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

Design and Technology: **SYST1**
**Systems and Control
Technology**

(Specification 2555)

Unit 1: Materials, Components and Application

Report on the Examination

General
This was the third examination sitting of the new GCE Design & Technology: Systems and Control Technology specification at AS and the second examination sitting at A2. Centres should be highly commended for the quantity of work they have had to undertake in assimilating the requirements of the new specification, and in the amount of time they must have taken in preparing their candidates for the new format of examination. The quality of responses suggested that candidates had been well prepared for the examination in both the written and design based questions.

This year the SYST1 paper was marked online and candidates should be aware that they should only answer questions in the spaces allocated on the paper and use the additional answer sheets if their answer extends outside the allocated area. Candidates must also ensure
that any additional sheets they use are fully labelled with their name, centre number and candidate number.

The use of sketching and annotation continues to be of a good standard in both the short and long answer questions.

Section A - Compulsory

Question A1(a)
The majority of candidates gave an example of an input transducer, however a limited number could actually explain the term.

Question A1(b)
The majority of candidates gave an example of an output transducer, however a limited number could actually explain the term.

Question A2(a)
The majority of candidates gained marks on this question although many answers made reference to flowcharts instead of a system.

Question A2(b)
A well answered question with most candidates making use of a sketch to clarify their explanation. The most common omission from the diagrams was an indication of a pivot point.

Question A3
A well answered question with responses showing a clear understanding of a suitable method, the most commonly used was soldering. Many candidates failed to make any reference to the need for a clean joint or the use of flux.

Question A4(a)
The majority of candidates could complete the possible input combinations for A, B and C although these were often not in a logical order. The marks awarded for column Q tended to be either very good or very poor.

Question A4(b)
Most candidates received a mark for a suitable diagram of a SPDT switch but failed to show or explain how it was connected to the supply or input of the gate.

Question A4(c)
Approximately half the candidates scored on this question, the use of technical language varied considerably.

Section B – Answer one of two optional questions.
In this paper the majority of candidates opted to answer question 6 as opposed to question 5, however both questions appeared to test candidates in equal measure.

Question B5(a)(i) & (ii)
The majority of the candidates opted to produce electronic solutions to this problem although it could easily have been answered using a mechanical or pneumatic system operating switches. This type of solution would have allowed the 240 volt lamp to operate directly without the need for an interface.

The majority of responses used solutions based on the PIC or 555. Most candidates could produce a recognisable circuit although connections were often incorrect and the activation switch omitted.

For an answer to receive a high mark an explanation of how the timing was achieved needed to be included.

In the case of a 555 circuit this could be achieved by a circuit diagram showing component values and the relevant timing formulae or a circuit diagram with an explanation of the circuits operation and the interaction of the components to provide the correct cycle.

In the case of a PIC solution a suitable circuit diagram was required along with a flowchart or explanation clearly showing how input sensing, output and timing cycle were achieved

Question B5(b)
Most candidates could adapt their solution but only the better answers made reference to actual values required to achieve the timing range.

Question B6 (a)(i) & (ii)
Nearly all candidates were able to provide reasonable quality answer to this question. Candidates often forgot to label their diagrams with values or explain how the amplification was achieved.

Question B6 (b)
This question was generally well answered, although many candidates failed to show the pivot points or a guidance system for the reciprocating motion.

Section C - Compulsory

Question C7 (a)
Nearly all of candidates gained at least half marks for this question. Candidates showed suitable sensors mounted in appropriate positions. Only the better answers had a system that produced an output **proportional** to the water level.

Question C7 (b) (i) & (ii)
This question was well answered by the majority of candidates. Most solutions would clearly convert the motion of the river into rotary motion although some were much more efficient than others. Many candidates converted the vertical movement or water level into rotary motion, this was a perfectly acceptable response to this question.

Question C7 (c)
A generally well answered question with the majority of candidates using a sensor activated by a cam connected to the shaft.

Many candidates showed the sensor but failed to show how an electrical pulse was produced.

Question C7 (d)
Many answers showed a system that was capable of counting and displaying the number of pulses. Only the better responses made clear reference to the input and how a timing system was integrated, so that only the number of pulses per minute could be displayed.

Question C7 (e)
A reasonably well answered question, with candidates showing the ability to 'join up' their thinking from the previous parts and create realistic and functional complete systems.

Only the better answers made reference to suitable materials and methods of construction.

Mark Ranges and Award of Grades

Please see the following link:

http://www.aqa.org.uk/over/stat.html

UMS Conversion Calculator

Please see the following link:

www.aqa.org.uk/umsconversion