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GCSE

Edexcel GCSE

Engineering (Double Award) (2316)

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Summer 2005

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Examiners' Report

Edexcel GCSE
Engineering (2316)

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Summer 2005

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Principal Moderator's Report

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Introduction

A team of eighteen moderators was involved in the moderation of portfolios from some 320 centres covering the two internally assessed, externally moderated units. There was a good level of consistency within the moderation process and this was assisted by the use of new moderator training and standardisation events at which it was possible to share expertise and understanding.

It was pleasing to note that some centres provided very high quality samples of work that met the requirements of the specifications. However it must still be noted that many centres are misinterpreting the content of the specifications and are not conforming to the procedures laid down by the awarding body. Where ever possible moderators ensured that students were not disadvantaged by incorrect procedures, however where the specification was not interpreted correctly, as identified later in this report, students were inevitably disadvantaged. Much of this report reiterates problems identified in last years report.

It is disturbing to report that some teachers are using record sheets, assignments and some assessment criteria from other qualifications such as GNVQ, CGLI and NVQ qualifications, whilst others are applying assessment strategies more appropriate to a D&T qualification. This qualification has its own assessment strategy and criteria, and these may be significantly different from those of other similar qualifications.

A significant number of centres did not follow the Guidance for Centres relating to the Moderation of Portfolios. This caused problems for the moderation team in the following areas:

Deadline for Submission of Marks and Sample of student work to the Moderator
A substantial number of centres did not meet the deadline of 15th May '05, and the moderation team has endeavoured to deal with late work in order to issue results on time.

Presentation of Units
Some centres presented the two units as integrated work in one portfolio. Each unit must be treated individually during the moderation process and therefore it is important that students present their portfolio work in such a way that a moderator can clearly identify the work that contributes to each individual unit. Where centres did not clearly identify work to meet individual units special moderation facilities were required.

It is an acceptable practise to combine the evidence for two or more different units into one portfolio. However it is essential that assessors provide suitable

annotation to indicate achievement relating to each of the units covered by the work. This may best be achieved by the use of specific assessment front sheets and possibly the use of different coloured annotation. It is vitally important that assessors provide specific evidence of assessment for each unit and justification of the scoring achieved across the different units.

Mark Record Sheets

Some centres did not use relevant mark record sheets. Where ever possible the Moderator applied individual judgement to identify where evidence was considered to have been recognised. However in these cases it was not possible to comment on the assessment decision with any certainty and moderators found it necessary to remark work instead of trying to agree assessment decisions.. All portfolios should include an annotated Mark Record Sheet and the assessor should ensure that:

- All marks are recorded accurately and the arithmetic is correct
- The total mark is transferred correctly onto the OPTEMS or via EDI
- The candidate and the assessor, as appropriate, sign any required authentication.

Moderators reported lack of attention to detail by some centres in recording marks. In some cases the marks recorded on the OPTEMS forms did not agree with the marks awarded to students on the Mark Record Sheets or the student work

Presentation of Portfolios

A significant number of centres did not present portfolios in an appropriate manner.

All portfolios **must include the following**:

- A title page with the relevant specification name and number, candidate name, candidate number, centre number, and date:
- A mark record sheet for each unit to be moderated
- Clear page numbering
- A contents list.

This title page must be in addition to the Mark Record Sheet which does not form part of the portfolio and is removed when the work has been moderated. In many cases work did not carry any means of identification after the Mark Record Sheet had been removed.

Portfolios should only include student work that evidences the required assessment outcomes, as indicated in the appropriate marking grids. Many students presented large amounts of non-relevant materials such as class work notes and research materials. This made the portfolios difficult to handle and did not enhance to overall marks in any way.

Portfolios should be securely bound and the use of lever arch files is not recommended due to packaging, transport and security features. Some candidates work was received by moderators in a disordered state, causing accompanying problems in identifying appropriate evidence. This was particularly difficult when plastic wallets were used to contain large numbers of loose sheets.

Electronic evidence is currently not admissible for this qualification and therefore it is inappropriate to provide and make reference to evidence contained in electronic storage media such as ‘floppy disks’ and CD-ROMs.

Assessor Annotation

The GCSE, GCE VCE and GNVQ Code of Practice requires that assessors record full details of the nature of any assistance given to individual candidates that is beyond that of teaching the group as a whole. Many assessors did not record the degree of assistance provided to individual students and significantly similar pieces of evidence for different students was often awarded different grades without the assessor substantiating the decisions. This frequently resulted in moderators awarding substantially lower marks due to the lack of appropriate evidence.

Assessor annotation to identify where achievement has been recognised is a mandatory requirement for internally assessed work. The minimum requirement for annotation is to complete the annotation column on the Mark Record Sheet by listing the portfolio page numbers where evidence can be found for each of the assessment criteria. A significant number of centres did not provide annotation and therefore moderators were not able to identify where assessors had recognised achievement. In these cases it was necessary for the moderator to remark the work in order to provide a reliable moderator mark for the available evidence.

Witness Testimony

Whenever process skills are assessed, it is vitally important that Witness Statements/Testimony is completed by assessors in order to authenticate student work and provide evidence that students have achieved the level of performance required in the assessment grid. This Witness Testimony must be detailed and state exactly what a student has done and how this meets specified assessment criteria. General statements such as 'normal workshop safety rules apply' is not sufficient evidence to provide evidence of independent use of appropriate processes, tools and equipment, using them safely with skill and accuracy. It is strongly recommended that assessors use the appropriate forms provided in order to record in detail student activity and the degree of independence demonstrated in the activities.

All witness testimony should be signed and dated by the witness.

Witness testimony should normally be supported by other forms of evidence such as annotated photographs, records of measurements etc. In some cases assessors provided statements that students had met all required quality standards. In these instances the statements should be supported by records of measurements and comparison with the required standards. Similarly it is inappropriate for an assessor to record that a student worked safely at all times. Witness testimony must state details of student activity and equipment used accompanied by dates when observations were made. General 'all encompassing' statements are inadmissible.

It should be noted that the Mark Record Sheet does not form part of the students portfolio and therefore it is not appropriate to use this form to record assistance provided and skills achieved.

Assessment of the Units

It is important that learning and teaching experiences are separated from assessment activities. Therefore it is not appropriate to teach via assignments that are intended to provide final evidence for this qualification. In general terms progression across the mark bands is characterised by:

- Increasing breadth and depth of understanding
- Increasing coherence, evaluation and analysis
- Increasing independence and originality.

Therefore summative assessment should occur after all teaching and learning experiences have been undertaken in order that the student may demonstrate the highest achievable levels of understanding and independence and originality.
It is not appropriate to teach via the completion of the final assignment since candidates are not able to demonstrate an ability to work independently and also are not able to fully demonstrate their final degree of skill and competence.

When considering work to meet the higher mark bands it may be helpful for centres to consider the following explanations:

Breadth:	Range of ideas Alternative Solutions Range of information services
Coherence:	Structured and consistent work
Evaluation:	Judging the validity of results Self criticism Identifying solutions
Independence:	Free from outside control; not subject to another's authority, Without support and guidance
Originality:	Inventiveness, ingenuity, creativity, innovation, imaginativeness, uniqueness.

These units are not to be subjected to continuous assessment since this may significantly disadvantage students. Centres are strongly advised to separate Teaching and Learning from Assessment.
The assessment of these units is best carried out after all teaching and learning activities have been undertaken**.** This enables students to perform to the highest possible degree of skill and independence. If teaching and learning takes place during the assessment activity it is difficult for students to work independently and also they will not have had the opportunity to practice their skills.

Learning and teaching activities may be undertaken during ‘design and make’ activities. However, contrary to advice presented by other organisations, the assessment of these two units is most accurately achieved by separate, unrelated assessment activities. This is because in a ‘design and make’ assignment, the student produces working drawings and a product specification with which to make the product. However, in this qualification a significant amount of marks in unit 2 are awarded for the ability to use a given product specification and engineering drawings in order to make a number of products as part of a team. It must be recognised that the preparation of a specification and drawings is not evidence that a student can read and interpret such documents.

Students achieved most success when they were presented with completely unrelated assignments for each of units one and two.

Many centres failed to award marks correctly as detailed in the Guidance for Teachers - Assessment Guidance – Awarding Marks. When assessing the evidence assessors **must** refer to the evidence requirements for the unit. Marks are awarded for evidence to meet the bullet points listed in the evidence requirements (listed on pages 22 to 27 for unit 1, pages 35 to 40 for unit 2. This guidance identifies **two** aspects to each assessment criterion, and also explains the procedures for awarding marks when a particular criterion has not been fully met. Therefore in order to be awarded full marks for any individual criterion a student must produce evidence to meet both of the bullet points identified in the specific criterion in the **evidence requirements** for that unit.

Unit 1: Design & Graphical Communication

Moderators were instructed to work very closely with the evidence descriptors provided in the Guidance for Teachers section of the specification. This section provides examples of the type and level of evidence required to meet each of the mark bands for specific assessment outcomes. Moderators also used the Portfolio Marking Guidance to identify the type of evidence required to meet mid band requirements.

It is important that students are provided with a written client brief and that they include this brief in their portfolio. Some centres allowed students to choose their own design topic and therefore students were not able to provide appropriate evidence of being able to analyse a brief and identify client needs. Some centre provided students with a range of different client briefs from which to choose their focus. This practice is to be recommended, since it allows individual students to demonstrate originality. Where the use of one single client brief has been used by a cohort there have been inevitable problems of similarity of approach and final design solution.

The design activity must be based on an **Engineering solution**. This is **not** a general product design but should be based on an Engineering problem. Therefore the design options should include various methods of overcoming engineering problems. The solutions should most probably include the use of some scientific principles and, possibly, calculations. Therefore it is important that candidates consider far more than aesthetic properties.

Some centres provided inappropriate foci for the assessment. The unit required students to produce a design solution of an engineering problem or service in which the use of scientific principles is incorporated. Where students were asked to design articles such as a trophy or a CD rack the assignment did not provide a suitable vehicle for the production of evidence to meet the evidence requirements. In these cases the centres choice of product significantly disadvantaged the students.

This is **not** a 'design and make' activity, although the manufacture of a prototype could demonstrate that the product meets the clients brief, and could form a useful part of the presentation.

A good design brief would require a student to consider mechanical and either electrical/electronic or pneumatic/hydraulic features. A product or service that only includes mechanical features would limit students' ability to achieve some of the higher mark bands.

The design of products such as shelves and stands could be considered to be an engineering problem. However in such cases students would need to have an understanding of frame works, structures and moments of force. When undertaking this type of product design most students judged a large, robust looking item as being suitable without reference to its own weight and that of the articles for which it was designed to support. Students **must** consider engineering features in order to succeed in this unit. Therefore they must be taught the appropriate scientific principles **before** undertaking the design activity.

In order to meet the higher mark bands the majority of the work should be produced by the individual student. Group work and brainstorming may be appropriate at the very beginning, but the generation of ideas and solutions must be that of the individual. Many students work showed evidence of a class approach with significant input from the teacher. This is acceptable for the lower achievers. However the approach is inappropriate for the higher mark bands.

Assessment Objective a) an analysis of the brief with key features of the product or service

Students were generally able to list the clients needs and the key features of the product. However the degree of analysis, required to meet mark band 3, was not achieved by many students. In many cases well written lists were wrongly considered by assessors to meet the requirements of mark band level 3. It is important that a student provides descriptions of the main client needs and the main key features of the product in order to meet mark band level 2. Similarly, in order to meet the requirements of mark band level 3 students must provide evidence of analysis of the relevant features.

The key features of an engineered product or service are:

- Function – where and what the product will be used for
- Quality standards – sector and/or client quality standards
- Performance – how well the product has to perform
- Intended markets – who might use the product, competition with other similar products, client's own customer base
- Size – the approximate size in three dimensions
- Maintenance – how this is planned for in design and during the product's use
- Production methods and materials
- Cost – including design, production and material costs
- Regulations – including health and safety
- Scale of production – quality required, use of mass or batch production.

When producing evidence to meet the higher mark bands student's should be able to demonstrate an understanding of how the features would affect either the design of the product.

Assessment Objective b) details of the product criteria and production constraints

This outcome was generally poorly attempted, with many students not showing an understanding of the content of a design specification. Many candidates concentrated on aesthetic values of the product without considering the products function, size, performance intended markets and maintenance. Similarly few students showed a consideration of production constraints which should include features such as scale of production, cost, production methods, materials, quality standards and possible regulations.

A well prepared design specification helps the student to produce suitable design solutions and to check that possible design ideas will meet the client's needs. Therefore it will be useful in achieving success against assessment criteria (c), (d) and (g).

Assessment Objective c) a range of ideas and design solutions
A few students produced imaginative design solutions. However the majority of students again concentrated on aesthetic qualities and failed to consider engineering details or simple scientific principles. A significant number of students produced simple designs that failed to consider how the features could be achieved either from a manufacturing point of view or a functional aspect.

In order to meet mark band 3 students must produce 'imaginative' designs which do not rely on established market-leading products, or that offer a new slant on an existing product. In this case students should be able to explain how the design differs from existing products or services. Some students carried out research of existing products in order to choose the 'best' solution, without providing and modification. Therefore they could not be considered to have met the mark band 3 requirements.

The use of scientific principles does not require a detailed programme of study into 'engineering science'. However students should be able to recognise where scientific analysis is required and should be able to use simple modelling activities such as computer analysis of features such as structures, electrical circuitry etc. or the testing of models in order to determine suitable sizes.

Assessment Objective d) evidence of how you tested and selected the final design solution
This assessment objective requires students to devise suitable methods to compare the characteristics and features of their different design solutions with the design specification in order to identify the solution that best meets the client requirements. The use of simple tables with the awarding of arbitrary scores would be sufficient to meet mark band level 1. However in order to meet the requirements of mark band level 3 there is a need for objective testing and an explanation and justification of how the final design solution was chosen, and how it meets the design criteria.

Many students never stated which was the most appropriate solution. In order to meet this aspect of the assessment criterion at level 1, students are required to provide a brief outline of how their chosen final design solution meets the design criteria. However, in order to meet the higher mark bands the student is required to provide a detailed description or justification of how the final design solution meets the design criteria.

Assessment Objective e) evidence of how you selected and used engineering drawing techniques,
Students do not need to make a verbal presentation to an identified audience. However the final design solution should be submitted to a client audience and the make up of the client audience will help students to meet the higher mark bands of part of this criterion. It is therefore helpful to the students for the brief to identify the make up of the group to whom the final proposals will be submitted.

Very few students stated why they were using different techniques within the range. In order to meet the higher mark bands students should present evidence to demonstrate that they have considered the purpose of the drawing and the intended audience

Students should use both manual and computer generated engineering drawing techniques and in order to meet mark band level 3 it is expected that they would use a large range of

appropriate techniques from the list provided on page 17 of the specification. Freehand sketches, perspective views and orthographic projections would most probably restrict achievement to mark band level 1.

Assessment Objective f) engineering drawings and technical details

Many students provided high quality graphic illustrations produced both manually and with the aid of CAD. These illustrations consisted of various perspective drawings. However few candidates were able to satisfactorily use engineering drawing techniques to produce drawings that were suitable for use by a technical customer. It is recognised that 'technical drawing' has not been an aspect of CDT teaching for some considerable time. However this unit requires that all engineering drawings and diagrams comply with sector specific conventions such as BS8888:2000/BS3939-1. Students are not expected to have occupational competencies or to be working to commercially accepted standards. However all engineering drawings and diagrams should comply with sector specific standards and conventions. Many students produced drawings that did not have the minimum of title, name block, scale and borders.

Many centres set design briefs that restricted student opportunity to use common standard symbols for electrical, electronic or mechanical features. Therefore the students were significantly disadvantaged. In order to meet the higher mark bands students must be able to describe and/or explain, in some detail, the purpose of components and features used.

Assessment Objective g) evidence of how the solution meets the criteria with suggested modifications to improve its fitness for purpose
This assessment objective was best met by students who considered that they were to present their final design solution to a client either verbally or by a written presentation. They prepared statements to describe how their solution met the key features of the design brief and the design specification and presented their final solution as a completed project. This promoted the opportunity for feedback and for the student to identify relevant modifications to possibly improve the products fitness for purpose.

Modifications should be made **in response to feedback**. However this feedback need not necessarily be provided at the end of the activity. It is possible for students to refer to the client/s during the design process and records of this contact could be used as evidence of having made modification in response to feedback. Commercial engineering design frequently incorporates communication with the client to confirm progress or direction.

Unit 2: Engineered Products

The assessment requirements of this unit demand that the student produces an engineered product. The guidance for teachers explains that the product should endeavour to reflect the diverse realms of engineered products, for example by including mechanical and electrical components where feasible to do so. The 'What you need to Learn' section of the specification states that the chosen product must be able to use the following processes:

- Material removal, such as turning, drilling, etching , milling and grinding
- Shaping and manipulation, such as hammering, forming and bending
- Joining and assembly, such as crimping, soldering, adhesion, wiring, threaded fasteners, welding and brazing

- Heat and chemical treatment, such as annealing, tempering, hardening, etching, plating
- Surface finishing, such as polishing and coating.

Many centres made products that did not meet these requirements. Some centres made several simple products each utilising one of the processes listed. Moderators were instructed that, for this year only, they should continue to accept any product as evidence to meet this unit. However in many cases students were disadvantaged because they were not able to provide evidence to meet some assessment objectives. It is difficult to envisage the use of a range of components in the manufacture of a product such as an engineers punch of a hacksaw.

The most successful products were those that incorporated mechanical and electrical/electronic features. However some centres concentrated on local skills and specialities such as hydraulics and pneumatics with equal success. The least successful products were traditional apprentice tests such as plumb-bobs, Gee clamps and tool makers vices. These traditional tests also tended to indicate lack of interest and motivation among the students.

In order to fully meet the requirements of this unit, students must be provided with a detailed product specification and the necessary engineering drawings to enable the product to be made to the required standards. Some centres did not provide the students with the required information and students were thus severely disadvantaged. In many cases the drawings provided by the centres did not conform to any sector specific standard or convention.

Many of the assessment objectives require evidence of safe use and skill. Risk assessments are very useful documents. However they do not provide evidence that a student has worked safely. This evidence can only be provided adequately by annotated photographs and detailed witness testimony. Most workers can explain how to work safely when not actually carrying out safe working practices. Some centres provided evidence of students having undertaken a course of safe working practice before undertaking practical activities. This is excellent teaching practice. However it does not constitute evidence that the student has worked safely, only that the student has undertaken a course of instruction. Many motorists have undertaken a course of instruction. However this does not necessarily mean that they drive in a safe manner and observe all of the rules relating to the use of highways.

Assessment Objective a) how you used a product specification and interpreted engineering drawings

Normally students would be expected to be provided with both a product specification and the requisite drawings. However it is possible for all the relevant information to be contained within detailed drawings. However this may make the interpretation of drawings more difficult.

Assessment Objectives b) information about details of resources and processing requirements and c) information about production details and constraints
In order to meet the requirements of these two assessment objectives students need to produce a production plan that identifies details of resources used, processing requirements, production requirements and production constraints. Students were most successful when they used vocationally relevant formats to provide this evidence, although some students were able to achieve high marks by the use of non-standard formats for production plans. The use of standard vocationally relevant production plans is

recommended, and these can be provided with additional notes to describe or to explain the aspects in order to meet the higher level mark bands.

Assessment Objective d) how you selected and used materials to safely make your product

Engineering product specifications and drawings normally detail which materials are to be used in making an engineered product. This particular assessment objective relates to the students ability to select from a range of engineering materials the appropriate materials to meet the product specification and to use them safely. This could mean that a student can identify brass from a range of materials and choose a suitable piece of raw material to ensure the minimum amount of waste.

The evidence of safe use and skill and accuracy was most effectively provided by a combination of annotated photographs and witness testimony.

Assessment Objective e) how you selected and used parts and components to safely make your product

Where students did not make a sufficiently complex product that used parts and components it was difficult for them to achieve success in this assessment objective. Students were most successful when they made a product involving electrical/electronic components.

Assessment Objective f) how you selected and used processes, tools and equipment to safely make your product

This assessment objective was most successfully met by a combination of annotated photographs and witness testimony. This witness testimony stated:

- What the student did
- The degree of skill and accuracy demonstrated
- How they worked safely
- What safety equipment was used
- The degree of independence and confidence demonstrated

Some students wrote a diary of their activities and with the inclusion of witness testimony to verify the activities, this proved to be acceptable evidence. However it should be noted that the assessment activity should be designed to assess practical skills, not their ability to write fluent English. Some students may have not had the ability to fully describe their activities and therefore without detailed witness testimony and annotated photographs they may have been disadvantaged by this form of evidence.

Assessment Objective g) how you tested your product and how it complied to the standards required

The provision of a detailed product specification assisted many students to tabulate results of testing procedures to ensure that the product met the required standards. Unfortunately a significant number of centres did not provide the students with sufficiently detailed quality standards and this disadvantaged the students significantly.

Chief Examiner's Report

June 2004

There were two qualifications examined in this series at GCSE level.
GCSE Engineering (Double Award) and
GCSE Manufacturing (Double Award)

Unit 3: Application of Technology (5318)

The award of this unit was split into six sectors with an individual paper for each

5318/01	Printing and Publishing Paper and Board
5318/02	Food & Drink, Biological & Chemical
5318/03	Textiles and Clothing
5318/04	Engineering and Fabrication
5318/05	Electrical and Electronic, Process Control, Computers, Telecommunications
5318/06	Mechanical, Automotive

All six papers were harmonised for structure and difficulty.
Each paper had two sections. Questions in Section A related generally to information about the chosen sector. Section B illustrated a product from a chosen sector and questions were related to that product. The product was pre-released in September 2004 and acted as a focus for research in preparation for the exam. Students were able to take their own research notes into the examination, but this was not to be submitted with the examination paper for marking.
The question paper within both sections was ramped in difficulty throughout.

All Principal Examiners' reports indicate that all the questions within the respective paper were accessible to their intended candidature, although all indicated that overall access may have been more difficult.

Generally speaking those candidates who had had opportunities to study and research the target product answered well. It was clear in their responses that they understood the process of manufacturing/engineering when applied to their product and sector. Good candidates were also able to give variety in their responses across the range of questions.

In general terms a typical grade F candidate was able to identify products from a given sector, name and describe the use of components/symbols etc and to some degree link applications of technology to key areas of technology. In a range of other questions where explanations and descriptions were required often candidates were only able to give one word if not simple answers. Variations in answers throughout the paper were limited. Application of technology was also limited throughout their responses. Often no responses were suitable for the last few questions in the paper. They showed limited recall and application of knowledge and understanding.

In general terms a typical grade C candidate was able to gain a range of marks from the same areas and aspects of the paper as a grade F candidate, but with further detail in their responses to those questions demanding an explanation or description. They were able to state a product from their sector and explain its purpose and material use. They were, however unclear about process control. They were able to explain a wider range of benefits of using CAM but often were unable to apply this to demonstrate benefits to the consumer. Their responses about CIM features were limited. Good responses were given when explaining the aspects of the pre-release product through sketches and notes. There

was a wider range of responses when demonstrating their knowledge of the use of modern materials, but there knowledge of the stages of manufacturing was often limited, especially about production planning. Often general response were given for the last few questions on the paper but these were not in context of the questions and limited marks were awarded.

In general terms a typical grade A candidate was able to access marks for many aspects of the paper including most of those achieved by grade C candidates. Their explanations and descriptions were complete and had many references to "real" manufacturing and application of technology of their product. Throughout the papers candidate responses evidenced a variety of application of technology. Many candidates were able to relate quality control and computer control to the manufacture of their pre-release product. They were also able to link the use of ICT to marketing and packaging and despatch. Whilst some gained good marks for evaluating how a manufacturer operates and uses modern technologies worldwide, relatively few gained maximum marks for these last few questions.

All of these points were considered during the awarding of the results. Overall there was an increase of around 34.5% in candidature over that for June 2004, with many new centres entering learners.

Comments on individual sectors are given on the next pages.

5318/01: Printing and Publishing Paper and Board

General Comments
Overall this paper produced a wide range of responses across the whole paper and for the two sections within it. Centres would benefit from providing candidates with a comprehensive glossary of terms used in this unit paper to avoid confusion with the specialist technical terminology.

Specific Comments
Written Test

Q1 Well answered by the majority of candidates. One of the only mistakes made by a significant number was to state that 'credit card' was a product belonging to the paper and board sector.
Centres are reminded that (a) asks for identification of products belonging to the printing and publishing sector and that (b) are products belonging to the paper and board sector.

Q2 A significant number of candidates were unable to correctly name and/or state the purpose of both printers marks illustrated. The use of printers marks for this exam was clearly stated in the pre-release materials. Centres are reminded that all key words should be highlighted and appropriate research undertaken.

Q3 A generally well answered question. Many candidates gave specific software responses for types of ICT and these were rewarded appropriately.
A number of candidates struggled to name an appropriate smart material and explain the term even though it was the basis of last year's forehead thermometer product.

Q4 A well answered question by the majority of candidates. Many stated the previous year's product and answered accordingly. However, a significant amount were unable to correctly state and give an advantage of a type of process control relating to the product.

Q5 (a) Although most candidates were able to offer some description and explanations relating to CAD, few were able to describe a suitable modelling technique or fully explain the importance of modelling as an industrial process.
(b) Most candidates were able to describe a use of CAM and explain a benefit. However, some candidates did not read the question fully to realise that the benefits were to the consumer.

Q6 (a) Generally well answered with the majority of correct responses being e-mail. Some candidates incorrectly stated fax and telephone as communications technology. Interestingly, many candidates believe that e-mail is free.
(b) Very few candidates were able to offer the textbook response of EPOS for transferring sales information. Many answered e-mail and were rewarded appropriately.

Q7 A significant number of candidates were unable to describe a feature of CIM and give one benefit to manufacturers. Many responses were more appropriate for CAD/ CAM and not CIM.
Centres are reminded that Computer Integrated Manufacture is a fundamental aspect of many modern manufacturing systems.

SECTION B – based upon the mass produced musical greeting card pre-release material

Q8 (a) A very poorly answered question. Many candidates were unable to explain how the holographic pattern was applied to the card. Some explained how a hologram was produced which was not relevant in this case.
(b) Again, a poorly answered question but more candidates knew that die-cutting was the appropriate method of cutting out the envelope. Many incorrectly stated the use of plotter/ cutters often found in centres as an appropriate industrial method.

Q9 (a) Many candidates were able to offer some explanation of how the modern component works in the musical greetings card. However, a significant number were unable to correctly state its name. The music module was stated in the pre-release material as a modern component.
(b) A full range of appropriate printing effects were evidenced here. However, some candidates incorrectly stated printing processes such as offset lithography.
(c) A generally well answered question with most candidates able to offer some explanation of how the musical greetings card appeals to children.

Q10 The majority of candidates were able to correctly describe the four stages but many gave generic rather than specific responses to the musical greetings card. Centres that related the stages of manufacture specifically to the pre-release product performed significantly better than centres who gave generic responses. There was confusion with some candidates regarding the production planning stage where a commonly stated incorrect response related to the *design* of the product.

Q11 (a) Generally well answered. Most candidates were able to state a stage where quality control should be checked but were unable to fully describe the process or explain its benefits to the customer. Again, some candidates gave benefits to the manufacturer and not as the question read '*to the customer'*.
(b) Not as well answered as part (a). Many candidates did not state computer control at the *production* stage instead stating and describing CAD. It was evident that candidates who answered Q10 specifically were able to gain greater marks here as they had a more detailed subject knowledge.

Q12 Generally well answered with a wide range of appropriate ICT responses evidenced. However, many candidates confused part (b) regarding ICT in the packaging and dispatch stage with the *design* stage. Therefore, many incorrect responses related to the design of the cards and not the actual stage where the cards are packaged into boxes before they are dispatched to retailers.

Q13 (a) Although a number of very detailed responses were evidenced, the vast majority of candidates failed to relate the use of ICT to a worldwide context. Benefit of the doubt was given where appropriate but a very low scoring question overall. Centres would benefit from teaching overseas or offshore manufacturing which is increasingly used in modern manufacturing industries.
(b) Very few candidates were able to successfully gain marks in this question. The majority of candidates interpreted 'sustainable manufacture' as the ability to sustain manufacture (keep manufacture going). However, sustainable manufacture is related to 'sustainability' including values issues such as the impact of manufacturing activities upon the environment.

5318/02: Food & Drink, Biological & Chemical

General Comments
The overall impression of the paper was that it worked reasonably well. There was evidence that candidates did not understand fully CAD, CAM, CIM, smart materials, modern materials and there application to the sector. There was evidence of candidates not grasping the concept of international perspectives and sustainability.
There was significant evidence of candidates not reading and interpreting questions correctly.

Specific Comments
Written Test

Q1 An appropriate first question, it was generally well answered by the majority of candidates. The lower ability candidates had difficulty with part b, some not able to identify biological and chemical sector products.

Q2 The majority of candidates were able to name the equipment. There were many low level responses relating to use ie to cook food, some candidates were able to give examples ie to boil, fry, bake etc; but little evidence of specific references.

Q3 A good proportion of candidates were able to identify the internet for sourcing information and databases, spreadsheets for handling information. Some candidates stated CAD as a type of ICT for sourcing information.
Part b proved more difficult, but there was evidence of stock answers relating to systems and control technology to monitor production.
Smart materials and modern materials were often confused and some candidates had difficulty explaining the term smart material.

Q4 Identifying a product proved to be of little difficulty to the majority of candidates. The purpose of the product produced many low level responses ie to be eaten, the better candidates expanded the response ie to be frozen, convenience food, nutrition.
Part b responses were sometimes a repetition of Q3 c where confusion between modern and smart materials persisted, some candidates made reference to equipment used in production.
In part c some candidates did not change the emphasis eg "user" in part 'b' and manufacturer in part 'c' , otherwise reasonable responses.

Q5 A good majority of candidates were able to describe and explain CAD, but fewer were able to describe and explain the benefit of CAM. There was also some confusion between CAD, CAM, CIM and this was evident in some answers etc.

Q6 A significant number of candidates did not fully understand the question, eg telephone and fax were often stated in part 'a'.
The word 'talk' was literally translated and very general responses were given and not specific to communications technology and the appropriate benefits relating to this.
Some candidates described benefits to the user rather that the manufacturer.

Q7 Many candidates found difficulty with this question, CIM was not well understood and subsequently candidates were not able to describe the benefits fully, although some marks were gained. Those attempting the questions often provided low level responses

SECTION B – based upon the mass produced savoury flans with custard filing pre-release material

Q8 A good majority of candidates were able to describe the functions of foil and topping well, gaining full or near full marks.

Q9 The concept of modern material was not well understood and some candidates chose to name general materials ie flour etc. and then had difficulties in expanding this in a ii [to a benefit to improve characteristics]. Many candidates understood the reasons for using stabilisers but were not always able to state a type or name one.
Part 'b' responses were varied some candidates were able to identify the appeal to supermarkets of modern materials eg shelf life, appearance etc. but few candidates were able to expand these to gain full marks.

Q10 The majority of candidates were able to describe production there was evidence that production planning, materials supply and cooling/packing were not fully understood. Responses from candidates were often low level. Some candidates described the design of products.
Many candidates did not link ICT to the production planning stage amd made inappropriate responses. There appeared to be a lack of understanding of ICT and its application to the planning process.

Q11 The majority of higher level candidates understood the importance of quality control. There was evidence that some candidates were confused in relation to "what is being checked" and "how it should be checked". There was a good understanding of how computer control is used and the benefits to the manufacturer, by higher level candidates, with appropriate examples given.

Q12 Only the better candidates gained marks from this question. Responses in earlier questions relating to CAD,CAM etc were sometimes repeated. There was significant lack of understanding of the use of ICT at the marketing stage. In part 'b' numerous candidates made reference to the design of packaging rather than the packaging and dispatch stage of manufacture.

Q13 Most candidates had difficulty with this question. There was a distinct lack of understanding of the concept of worldwide and how to evaluate the advantages. Where part 'a' was attempted, generic answers or low level responses were given therefore not gaining high levels of marks.
There was also significant evidence that candidates did not understand the term sustainable manufacture and generic or irrelevant answers were often given.

There was little evidence of real evaluation in both parts and sometimes negative effects were given instead of positives as required in part 'a'.

5318/03: Textiles and Clothing

General Comments

In general some candidates were able to access questions throughout the paper and many evidenced a good understanding of the Specification content. However, the more demanding questions at the end of Section B were difficult for most candidates and many gave inappropriate responses. Some candidates gave responses based on the previous year's mark scheme and did not gain marks because the demands of this year's questions were different from the previous year. Lower ability candidates often gave generic responses to questions, such as 'quick, fast, cheap' which gained them limited marks. Most candidates would benefit from being taught exam skills. Many lost marks through not reading the questions properly, e.g. answering 'CAM' related questions with responses related to 'design'.

Specific Comments

Written Test

Q1 (a) and (b) were well answered and many candidates achieved full marks.

Q2 Was generally well answered although some did not know 'hook and eye'. Some just described the look of the components, rather than explaining how each is used.

Q3 Was often not well answered, although most knew 'sourcing' and 'handling' in (a)(i)and (ii). In (b) many candidates missed 'monitor production' in the question so answered incorrectly. In (c) some could name and define a 'smart material' but many could not.

Q4 Was generally well answered although in (b) generic responses were often given and 'quick' seemed to be the answer to everything related to 'CAM' or 'process control'.

Q5 (a)(i) was often not well answered, particularly by low ability candidates. However, some candidates could describe a CAD modelling technique and could explain its importance in (a)(ii), although some gave its importance in (a)(i) so lost the marks in (ii). Only a handful of candidates mentioned Speedstep. Low ability candidates did not answer (b)(i) and (ii) well. Some could describe a use of CAM in (b)(i) in generic terms but many did not read the question properly in (b)(ii) and missed 'benefit to the consumer'. Most talked about 'quality' or the benefit to the 'manufacturer' rather than the benefit to the consumer.

Q6 Was generally answered well by those who had been taught about EPOS and could apply their knowledge to the questions. Many said email for (a)(i) but others said phone or fax so were not always able to respond to (ii) in an appropriate way. Only a few said video conferencing. Many candidates had the same responses for (b)(i) and only the most able related responses to stock control or quick response to demand.

Q7 Was generally not well answered, although some candidates who knew about CIM responded well. Candidates who knew (a) often did well in (b). Many responses in (b) related to 'quick, fast'.

SECTION B – based upon the mass produced rucksack pre-release material

Q8 (a) and (b) were generally well answered and many candidates achieved full marks. There were some very good sketches but also some very weak ones. In (b) some only addressed the hip belt not the snap fastening, so could not access all the marks.

Q9 Was generally well answered, especially by candidates who undertook the research outlined in the Pre-release. These candidates could give an appropriate modern material for the rucksack, could name a 'coating' and often describe a reason for its use, although there is not a clear understanding of the difference between the terms 'coating' and 'laminating'. However, some candidates had learned about a smart material (e.g. Stomatex biomimetic fabric) and suggested it for the rucksack in (a) (i), even though it was inappropriate. Most candidates responded well to (c).

Q10 (a) generally elicited generic responses for all the parts, although the more able candidates could apply specific knowledge of textiles and clothing. Weaker candidates generally did not know the stages of production. Some used the responses from the Candidate Kit, many of which were inappropriate for textiles, e.g. 'build' a product. In (b) some could explain the advantages to the manufacturer of using ICT at the production planning stage of the rucksack, although some did not read the question properly and missed 'production planning stage' and talked more generally about ICT.

Q11 Was answered well by some candidates who had been taught something about quality. However, some chose 'processing' for the stage in (a)(i) and gave responses related to the 'assembly' stage, so did not gain the available marks. In (b) responses were often generic about computer control in processing rather than specific to clothing manufacture. In (b)(iii) 'quick, easy, fast, cheap' were often the responses given.

Q12 Was difficult for many candidates but well answered by those who understood the question. 'Advertising' or use of 'websites' were popular responses to (a)(i). Many candidates talked about 'design' issues in (a)(ii) and in (b). However there were some good responses to (b)(ii) such as the use of 'mail-merge' software, 'electronic tagging' or 'bar codes'. Part (c) mainly elicited responses related to the quality, appearance or features of the rucksack.

Q13 Was the least well answered question in the paper. Very few candidates understood the question and gave appropriate responses related to the global use of ICT 'worldwide' in (a) or had any understanding of 'environmental' concepts related to 'sustainable manufacture' in (b). Most candidates talked generally about the use of ICT in design and manufacture in (a) or about the characteristics of the rucksack in (b). Marks were awarded in question 13 where responses had any possible connection with the demands of the question.

5318/04: Engineering Fabrication

General Comments

Overall this paper produced a wide range of responses across the whole paper and for the two sections within it. Centres would benefit from providing candidates with a comprehensive glossary of terms used in this unit paper to avoid confusion with the specialist technical terminology.

Specific Comments

Written Test

Q1 A very well answered question with the vast majority of candidates selecting appropriate products belonging to the fabrication sector. There were a surprising number of candidates who incorrectly stated 'curtains' as a product from the fabrication sector. It can only be guessed that the 'fabric' in fabrication led to this response.

Q2 A significant number of candidates were unable to state the correct name for the pin. (Some thought it was a 'hair pin used to tie hair back in a workshop'). However, many candidates were able to explain its use. A small number of candidates stated that the bolt was in fact a nut.

Q3 A generally well answered question. Many candidates gave specific software responses for types of ICT and these were rewarded appropriately.
A number of candidates struggled to name an appropriate smart material and explain the term even though shape memory alloys (SMA) were clearly stated in the pre-release materials. A number of candidates incorrectly stated 'polymers' as a smart material and used 'plastic memory' as an explanation.
Centres are reminded that the use of modern and smart materials in this sector is widespread and that candidates should have a good working knowledge of a range of appropriate materials.

Q4 (a) A wide range of appropriate products were evidenced here ranging from last year's mountain bike to all types of motor transport. Explanations were generally sufficient to be awarded full marks. A number of candidates incorrectly stated 'snooker cue' as a product. Centres are reminded that products from this sector should not be predominantly manufactured from wood.
(b) A generally well answered question but many generic responses rather than specific materials and benefits. Some candidates became confused at this point and referred to the darts and not the product stated in part (a).
(c) Many candidates were unable to correctly name and explain an advantage of a particular process control related to their product.

Q5 (a) Many candidates were able to name a CAD modelling technique but found it difficult to describe it in any detail. Surprisingly, few were able to explain why CAD modelling is an important industrial process even though software such as ProDesktop is widely used in many centres.
(b) The responses to CAM were more successful. There was reference to accuracy and a better quality of product for the consumer. However, some candidates did not read the question correctly and explained a benefit to the manufacturer.

Q6 (a) Generally well answered with the majority of correct responses being e-mail. Some candidates incorrectly stated fax and telephone as communications technology.
(b) Very few candidates were able to offer the textbook response of EPOS for transferring sales information. Many answered e-mail and were rewarded appropriately.

Q7 A significant number of candidates failed to attempt this question. Many did not have a detailed knowledge and understanding of CIM systems but chose to answer with reference to CAD/ CAM.
Centres are reminded that Computer Integrated Manufacture is a fundamental aspect of many modern manufacturing systems.

SECTION B – based upon the mass produced sets of darts pre-release material

Q8 A well answered question with many candidates able to gain the majority of marks by using notes and sketches to explain the functions of dart components. This demonstrates that centres had studied the four components of the dart in sufficient detail to respond accurately to this question.

Q9 (a) A range of appropriate alloys were given from brass to the now widely used nickel tungsten. Those candidates that stated nickel tungsten gave more detailed explanations of improved characteristics. This demonstrated that centres had undertaken research in sufficient depth.
(b) There were a wide range of responses to this question including anodising as an appropriate coating for aluminium darts. However, the most common incorrect response was 'painting' which is not appropriate and non-specific.
(c) A generally well answered question with many generic rather than specific responses offered.

Q10 (a) The majority of candidates were able to correctly describe the four stages but many gave generic rather than specific responses to the manufacture of darts. Centres that related the stages of manufacture specifically to the pre-release product performed significantly better than centres who gave generic responses. There was confusion with some candidates regarding the production planning stage where a commonly stated incorrect response related to the *design* of the product. In addition, many confused the assembly stage with the packaging stage.
(b) Very few candidates were able to gain full marks on this question and simply gave the benefits of CAD at the design stage.

Q11 Some candidates struggled to identify a stage of manufacture and a corresponding quality check. More candidates could suggest a use of computer control such as CNC machinery, but most struggled to provide an appropriate description of the process itself. Benefits to the manufacturer tended to be limited to simple explanations rather than the detailed responses required for this question.

Q12 Most responses for part (a) were very simple statements usually related to Internet advertising. Few candidates seemed to understand the benefits of using ICT in the marketing stage. In part (b) many candidates confused the packaging stage with design rather than the monitoring and control of dispatch. Many candidates were unaware of the use of barcodes and how products can be tracked using new technology. Simplistic responses regarding the product's appeal to the target market seemed to be in the main for part (c) of this question.

Q13 (a) Although a number of very detailed responses were evidenced, the vast majority of candidates failed to relate the use of ICT to a worldwide context. Benefit of the doubt was given where appropriate but a very low scoring question overall. Many candidates failed to attempt the question at all.
(b) Very few candidates were able to successfully gain marks in this question. The majority of candidates interpreted 'sustainable manufacture' as the ability to sustain manufacture (keep manufacture going). However, sustainable manufacture is related to 'sustainability' including values issues such as the impact of manufacturing activities upon the environment.

5318/05: Electrical and Electronic, Process Control, Computers, Telecommunications

General Comments
Overall this paper produced a good range of responses across the whole paper and the two sections within it.

Specific Comments
Written Test

Q1 A very straight forward question, the majority of candidates were able to identify the correct sector for both part a and b

Q2 The majority of candidates were able to access most of the marks in this question. The response for the Use of each component however, required some depth of understanding to gain full marks eg Resistor is used to regulate the flow of current in an electronic circuit.

Q3 Part (a) was generally well answered with most candidates being able to identify a type of ICT used for handling and/ or sourcing information.
For (b), many candidates gave a generic response rather than focusing on systems and control technology to monitor production**.**
In (c), it was surprising how few candidates were able to name a Smart material or have any understanding of what is meant by this term. Centres should note that Smart materials are included in the Unit 3 Specification content and therefore candidates should be expected to have an understanding of them.

Q4 Parts (a) and (b) were generally well answered, with candidates picking an appropriate product and modern material. Answers for (ii) in both (a) & (b) showed a significant improvement from 2004, with many candidates giving comprehensives in their responses to gain full marks.
Part c was not so well answered, mainly through a lack of understanding of Process control and its use in manufacture.

Q5 Many candidates were able to demonstrate some understanding of both CAD and CAM and therefore to access marks in this Question. Better answers for (a) made specific references to Modelling techniques using CAD, including the use of Pro desktop and Crocodile Clips.
For (b)(ii) many candidates however, gave non-specific advantages of CAM eg faster, accurate, with out any real reference to the benefits to the consumer.

Q6 Most candidates demonstrated an understanding of what was meant by 'communications technology'. There was a much better application of this understanding over 2004, with many candidates selecting E-mail for (a)(i). Though the scarcity of answers relating to video conferencing and EPOS systems highlights the fact that there is more work to be done by centres in this area. When it came to describing the benefits in (a)(ii) and (b)(i) candidates opted once more to general non-specific responses such as 'fast', thus restricting their access to the higher marks.

Q7 It was concerning to see how few candidates had any understanding of a CIM system and the benefits of CIM to manufacturers. Answers tended to be generalised such as 'quick', 'fast'. Centres need to note that this is an inclusive part of the Unit 3 specification content:
'The use of systems and control technology to organise, monitor and control production, including:
ICT as applied to integrated manufacturing/engineering systems, computer-integrated engineering (CIE), computer-integrated manufacturing (CIM) and including CAD/CAM links'.

SECTION B – based upon the mass produced cordless drill pre-release material

Q8 The responses on the whole showed and improvement over the same question in 2004. However, to gain full marks in each section candidates should include an annotated sketch with explanation. Centres should note that the quality of sketching is often unclear and did not help to support the explanation of the 'function'. Good responses to (a) used sketches of how the switch fitted into the circuit for the drill and the use of a variable resistor for the 'soft start' function. In (b) good responses demonstrated the '3 jaw' chuck system and how this enabled the drill piece to be held centrally.
It is evident in many instances, that centres are not giving due regard to the study of the product in preparation for the Paper.

Q9 It was pleasing to see that many candidates were able to name a specific rather than generic material in (a)(i) & (b)(i). This also led to good responses for the corresponding (ii) section. This is a significant improvement over 2004. One point to note however is that of a significant number of candidates lack of understand of what an alloy steel is, responses included 'copper' and 'aluminium'. Centres should note that the materials stated need to be specific and relate to the product, 'polymer' is not acceptable.

Q10 In Part (a), Most candidates were able to demonstrate some understanding of the stages, though far too few related these to the manufacture of a Cordless drill, as required in the stem; as such the answers were often generic and thus failed to access the full marks. Part b should have been a relatively straightforward question especially if (a)(i) was correct. However, candidates again far too often went for the general answers rather than specifically addressing the advantages of using ICT with respect to production planning.

Q11 Part (a) on the whole was answered well by candidates with most being able to state a Stage where quality should be checked and the corresponding way this could be done. In (b) however, there was a lack of understanding of what 'computer control' is, and how and it is used in the production stage. Responses to

(b)(iii) subsequently tended to be generic, such as 'cheap', 'quick', rather than explaining the benefits to the manufacturer in any depth.

Q12 Most candidates who attempted (a) found it straightforward.
In (b) however, many candidates gave responses, which related to the production of the packaging rather than the use of ICT for such thing as the monitor stock flows. In (c) answers tended to relate to technical features of the product rather than how use of ICT has made the drill appeal to the DIY enthusiasts market.

Q13 Most candidates found these the most challenging questions in the Paper, when attempted, the answers tended to be generalised often following the format of the corresponding questions from the 2004 Paper. To answer the question successfully requires candidates to specifically to make an evaluation against the information given in the stem. Very few candidates made any reference to ICT and manufacturers operating worldwide (a) or sustainable manufacturer (b), and as such found it very difficult to access any of the available marks.

5318/06: Mechanical, Automotive

General Comments
Overall this paper produced a good range of response across the whole paper and the two sections within it. There was evidence that candidates did not understand fully CAD, CAM, CIM, smart materials, modern materials and there application to the sector. The more demanding questions at the end of Section B were difficult for most candidates and many gave inappropriate responses. Some candidates gave responses based on the previous year's contexts and did not gain marks. Lower ability candidates often gave generic responses to questions, such as 'quick, fast, cheap' which gained them limited marks. Most candidates would benefit from being taught exam skills as often they did not read the questions properly.

Specific Comments
Written Test

Q1 A good range of responses, well answered by many but distracters caught poorer students out in a few cases. The vast majority of candidates selected appropriate products belonging to the mechanical sector for part a) whilst some dropped marks when selecting the products from the automotive sector.

Q2 A significant number of candidates were unable to state the correct name for the pin. (Some thought it was a 'hair pin used to tie hair back in a workshop'). A small number of candidates were unable to identify the bolt.

Q3 Parts a) and b) were generally well answered. Many candidates gave specific software responses for types of ICT and these were rewarded appropriately.
Often candidates struggled to name an appropriate smart material and explain the term even though shape memory alloys (SMA) were clearly stated in the pre-release materials. Smart materials were often confused with modern materials. A number of candidates incorrectly stated 'polymers' as a smart material.
Centres are reminded that the use of modern and smart materials in this sector is widespread and that candidates should have a good working knowledge of a range of appropriate materials.

Q4 A wide range of appropriate products were evidenced some from last year's fire extinguisher. Some answers were very similar to the pre-release product such as 'lever jack'. Explanations were generally sufficient to be awarded a range of marks. Centres are reminded that products from this sector are wide and varied so candidates should always be able to gain some marks from these types of questions.
Many generic responses rather than specific materials and benefits were seen in part b). Candidates should, in this question concentrate on the product stated in part (a) and not the pre-release product.
In part c) some candidates did not change the emphasis eg "user" in part b) and manufacturer in part c).

Q5 In part a) many candidates often named a CAD modelling technique but found it difficult to describe it in any detail. Few were able to explain why CAD modelling is an important industrial process even though software such as ProDesktop is widely used in many centres.
The responses to CAM were more appropriate, however many were very limited answers particularly when explaining the benefit.

Q6 Generally well answered with the majority of correct responses being e-mail, something that was usually forgot in the responses to the 2004 Paper and commented upon in the examiners report. Some candidates incorrectly stated fax and telephone as communications technology.
Very few candidates had experience of EPOS for transferring sales information. Many answered e-mail and were rewarded appropriately. Some took the word 'talk' literally.

Q7 A significant number of candidates failed to attempt this question. Many did not have a detailed knowledge and understanding of CIM systems but chose to answer with reference to CAD/ CAM. Often weaker candidates restricted their answers to CAD. Hence the question worked well as a differentiator.
Centres are reminded that Computer Integrated Manufacture is a fundamental aspect of many modern manufacturing systems.

SECTION B – based upon the mass produced trolley jack pre-release material

Q8 A simple question well answered question with many candidates able to gain all marks by using notes and sketches to explain the functions of the mounting plate and wheels. Marks were awarded for what the candidates communicated and not how they communicated.

Q9 A range of appropriate materials were given, often though, restricted to steel which was awarded marks on this occasion.
There was a wide range of responses to part b) with painting being a popular response.
Part c) was generally well answered although many generic rather than specific responses offered.

Q10 Although this was not designed as a question to differentiate performance it turned out this way. The majority of candidates were able to correctly describe most stages many gave generic rather than specific responses to the manufacture of trolley jacks. Centres that related the stages of manufacture specifically to the pre-release product performed significantly better than centres who gave generic responses.
There was confusion with some candidates regarding the production planning stage where a commonly stated incorrect response related to the *design* of the product. In addition, many confused the assembly stage with the packaging stage.
The confusion from describing the production planning stage also exhibited itself in part b) where responses again related to design.

Q11 Some candidates struggled to identify a stage of manufacture and a corresponding quality check. There was evidence that some candidates were confused in relation to "what is being checked" and "how it should be checked". There was a good understanding of how computer control is used and the benefits to the manufacturer, by higher level candidates, with appropriate examples given.

Otherwise benefits to the manufacturer tended to be limited to simple explanations rather than the detailed responses required for this question.

Q12 Most responses by weaker candidates for part a) were very simple statements usually related to Internet advertising. Few candidates seemed to understand the benefits of using ICT in the marketing stage. In part b) many candidates confused the packaging stage with design rather than the monitoring and control of dispatch. Many candidates were unaware of the use of barcodes and how products can be tracked using new technology. Simplistic responses regarding the product's appeal to the target market seemed to be the limited response for part c).

Q13 Generally a poor response but as a progressive question it differentiated ability levels. Many wrote a lot for part a) but failed to target their response to the effect on the needs of a worldwide manufacturer and therefore failed to score any marks. Most candidates found this question challenging and as such very few were able to access all of the marks. Marks for both parts were hard to access, showing a general knowledge gap for this part of the specification in application to worldwide manufacturing and sustainability. Many candidates failed to attempt the question at all.

VGCSE Engineering 5316/01& 5317/01 June 05 – Statistics

5316/01 – Design & Graphical Communication

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	42	40	34	28	23	19	15	11	7	0

5317/02 – Engineered Products

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	42	39	34	29	24	19	15	11	7	0

VGCSE Engineering 5318 June 05 – Statistics

5318/01 - Printing and Publishing Paper and Board

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	65	56	47	38	32	26	21	16	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

5318/02 – Food & Drink, Biological & Chemical

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	79	70	61	52	44	36	28	20	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

5318/03 - Textiles and Clothing

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	78	66	54	42	35	28	22	16	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

5318/04 - Engineering Fabrication

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	70	60	50	40	35	28	22	16	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

5318/05 - Electrical and Electronic, Process Control, Computers, Telecommunications

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	71	62	53	45	38	31	25	20	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

5318/06 - Mechanical, Automotive

Grade	Max Mark	A*	A	B	C	D	E	F	G	U
Raw Boundary Mark	100	63	73	63	54	46	39	32	25	0
Uniform Boundary Mark	100	90	80	70	60	50	40	30	20	0

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