



**General Certificate of Education (A-level)
June 2011**

**Design and Technology:
Systems and Control
Technology**

SYST3

(Specification 2555)

Unit 3: Design and Manufacture

Report on the Examination

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Section 1

Question 1

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

Part 01

Tensile Strength

Most candidates could produce a suitable sketch for a method of testing tension.

The descriptions of the system provided often showed little understanding of the amount of force required to break a sample. Either the sample was excessively large or the force was not of the correct order of magnitude.

Most candidates clearly identified the data that needed to be collected but failed to use appropriate measuring devices especially for measuring extension.

Many candidates did not describe how the data was analysed but just said it would be entered into a spreadsheet or graph.

Hardness

Most candidates could produce a suitable sketch for a method of testing hardness.

The descriptions of the system used often allowed for more than one variable, therefore the results could not be used to make comparisons.

Electrical Resistance

In many cases the size and shape of the sample was inappropriate. Many candidates were confused about the positioning of meters in a circuit or the correct type of meter or meters to use. The better answers made reference to the relationship of voltage, current and resistance.

The analysis of the data for this part was generally well done.

Resistance to Corrosion

Some very ingenious solutions to this problem. Very few answers had a suitable and quantifiable method of measuring the amount of corrosion that had taken place. Candidates tended to suggest observation with no indication of what you are looking for.

Many candidates still seem to think that the only type of corrosion on metal is rust.

Question 2

Part 02

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

Part 03

A well answered question with the most of the candidates producing clear reasons relating to function, hygiene and methods of production.

Part 04

Candidates gave clear reasons for their materials choice and made reference to the properties required. The methods of production given did not always match the material.

Part 05

The majority of answers achieved half marks or better. The candidates used a wide range of suitable materials and made clear reference to the many different properties required in this situation.

Question3

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

Part 06

This part of the question was well answered with most candidates giving suitable sketches and clear explanations of either vacuum forming or injection moulding. A few candidates used the example of 3D printing which was also acceptable.

Part 07

This part of the question was not as well answered as part 06. Most candidates used forging or casting as the process, many of the answers lacked important technical detail.

Part 08

This part of the question was not well answered. Many candidates did not appear to understand the term. The reasons given were often generic and could be applied to any manufacturing process.

Question 4

Part 09

It was very pleasing to see the range of solutions given by candidates, these showed a clear understanding of the different ways the suns energy effects the environment. The higher scoring answers clearly showed the energy changes that take place.

Part 10

Most candidates scored well on this question but only the better answers related their responses to the UK, its resources and environment.

Question 5

This was not a popular question and was answered by less than a quarter of the candidates.

Part 11

Candidates showed a good understanding of the operation and characteristics of both types of motor. There was good use of technical language to support their answers. Most answers compared the advantages and limitations of the two types of motor but to achieve the higher marks this needed to be related to situations requiring precise linear movement.

Part 12

A well answered questions with most candidates using suitable diagrams to aid their explanation. A range of sensors, both analogue and digital were used to provide the feedback. Only the better answers clearly showed how the sensing system was activated by the output or how the feedback signal controlled the motor.

Question 6

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

Part 13

Candidates used clear sketches to show the anthropometric data required and where it affects the design of the bicycle. In most cases the reasons given were specific to part of the bicycle and described how the data was applied.

Part 14

A well answered question, candidates showed a good understanding of what makes a fair test. They used a wide range of systems to power the wheel, provide force to the brake and measure the effect. Only the better responses clearly showed how the results could be analysed to compare the different systems.

Mark Ranges and Award of Grades

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