

Examiners' Report/
Principal Examiner Feedback

Summer 2014

Pearson Edexcel GCSE in
Application of Technology in
Engineering and Manufacturing

Unit 5EM03 Paper 3E
Electrical and Electronics,
Process Control, Computers,
Telecommunications

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Electrical and Electronics, Process Control, Computers, Telecommunications

General Comments:

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

Lower ability learners 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 learners and consequently a proportion gave poor responses. The format of the last question has shown centres developing the concept of "just in time" techniques.

Most learners have demonstrated being taught examination skills and technique; some of the low ability 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 correctly identified the solder iron stand and only a few the logic probe. Part b) was well attempted with the majority of learners gaining some marks for the transistor. It was disappointing to see so many get the function of the components 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) a number answered with a process in the stage, but generally well answered. Hence b)(ii) was answered well by most. In Part c)(i) , learners generally provided answers of wave soldering or hand soldering. Responses in c)(ii), were of a very varied standard with many low order responses but most got some appropriate points.

Question 5

The majority of learners scored reasonably well for Part a) giving a use of direct advertising as a benefit. However in b) does show a limited knowledge of all the benefits of CAM.

Question 6

Part a)i was a reasonable response, many gave good examples to show their understanding. Limited response to how manufacturers could make use of e-mails in a)ii. Learners answered Part b)(i), well, recognising smart materials and mainly Polymorph, b)(ii) mainly low responses and a number of lower ability accessing one mark for an advantage, and in b)(ii), most answered well but mainly low responses.

Question 7

This question required an ability to provide specific responses, by drawing upon specialist knowledge. Learners where asked to provided answers that related to the use of information and data handling systems in Product sales and Production. Part (a), was generally a well answered question, although some learners provided highly generic responses, such as, customer information, advertising without qualification. Part (b) was related to production, again some learners provided generic responses, but most gave low responses similar to the mark scheme.

Sector B – based upon the ‘night light’ pre-release material

Question 8

A reasonably well answered question for all parts. Learners were able to effectively explain, using notes and sketches, the function of the base, light detector and the cover. The vast majority of learners had clearly undertaken some research based upon the pre-release material. Some responses with drawing failed to annotate 3 points on the drawing so not achieving full marks.

However, it should be noted that full marks can only be attained with both notes and sketches; a significant number of learners 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, many learners gaining full marks. Part b) looked at the materials supply and control stage and was again generally well answered with maximum marks gained from low responses. Part c) looked at the production planning stage and was not answered so well and with mainly two low responses.

Question 10

Part (a) showed that many had done research on polymers 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 vacuum forming were able to offer some detailed responses. Most got marks for low responses. For Part (b)(iii) those who studied the environmental impact of manufacturing and the use of modern materials to reduce the effect, were able to offer detailed responses.

Question 11

For Part a)(i), simple responses were evident, but generally understood the function of ICT at the design stage. Many learners gave correct answers to

a)(ii), but as low responses for use of ICT in the packaging and dispatch stage, with few achieving maximum marks. In (b) those with an understanding of how a distributor uses ICT gave good responses. For c) the impact ICT had on design, development and production answered mainly with low responses.

Question 12

Parts (a) was looking at the changes to the type of workforce and the effect of automation and were generally answered well by most of the learners. For Part a), higher skills or retraining or reduced workforce were the prevalent answers. For Part b) how automation effected the working environment most got the changes with some being able to explain why. Part c) most could identify other issues gave responses about cost implications and the impact of noise.

Question 13

This question asks for how waste heat can be utilised. Many attempted the question and achieved some low response marks with reference to heating the workspace. 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 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 "just in time" improved the manufacturing process with regard to the supply chain and dealing with errors and storage issues. None picked up on the need for multi-skilling. 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>

