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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

Similar general comments as the past years.

Some candidates do not give both their name and examination number on their answer papers.

Certain Centres are allowing the candidates to use more than one piece of drawing paper, that is not using both sides of the paper. The examination questions are designed to fit on to one side of the A2 paper. Various sizes of paper are being used from A3 to larger than A2.

It is essential that the candidates read the instructions on the front of the Examination Paper.

Many candidates spend time dimensioning their answers. It clearly states in the instructions that dimensions are not required.

Geometrical methods must be used for the solutions, unless otherwise stated, and all construction lines must be clearly shown.

Candidates are instructed to answer five questions, not more than three questions to be answered from one section.

Some candidates answer *four* questions from **Section 2**.

Comments on specific questions

Section 1

Question 1

- (a) The construction of the pentagon was not attempted by many Centres. The angle was calculated for the corner of the pentagon, or the size and shape of the pentagon was drawn without construction.
- (b) Conversion of the area of the pentagon was either very well done or the rectangle was drawn without any construction.
- (c) Where attempted, the conversion from a rectangle to a square of equal area was well done.

Question 2

A popular question, but many candidates failed to indicate the points of tangency, or the centres for the constructed blend radii. The construction for the tangent to two circles was frequently omitted. A straight line was drawn for the required tangent.

Question 3

A common mistake was to step off the chordal distance on the centre line of the rolling circle instead of the circumference of the 60 diameter. Another common mistake was to divide the 60 diameter into 12, to give the position of the rolling circle. Many candidates drew a cycloid, others drew a helix.

Section 2

Question 4

This question was generally well answered by the majority of candidates.

Question 5

Most candidates did not construct the octagon to obtain the sizes of the side in the required views. Very few candidates attempted the development of the octagon.

Question 6

A popular question, but generally poorly answered. Many candidates were unable to construct the required conic sections.

Question 7

Most candidates redrew the given views and very little more. Some candidates projected an auxiliary plan instead of the elevation. The majority of the candidates did not attempt the second auxiliary plan. The second auxiliary view has now been removed from the syllabus.

Question 8

A very popular question, but poorly answered. Many candidates were unable to visualise the plate in the space between the X and Y axes, consequently they were unable to determine the true lengths of the sides or the true diagonal distances of the plate.

No candidate found the true distance of the mid-point of the plate from the X Y line.

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

General comments

The wide differences in quality and quantity of work submitted by candidates varied considerably between Centres. The better candidates entered for this examination produced work of a pleasing standard that was a credit to them and their Teachers. However there were other scripts that consisted simply of a named plain sheet of cartridge paper or one or two unrelated lines. Far too many candidates at the lower end of the spectrum made no attempt to answer the questions, but simply copied the Examination Paper. Entering candidates with such limited proficiency is considered questionable.

Examination officers/invigilators are to be congratulated for the correct parcelling of scripts, this ensures that the scripts are delivered to the Examiner in mint condition.

Although far less than in recent years several Centres continue to disadvantage their candidates by supplying unsuitable paper. Very thin detail or shiny photographic card causes more problems for candidates than the recommended cartridge paper that Centres are expected to supply. Those candidates issued with A3 sheets cannot position all the views required for **Question 2** onto a single side, since these views are therefore drawn on different sheets or sides and not projected. Centres are advised that such scripts only score for the best view, the other views being discarded for examination purposes.

It is important that candidates read fully the rubric and all the questions before commencing drawing. Considerable time is lost by candidates fully dimensioning or placing dimensions on all views with the result that many fail to complete the Paper and consequently lose marks.

Comments on specific questions

Section 1

Question 1

Attempted by all but a handful of candidates. Several candidates wasted time and ultimately marks by including a freehand copy of Figure 1.

Other common errors :-

- (a) Surprisingly, many candidates failed to answer the question correctly, submitting instead an assembled orthographic projection of the complete Die Holder rather than the details separately as specified in question. Centres need to ensure that their candidates are aware of the importance of reading and re-reading the questions before commencing drawing.
- (b) Failure on the part of candidates to realise that two differing views convey more information of the Die Holder, Lever and Mandrel and were therefore preferable to two very similar and/or identical ones.
- (c) Marks were lost by candidates not including the hidden details of Die Holder as requested.
- (d) The parts list expected should have been along the lines indicated below :-

REF	NAME	MATERIAL	N0. OFF
1	DIE HOLDER	PLAIN LOW CARBON STEEL	1
2	LEVER	PLAIN LOW CARBON STEEL	1
3	MANDREL	MEDIUM CARBON STEEL	1
4	GRUB SCREW	NICKEL STEEL	3

- (e) It was very disappointing to note that the majority of candidates attempted to enhance their sketching by the use of instruments prior to lining in freehand. Such practice is readily detected by Examiners and heavily penalised. Centres should ensure that candidates develop their freehand sketching skills rather than resort to questionable practices.
- (f) Clearly it would benefit the majority of candidates if Centres were to devote more attention to dimensioning. Far too many candidates at present fail to follow the general principles of dimensioning given in the BS 308/PD 7308 standards, a copy of which should be available in all rooms where candidates are being prepared for this examination.

Section 2

Question 2

- (a) Pleasing to note that the majority of candidates assembled the Swinging Arm Jig correctly. A very small number of scripts showed the eye bolt lying horizontally rather than vertically as specified, and there were several Swinging Arms open rather than in the closed position.
- (i) Failure to section the elevation and/or include all the details were the principal errors in this view. The elements most frequently omitted from the view were the Work Piece and M10 Bolt.

- (ii)** The plan view was frequently incomplete with many solutions consisting solely of the Body. Regrettably with the majority of these solutions the candidate had lost much valuable time by including a side elevation that was not required and which therefore scored no marks. Fully dimensioning the sectional front elevation (a) was the other principal factor preventing a number of the weaker candidates from completing this plan view. Unfortunately these dimensions, although often well done, did not score, and the time would have been more profitably spent on answering a part of the set question. Time spent by Centres ensuring candidates realise the importance of vigorously reading the questions before commencing to draw is essential if their candidates are to be successful.

- (b)** Whilst there was a pleasing increase in the percentage of candidates lining up views and ensuring they were in projection, many unfortunately continue to omit the title block, the title, the scale used and even more the projection symbol.