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Examiners' Report/ Principal Examiner Feedback

June 2011

GCSE

Application of Technology in Engineering and Manufacturing

Unit 5EM03 Paper 3C

Textiles and Clothing

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Contents

Chief Examiner's Report

There were two qualifications examined in this series at GCSE level.

GCSE Engineering (Double Award) 2EG02 and

GCSE Manufacturing (Double Award) 2MN02

Unit 3: Application of Technology in Engineering and Manufacturing (5EM03)

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

5EM03/3A Printing and Publishing Paper and Board

5EM03/3B Food & Drink, Biological & Chemical

5EM03/3C Textiles and Clothing

5EM03/3D Engineering and Fabrication

5EM03/3E Electrical and Electronic, Process Control, Computers, Telecommunications

5EM03/3F 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 the chosen sector and questions were related to that product. The product was pre-released in September/October 2010 and acted as a focus for research in preparation for the exam. Again this year a Support Paper was available to help centres prepare for the exam. This paper was attached to the pre-release material so every centre had access to this. Candidates were able to take their own research notes into the examination, but these were not to be submitted with the examination paper for marking. A very few centres did submit this work which caused problems for the processing of their scripts. This action may cause a delay in the marking and therefore issuing of results so centres are strongly warned not to include the pre-release work when submitting scripts. The question paper within both sections was ramped in difficulty throughout although in some papers an unusual pattern emerged where higher achievers failed to gain "easy" marks.

All Principal Examiners' reports indicate that all the questions within the respective paper were accessible to their intended candidature, although all indicated that lower achievers often gave generic answers throughout the paper. A feature of this year, different to the predecessor qualification, was that some sector papers (mainly sectors 3B and 3E) had a significant number of blank spaces. Also most Principal Examiners' reports indicate that marks could be obtained from questions 13 but question 14 which involved assessment of Quality of Written Communication (QWC) was difficult for most.

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. Some responses led the examining team to suspect that in some centres candidates were allowed to take in information from previous examination papers or mark schemes as often their answers were duplicates from these previous mark schemes. In these cases often the answer was not in the context of the question and the candidate was not able to score high marks and therefore were disadvantaged by having this information within their pre-release notes and sketches. Candidates are not allowed to have these documents in the examination room as part of their pre-release work.

In general terms a typical grade F candidate was able to identify products from a given sector, name and describe, with some exceptions in some sectors, the use of components/equipment etc and in nearly all cases 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 latter questions in the paper particularly when the question asked for explanations of a term such as 'systems and control' and 'automation'. 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 explain benefits of using CAD and CAM. Their responses when explaining the implications of the use of information and data handling were limited. Good responses were given when explaining the aspects of the product through sketches and notes. Some were still unsure of the stages in manufacture, particularly what happens in some of the stages of manufacturing.

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 the "real" manufacturing and application of technology of their product. Throughout the papers candidate responses evidenced a variety of applications of technology. Many candidates at this level understood what SMART materials are and knew all about the application of automation. Often their evaluations on the use and impact of modern materials and processes were well presented.

All of these points were considered during the awarding of the results.

Unit 5EM03_3C
Textiles and Clothing

General Comments

In general a good selection of responses were offered by candidates over both sections of this paper with many candidates being able to access some of the higher level questions at the end of the paper.

As seen in the past lower ability candidates often gave very generic responses to some questions, such as ‘quick / cheap/ easier which gained them limited marks. The more demanding questions (those at the end of Section B) were often out of reach for the lower ability candidates due to the ramped nature of the paper in question. It was however good to see that many were attempted and blank spaces were kept to a minimum.
It was clear that many candidates had read the question paper properly and when they were asked to ‘describe’, ‘explain’ or ‘discuss’ candidates took note of this and answered in full sentences or paragraphs as appropriate.

The pre-release material this year was focused on the manufacture of winter cycling gloves. Centres had clearly prepare well for this section of the paper as the candidates were able to discuss aesthetic, functional and material properties as well as production techniques related to this theme.

Section A

Question 1

The majority of candidates correctly identified the products belonging to the Textiles sector in part Q1(a) and Clothing sector in Q1(b).

Question 2

The majority of candidates were able to identify the textile components (button & pin) shown in Q2(a). However, Q2(b) proved difficult for some candidates who did not seem familiar with the term ‘reel of thread’. The hook and eye was correctly explained by most candidates who knew that it was a fastening and where about it could be used.

Question 3

A generally well answered question although some candidates did confuse the key areas of ‘control technology’ and ‘information communications technology’.

Question 4

This was a generally well answered question. Good responses to Q4(a) included products used in previous pre-release materials or in the sample assessment material. In Q4(b) candidates gave a wide variety of answers as the textiles and clothing sector has many modern materials to call upon. The benefits described in Q4(b)(ii) were quite generic in a lot of cases and the link to the manufacture was not made clear by a lot of candidates. Q4(c) was not so well answered as many candidates listed more modern materials as opposed to those that can be considered 'smart'.

Question 5

The majority of candidates achieved well in Q5(a) as they were able to state a variety of reasons why a manufacturer would use CAD. Many were also very good at describing these issues in further detail. Q5(b)(i) was not so well answered as many candidates stated generic benefits of CAM such as 'quick' and 'cheap'. In Q5(b)(ii) responses were quite often repeated from Q5(b)(i) and candidates often did not link their answers to the retailer.

Question 6

Q6(a) proved a problem for many candidates who struggled to define the term 'systems and control'. Many talked about the use of computers to control a process which would not attract the full mark allowance. Q6(b)(i) was well answered and many candidates were able to name an example of systems and control. Most candidates identified that some form of manual process had been replaced in Q6(b)(ii). In Q6(b)(iii) candidates could usually identify one detailed benefit of using robotics in hazardous conditions but they struggled to find a second answer to this question and it was found that in many cases the second answer was just a repetition of the first.

Question 7

Centres are reminded that the paper is ramped in difficulty and the latter questions in each section are aimed at the more able candidates. Many candidates struggled to respond well to this question. They appeared to be unaware of the meaning of the term 'information and data handling systems' and were often confused by the term 'implication'. Many candidates interpreted the question to have negative answers only, which was not the case.

SECTION B – based upon the mass produced winter cycling gloves pre-release material

Question 8

It should be noted for Q8 that for a candidate to obtain full marks they must use both notes and sketches to explain their responses. In Q8(a) many candidates drew useful sketches and it was clear to see how the glove expanded and contracted therefore making it suitable for a variety of wearers etc. They also added to their diagrams useful annotations. In Q8(b) and Q8(c) many candidates struggled to sketch meaningful diagrams to aide their explanations. In Q8(c) in particular, candidates were unable to explain or sketch the purpose of the ergonomic finger construction. Q8(b) and Q8(c) saw some good explanations written in prose however, so candidates were credited accordingly.

Question 9

Q9(a) - Many candidates were able to identify the missing stages correctly.

Q9(b)(i) and Q9(b)(ii) - Were generally well answered as many candidates could describe what happens during the processes of production planning and packaging and dispatch.

Question 10

Q10(a) was very well answered as most candidates could state a material used in the production of winter cycling gloves. There were mixed responses to Q10(b)(i). Here it is expected that candidates list specific processes that are carried out during the production of the winter cycling gloves. Suitable answers included responses such as ‘lay planning’, ‘cutting’, ‘sewing’ etc. Many candidates listed stages of the production process (eg marketing) or were not specific enough giving answers such as ‘assemble’. Q10(b)(ii) was well answered by many who could explain a variety of reasons why digital printing was a suitable process to use on the gloves.

Question 11

Many responses to Q11(a) were limited as candidates often struggled to put their explanation of ‘automation’ into a logical sentence. Q11(b)(ii) was quite well answered as many could describe numerous benefits to the manufacturer of using types of automation. Candidates generally struggled with Q11(b)(iii) as they found it difficult to distinguish between benefits to the manufacturer and benefits to the consumer. Q11(c) was well answered and attempted by most candidates. Many were able to explain the difference between automation and mechanisation.

Question 12

Most candidates were able to achieve full marks in Q12(a)(i) and many achieved full marks in Q12(a)(ii). It was clear that candidates were familiar with many different types of communication technology from this question and were able to describe the benefits of this. Mixed responses were given for Q12(b) as many candidates confused Q12(b)(i) and Q12(b)(ii). They often described a Quality Control check in Q12(b)(ii) and were then left leaving Q12(b)(ii) blank. Q12(b)(iii) was very well answered as most candidates were able to explain numerous ways in which Quality Control checks benefit the end user of a product.

Question 13

Many candidates attempted this question. This is pleasing as it is a good examination technique for candidates to attempt all questions, even if the response is an informed or 'educated' guess. Many candidates were able to gain some marks on this question. Most attempted to explain the impact of modern technology on the workforce but did not consider the working environment. Some candidates attempted to discuss environmental issues rather than those related to the working environment.

Question 14

This question was attempted by many candidates but some did leave it blank. Those candidates who did not perform well centred their answers on the term 'modern technology' and discussed issues such as automation which were seen earlier in the paper. Those that did pick up on the issue of 'sustainable manufacture' achieved some marks but often did not elaborate on the points that they made and so it was seldom that full marks were achieved. This question is now where candidates are credited for their QWC and in general most answers were written logically and correctly in clear English.

Grade Boundaries

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