

# METALWORK

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## GCE Ordinary Level

<p>Paper 6040/01 Theory, Drawing and Design</p>
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### General comments

As there were so few candidates, it is very difficult to generalise. However, most of the scripts were of a reasonable standard particularly with **Section A** Theory, but **Section B** Drawing and Design mainly found the candidates lacking the ability to solve the design problems.

In **Section A**, candidates produced better sketches this year which resulted in higher theory marks; essay type answers are often inappropriate when a clear, annotated sketch rapidly conveys most of the information that is needed. Unfortunately, this higher standard was not carried through to **Section B** where the freehand sketching failed to supply sufficient detail.

### Comments on specific questions

#### Question 1

This was a popular question which produced a reasonable response.

- (a) Answers were too vague and generalised e.g. most answers concentrated on colour alone while other properties were usually neglected.
- (b) Some candidates believed that all the metals would melt, again revealing a lack of knowledge about the properties of metals.
- (c) There was an excellent understanding of the uses of metals.
- (d) The meaning of case-hardening was well known but not the reason for its application.

#### Question 2

Although this was not a very popular question, it was well answered.

- (a) A fair knowledge of turning procedure was shown but answers lacked depth.
- (b) Well answered with clear diagrams.
- (c)(i) This was very well answered with good sketching.
  - (ii) The danger of using a tool designed for cutting aluminium on brass was not recognised.

#### Question 3

A popular, well answered question.

- (a) A sound knowledge of the correct marking out tools was shown.
- (b) Rather than showing how to set the odd-legs to 15mm, some candidates mistakenly showed how to draw the centre line.

- (c) Again a mixed response. Some candidates drew a clear diagram showing the unbent bracket supported by packing and held in a machine vice; others misread the question and showed how to mark out the holes.
- (d) Some excellent answers, but some candidates made no attempt at all.
- (e) Generally very well answered.

#### Question 4

A popular question with fair to moderate answers.

- (a) Reasons for using fillets and providing a good surface finish for the pattern were, surprisingly, almost unknown.
- (b) A good knowledge of safety procedures was shown but some candidates lost marks by repetitious listing of protective clothing.
- (c) Few candidates had the slightest idea why the moulding sand would not bind together, but the difficult pattern removal was very well answered.
- (d) Little understanding of why the surface of the casting was rough, but the reasons for the misrun were well known.

#### Question 5

Not a very popular question but it was reasonably answered.

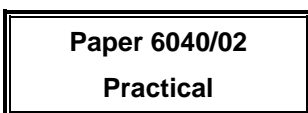
- (a) The problems caused during soldering and drilling were understood but the causes of the other difficulties were unknown.
- (b) Candidates could give a sensible, well illustrated answer for one method of joining the rods together but not for a further method.

#### Question 6

All the candidates found the design problems too taxing for them. There was a moderate response to the securing of the fence to the table, although the 0-80 adjustment was poorly conceived. The simple problem of reducing the 50 diameter hole was very poorly answered while the method of ensuring steady pressure of timber to fence met with a nil response. Sketching was generally clear but no candidate made any reference to materials or joining methods. Therefore it appears that candidates have had insufficient practice in solving design-based problems particularly when the response to **Section A** was so much better.

#### Question 7

Drawings were mainly incomplete or in the wrong projection, again revealing a lack of practice in drawing techniques. Considerable marks will always be lost unless this important part of the syllabus is given more attention.



#### General comments

As in previous years there was a very small entry for this syllabus. Comments in this report will remain general but the standard of work was very good and of a similar standard to the previous year.

## Comments on specific questions

### **Part 1**

This was well done.

### **Part 2**

This was also well done with candidates first shaping and then drilling accurate holes. The bends were on the whole very good and bent accurately to 90°.

### **Part 3**

This was well made with the cutting and shaping scoring good marks.

### **Part 4**

This was prepared prior to the examination.

### **Part 5**

This was very well done with both ends having an accurate 45° chamfer and also an accurate internal thread cut.

### **Part 6**

This had a long external thread to cut and this was generally well done.

## Assembly

It was pleasing to see candidates achieving a good standard of made product. **Parts 1, 2 and 4** were accurately drilled and so it was easy rivet the parts to assemble the spanner. It may be that candidates need more instruction on the soldering techniques required as this was the least successful part of the examination.