Examiners' Report/
Principal Examiner Feedback

Summer 2015

Pearson Edexcel GCSE
in Manufacturing & Engineering

5EM03 Paper 3E

Electrical and Electronics, Process Control, Computers, Telecommunications

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General Comments

Only 27 students took this paper so difficult to come to clear conclusions. Overall, this paper produced a good range of responses to the questions. The majority of learners attempted all questions but this year empty spaces were again noticeable as the questions ramped up in Section B.

Lower ability learners 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 learners, and consequently a proportion gave poor responses. The question relating to Lean Manufacturing was well answered by those who were taught about this.

Most learners have demonstrated being taught examination skills and techniques. Some of the low ability learners still had problems understanding the questions in Section B.

It was noticeable that a number of learners had little knowledge of electronic equipment, components and their function in circuits.

Section A

Question 1
The majority of learners 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 learners failed to identify the tools. Part (b) was well attempted with the majority of learners gaining some marks for the motor. It was disappointing to see so many get the function of the fuse incorrect.

Question 3
A straightforward and generally well answered question, with a high proportion of learners gaining full marks.

Question 4
Good responses to (a) included products used in the pre-release materials for past papers or specimen assessment materials. Part (b)(i) generally well answered. (b)(ii) was answered well, with most getting 2 marks. In Part (c)(i), learners generally provided an appropriate smart material although confused this with modern materials (GCSE Bitesize could be the problem as it has a section on Smart and Modern materials). Responses in (c)(ii) were of a very varied standard, but most got some appropriate points.

Question 5
The majority of learners scored reasonably well for Part (a)(i), giving reference to global communications. For (a)(ii), most got a disadvantage for hacking or system failure. Then in (b)(i) most learners put mobile phone; in (b)(ii) most learners got a low level benefit.

Question 6
Part (a)(i) had reasonable responses, many gave good examples to show their understanding. There were limited responses in Part (a)(ii) for disadvantages – most got 'high cost for set up'. Learners answered Part (b) reasonably well, recognising a feature.

Question 7
This question required an ability to provide specific responses by drawing upon specialist knowledge. Learners were asked to provide answers that related to the use of information and data handling systems in Production planning. Part (a) was generally a well answered question, with some learners providing generic responses, such as 'quantity of materials'. Part (b) was related to marketing and selling. Most gave low responses for one mark each, as detailed in the mark scheme.

Section B – based upon the 'moisture tester' pre-release materials

Question 8
A reasonably well answered question for all parts. Learners were able to effectively explain, using notes and sketches, the function of the probes, outer case and the selector switch. The vast majority of learners had clearly undertaken some research based upon the pre-release materials. 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 – some learners omitted one or the other.

Question 9
For (a)(i) & (ii), the correct sequence of stages is clearly outlined in the specification and centres should refer to it. Many learners gained full marks. Part (b) looked at the design stage, and was again generally well answered with maximum marks gained from low responses. Part (c) looked at the packaging and dispatch stage, and was not answered so well, with mainly two low responses.

Question 10
Part (a) showed that many had done research on moisture tester probes and 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 learners that had studied injection moulding were able to offer some detailed responses. Most got marks for low responses. For Part (c), those who studied thermoplastics used in manufacturing were able to offer detailed responses.

Question 11
For Part (a)(i), simple responses were evident, but generally illustrated an understanding of the role of Control Technology. Many learners gave correct

answers to (a)(ii), but as low responses for use of Control Technology in the production of moisture testers, with few achieving maximum marks. In Part (b), those with an understanding of how a manufacturer uses computer controlled production gave good responses. A number of responses given were based on last year's question.

Question 12

This question was looking at Lean manufacturing, and where it was taught saw good responses and full marks in (a)(i) and (a)(ii). In (b)(i), there were good responses to the positive effects and most got 1 mark for (b)(ii).

Question 13

This question asks for how to process materials in a sustainable way. Many attempted the question and achieved some low response marks with reference to reworking of materials. As a ramped question, the few more able had covered and identified other key points.

Question 14

A number of learners sitting the examination paper this year attempted this final question. This is pleasing as it is a good examination technique for learners to attempt all questions, even if the response is an informed or 'educated' guess. Responses indicated that a number of students did understand how automation improved the quality. None picked up on the need to move away from highly skilled manual workers/crafts. As a ramped question, it clearly differentiates, 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:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

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