



General Certificate of Education

Design and Technology: Systems & Control Technology 2556

SYST3 Design and Manufacture

Report on the Examination

2010 examination - June series

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General

Section 1

Question 1

This was a popular question and was answered by more than half the candidates.

Part 01

The majority of candidates attempting this question produced a clear and reasonably sized sketch of suitable mechanisms. The better answers showed how the mechanical parts were attached to the shaft and explained the energy conversions taking place.

It was encouraging to see the range of methods used by candidates, showing a good application of knowledge.

Part 02

A well answered question with the majority of the points made referring to technical advantages and limitations.

Part 03

A well answered question with the most of the candidates producing clear well proportioned and labelled sketches. The majority of candidates achieved half marks or better.

Question 2

Part 04

Candidates used clear sketches to show the anthropometric data required. In most cases the reasons given were specific to the mobile phone and described how the data was applied. Approximately three quarters of the candidates attempting this question achieved half marks or better. It is pleasing that only a very few candidates confused anthropometrics and ergonomics.

Part 05

The majority of answers achieved half marks or better. The question required candidates to relate their comments to potentially hazardous situation, unfortunately many start with a specific example but then gave general observations that could be related to any general situations

Question 3

This was a popular question and was answered by more than half the candidates.

Part 06

The answers to this question clearly demonstrated first hand experience of candidates in use of the different types of available software. The quality of arguments for and against were well put with good examples of alternative methods given with reasons. Candidates scored well on this question with over three quarters achieving half marks or better.

Part 07

A wide range of examples were used but the majority of examples were related to general appearance, aesthetics and market research. The technical, testing and evaluation use of modules was neglected in all but the best scoring answers.

Question 4

This was the least popular question with less than ten percent of the candidates attempting it, although the majority of those that did scored well.

Part 08

The most common solution used involved the use of a stepper motor and gearing, in most cases the gearing calculations were correct. A few candidates used other prime movers and a feedback system which was also acceptable if the sensor would provide the correct degree of accuracy.

Part 09

It was very pleasing to see the candidates application of knowledge to this question. Many different acceptable solutions were given with explanations that showed a high level of understanding. There were very few 'Black Box' solutions with no explanation of what happens inside the box.

Question 5

This was the most popular question and was answered by more than two thirds of the candidates.

Part 10

Most candidates could suggest two suitable methods of joining but very few could explain how this was done. There was little or no reference to preparation and limited understanding of how joining is achieved. When heat was used the temperatures were normally inappropriate or not given.

Part 11

Candidates normally identified two suitable methods that could be used with non-ferrous metals, but had difficulty relating them to specific metals. The most common method used was riveting although generally well explained many candidates failed to produce a hole for the rivet to go through.

Candidates also normally described a heat process such as soldering, brazing or welding, all these were perfectly acceptable. As with the joining of plastics there was limited reference to preparation or the use of flux. The greatest confusion was with the use and purpose of the solder or filler rod. Very few answers made any reference to the heat source, the temperature required or how the additional material is melted or how it joins the materials.

Part 12

A well answered questions with most candidates making reference to technical problems involving the joint and the materials. Safety of the operator was only accepted as one example.

Question 6

Part 13

A wide range of feasibly solutions were given that applied many different parts of the specification content, as long as they could produce the required function they could achieve full marks. The sensing part of the system was normally well explained as was the display. Candidates often failed to show how the timer operated, too often they just drew a box labelled 'PIC' with no explanation of the program. The sensor connections to the timer and the output to the display were also not clear in a large number of cases.

Part 14

A well answered question, candidates showed a good understanding of the advantages and limitations of pneumatics and used good examples of use to support their answers.

Part 15

The answers that scored well on this question made clear reference to the difference in surface area on each side of the piston and that the force produced was dependant on the area of the piston.

Mark Ranges and Award of Grades

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