

# DESIGN AND TECHNOLOGY

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Paper 6043/01

Paper 1

## General Comments

Overall the performance of candidates was a little low, with many scoring single marks in some questions. However, most candidates had a real understanding of the safety hazards and equipment in a workshop situation, as demonstrated by answers to **Question 17**.

Process questions still cause candidates problems, and often lack real detail. Terms such as 'I marked it', 'it was cut', 'glue it', are too brief, and must detail the tools or equipment being used to gain maximum marks.

A number of candidates failed to read questions correctly, spending a great deal of time and energy answering the wrong question.

Graphics continue to improve and are used to good effect.

**Section A** was quite well attempted with only **Question 10** showing a lack of understanding. **Question 17** proved to be the most popular question with candidates, with **Question 14** a close second. **Question 18** proved the least popular.

## Comments on specific questions

### Part A

#### Question 1

This was not well answered, with many candidates failing to understand workshop testing of plastics. Only the better candidates suggested heating, cutting, scratching, etc.

#### Question 2

This question was quite well answered, but many incorrectly named the toolmaker's clamp as an f-clamp. The use was well explained.

#### Question 3

About half the candidates correctly explained the term 'K.D. fitting' as Knock Down, and its use in quick assembly furniture.

#### Question 4

Most candidates scored well on this question, giving reasons such as absorbs shocks, heat insulator, lightweight, etc.

#### Question 5

This was a well answered question, with most candidates able to state how a shape is formed by the given three methods, lamination, blow moulding and casting.

#### Question 6

There was some very good sketching of the two fittings. However the hexagonal bolt did cause some problems; in some cases it was drawn as a nut.



### Question 7

Most candidates were able to name a suitable cutting tool such as a coping saw. However a number were unable to explain the use of tape on the plywood surface, to prevent splintering.

### Question 8

This was another well answered question with reasons such as wide range of colours and designs, heat and stain resistant, hygienic, etc.

### Question 9

There was a wide range of wood adhesives correctly given in the answers by candidates – scotch, casein, PVA, epoxy, resin, etc.

### Question 10

Very few candidates gave the correct definition of 'swarf', and those that did used the drilling machine as an example.

## Part B

### Section 1 – Tools and Materials

#### Question 11

There was a very mixed set of answers to this question, with some excellent responses to the three tools while others showed a real lack of understanding.

- (a) The better candidates were able to correctly identify the three tools and give real valid uses.
- (b) Again, good candidates were able to explain this section apart from part (ii), the application of leverage when using pincers.
- (c) This question produced some very mixed responses, with most getting the sketch of the forge tongs correct, but failing to show the correct tap wrench. Quite a number of candidates incorrectly sketched a die holder.

#### Question 12

This was quite a well answered question.

- (a) Most candidates were able to explain the purpose of using abrasives, correctly giving cleaning, removing scratches, removing marks, smoothing.
- (b) All candidates seemed well able to state an abrasive for the materials given.
- (c) A number of candidates just sketched the two items and missed out the depiction of the abrasive wrapped around the file and block.
- (d) Very few candidates demonstrated understanding of how abrasives can restore tools such as the blunt chisel or chipped screwdriver.



### Question 13

This was a very popular question with candidates but not well answered.

- (a) A good response by candidates to this first section with most able to give a valid reason for selecting and rejecting each material.
- (b) Many candidates did not read the question correctly. It asked them to 'name and sketch the tools' in the processes, but many gave long written explanations with no drawings at all.
  - (i) The popular method used to join the parts was an adhesive; however few named the correct type of adhesives for the materials chosen or showed how it would be applied.
  - (ii) This question produced some excellent sketches of the set-up for drilling the finger hole, with the clamp or vice shown, waste support, drill machine, tank cutter.
  - (iii) Once again there were some excellent drawings from better candidates, showing the set-up for cutting out the shape.

### Section 2 - Processes

#### Question 14

This was another popular question.

- (a) A wide range of materials were suggested and reasons given. Only MDF board was impractical and gained no marks.
- (b) The best answers involved making the door stop by injection moulding or sand casting. Well explained sectional drawing with lots of detail scored highly. Those that tried to make the door stop from solid material failed to explain many areas of construction and in some cases missed the peg out altogether.
- (c) (i) Some interesting designs for decorating the peg were proposed.
  - (ii) However some candidates tried to carve the difficult shaped item by holding it in the hand. Most suggested using paint, and applying it to the surface with a brush or spray.

#### Question 15

This was another popular question with candidates, but again many were let down by poor detail.

- (a) Only a few candidates attempted this section, and those that did changed the question to welding which is a different process to brazing.
- (b) A number of candidates appeared to not read the question correctly. A large number described cutting and preparing a rough piece of timber, followed by pages of marking out joints just with a pencil and ruler. When it came to cutting the joint the detail was missing.
- (c) This was the best answered part of the question, with most candidates able to describe the acrylic bending and joining process in real detail.

### Question 16

This was quite a popular question but again let down by poor process details.

- (a) Most candidates were able to give a valid material for the rack with a screw or rivet as the means of joining the arms.
- (b)(i) Most candidates just gave a pencil and ruler as the means of marking out, few work from centre lines, etc. Some better answers did mention marking gauges, odd legs, dividers, engineers square, etc.
- (ii) Once again the cutting out of the shape lacked real detail, such as a method of holding, the tool used, waste protection, suitable cutting tool, etc.
- (c) Most candidates suggested drilling a hole; better candidates made a shoulder on the peg to give extra support. Others used a screw system applied from the rear of the arm.

### Question 17

This was the most popular question on the paper that was very well attempted.

- (a) Nearly all candidates were able to describe a workshop process and the hazard involved.
- (b) Once again candidates were able to identify most, if not all, of the precautions and equipment needed to overcome the dangers.
- (c) This part showed that most candidates are very well trained in safety awareness when in the workshop, with some excellent answers on personal clothing, appearance, and behaviour.

### Question 18

This was not a popular question with candidates.

- (a)(i) Not a well answered section. Many candidates failed to realise that the two boards needed to be worked as a pair, and were too large to be drilled on a drilling machine. The best answers supported the work on the bench with waste support.
  - (ii) There was poor detail on how the spacing bars would be set out ready for joining. Most candidates just suggested nailing. A method of getting the bars to be equally spaced from each others before fixing was required.
  - (iii) Mainly poor answers were given here, with little explanation of building up the leg support or how it could be done by injection moulding or casting.
- (b) The main method suggested for catching the loose discs was a tray of some sort, which pulled or hinged out.

### Conclusion

Once again a large increase in the numbers taking the examination, which is tending to give a much wider spread of marks. As stated last year poor descriptions in simple processes such as marking out, drilling a hole, cutting a joint, are letting candidates down. Tools, equipment, and materials should all appear in the answers. Sketching and graphics continue to improve but must be applied to the correct answers. Much more care should be taken when reading the questions so that time and effort is not wasted on work not needed. As stated earlier health and safety seems to be very well covered by all centres and this is to be commended. Casting and injection moulding are processes that continue to be well understood and described. Wood continues to be filed and acrylic centre punched.

One area that centres should address is the use of additional drawing paper for candidates. Many of the drawings are not numbered and the order is not clear. Sometimes an additional answer is found on a small section at the rear of a drawing sheet after marking. Candidates could well lose out on marks with this practice, and should label their drawings and sketches clearly.

# DESIGN AND TECHNOLOGY

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**Paper 6043/02**  
**Design Project**

## General comments

Candidates interpreted the theme **Sports** in a variety of ways with the whole range of different sports and aspects of sporting activities considered. Interesting outcomes included: folding goal posts; golf bag; trophies; fishing equipment; fencing sword rack; ball collectors; ball servers; first aid kit; cycling accessories; training aids; weather protection; exercise machine; adjustable training bar etc.

The majority of design folders were set out well and tended to follow the order of the assessment criteria. This together with an accurate list of contents helped the process of moderation.

Most candidates had clearly become very involved and interested in their Design & Technology Project resulting in some work of an extremely high standard.

## Comments on Individual Assessment Criteria

### **The Folio**

#### **General Analysis of Topic**

Generally, candidates made a thorough analysis of the sport theme and this resulted in a range of potential design problems in most cases. Candidates seemed to have few problems linking the theme to their own experiences and this gave the work more meaning.

#### **Design Brief and Specification**

Most candidates wrote a clear brief and this left no doubt in the readers mind as to the direction of the project. It is pleasing to report that specifications are becoming more focused with sound qualifications and there are fewer cases of generic statements being used such as 'Must look good.'

#### **Exploration of Ideas**

Most candidates had a good balance between sketches and annotation with ideas containing appropriate detail so that the design thinking could be followed. Some candidates were very creative indeed, giving themselves the opportunity to consider a whole range of different design ideas. These candidates deserve be congratulated on the quality and variety of their ideas.

#### **Detailed Development of Proposed Solution**

There were some very good examples of candidates considering all aspects of form, materials and constructions in the development of their chosen idea. These choices were supported by sound reasoning indicating that candidates had a good knowledge and understanding of those aspects of Design & Technology.

This section should conclude with some form of working drawings from which a skilled person could make the artefact.

#### **Suitability of Chosen Materials and Constructions**

High marks can be awarded in this section only where candidates have given sound reasons for their choice of materials and constructions in the previous section.

## **Production Planning**

There is no need for candidates to describe in detail the basic stages of manufacture such as marking out and preparation of materials. However, they should set out the more complex tasks or any processes that are new to them.

This should be alongside an overall sequence plan so the order of important stages is clearly set out. In some cases this was linked to specific dates and indicated where the schedule had not been met. This section of folios must not be a record of what has already happened but a plan of what will happen as the making progresses.

## **Communication**

The standard of drawing and other communication techniques was very high indeed and folders were generally neat and easy to follow. Candidates had clearly paid particular attention to this aspect of their work and should be congratulated on the successful outcomes.

## **The Artefact**

### **Suitability of Proposed Solution**

Most artefacts appeared to function successfully and there were few examples of unfinished work. It is important that Centres use the full range of marks where appropriate so that fair discrimination between candidates can be maintained.

### **Workmanship**

There were examples of some very high quality products indeed indicating that many candidates have developed sound making skills. It is reassuring to see that candidates can be discerning in this respect so that outcomes are well finished and operate as intended.

Some products were indeed innovative, indicating that these candidates had achieved much from their Design and Technology course of study

Photographic evidence of artefacts was as required by CIE and this was very helpful to the Moderator.

## **Evaluation**

As has been observed before, this section of design folders continues to improve indicating that candidates now have a better understanding of the importance of real testing leading to meaningful evaluation. Most evaluations took account of the original design specification and these were considered carefully and given objective comment.

Where candidates observed faults in their designs then modifications or alternative approaches were normally suggested.