

Examiners' Report/
Principal Examiner Feedback

Summer 2012

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 responses. The majority of candidates attempted all questions and this year empty spaces were noticeable as the questions ramped up in section B.

Lower ability candidates gave less 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 candidates and consequently a proportion gave poor responses. Candidate responses to the last question has highlighted a need to inform centres of developing the concepts of energy management.

Most candidates have demonstrated being taught examination skills and technique, however, some of the lower ability still had problems understanding the questions in section B.

Section A

Question 1

The majority of candidates 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 candidates correctly identified both components used in the manufacture of products, namely the 'thermistor' and 'buzzer'. Part (b) was well attempted with the majority of candidates gaining some marks. It was pleasing to see so many get the function of the MES lamp correct.

Question 3

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

Question 4

Good responses to (a) included products used in the pre-release materials for past papers or specimen assessment materials. In Part (a)(ii) , candidates generally provided answers of 'ABS' or 'Polythene'. Responses in (a)(iii) were of a very varied standard with many low order responses , but most got the advantages. For part (b)(i) a number answered with a process in the stage, but generally well answered. Hence (b)(ii) was answered well by most.

Question 5

The majority of candidates scored reasonably well for part (a) giving three appropriate low responses. However, responses did show a limited knowledge of all the benefits of CAD. Good responses in (b) with most knowing advantages to using CAM.

Question 6

For part (a)(i) many gave good examples to show their understanding. In (a)(ii) mainly low responses were seen with a number of lower ability candidates referring to a need to have a computer or the internet. Candidates answered part (b)(i), well, recognising the traditional method it replaced, hence in (b)(ii), most gave two advantages but mainly low responses.

Question 7

This question required an ability to provide specific responses, by drawing upon specialist knowledge. Candidates were asked to provide answers that related to production efficiency when using Information and Data handling in part (a). It was generally a well answered question, although some candidates provided highly generic responses, such as, 'quicker method' and 'spreadsheets' and 'databases' without qualification. Responses that scored full marks had an explanation or were qualified. Part (b) was related to two benefits when using Information and Data handling in packaging and dispatch and was also a generally well answered question. Again, some candidates provided generic responses, but most gave low responses.

Section B - Based upon the 'mass produced mobile phones' pre-release material

Question 8

A reasonably well answered question for all parts. Candidates were able to effectively explain, using notes and sketches, the function of the LCD screen, keypads and connection points. The vast majority of candidates had clearly undertaken some research based upon the pre-release material. A number of responses with drawing failed to annotate 3 points on the drawing so were unable to achieve full marks.

However, it should be noted that full marks can only be attained with both notes and sketches; a significant number of candidates 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 marketing stage and was again generally well answered with maximum marks gained from low responses. Part (b)(ii) looking at materials supply and control was not answered so well and with mainly two low responses.

Question 10

Part (a) showed that many had not looked at antenna manufacture but those that did, answered well.

Part (b)(i) elicited a varied response; answers that gained the full 3 marks were few, however most could identify other production processes. For part (b)(ii), those candidates that had studied surface mount technology were able to offer some detailed responses. Most achieved marks for low responses.

Question 11

For part (a)(i), simple responses were evident, but generally most understood the function of QC in packaging and dispatch. Many candidates gave correct answers to (a)(ii), but many of the low response related to the conveyor belt and pick and place robot. In part (b) the responses were good but were low responses for identifying the advantage.

Question 12

Part (a) looking at the changes to the working environment was generally answered well by the majority of candidates. For part (a)(i), less work and more skills were the prevalent answers. For part (a)(ii), many correct low responses for global environment were seen but few gained full marks. Part (b) looking at the use of ICT at named stages was answered well by most.

For (b)(iii) a benefit of ICT to the distributor produced varied responses but most achieved a low response mark.

Question 13

This question asks for the impact of control technology on safety when manufacturing. Many attempted the question and achieved some low response marks, with many providing 2 low responses. Some could identify two effects on the workforce and the workplace. As a ramped question the more able had covered and identified the key points.

Question 14

The majority of candidates sitting the examination paper attempted this final question. This is pleasing as it is good examination technique for candidates to attempt all questions, even if the response is an informed or 'educated' guess. Responses indicated that many candidates did not understand fully how energy consumption can be reduced to be cost effective. Most candidates only achieved between 1 or 2 marks. As a ramped question it clearly differentiates and the marking scheme focuses on ensuring more than one issue is developed to gain full marks. Centres need to develop a better understanding of how energy consumption can be reduced.

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