

Examiners' Report/
Principal Examiner Feedback

Summer 2013

GCSE

Application of Technology in Engineering
and Manufacturing

Unit 5EM03 Paper 3E

Electrical and Electronics,
Process Control, Computers,
Telecommunications

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Unit 5EM03_3E

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General Comments

Overall, this paper produced a good range of response to the questions, the majority of students attempted all questions, however, this year empty spaces were again noticeable as the questions ramped up in Section B.

Lower ability students gave more generic responses to questions, such as 'quick/fast/cheap' which gained limited marks. The more demanding questions, especially at the end of Section B, were difficult for many students and consequently a proportion gave poor responses. The format of the last question has shown centres developing the concepts of marketing and selling due to use of new materials.

Most students have demonstrated being taught examination skills and technique, however some of the low ability still had problems understanding the questions in Section B.

Section A

Question 1

The majority of students correctly identified the products belonging to the Electrical and Electronics sector in Part (a) and the Process Control and Computer sector in Part (b).

Question 2

The majority of students correctly identified the 'solder sucker' and some the 'long nose pliers'.

Part b) was well attempted with the majority of students gaining some marks. It was pleasing to see so many get the function of the components correct.

Question 3

A straightforward and generally well answered question with a high proportion of students gaining full marks.

Question 4

Good responses to Part (a) included products used in the pre-release materials for past papers or sample assessment materials.

For Part (b)(i) a number answered with a process in the stage, but the question was generally well answered. Part (b)(ii) was answered well by most.

In Part (c)(i) , students generally provided answers of ABS or Polythene. Responses in (c)(ii), were of a very varied standard with many low level responses.

Question 5

The majority of students scored reasonably well for Part (a) giving a use of CAM in manufacturing and a benefit. However responses in (b) showed a limited knowledge of all the benefits of CAD.

Question 6

Reasonable responses were seen for Part (a) and many gave good examples to show their understanding. Students answered Part (b)(i), well, recognising the traditional method it replaced. In Part (b)(ii) mainly low responses were seen and a number of lower ability accessed one mark for an advantage, and in (b)(ii), most gave one disadvantage but again mainly low responses were seen.

Question 7

This question required an ability to provide specific responses, by drawing upon specialist knowledge. Students were asked to provide answers that related to the use of PLCs in safety and production efficiency.

Part (a) was generally a well answered question, although some students provided highly generic responses, such as, 'reduce danger', 'less injuries' without qualification. Responses that scored full marks had an explanation or were qualified, eg 'Because a fault is detected and the machine is stopped to avoid injury.'

Part (b) was related to production efficiency, again some students provided generic responses, but most gave low responses.

Section B - Based upon the 'mass produced hot air gun' pre-release material

Question 8

A reasonably well answered question for all parts. Students were able to effectively explain, using notes and sketches, the function of the nozzle, casing and the control switches. The vast majority of students had clearly undertaken some research based upon the pre-release material. Some responses with drawing failed to annotate 3 points on the drawing, thus not achieving full marks.

It should be noted that full marks can only be attained with both notes and sketches; a significant number of students omitted one or the other.

Question 9

For Part (a)(i) & (ii), the correct sequence of stages is clearly outlined in the specification and centres should refer to it.

Part (b)(i) looked at the Design stage and was again generally well answered with maximum marks gained from low responses. Part (b)(ii) looking at Marketing was not answered so well, with mainly two low responses being provided.

Question 10

Part (a) showed that many student had done the research and answered well. Part (b)(i) elicited a varied response; answers that gained full marks were few, however most could identify other production processes. For Part (b)(ii), those students that had studied wave soldering technology were able to offer some detailed responses. Most got marks for low responses. For Part (b)(iii) those who studied the technology behind pick and place machinery were able to offer detailed responses.

Question 11

For Part (a)(i), simple responses were evident, but most generally understood the function of process control. Many students gave correct answers to (a)(ii), with many correct low responses for why process control is used during automated stages of manufacture, but few were able to achieve maximum marks. In Part (b) those with an understanding of QC gave good responses but many gave low responses for identifying the QC function.

Question 12

Part (a) looked at the changes to the type of workforce and the production environment and environmental benefit, and was generally answered well by most of the students. For Part (a)(i), higher skills or retraining were the prevalent answers. For Part (a)(ii) most got the changes with some being able to explain why. For Part (a)(iii) most could identify a benefit. In part (b) the advantages of the use of barcodes at the packaging and dispatch stage showed varied responses and most could provided two valid responses.

Question 13

This question asks for the impact of modern materials on customer satisfaction. Many attempted the question and achieved some low response marks with many giving low responses. The more able students had covered and identified the key points well.

Question 14

The majority of students sitting the examination paper this year attempted this final question. This is pleasing as it is good examination technique for students to attempt all questions, even if the response is an informed or 'educated' guess. Responses indicated that a number of students did understand how modern technology improved production process and profit affected marketing by looking at the issues of the effect of new materials and new manufacturing processes. As a ramped question it clearly differentiated and the marking scheme focuses on ensuring more than two issues are developed to gain full marks.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

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