Oxford Cambridge and RSA Examinations

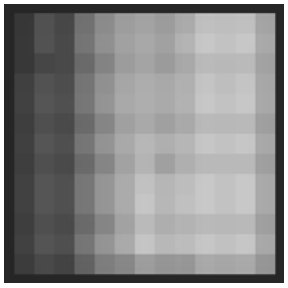
RECOGNISING ACHIEVEMENT

GENERAL CERTIFICATE OF SECONDARY EDUCATION GCSE 1492
GENERAL CERTIFICATE OF SECONDARY EDUCATION GCSE 1496

APPLIED ENGINEERING
APPLIED MANUFACTURING
(DOUBLE AWARD)

COMBINED MARK SCHEME AND REPORT FOR THE UNITS
JANUARY 2005

GCSE



1492/1496/MS/R/05J

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

The report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

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Mark Scheme 4868/4880
January 2005

1 **(a)** 1 mark for information, 1 for appropriate method e.g. product specification details via internet, current prices via telephone 2x2. **[4]**

(b) 1 mark for appropriate method e.g. handling the product (*insert example*), 1 mark for information on, for example:

- materials
- components
- properties

eg i-pod: handled the product – can use the wheel easily or fits in pocket

bird house: measured the size of the hole – 22mm which is OK for blue tits **[4]**

(c) For each 2 tests, 1 mark for description of a simple test. I mark for relevant information:

- fishing line: adding weights in steps - breaking strain is more than stated
- Scone: weighing products on scales – between 100 and 105 gm.
- Mobile phone: time to connect to internet – took 29 seconds
- Bird house: Put in my garden for 6 months – blue tits nested in it **[4]**

Total [12]

2 1 mark for product clearly from identified sector. 1 for named technology relevant to stated product. Technology must be appropriate to the product.

1 mark for how used, for example:

Paper and Board

- Product – packaging
- Technology – automatic printing use – print sell-by dates or batch numbers

Mechanical

- Product - screws
- Technology – computer controlled system used for weighing and packaging

Food

- Product – bread
- Technology – temperature control automatic in oven

Textiles

- Product – football strip
- Technology – breathable fabric used as main material 4x3 **[12]**

3 (a)(b) and (c)

1 mark for suitable product and 1 for appropriate material. E.g.

(a) Product - Surfboard:

- Material expanded polystyrene foam

(b) Product - Refrigerator:

- material pre-coated steel sheet

(c) Product - Tennis Racquet:

- Material carbon fibre reinforced resin 3x2 **[6]**

(d) Production costs reduced, fewer stages, more efficient production (speed), product appeal-modern 2x1 **[2]**

(e) 2 marks for each benefit described: (1 for benefit, 1 to workforce) E.g.

- pre-finished sheet means they do not have to have spraying equipment/solvents – safer,
- training given – therefore workforce is better qualified
- reduced product/component weight - less heavy lifting for workers 2x2 **[4]**

Total [12]

4 Candidate's choice of product. The response should reflect the unit specification content:

Guidance for marking

Technology used

- clear indication of what is utilised (1 each)
- and how incorporated (1 each) into the product) up to 4 marks. **[4]**

Materials and components/ingredients used

- One mark for each specific material identified, 1 for each component, 1 for detail eg for clear indication of where used in product, to maximum of 4 (see 8.2.4) **[4]**

Structure and Form

- One mark for a sketch or description of general form.
- One mark for indicating each specific feature (structure or form)
- One for showing how that feature of the product meets its purpose/reflects technology used. Could be straightforward, e.g. Mobile phone **size**, **rounded corners** and **shell** structure reflect need to **keep in pocket** and **protect** delicate electronic components **[4]**

Purpose

- Two marks for clear statement (allow 1 for simple broad statement)

  e.g. mobile phone to talk to your friends (1) Contact people on the move (2)). **[4]**

Total [14]

5 **(a)** Two marks for description (guidance: function and how relevant) examples.

(i) Databases:

- Record/retrieve data
- e.g. material properties/availability/costs/suppliers to help selection **[2]**

(ii) Spreadsheets:

- Carry out calculations and projections.
- E.g. to compare costs of different designs, forecast profitability. **[2]**

(iii)

- E.g. Communication - sending information, designs for approval or direct to production
- Importing details/drawings of components direct from suppliers **[2]**

(iv) Two marks for each disadvantage described. Need to draw on previous response (allow 1 for a simple statement e.g. may break down)

- Need for staff training
- May lose customers who prefer 'one-off' product
- Smaller workforce required
- Initial costs can be high **[4]**

(b) Two relevant points, accept non-technical language.

Examples of points:

- The **results of market research** are entered into a **database** for **analysis** to determine consumer preferences;
- **direct mailshots** can be made to potential customers identified from a database holding personal details and preferences;

- Company website for ordering online and included in search engines under relevant terms banner ads **[2]**

(c) Dispatch:

e.g. product batch of T shirts

- Computer system **prints appropriate label for** package with **barcode;**

Or logs out on **database** using **order information**. **[2]**

Total [14]

6 (a)(b) and (c)

Marks for describing the impact. (allow one for stating a relevant example of technology or an impact without the technology e.g. more efficient)

(a) Using the internet:

- Can investigate sources and specifications of materials
- Can order on line and track orders
- Correct materials and components sources
- Avoids human ordering error
- Correct quantities ordered for production run reduces material used
- Computerised stock control systems
- Can re-order automatically etc. 2 x 2 **[4]**

(b) E.g. scheduling of production runs can be computerised to optimise utilisation of resources:

- Systems can monitor production and stop if reject rate increases/tolerances approaching limit, etc.
- JIT facilitated 2 x 2 **[4]**

(c) E.g.

- Maintaining system continually check safe conditions (e.g. temperature in oven).
- Monitoring guards in place.
- Robots in hazardous environment

(d) E.g.

- Products can be ordered online from across the world
- Customised products can be made to order using CAD files
- Stock control systems keep retail shelves stocked

(e) E.g. designers can make modifications to designs readily using CAD:

- Features of products can be changed by re-programming microchips (e.g. in cameras) etc.
- Application of ICT in innovative products 2 x 2 **[4]**

Total [12]

7 (a) One mark for each of 4 benefits of CIE/CIM over automated processes (not over manual labour) – examples:

- Systems use a common set of data
- Avoids errors in copying
- Carry out a range of computerised design/production activities
- Concurrent engineering is possible/can produce PCBs while refining exterior design
- Project management and tracking features
- Parts can be machined directly from CAD files
- Materials and components ordered automatically
- Assembly is controlled and finished products packed and dispatched by the system **[4]**

(b) One mark for each of 4 relevant features of robotic systems:

- E.g. consistency of product and accuracy
- Can operate in hazardous environments
- Continuous production
- Long term savings
- Flexibility (can be programmed) **[4]**

(c) Microchips pre-programmed to replace part of PCB/circuit:

- Gives flexibility through different programmes as in washing machine or providing different product features as in camera models

Examples (2 x 1); explanation (2) **[4]**

Total [12]

8 (a) and (b)

Extended answers should conform to the ‘discuss definition given on the paper:

- State 3 relevant points (3)
- Explain why two are relevant (2)
- Draw conclusion (1)

Examples given:

(a) The working environment:

- Improved H & S
- Safer conditions where environmental controls used/hazardous tasks automated
- Potentially hazardous materials
- Pressure/stressful environment
- May be hotter
- Noisier
- More hazardous if automation not though through carefully **[6]**

(b) Global environment and sustainability. E.g. modern methods allow:

- Resources to be used more efficiently
- Reduced waste
- Lower resource/energy demands

This may bring:

- Increased consumerism through reduced prices
- Non biodegradable/reusable materials
- higher repair/maintenance costs

To make a product sustainable it should:

- Be made from and with materials from replenishable sources
- Be energy efficient in manufacture and use
- Be recyclable at the end of its life

[6]

Total [12]

REPORT ON THE UNITS
JANUARY 2005

1492/1496: GCSE Engineering/Manufacturing (written examination)

General comments

The written paper assesses candidates' knowledge and understanding of Unit 3: Application of Technology. Section 8.2 of the specification (What you Need to Learn) comprises 4 parts with a total of 10 subsections (i.e. main paragraphs and bulleted lists). It was clear that many Centres had prepared candidates well to answer questions from all of these areas and standards were generally improved from the first paper in June 2004. There were examples of excellent candidates who were able to demonstrate understanding clearly across all areas. The paper discriminated well, producing a wide spread of marks albeit weighted towards the lower end, reflecting the nature of the entry.

In general, poorer candidates tended to repeat 'computers' and 'robots' where their knowledge was limited.

Comments on individual questions

1) This question addressed the first paragraph of section 8.2.4 of the specification: investigating products. The question required candidates to relate activities that they had carried out themselves. There was a small number of excellent responses particularly from candidates who drew on their experience of investigating mobile phones (a popular choice from many Centres). Some candidates struggled, relating their investigations when designing their own products. Examiners credited these responses where appropriate, for example investigating suitable materials.
   a) Specific examples such as 'Nokia Website' or 'production manager on Nokia video' were require rather than vague (e.g. 'internet', 'we watched a video') or reflecting the question (e.g. 'from the manufacturer').
   b) Some candidates described tests they could not have carried out themselves, such as flying a plane.

2) 8.2.1: Manufacturing and Engineering sectors. This was answered much better than a similar question in June 2004. There were some excellent responses from candidates who had studied the given sectors. However a significant minority of candidates seemed unfamiliar with this fundamental area of the specification.

3) 8.2.2: linking modern materials and impact of technologies. Candidates gave a wide range of specific modern materials, including Kevlar, Gortex and carbon fibre. Common brand names were accepted. Generic responses such as 'plastic' gained no credit.
   c) A minority of candidates gave an example of a material making a product easier to use rather than produce, reflecting the question in a similar position in the June 2004 paper.

4) This question addressed the final part of 8.2.4: investigating products. It discriminated well between candidates with the standard being much improved on a similar question in June 2004. There were some excellent responses, most of which took the bullet points in turn and focussed on a mobile phone. Another popular product was the iPod, though it produced fewer fully detailed responses. One Centre's candidates produced detailed sketches and information boxes headed with the bullet points, which was helpful to examiners. Others were unstructured making it difficult to find specific correct points. In general, answers consisting of notes or sketches alone rarely gained full marks.

5) This question required candidates to make connections between two areas of the specification: 8.2.2 (Information and Communication Technology) and 8.2.3 (Stages in Engineering and Manufacturing a product). Again, good responses tended to come from whole Centres, where candidates had been well-prepared for the written examination.

a) Some candidates failed to note the word 'databases' and launched into Computer Aided Design (which occupied a similar position in the June 2004 paper).
b) Responses included a wide range of relevant points, showing a clear understanding of marketing.
c) The expected response to this question was tracking goods or routing deliveries using ICT. Some other good points gained credit, such as controlled atmosphere packaging to extend product shelf life. A disappointing minority of candidates gave responses along the lines of 'robots do it now' or 'packaging machines are used'.

6) This question addressed 8.2.2, linking ICT as an example of a modern technology with specific areas.
a) Most candidates gained at least two marks here, giving examples as illustration.
b) It is disturbing, given the vocational nature of the course, that many candidates' knowledge of production was limited and they resorted to vague (e.g. 'cheaper' or 'quicker') responses.
c) A very small number of candidates produced excellent responses to these questions, despite some flexibility in marking. This area of the specification appears to have been neglected in many cases.

7) Again, part 8.2.2 of the specification is the focus of the question, which requires candidates to have detailed knowledge of the specification content, rather than relying on general knowledge.
a) Few candidates were able to respond at the level required, making general points rather than addressing the specific areas required. Many candidates seemed unfamiliar with the terms given. Appropriate responses were rare and tended to come from individuals. Many described the benefits of robotics, reflecting a similarly placed question on the June 2004 paper.
b) Most candidates gained marks here, though again, there were many vague examples not related to production.
c) There was a small number of good responses to this question, giving examples such as mobile phones, cameras and washing machines. Many candidates gained some marks.

8) This question discriminated between candidates well. Very good responses to both parts were guided by the instructions given: raising three relevant issues, explaining why two of them are relevant and giving an example.
a) The most common candidate error was relating the answer to the workforce (as in June 2004) rather than to the working environment.
b) Most candidates were able to make points related to the environment, but many failed to focus on global technology and sustainability. Some excellent responses described measures to limit environmental impact and improvements to sustainability brought about by the use of modern technology.

1492: Engineering (Double Award)

Principal Moderator's Report

4866: Design and Graphical Communication

General Comments

Only five Centres entered candidates and four of these Centres entered candidates for the first time. Unfortunately, the work from these new Centres showed the same problems and misconceptions that were seen in June 2004 and consequently marks were adjusted. In several cases these adjustments were significant. The one Centre that had entered candidates in June 2004 entered a new cohort for this series and had obviously benefited from their June experience as their marks were not adjusted.

The overall quality of the candidature was very similar to that in June 2004. The majority were from the middle to lower ability bands of the average Year 11 cohort.
The advice offered in the Principal Moderator Report for June 2004 is repeated and all Centres have received further guidance on the interpretation of the assessment criteria.

Advice from the June 2004 Examination Series

The task of the moderators is to check the Centres' assessments. They should not have to re-assess the work. However, the majority of work had to be re-assessed in this series, because there was insufficient evidence to show how the points scores had been determined. The best practice is for the evidence to be page referenced on the URS and then, on each referenced page, there should be a clear indication of which part of the grading criterion is covered and what is missing. It might also be useful to indicate how a particular criterion has been interpreted by the Centre. Where more than one assessor has marked the work, the Centre is responsible for the internal moderation of the individual assessor decisions.

Too often the work which was submitted did not match the requirements of the assessment grids. It is worth reminding Centres that there is a higher step-up between Band 1 and Band 2 than between Band 2 and Band 3. Band 1 requires basic description, Band 2 clear explanation and Band 3 interpretation and /or justification. Too much of the work seen in Bands 2 and 3 was descriptive and did not explain or evaluate. Simply heading a section 'Evaluation' does not meet the requirements of the specification. Band 3 in particular requires candidates to be able to relate what they have done in a drawing office/workshop context to the situation in 'real world' engineering. Too many portfolios showed little evidence that candidates were familiar with 'real world' engineering contexts. Visits out-of-school are critical in this context.

Assessors are reminded that they should look for a 'best fit' of the evidence to one of the boxes in the assessment grid; this then determines the points range that can be awarded. Within this points range there should be a clear indication why a particular score has been given. Without this level of detail the moderator has no option but to re-assess the work.

The specification requires the following processes to be evidenced:

- a clearly defined customer/client who provides the design brief (This cannot be the end-user of the product or the candidate);
- the candidate then works with this customer/client to develop the design brief into a design specification;
- several (three minimum) design solutions are then developed by the candidate to satisfy this design specification;
- through discussions with the customer/client, one of these design solutions is selected to be produced; and
- this final design solution is worked up in detail before being presented to the client.

In Strand a: if there is no clearly defined customer/client there is no access to a3 and one of the two main components in a2 (using customer feedback) cannot be evidenced. Maximum mark is 4 and more generally the 'best match' will be a1 with a maximum mark of 3.

In Strand b: access to b2 and b3 depends on the candidate matching the accuracy of their drawing techniques to the purpose for which they will be used. For example, hand drawn sketches might be appropriate in developing the design specification from the design brief, but the final design solution would include accurate engineering drawings from which the product can be made.

In Strand c: c1 requires Health and Safety issues to be addressed; these should be relevant to the candidate's product. c2 and c3 require the quality control procedures used in making the product to be identified. If these are not included, the c1 'default' requires the H&S issues in making and using the product (not H&S in general terms) to be identified.
If Quality Control procedures are mentioned but no H & S issues are identified then the marks available for c1 (4) will not apply.
H & S issues must be written down. They should not be referred to as a verbal report nor their use implied by the teacher's knowledge of the candidate.

In Strand d: if the design solution has not been presented to the customer/client (or if there is no clearly defined customer/client), only d1 can be awarded. d2 & d3 require modelling as well as diagrams and sketches to be used in the presentation. If modelling is not used the maximum mark is 7.

In Strand e: access to e2 and e3 require quality assurances to be identified. These must include the tolerances to which the product will be made.

4867: Engineered Products

Principal Moderator's Report

General Comments

Only four Centres entered candidates, all for the first time. The work from these new Centres showed the same problems and misconceptions that were seen in June 2004 and consequently marks were adjusted. In several cases, these adjustments were significant.

The overall quality of the candidature was very similar to that in June 2004. The majority were from the middle to lower ability bands of the average Year 11 cohort.

The advice offered in the principal Moderator Report for June 2004 is repeated and all Centres have received further guidance on the interpretation of the assessment criteria.

Advice from the June 2004 Examination Series

The task of the moderators is to check the Centres' assessments. They should not have to re-assess the work. However, the majority of work had to be re-assessed in this series, because there was insufficient evidence to show how the points scores had been determined. The best practice is for the evidence to be page referenced on the URS and then, on each referenced page, there should be a clear indication of which part of the grading criterion is covered and what is missing. It might also be useful to indicate how a particular criterion has been interpreted by the Centre. Where more than one assessor has marked the work, the Centre is responsible for the internal moderation of the individual assessor decisions.

Too often the work that was submitted did not match the requirements of the assessment grids. It is worth reminding Centres that there is a higher step-up between Band 1 and Band 2 than between Band 2 and Band 3. Band 1 requires basic description, Band 2 clear explanation and Band 3 interpretation and /or justification. Too much of the work seen in Bands 2 and 3 was descriptive and did not explain or evaluate. Simply heading a section 'Evaluation' does not meet the requirements of the specification. Band 3 in particular requires candidates to be able to relate what they have done in a workshop context to the situation in 'real world' engineering. Too many portfolios showed little evidence that candidates were familiar with 'real world' engineering contexts. Visits out-of-school are critical in this context.

Assessors are reminded that they should look for a 'best fit' of the evidence to one of the boxes in the assessment grid; this then determines the points range that can be awarded. Within this points range there should be a clear indication why a particular score has been given. Without this level of detail the moderator has no option but to re-assess the work.

To meet the specification, candidates must show that they understand quality assurance procedures (how the product will be quality assured), and quality control tests (the values used for quality assurance/quality control are covered in c2 and how these affect planning and scheduling in c3).

In Strand a: to access a2 and a3 there must be a production plan with associated quality control identified. If there is no quality control the maximum mark is 4. The engineering processes must relate to the categories identified in the banner i.e. material removal, jointing and assembly, treatment processes and surface finishing;

In Strand b: b2 & b3 require a schedule i.e. appropriate timescales allocated to the stages in making the product. This could be a Gant diagram which is time constrained. If no sequence is identified, and b1 is therefore the best fit, then b1 requires a description of why production planning is necessary in itself and in meeting the product specification.

In Strand c: c2 requires the quality control tests in terms of equipment, procedures and tolerances to be identified and, in c3, the impact on production planning and sequencing if these tests are not met must be explained i.e. what is the impact of 'go/no go' decisions. In c1 the default is to identify the critical control points and describe H&S issues pertinent to the production of the product (again, **not** just H&S issues in **general** terms).

In Strand d: If candidates have not used ICT in making their product they can access this strand by describing (d1) or explaining (d2) why it was **not** appropriate to use ICT in making their product. **However, to access d3 candidates MUST evaluate how ICT would have been used to make their product in 'real world' engineering.**

In Strand e: e2 requires an explanation of why the tools and equipment used were fit for purpose in the school/college workshop context and e3 requires an explanation of how and why these would be modified in real world engineering situations. e2 also requires any changes to the production plan to be identified or if no changes were made an explanation of why these were not needed. In e3 this explanation must be expanded to explain the impact of the use of real world engineering tools and equipment would have on the production plan. If there is no explanation of how tools and equipment were fit for purpose, then the maximum mark is 7.

1496: Manufacturing (Double Award)

Principal Moderator's Report

General Comments

This was the first time that the examination had been offered as a January sitting and it was disappointing that the number of portfolios entered was low. However, as in the summer session, the vast majority of Centres are to be congratulated in the way that they applied the new assessment grid when allocating marks to candidates.

In order for moderation to be carried out efficiently it is necessary for Centres to identify, locate and annotate the evidence. Good practice saw this evidence being logged on the Unit Recording Sheet provided by OCR. Difficulties arose when Centres only forwarded a breakdown of marks using OCR CSFs. Without suitable identification of the evidence, a problem is created for the Moderator, who then has to identify where a candidate had been given marks by the teacher.

The presentation of work by candidates was generally good and it was appreciated that, where portfolios had been bound securely together, they included a cover sheet and page numbers. Problems arose when work had been forwarded to moderators using individual plastic wallets or when work had been compiled in no particular order. Teachers should also encourage candidates to submit work that is relevant to the assessment grids and avoid the inclusion of irrelevant padding.

Where the assessment grids had been applied fully by the Centres and evidence had been identified there was little problem in confirming the marks allocated by the Centre. However, in some instances it was clear that the assessment grids had not been used as a working document and their statements had been given only a cursory glance.

When using the assessment grids to assess candidates' work it is important that work produced is given the credit it deserves for the particular statement in the grid. However, Centres must take care that they do not award duplicate marks from another statement in the grid for the same piece of work. Separate evidence must be seen in each candidate's portfolio for each statement in the relevant assessment grid. Good practice saw candidates clearly dividing up their work into five clearly marked sections.

It must be pointed out that in Unit 1 candidates are expected to develop the design of **one** product and the portfolio should follow the development and presentation of such a product. It must be stressed that the portfolio should not be made up from a range of mini projects, with marks being allocated across the different projects. Good practice in this area was highlighted by those Centres that had identified a suitable customer/client in strand a, from whom to gather feedback to initial research and to whom they presented their ideas strand d.

In Unit 2 the candidate must work as a member of a team that collectively produces a batch of identical products. On occasion it was not made clear in portfolios where tasks had been allocated to team members and what contribution each member made to the manufacture of the product. In both units problems occurred where candidates had looked at some issues (health and safety, quality control and real world manufacturing) in general terms rather that relating them to the product being designed/manufactured.

The use of writing frames may assist candidates. However, Centres should consider if such systems are suitable for all candidates in their Centre, as they may limit the creativity and freedom of more able candidates.

Unit 1 Designing Products for Manufacture.

Strand a

Candidates who performed well in this area had identified a suitable client or had developed their work from an identified customer design brief. Those candidates gaining high marks had carried out suitable research and then produced a design specification. However many design specifications could have been developed to give much more detail. It is important that, when associated information is gathered, effort is focussed on the task and the information is then used to develop the specification. Centres should be aware that customer feedback in this section is only related to the specification; any feedback regarding designs should be rewarded in strand d.

Strand b

The requirements of this strand were generally well understood by candidates and ideas were presented. However it is important that such ideas do relate to the specification and that those candidates to whom higher marks are allocated provide the expected explanation and justification when developing their ideas. Many candidates were allocated high marks in this strand by Centres but they failed to provide the required explanation or justification of ideas leading to a final design solution. In far too many cases candidates were awarded marks for explaining ideas when, in reality, the written work was no more than a heading or title.
It was also evident in this strand that some Centres had misinterpreted the assessment grids and allocated marks for the same piece of evidence in b2 and also in d2, which is not allowed.

Strand c

Health & Safety and Quality Control issues in this strand should relate to the candidate's product and not be left as general descriptions. Quality control procedures should be highlighted and explained for each stage of manufacture. Evidence from better candidates did show that such work had been carried out, however to gain maximum marks in this strand it was important that an evaluation of quality control procedures applied to making their product was also presented.

Strand d

This strand required the candidate to present his/her final idea to the customer or client. Some work failed to progress further than rough sketches produced in strand b. Other candidates entered into the spirit of the strand and used a variety of methods to present and explain their product to the client. The methods used to present the ideas did vary according to the materials used for the product but modelling, photographs of models, working drawings, mood boards, 3D rendered sketches and even prototypes were evident.
To gain high marks in this strand, the candidate was expected to use any of the afore mentioned techniques to present their ideas to the customer but it was important that such methods were backed up by an explanation. The more able candidates should be able to fully justify their decisions. An opportunity was also available here to record customer feedback and maybe suggest modifications to the proposed idea.

Strand e

The main aspect of this strand is the reference to the production of the item in quantity. Many candidates failed to score highly in this strand because they planned how single items would be made in their own workshop environment. Where real world manufacturing was considered it tended to be in general terms and not related to the product designed by the candidate.

Unit 2: Manufactured Products.

Strand a

Evidence was required that the candidate was working to an identified production plan. This plan should have been developed to indicate manufacturing processes and identify quality control procedures. Where production plans were produced, candidates failed to fully evaluate these and therefore prevented themselves from gaining marks in the higher range of this strand.

Strand b

In this strand it was expected to see evidence of the candidate describing the importance of using production plans. Little evidence of this was seen from the majority of candidates entered. Team roles were allocated by candidates but once again little justification was evident in many folders as to why individuals had been given the task to be carried out.

Strand c

As in Unit 1, Health and Safety issues were identified but far too often it was only in general terms. Candidates who gained higher marks did relate Health and Safety issues to their product and used them when carrying out the manufacturing schedule. Such evidence was highlighted by the use of text and some Centres also included photographic evidence. It is presumed that in the vast majority of cases quality control tests would have been used. However it is vital, in order to access the marks available, that evidence of these tests is recorded in the portfolio. To be awarded high marks in this strand, candidates were expected to evaluate their planning and scheduling and justify how it could be improved to encompass total quality management and appropriate safety systems. Once again very few candidates did carry out such reflective work and some Centres did not take this into account when they allocated their marks for this strand.

Strand d

In this strand the candidate should reflect on good teamwork and how effective the structure of the team is in carrying out the allocated stages of manufacturing. In order to gain high marks in this strand it was important for candidates to reflect on how the manufacturing team could be used in a more effective way to improve the production of their product. Also it was required that candidates consider what improvements could be made to the product as a result of buying in components or ingredients. In many cases this last aspect was not considered or there was little evidence in the portfolio to show that it had been carried out.

Strand e

In general candidates were able to identify tools and equipment that they had used in order to manufacture their product. However on many occasions the strand ended at this point as candidates failed to explain why such tools and equipment were appropriate for the task. Similar to the work carried out in Unit 1, many candidates failed to explain how tools, equipment and processes would be modified if their batch of products was to be produced in Real World manufacturing. Some Centres had not taken into account the wording of e3 in the assessment grid and candidates had been allocated high marks without providing the appropriate evidence.

General Certificate of Secondary Education Engineering 1492

January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
4866	Raw	50	46	40	34	29	23	17	12	7	0
	UMS	100	90	80	70	60	50	40	30	20	0
4867	Raw	50	45	40	35	30	24	18	13	8	0
	UMS	100	90	80	70	60	50	40	30	20	0
4868	Raw	100	71	61	51	42	35	29	23	17	0
	UMS	100	90	80	70	60	50	40	30	20	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

		Maximum Mark	A*	A	B	C	D	E	F	G	U
1492		300	270	240	210	180	150	120	90	60	0

The cumulative percentage of candidates awarded each grade was as follows:

		A*	A	B	C	D	E	F	G	U	Total Number of Candidates
1492		0	0	0	0	0	0	0	0	0	0

General Certificate of Secondary Education Manufacturing 1496

January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
4878	Raw	50	45	40	35	30	24	18	13	8	0
	UMS	100	90	80	70	60	50	40	30	20	0
4879	Raw	50	45	40	35	30	24	18	13	8	0
	UMS	100	90	80	70	60	50	40	30	20	0
4880	Raw	100	71	61	51	42	35	29	23	17	0
	UMS	100	90	80	70	60	50	40	30	20	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

		Maximum Mark	A*	A	B	C	D	E	F	G	U
1496		300	270	240	210	180	150	120	90	60	0

The cumulative percentage of candidates awarded each grade was as follows:

		A*	A	B	C	D	E	F	G	U	Total Number of Candidates
1496		0	0	0	0	0	0	0	0	100	8

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