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ASSESSMENT and QUALIFICATIONS ALLIANCE

Report on the Examination

Design and Technology:
Graphic Products

- Full Course
- Short Course

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Design and Technology: Graphic Products

General

- There was evidence that centres had used the preparation sheet as intended, however knowledge of the stages in vacuum forming was at best confused despite several pointers on the Preparation Sheet.

- As in previous years many centres continued to prepare candidates well for the designing questions on the paper and the quality of such sketches continues to reflect credit on students.

- Unfortunately many candidates adding unwanted text to their designs which detracted from otherwise acceptable solutions. Candidates must be warned against such unnecessary and unwanted elaboration. It was not asked for. It wastes time that could be better spent on other sections of the paper.

- When written responses were required some candidates persisted in offering one-word answers. These rarely provide sufficient knowledge for full marks to be awarded. Some candidates did not give reasoned responses even when specifically asked to do so.

- Many candidates failed to connect their response to the context in which the question was set and generalisations were offered, which were frequently outside the context or sometimes even outside this particular Specification and so could not be rewarded.

- Centres are reminded that while the Preparation Sheet provides the focus for many of the 'themed' questions; questions can and will be set which draw from the whole Specification. Candidates should be prepared for this. For several years questions requiring subject specific knowledge have been asked and generally poorly done. Also, the Principal Examiner is permitted to re-visit topics which have been poorly attempted in recent papers e.g. British Standards, scales, new materials.

Full Course

Tier F

The paper was generally well attempted with most candidates having the opportunity to demonstrate their skills and knowledge. The time allocation was adequate; the majority of candidates completed the paper.

Much of the 'graphic' design work was good with several graphic techniques well applied.

As in earlier years some candidates did not demonstrate 'subject specific' knowledge in particularly dimensioning conventions and CADCAM processes.

Most candidates were properly equipped for the examination, usually with a range of coloured pencils. A few persisted in using 'felt tip' pens with the associated problems of tonal control, bleeding and inaccuracy.

The quality of written communication continues to present examiners with difficulties. Imaginative spelling, poor handwriting or lack of appropriate punctuation makes the interpretation of work for from straightforward. Where ever possible credit was given if some understanding can be deduced.

Question 1 – Representing Data

This question was, in part, aimed at settling the candidates into the examination and was successful. As candidates were able to draw the bar chart successfully by correctly translate the given figures into graphical form.

(a) Most candidates were able to draw the bars to an accuracy of +/- 1mm.
(b) Well answered by candidates equipped with coloured pencils, hatching was accepted. It was expected that all rendering / hatching must be within the 'bars' for maximum marks. This was where marks were sometimes lost. Felt tip pens frequently proved inaccurate.
(c) All candidates correctly completed the key.

Question 2 - Designing

This was well attempted by the majority of candidates and many gained high marks. However, too often time and effort was miss-spent thinking up promotional slogans and additional text for the package, which was not required. These frequently detracted from the designs and sometimes prevented full credit being awarded.

Box 1: Mountains
Most candidates presented three variations based on the idea of mountains. Some were most imaginative and if a 'mountain' connection could be deduced e.g. alpine sports, waterfalls, pine trees, credit was given.
In this ideas generation stage neat coloured drawings were not required. Appropriate sketches, an indication of colour and annotation adequate to communicate the design was all that was wanted.
Colour could be indicated either by annotation or application, both were acceptable in this question. Many candidates spent too much time generating presentation quality drawings. Some candidates offered three decorated outline panels and this was acceptable on this tier.

Box 2: Development of a Logo
While many candidates offered a development of a logo based on the letters A1C many presented a single design and that in single pencil line. These could not access the full mark.

Box 3: Embossing
Poorly understood by most candidates who showed a general lack of understanding of this printing finish. This box was often left blank. When understood, it was usually appropriately applied either to the logo or to the mountains.

Evaluations tended to be either labels or descriptions. Most lacked a critical perspective.

Question 3 - Presentation

In this question the candidates was expected to demonstrate their graphic skills by completing a presentation drawing. Most score over 50% of the marks available.

(a) The majority of candidates used the given starting point to draw the top panel of the box. However, accurate measuring was often lacking. Most candidates produced a drawing with a 'landscape' orientation although 'portrait' was equally acceptable. Weak candidates attempted variations of isometric and perspective.

(b) This section was well done by the vast majority of candidates, who were able to use the specification and demonstrate high quality drawing skills. The line quality, knowledge of layout and use of space was usual good. Colour was often very simple block colouring with only a minority providing the higher skills of tonal control, texture etc.
A few candidates made successful use of 'metallic' ink pens to enhance their designs and imply a metal foil effect. Felt tip pens rarely proved successful. Graphic liner pens were popular.

(c) Many candidates scored well in this section, but some answers referred to information which would be printed on the top panel of the sleeve e.g. fragrance, price.

Question 4 - Manufacturing

Overall, this question was not well answered despite being indicated on the Preparation Sheet.

(a) Many candidates could not correctly identify thermoplastics as the group of materials used for vacuum forming although many could name specific thermoplastics, PVC and polystyrene were the most popular.

(b) This was poorly done. A general lack of knowledge of the process was evident with many candidates merely repeating the given stages or totally ignoring this section. Many candidates failed to appreciate that the platen rose up into the plastic material and caused it to drape over the mould.

(c) A few candidates knew why the mould's sides are tapered, many were confused and were rewarded according to the merit of their answer.

(d) A very poor understanding of quality control was evident and how it could be suitably carried out on the vacuum formed trays. Successful answers related to the needs of the customer or end user and a visual inspection was a popular checking method.

Question 5 –Enlargement & British Standards

This question was popular with many candidates successfully completing the enlargement only to miss out on its dimensioning.

(a) The enlargement was well done, true, neat and accurate. The drawing of the hole was less well done with its position and diameter frequently outside the reasonable tolerances.

(b) Again dimensioning was poorly done. This continues to be the worst scoring section on the paper. A large number of candidates did not even attempt this section even though it is clearly stated in the specification and has been on every paper in recent years. Some examiners reported that there is evidence to suggest that some centres are covering British Standards as all their candidates scored highly.

(c) Only a small minority scored a mark on this section. A common response was 9:8, referring to the squares on the grid.

Question 6 – Materials

Most candidates attempted this question with varying success. Many failed to keep their answers within the context of the question and offered only vague generalisations instead.

(a) Many candidates did not have a basic understanding of the properties of graphic product materials and their uses in Design and Technology. Terminology was poor with the frequent use of one word answers e.g. light, cheap. Some candidates attempted a 'shot gun' approach by repeating the same reason or word for all five materials. Both these approaches failed to impress the examiners and should be avoided in the future.

(b) The majority of candidates demonstrated only a fundamental knowledge of how the thermometer works and the role of the thermochromatic ink in it. This new, smart, material was introduced into last year's paper and it was hoped that centres would have covered these materials in their preparation.

Many candidates either compared the use of this thermometer with the traditional glass one or described how this new design was used rather than explaining the position of the coloured line and how it became visible due to body heat. Marks were awarded in proportion to the understanding of the function of the new material in the forehead thermometer.

Question 7 – CADCAM

Generally well answered with a knowledge of CADCAM clearly evident.

(a) Most candidates were able to illustrate the given main stages in designing and making the backing card of the blister pack using a CADCAM system. Although few realised that in the third stage the original design (from stages 1 and 2) had to be copied and pasted to give a total of three shapes on one piece of A4 card.

(b) Most responses referred to accuracy, speed, quality of work or ease of changing designs and were suitably rewarded. Unfortunately one-word answers were common and rarely offered an adequate explanation, which was necessary for both marks.

(c) Mixed responses with some good, acceptable and relevant advantages explained. However, many candidates forgot the context of 'batch production' and wandered off into the 'unemployment' and monetary costs.

Question 8 – Environmental and Social Issues

This question was well answered with many high or perfect scores recorded.

(a) This was generally well answered. Most candidates were able to explain why air fresheners are contained inside sealed packages. Fragrance leakage and tamper proofing being popular responses. Again, many candidates failed to keep to the context of the question and offered reasons that related to display or customer appeal. Marks were awarded accordingly.

(b) (i) A disturbing number of candidates thought that the transparent material used for packaging the car air fresheners was made from a renewable resource. Those who did correctly identify it as a non-renewable resource material frequently failed to give a reasoned explanation based on plastics, oil and its finite availability. Many answers offered its potential as a recyclable, reclaimable or reusable resource. Marks were awarded according to the correctness of the answer to the context of the question.

(ii) Many responses referred to generalisations such as global warming, pollution or dangerous gases and did not specifically focus on the long-term effect on the environment e.g. unsightly litter, biodegrading, and dangers to children and animals.

(c) This was well answered. Most candidates did draw a symbol that effectively conveyed that a package contained 50% recycled materials. Green, wide arrows, in a 'cyclic' form with the proper number were in ample evidence although multicoloured images and the omission of the percentage sign prevented some candidates from accessing top marks.

(d) Again, this question was well answered although some candidates confused recycled with reused and refilled. Some responses also strayed away from paper and board into other materials. One-word answers did not access the full range of marks.

(e) (i) There was wide a spread understanding of the need for virgin materials for food packaging and candidates were familiar with the need for hygiene and dangers of contamination.

(ii) Most candidates correctly identified litter from food packaging as an unwanted effect on the environment near a 'fast food' shop. A full explanation was required for both marks. One-word answers were inadequate.

(iii) A good response that linked symbols and signs on the package to caring for the environment.

Tier H

The majority of candidates attempted all the questions very few did not complete the paper. Design work was often excellent with high graphic skills well applied.

As with Tier F candidates did not show adequate 'subject specific' knowledge and this frequently prevented the higher marks range being accessed.

Poor spelling, grammatical errors and slovenly handwriting were not directly penalised but often prevent the candidates from clearly explaining a desired point or describing facts and processes. Despite the efforts of the examiners marks could not always be awarded because of confusion or lack of clarity caused by these weaknesses.

Question 1 - Representing Data

A well-answered question, full marks were frequently awarded. The format permitted the drawing of either a normal bar chart or a single column bar chart. Both were acceptable.

(a) Most candidates achieved the required accuracy. On the rare occasion where there was some lack of precision it usually related to the 25% and 15% divisions.

(b) Colour was well applied often with good tonal control. Few examples of hatching were evident.

(c) All candidates correctly identified the appropriate 'bars' on the chart. However, some candidates omitted to complete the vertical scale.

Question 2 – Manufacturing

(a) Most candidates could name a thermoplastic used in vacuum forming. Many were given and providing they were available in sheet form they were accepted. Popular answers included acrylic, PVC and polystyrene.

(b) This was not well understood. Many candidates were familiar with the appearance of a vacuum former machine and could, generally, describe the basic operating sequence without knowing what happened inside or, more importantly, why.

Question 3 – Designing

This was well understood and well answered with many scores in the higher range.

- Most candidates presented three ideas based on mountains. Diversity and ingenuity were frequently evident. As with Tier F related themes were accepted if clearly related to 'mountains'. Unfortunately many ideas were not developed even though this was stipulated in the question. Marks were therefore self limiting.

- Colour was usually added to these sketches. Sometimes much time was spent producing rendering of high quality when only an indication was wanted on these formative drawings.

- Some candidates did develop a logo based on the letters A1C, but many were content to present only one, or sometimes several discrete and unrelated ideas. These could not achieve the full mark.

Time and effort was often misspent by candidates who produced unwanted text, messages or images that were not included in the box's specification. Marks were not deducted for this but if carried on to the presentation drawing could detract from the final impression.

- A range of print finishing effects was applied to the designs. Some candidates included several effects. Embossing and laminating were the most popular. The use of technical vocabulary sometimes marred the annotation but if understood by the examiner some credit was given e.g. 'bumped up' for embossing, shiny for varnishing. Some candidates were able to explain why their chosen effect was appropriate for their designs most simply labelled the effect.

- Evaluation was rarely critical and objective. Most was descriptive, self congratulatory or in a few cases simply labels.

Question 4 –Presentation and Consumer Information.

Ideas generated in Question 3 were expected to carry through on to this presentation drawing. This was the best-answered question on the paper with many candidates being very successful and scoring high marks. Generally the designs were imaginative and well presented. Over elaboration, text and promotional slogans, detracted from the worth of many drawings.

(a) (i) The specification was well applied. Unfortunately a few candidates altered their designs from the sketches on the previous sheet.

(ii) Drawing skills were well done with candidates recognising the need for quality line work. Evidence of faint ruler generated pencil construction lines contributed to successful drawings. The use of fine liner pens appears to be increasing for enhancing line work.

(iii) The formative ideas were well transferred with only minor modifications. Very few were completely redesigned. Many candidates were unable to illustrate their chosen print finishing effect. Techniques that conveyed laminated, or varnished surfaces were rarely correctly applied. An embossing effect was slightly more successful.

(iv) Symmetry, balance and alignment were frequently displayed. Many candidates of all abilities insisted on including additional text to the layout often to the detriment of the overall layout.

(v) Much good work was evident. When pencil block colouring was applied it was done to ensure a regular, even and consistent covering. Tonal rendering was also of a pleasing quality. Water based felt pens, with all their inherent difficulties, were fortunately rarely used.

(b) A good deal of guesswork was presented here with many semi-correct explanations. Successful answers included explanations of stock control and product code. Other suggestions were rewarded on merit. Weaker candidates attempted slight variations of the same basic response. Double rewarding is not permitted.

(c) Many candidates correctly identified the drawing in part (a) as isometric but an alarming number thought it was '2-D' or even 'picture type'. Often when (i) was incorrect, candidates went on and could correctly name another type of pictorial drawing (ii), - isometric!

Question 5 –Locking Mechanisms.

Candidates were asked to consider ways of improving the given box locking mechanism. Very few successful designs were evident. Some ideas had potential but lacked the necessary detail to ensure a secure locking lid. Marks were awarded according to the practicality of the design; few maximum marks were gained.

There were many of fanciful answers involving Velcro, studs, sliders, string and additional card Simpler, successful, designed included tabs and slits on the lid that were aligned with an appropriately positioned slot in the folded edge of the base. Many candidates ignored the clues on the given lid tab and forgot about alignment.

Question 6 – Enlargements and British Standards.

Most candidates attempted this question and all were successful in some part, although dimensioning continues to be poorly done.

(a) The enlargement was accurately done with many near perfect drawings. Surprisingly the sides of the shape presented almost as many difficulties as the toes.

(b) Dimensioning to British Standards continues to bewilder the majority of candidates. There were many attempts but their relationship to published conventions left more to luck than knowledge. Examiners reported where centres had taught the basic rules the whole centre scored high, a distinct advantage over other candidates.

The scale was usually correct but common errors included 1:2 or numbers evidently based on the number of squares on the grid.

Question 7 – Materials.

Most of this question allowed the candidates to show their knowledge of those materials and components that they were likely to have had first hand experience in school. However, many candidates failed to relate their responses to the given contexts.

a) (i) The equipment was often correctly identified with the full proper names given. Correct names have replaced generic names so candidate now gave stencil, craft knife, marker pen and glue gun.

(ii) Successful candidates connected the appropriate equipment with a particular use when making the air freshener's backing card.

(b) This was well attempted by most candidates but many responses strayed away from the given contexts and general statements such as 'easy to mould' and 'bright colours' failed to gain maximum marks. A number of candidates gave a list of possible qualities with the correct response often in third or fourth position. This blanket coverage also failed to impress the examiners.

(c) As with the Tier F, many candidates simply compared the given forehead thermometer with a glass one. Some understanding of heat reactive 'inks' was evident but there were few which clear explained how a smart material functioned in this example e.g. line becomes visible and moving along the scale, reversible.

Question 8 – Computer Aided Designing and Manufacturing.

(a) This question was almost universally attempted. Many candidates identified the correct sequence but rarely accurately completed the quality control feedback loops.

(b) This was also well answered by large numbers of candidates who kept these responses to the context of batch production and avoided generalisations. References to crashing, costings and power failure dominated part (ii).

Question 9 – Environmental and Social Issues

A high scoring question that rescued many candidates. The vast majority attempted this last sheet of the paper and gained over 75% of the available marks. Thankfully one-word answers were rare.

(a) This was well answered with most candidates recognising the need for sealed containers.

(b) (i) This part of the question attempted to extract knowledge that the transparent parts of the package were plastic and made from oil which is a non-renewable resource. Its intent was not appreciated by many students, who could identify it as plastic, but then ceased to develop an explanation. Marks were awarded accordingly.

(ii) As with part (i) some candidates did not fully explain their answers. Most appreciated the effects of the different materials correctly although 'doomsday' scenarios were common.

Biodegrading is common knowledge even if some candidates thought that it applied to all plastic materials. The dangers of landfill, deforestation, global warming and visual and chemical pollution were all mentioned.

(c) Recycling images were well done. Most were based on green arrows in the form of triangles and circles. Occasionally the percentage number or sign was omitted.

(d) This question was well answered with many candidates achieving maximum marks. Reasoned responses ranged from physical properties of recycled paper and board to the economics and consequences of using trees as a resource.

(e) Another well answered question. Successful candidates were able to explain the necessity of using new materials in food packaging, identify litter as an issue and appreciated the role of the graphic designer in fostering of care for the environmental.

Short Course

Tier F

As in previous years this paper was answered well and the design work produced was of a similar quality. The most of candidates completed the paper and all achieved a degree of success. The marks achieved by most candidates were within the range 40 – 75 with a few below 30 and over 90.

Question 1 - Representing Data

(a) Most candidates gained full marks. Very few were unable to construct the heights of the bars if a reasonable degree of accuracy was applied.

(b) The quality of the rendering was generally good and within the borders of the bars. When hatching was offered it was judged against the same criteria. There were very few monochromatic solutions.

(c) A few candidates did not complete the key although the bar chart itself was coloured.

Question 2 – Designing

All candidates attempted this question, most achieving at least 50% of the marks available. The quality of sketching in most responses was adequate and the evaluation in both instances tended to be superficial. Most candidates used colour to illustrate their work. A lack of knowledge of embossing was very evident.

Box 1: Mountains
All but a few candidates accepted the theme of mountains, but some interpretations were rather tenuous with some volcanoes, rounded hills and American buttes. Alpine connects, mountain streams, snow, cable cars and fir trees, were accepted if within clear related to theme. A small minority presented a featureless coloured space rather than any discernible images. The general quality of sketching was adequate to communicate these formative designs.

Box 2: Logo
Very few candidates bothered to develop a logo. Most were content to draw one idea, usually a simple variation of the letters A1C, which could not gain maximum marks as the question required the development of an idea.

Colours were considered in both boxes, and indicated either by labels, swatches or full rendering. All candidates achieved this mark.

Box 3: Embossing
Very few candidates had knowledge of embossing and even fewer could represent it and justify its use in enhancing their design.

Evaluations lack objectivity. The majority of comments were either labels or statements telling the examiner which design the candidate preferred.

Question 3 – Presentation

This question was well done with many candidates gaining perfect or near perfect scores especially on the first two sections.

(a) All candidates used the given starting angle and landscape orientation was popular. Many constructed accurate rectangles but frequently parallelism was lost or 'square' appeared. A very small minority attempted pictorial sketches, which tended to be unsuccessful and confused.

(b) (i) Almost all the candidates successfully used the given specification. Unfortunately too many candidates took the opportunity to extend it by adding unwanted text.

(ii) Candidates produced generally satisfactory drawings. There were a few examples of quality sketches which demonstrating control and differentiation of line thickness.

(iii) Ideas from Question 2 were usually successfully brought forward and gained full marks. New designs were very rare.

(iv) Layout in most cases was effective and satisfactory composition was evident. Poor spacing and crowded layouts were rare.

(v) Rendering was generally good. High level skills of tone and shade were attempted.

(c) Many candidates scored well in this section, but some answers referred to information which would be printed on the top panel of the sleeve e.g. fragrance, price.

Question 4 – Vacuum Forming.

A poorly answered question with only a minority achieving more than 50% of the marks.

(a) There is a general lack of understanding about the types of plastic materials and the properties peculiar to thermoplastics, which make it suitable for, vacuum forming. The split between thermosetting and thermoplastics was approximately 50/50.

(b) There is little doubt that candidates are aware of the process of vacuum forming but do not understand how it is done in a school situation. The given diagram of a vacuum former is similar to that found in Technology books but many failed to correctly identify its parts.
Guessing was clearly evident from the evidence. Whereas, candidates from centres which had studied has studied the Preparation Sheet tended to gain full marks en masse.
Many diagrams were untidy with freehand leader lines often terminating in mid space reinforcing the impression of uncertainty.
Most candidates could identify the mould but the other parts were usually incorrect despite colour on the paper offering heavy clues to some.

(c) This was a popular question and demonstrated an awareness of the process even when part (b) was poorly done. Whilst the general principles were known the functional details of airtight seals, differences in pressure were not. Often the plastic sheet was said to be 'sucked' onto the mould by the vacuum pump. Very few full marks were awarded.

Question 5 – Enlargements and British Standards.

This was popular with many candidates completing the enlargement and successfully showing how an air freshener can be attached to a car's rear view mirror. Marks over 60% were common.

(a) (i) The enlargement of the outline was well done. It was usually true and accurate. Some candidates did not appreciate that it was positioned one square but still gained most marks. There were a few 'none tree' shapes offered. The hole was less well positioned, with free-hand circles of varying size and quality.

(ii) To test the candidate's knowledge only one dimension was required but even this minimum requirement complied with British Standards conventions. This topic continues to be poorly applied despite being a common feature on all papers for many years. Easy marks were available for candidates who knew the basic conventions.

Only a small minority got the scale right, a popular answer was 1:2 rather than the correct answer of 2:1.

(b) Many candidates were able to effectively show how the air freshener could be attached to a car's rear view mirror. A variety of methods were described ranging from string to glue pads. Marks were awarded according to how well the method was communicated

Question 6 – Materials.

The first part of this question allowed many students to be rewarded for demonstrating their knowledge of materials used in graphic products. The second part was less well done.

(a) Nearly all candidates attempted this section and if responses were kept within the context of the question most had some success. As in other papers one word or vague generalisations failed to show sufficient understanding and could not be fully rewarded.

(b) This was very poorly done with very few marks in the higher range. Many candidates did not attempt this part. Popular answers tended to compare and contrast this design with a traditional glass thermometer. Knowledge of heat sensitive 'inks' was wanted but rarely achieved.

Question 7 – Environmental and Social Issues.

This question was popular with most candidates and all achieved some success.

(a) This was fairly well attempted. Candidates were able to explain why air fresheners are contained inside packages, but many candidates missed the point and commented on display or customer appeal.

(b) There was some confusion between renewable and non-renewable materials. Most candidates correctly identified the backing card as from a renewable source, but some answered, in error, referring to recycling or reusing card. Correct responses mentioned the benefits of replacement of trees and being environmentally friendly. Simple explanations were awarded a single mark, and fuller justified answers both marks.

(c) (i) Most candidates adequately explained the given symbol was related to packages containing recycled materials.

(ii) Green was readily understood to refer to nature, the environment and care of the planet.

(iii) The circular arrow identified with the process of recycling materials by all candidates.

(iv) Almost all who attempted this section connect the percentage to the amount of recycled material in the product, although some credit was given if it was implied that this proportion could be recycled rather than containing it.

(v) Another well answered part question. Candidates were aware of the need for new materials in food packaging. Although, a sizeable minority assumed it was to do with thermal insulation or appearance. Marks were awarded according to stated hygienic considerations.

Short Course

Tier H

Most candidates attempted all the questions. There were very few blank sheets. The quality of 'design' question was of a high standard but unfortunately specialist knowledge was disappointing. The quality of presentation and rendering continues to improve. There are some very talented candidates but sketching for communicating ideas is not so well advanced. A wide range of marks was noted ranging from below 35 to the high 90s.

Question 1 - Representing Data

This was particularly well done. Single 'column bar' or a 'multi bar' chart were equally acceptable. Rendering was that expected from Higher Tier candidates. A minority of candidates had difficulties with the 25% and 15% bars.

Question 2 – Designing

As with the other papers, three ideas were presented but evidence of development was rare. Many candidates, again, spent much time and effort recording unwanted promotional slogans. These could not be rewarded and the candidates penalised themselves by using time that could have been better used in other parts of the paper.

- Some imaginative mountain ideas were illustrated, other images were accepted if in the context of mountains but there was little developments shown.
- Colour was faithfully indicated either by full rendering or by annotation. Both were acceptable.
- A full development of a suitable logo based on A1C was frequently ignored in favour of a single idea.

- Many print finishing effects were incorporated into designs, varnishing and embossing were common. Sometimes technical vocabulary was weak and candidates merely indicated 'shiny' surface or 'glossy covering'.

- Evaluations were superficial and limited to labelling or self-congratulatory statements. Critical evaluations of the designs and ideas were rare

Question 3 – Presentation

Many excellent drawings were produced. Designs were extended onto the sides of the box in a variety of interesting and creative ways.

(i) The specification was faithfully applied with very few deviations from the given list.

(ii) Line quality and drawings were generally well done with some differentiation in thickness and density.

(iii) The initial designs generated in Question 2 were successfully carried through on to this presentation drawing.

(iv) Layout was satisfactory with only a few of designs showing crowding or untidiness.

(v) A range of rendering was evident with examples ranging from basic, imperfect block colouring to high quality tonal shading. Marks were awarded on merit.

Question 4 – Locking Mechanisms.

Very few successful designs were presented. Many candidates produced the start of a feasible idea but lacked the detail or precision which would have gained a higher mark.

Many answers involving additional materials. Successful solutions used tabs with slits aligned with an slot in the base. Many candidates ignored the clues on the given lid tab and forgot about alignment.

Question 5 – Enlargements and British Standards.

A popular question. Many candidates successfully transferred the shape onto the larger grid, although dimensioning continues to present problems.

(a) The enlargement was well done with many accurate drawings. Some outlines were wide and lacked a degree of precision. Most candidates coped quite well with the 'toes'.

(b) This was usually attempted but with little success. Even though only one dimension was required, dimensions continue to bewilder most candidates. Free-hand attempts lacked the necessary precision for a 'standard'. Occasionally, whole centres scored well, but most failed to gain any marks on this section.

A minority of candidates correctly deduced the scale. Many made no attempt.

Question 6 – Vacuum Forming and Sequential Drawings

A poorly answered question with only a minority achieving more than half marks. This topic was well flagged up with several references on the Preparation Sheet.

(a) While there were few maximum marks awarded many candidates could identify some of the features of a vacuum forming machine.

(b) There where many attempts at drawing an intermediate stage in the process of vacuum forming. Candidates were expected to show that the platen in a raised position but the exact point of movement was left to the individual. What was important was that this stage should be in the same style. This was often forgotten whilst the basic '2D section' was reproduced line quality and alignment were poorly applied. The use of a ruler and faint construction lines projected from the given stages would have doubled many scores.

Many candidates did not add notes to explain what was happened at their intermediate stage.

(c) (i) Many candidates appeared to guess which group of plastics were suitable for vacuum forming with no particular option favoured by candidates.

(ii) This was better answered with many thermoplastics correctly named.

Question 7 –Materials.

Candidates were expected to show their knowledge of common items of equipment when used in the given school based context. New materials are less well known.

(a) (i) The items of equipment were usually correctly identified. It is pleasing to notes that correct names have replaced the generic names of a few years ago.

(ii) Successful candidates related the equipment in context of making the air freshener's backing card.

(b) As with the full Tier H, many candidates simply compared the given product with a traditional glass thermometer, usually with reference to safety or ease of use. Some answers included an awareness of heat reactive 'inks' but there very few correct explanations. However, when attempted most candidates gained a mark or two.

Question 8 – Environmental and Social Issues

Almost all the candidates attempted this question and many gained high marks.

(a) This was well answered, perfume leakage and tamper proofing being popular responses. However, many candidates again failed to keep to the context of the question and offered reasons that related to display or customer appeal. Marks were awarded accordingly.

(b) (i) A number of candidates thought that the transparent plastic material used in packaging was a renewable resource. Those who did correctly identify failed to give an explanation. Marks were awarded according to the correctness of the answer to the context of the question.

(ii) Biodegrading, pollution and potential dangers to children and animals were popular answers. Many were fully and clearly explained. Some candidates showed deep concern for the environment and used more space than that given to express their views. All were marked according to the thoroughness of the explanation.

(c) A well answered question. All the required components were usually included, a 'cyclic' shape, green and/or black colouring and the correct percentage. Some excellent reproductions of recognisable symbols were suitably modified and credited.

(d) The relative advantages and disadvantages of using recycled paper and board was usually well attempted. There was some confusion with recycling, reusing and refilling but most appreciated the differences. A few candidates resorted to simple answers and this may have been a time consideration, but 'its cheaper' or 'poor quality' could not be fully rewarded.

(e) (i) There was a fair understanding of the requirements of food packaging and candidates were aware of the needs for hygiene and the dangers of contamination from recycled material.

(ii) The majority of candidates correctly suggested signs and logos on packages as a means of promoting care for the local environment. A few suggested that a graphic designer could contribute to an anti-litter campaign by designing posters. All were acceptable.

Coursework

General

This was the second year for this Specification and many centres had used the report from last year and the material presented at the Autumn Meetings, to 'fine tune' their approach in preparing candidates for this element of the examination.

Some centres were still not fully covering the three assessment objectives. This was particularly the case in the consideration of industrial practices, the production of products in quantity and examining the wider effects of technology on society.

The majority of centres completed the administrative tasks associated with moderation well but there was a significant number who fell short of requirements in one or more of the following areas.

- Completion and dispatch of Candidate Mark Lists by May 5th.
- Accurate use of matrix.
- Prompt dispatch of folders following request from moderator.
- Internal standardisation of work when two or more teachers were responsible for assessments.

It is important that centres understand that difficulties and delays in the moderation process, are caused by the above

The range of work seen was very encouraging with the majority of centres undertaking a range of appropriate projects which challenged candidates across all abilities. Some centres however disadvantaged candidates at the upper end of the ability range by undertaking projects which lacked rigour or which had a low level of difficulty or demand. Some projects were seen which either overused inappropriate materials or which failed to satisfy adequately the assessment criteria. Some centres are still allowing candidates to produce stand-alone architectural models such as café wine bars, children's playgrounds and re-designed bedrooms. Centres are again reminded that this type of outcome does not generally fulfill all the criteria for the new specification, particularly when considering 'production in quantity'. Centres who wish to continue with this type of project should consider producing a range of associated products such as promotional material, menus and instruction leaflets. These should represent a substantial part of the outcome.

There was again an increased use of appropriate ICT, including CAD & CAM. The majority of candidates produced evidence demonstrating their use of such programs.

Assessment within centres was varied with many being within the tolerance set by the board in both the designing and making sections. There were however a significant number of centres who had been generally lenient in their assessments, particularly in the making element of the course. Inconsistency of assessment within centres was also evident, particularly when internal standardisation had not taken place.

DESIGN FOLDERS

Research and Analysis

Many centres have responded to the challenge of getting candidates to produce concise and relevant research, acquired from a range of sources. A minority of centres still allows candidates to produce 'comfort research' which is time consuming and which does not contribute to fulfilling the assessment criteria for this section. Many candidates still produce generic information copied directly from textbooks

It is important that candidates annotate their research and do not use it as a cut and paste exercise. Some candidates over relied on work downloaded directly from the Internet, little credit can be given for this unless the work is relevant and suitably annotated.

It was good to see that some centres are encouraging candidates to incorporate the consideration of industrial practices and the effects of technology on society at this early stage. This is a good way of ensuring that these issues are incorporated into design thinking and are not relegated to being a 'bolt on' exercise or, as in many cases, forgotten altogether.

A questionnaire provides the candidate with a good opportunity to use a valid industrial technique and to demonstrate ICT skills but many candidates produced far too many graphs or charts often illustrating the same thing.

Analysis & Specification

Analysis of both the task and research was varied with much of it being more descriptive than analytical. The better candidates considered how their research had informed the brief and then incorporated this into a detailed design and make specification. Most candidates produced a reasonable specification but only a small minority considered social and environmental issues at this stage.

Design Ideas & Development

There was some improvement in this area this year with some centres using the time saved by producing only focussed and relevant research to produce and develop a range of ideas fully. Many centres however missed the opportunity of using this section to demonstrate the range and level of graphical skills required for the higher grades. Some candidates presented very few ideas or went directly to a final solution. Little credit can be given for ideas or solutions taken directly from the computer. The better candidates showed originality, using annotated freehand sketches, 2D and 3D drawings, models, prototypes and nets to show their initial ideas and the detailed development of their thinking. This section was also used to show good use of ICT, colour rendering and the consideration of social and environmental issues

Final Design

It should be remembered that a final design should include sufficient information for it to be manufactured. Many final solutions fell well short of this missing important information such as dimensions, materials and construction details. This is also an ideal opportunity to demonstrate quality drawing skills, using orthographic or other appropriate methods to illustrate the final outcome. This can be achieved by hand drawing, the use of CAD programs or a mixture of the two.

Planning of Making

Planning was either done very well or very poorly with very little in between. Candidates used a variety of methods such as flow charts, sequential diagrams etc, to illustrate what they were going to do and how they were going to do it. The better candidates used this section to address the issues of quality control and quality assurance as related to the completion of their product. Many candidates still tackled this section retrospectively and even then missed out or re-ordered important stages of manufacture.

Testing, Modification and Evaluation

This was done very well by small minority of candidates, who tested their proposals from an early stage, then made and recorded modifications as a result. The quality of evaluation at all stages has generally improved this year with many candidates seeking the opinions of a third party and considering how their product could be improved or modified to make it suitable for batch or mass production. Even candidates at the lower end of the ability range made an attempt to evaluate some or all aspects of their work and in most cases this was linked back to the specification.

Design Summary

Candidates generally demonstrated a good range of design skills, using appropriate techniques and equipment. There has been a further increase in the use of CAD with a range of programs being used to good advantage. It is important however to maintain a balance between traditional drawing skills and computer produced images. Candidates making use of CAD must ensure that they show evidence of their contribution to the design and development process.
The inclusion of photographs of the outcome, by many centres, proved to be very useful in moderation.

Many centres have incorporated the consideration of industrial processes into candidate's folders, some from an early stage.

Systems and control and the consideration of social issues were missing from many folders and the majority of centres should consider making these areas for improvement next year.
Assessment of design folders was generally sound with only the minority of centres showing a leniency beyond that allowed by the tolerance set by the board. A handful of centres undervalued the design work of their candidates, particularly at the lower end of the mark range.

MAKING

A wide range of outcomes using appropriate materials and constructional techniques were in evidence at the majority of centres.

The weighting of this element was better recognised by the majority of centres who produced either one substantial outcome or more commonly, a range of outcomes, which addressed all assessment criteria. Some centres were still not getting the balance right and did not allow sufficient time for candidates to produce a demanding, quality outcome.

Some centres allowed candidates to work on projects which were not totally appropriate for this specification. This was either because the nature of the outcome could not satisfy all assessment criteria or the materials or processes used did not lead to the production of a 'Graphic Outcome'.

Work from many of the more able candidates demonstrated a high level of both difficulty and quality. Some candidates limited themselves by choosing a project, which had a level of difficulty and demand too low for their ability. Centres should ensure that candidates choose a brief, which will produce an outcome or range of outcomes, which is appropriate to their ability.

There has been an increased use of CAM and electronically produced enhancement to the final product. This has resulted in some very 'professional' outcomes. Centres who do not have access to CAM facilities should ensure that candidates are made aware of, and recognise how it could be used in the production of their outcome.

A significant number of candidates failed to ensure real quality in their submissions. This was not limited to the less able.

Assessment of making was more varied that that of the design folders. Many centres over- valued work, which lacked rigour, had defective constructional details or was poorly finished. Candidates should be encouraged to spend more time in applying the finishing touches to their work.

Making Summary

A good range of appropriate outcomes seen in most centres.
There has been a better use of the time allocation.
Increased use and awareness of CAD and CAM in the production of outcomes.
There is a need for a greater emphasis on the production of a quality outcome.
Assessment tended toward leniency in many centres.

Conclusion

Centres are advised to read this report in conjunction with the centre feedback and continuation forms, dispatched with the results in August.

Centres wishing for clarification of any details regarding this specification should contact their Coursework Adviser.

Centres are reminded of the Autumn Meetings which take place each year. These further explain how centres can best prepare candidates for this specification.

The Acting Principal Moderator and the AQA are very grateful to the many centres that have provided examples of candidate's work to be used at standardising and moderator training meetings.

Mark Ranges and Award of Grades

Although component grade boundaries are provided, these are advisory. Candidates' final grades depend on their total marks for the subject. In particular, A* is determined on candidates' total marks, not on each component, and candidates do not have to obtain 95 marks on the coursework component in order to gain grade A* on the subject as a whole.

Full Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3543/F	125	140	63.83	17.35
3543/C	95	210	104.25	41.67
Foundation tier overall 3543	--	350	168.09	50.54

		Max. mark	C	D	E	F	G
3543/F boundary mark	raw	125	78	65	53	41	29
	scaled	140	87	73	59	46	32
3543/C boundary mark	raw	95	60	48	36	24	12
	scaled	210	133	106	80	53	27
Foundation tier scaled boundary mark		350	212	174	136	99	62

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3543/H	125	140	88.95	14.88
3543/C	95	210	164.83	33.48
Higher tier overall 3543	--	350	253.79	41.80

		Max. mark	A*	A	B	C	D	allowed E
3543/H boundary mark	raw	125	100	94	88	82	63	--
	scaled	140	112	105	99	92	71	--
3543/C boundary mark	raw	95	95	84	72	60	48	--
	scaled	210	210	186	159	133	106	--
Higher tier scaled boundary mark		350	317	286	255	224	177	153

Although component grade boundaries are provided, these are advisory. Candidates' final grades depend on their total marks for the subject. In particular, A* is determined on candidates' total marks, not on each component, and candidates do not have to obtain 95 marks on the coursework component in order to gain grade A* on the subject as a whole.

Provisional statistics for the award

Foundation tier (28,520 candidates)

	C	D	E	F	G
Cumulative %	19.6	47.7	70.3	84.6	93.9

Higher tier (37,968 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	3.2	24.6	52.5	78.3	95.2	97.2

Overall (66,480 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	1.9	14.0	30.0	53.1	74.8	85.9	92.0	96.1

Short Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3553/F	100	120	62.51	14.77
3553/C	95	180	82.02	36.50
Foundation tier overall 3553	--	300	144.52	42.59

		Max. mark	C	D	E	F	G
3553/F boundary mark	raw	100	68	57	46	36	26
	scaled	120	82	68	55	43	31
3553/C boundary mark	raw	95	60	48	36	24	12
	scaled	180	114	91	68	45	23
Foundation tier scaled boundary mark		300	187	154	121	89	57

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3553/H	100	120	73.14	12.70
3553/C	95	180	133.32	31.91
Higher tier overall 3553	--	300	206.47	38.62

		Max. mark	A*	A	B	C	D	allowed E
3553/H boundary mark	raw	100	79	72	65	59	49	--
	scaled	120	95	86	78	71	59	--
3553/C boundary mark	raw	95	95	84	72	60	48	--
	scaled	180	180	159	136	114	91	--
Higher tier scaled boundary mark		300	267	239	211	184	150	133

Although component grade boundaries are provided, these are advisory. Candidates' final grades depend on their total marks for the subject. In particular, A* is determined on candidates' total marks, not on each component, and candidates do not have to obtain 95 marks on the coursework component in order to gain grade A* on the subject as a whole.

Provisional statistics for the award

Foundation tier (946 candidates)

	C	D	E	F	G
Cumulative %	15.8	40.1	65.1	82.2	92.9

Higher tier (1,233 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	3.4	20.2	49.1	75.0	91.4	95.4

Overall (2,179 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	1.9	11.3	27.8	49.3	69.1	82.2	89.7	94.3

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade. Although component grade boundaries are provided, these are advisory. Candidates' final grades depend only on their total marks for the subject.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).