastic envelopes, since a number of scripts arrive 'welded' together and frequently prove difficult to separate before marking can commence.

Once again it is disappointing to note that several Centres continue to disadvantage their candidates by supplying A3/A4 sized paper. The main question for this examination is designed for an A2 sheet and the smaller sizes of paper do not allow sufficient room for all the views to be positioned on the sheet.

Examiners would encourage all Centres to ensure that their candidates read the rubric carefully before starting to draw their solutions. A number of candidates continue to fully dimension their answers thereby losing valuable time that would have been more beneficially spent on other details of the examination.

Whilst not common, Examiners would advise Centres to discourage the use of ink/ball point pen for any aspect of this examination. In addition candidates should be encouraged to use the correct techniques rather than masking with coloured pencils/crayons or resorting to shading practices that do not enhance a candidate's prospects in this examination.

Comments on specific questions**Section 1****Question 1**

It is always a source of amazement as to why so very many candidates resort to the use of instruments for this question. Regrettably many candidates lose marks by such practices when it is clearly stated that candidates will be heavily penalised for such actions. Centres are requested to stress to their candidates, yet again, that a freehand solution will always outscore an 'aided' answer.

- (a) The majority of candidates were able to produce the required views. However, in many cases, hidden details were generally omitted or incomplete.
- (b) Why dimensioning should prove to be so problematical is surprising, particularly when candidates have only to refer to Fig. 2 as a reference. Unfortunately by not conforming to BS308/PD7308 recommendations many candidates lose most or all of the marks allocated for dimensioning. Many candidates also lose valuable time by fully dimensioning views. Maximum marks for dimensioning were awarded for a single correctly applied dimension of the five types specified.
- (c) It was clearly evident that many candidates were unfamiliar with a parts list which should have been along the lines of:

5	GRUB SCREW	NICKEL STEEL	1
4	SPRING	MEDIUM CARBON STEEL	1
3	CAP	BRASS	1
2	CUTTER	MEDIUM CARBON STEEL	1
1	BODY	PLAIN LOW CARBON STEEL	1
REF	NAME	MATERIAL	NO. OFF

Section 2**Question 2**

It is pleasing to note that apart from the weaker candidates, the assembly of the various parts proved to cause few problems. Unfortunately a handful of candidates failed to position the fork as specified preferring to offer a solution where it was drawn at 90° to that set.

- (a)(i) Generally correctly assembled by the majority of candidates. Regrettably many lost time, and therefore marks, by including hidden detail that was not required or sectioning their answer. The majority of candidates scored well on this view.
- (ii) The most complex of the three views requested and consequently there were more errors from the weaker candidates. The most common were:
- Failure to section the view.
 - Omission of Bushes.
 - Spindle positioned with the 16 mm diameter on the left hand side of the view. The two grub screws were missing.
 - Pulley drawn as a solid disc without the four lightening holes.
 - The M20 nut inappropriately proportioned, that is not as recommended by BS308/PD7308.
 - Due to the stepped cutting plane the upper and lower remaining portions of the fork should not have been connected by the 12mm thick curved arms of the fork.
- (iii) The plan view caused few problems although many candidates omitted the M20 nut and/or visible portions of spindle, fork and pulley. Unfortunately a number of candidates failed to position the plan in projection with the front elevation. Others because of their A3/A4 sized paper resorted to drawing the plan on a separate sheet or on the back of the other views. Since the plan was not correctly placed these candidates were penalised.

- (b) The title stated should have been Swivel Pulley. Machine and/or Engineering Drawing or GCE O Level were inappropriate answers and not awarded marks.

The scale should preferably be stated as a ratio, i.e. 1:1, although Examiners also accepted full-size.

A projection symbol was requested and expected to indicate first or third angle projection. A written statement agreeing with candidates' solution was awarded no more than half marks.

Other aspects of the drawing where candidates can enhance their marks include:

Centre lines	Long/short chain lines drawn slightly lighter than outline of views.
Section lines	Hatching of areas other than nut, washer, spindle grub screws and webs. These hatching lines to be light and uniformly spaced, closer together and sloping to left and right for adjacent surfaces.
Section	Two arrows at end of chain line on front elevation should have indicated position of section and the direction in which it was viewed. Underneath (ii) , the sectional view should have appeared the printed statement section on SS.
Draughtsmanship	Although most of the marks are awarded for a candidate's understanding and interpretation of the question. It is never the less worthwhile for candidates to work neatly and accurately since these aspects of drawing are also rewarded with marks.
Fillets	Either drawn neatly freehand or with aids also scored higher than solutions left with square corners.