



## **General Certificate of Secondary Education**

# **Design and Technology (Systems and Control Technology) 3546/H**

**3546/H      Higher Tier**

## **Report on the Examination**

*2008 examination - June series*

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*Dr Michael Cresswell Director General.*

## General

The theme for this years examination was 'Theme Parks' and this allowed the questions to have a known context. Section A was answered by both the mechanical and pneumatic candidates, whilst in Section B candidates had a choice of question, depending upon the schools specialism. As in previous years the majority of candidates opted to answer the mechanical question.

The majority of the questions were attempted by all candidates. Many questions on the paper were developed to build upon the knowledge and skills developed by candidates during their coursework.

Questions requiring the candidates to design systems met with a variety of responses. Design issues and health and safety questions were well answered and most candidates gained good marks. AQA is pleased to note the high quality responses to the logic and the control sequence questions.

Candidates should be reminded that where a question asks them to show certain features, it is these features which will attain the marks. Often strong responses did not gain full marks because the candidate had not fully shown or discussed what was required by the question.

Some candidates lost marks because their answers were unreadable. Whilst there are no specific marks for hand writing or presentation skills, candidates should be reminded that if their answers cannot be understood, they will not receive credit.

At the lower end of the ability range some questions were not attempted. All candidates need to be reminded that an attempt at a question always has the chance of gaining marks, whereas a blank response is guaranteed to gain no marks.

## Section A

### *Question 1*

This question was well answered by most candidates. There was evidence that candidates had considered the theme. Candidates scored well on the 'bubble diagram'. The Design Specification was answered well by most candidates, some had trouble with the Durability requirements and others gained no marks for repeating the question e.g. 'it must be safe'.

### *Question 2*

This question was generally well answered. Marks were lost for only specifying generic materials (e.g. wood, metal, plastic) and some candidates only completed one design idea.

### *Question 3 (a)*

The question was well answered by most candidates. The point of an *electronic* sensing device was often missed.

'Pressed Pad' in the floor was a common response. LDR and potential divider answers were seen.

### *Question 3 (b)*

Candidates produced a variety of responses from fully workable solutions to barely recognisable attempts at a mechanism. Higher ability candidates responded well particularly those that followed the bullet points in the question.

#### *Question 4*

There were a variety of responses with a good number of candidates gaining full marks. Candidates could answer as a list of commands or as a flowchart; they did not need to do both. The most common error was not providing continuous operation. It was unfortunate that the printing of the paper placed the answer sheet on the next page to the question. Most candidates that attempted the question gained some marks.

#### *Question 5*

Part (a) attempted by most candidates, the majority gained full marks. A large variety of correct responses was seen in part (b), including rack and pinion, pneumatic cylinder, cam and follower, crank and slider. Some candidates struggled to show how the system would retract to allow the target to fall. Few showed how their system was mounted to the base or upright with many designing in free space. The notes were often of a better standard than the sketch but some were describing the need rather than the solution.

#### *Question 6*

Candidates answered well on the whole with many gaining full marks. There was some confusion between 'start up checks' and regular maintenance operations'. Candidates should be reminded that a single word answer is not sufficient to answer a two mark question.

### **Section B**

#### *Question 7*

This question was answered well. Most candidates drew the cam correctly but many failed to modify the end of the follower as asked and concentrated on the bearing blocks. Few candidates gained the five marks for completing the gear train diagram. The rest of the question was well answered.

#### *Question 8*

This question was attempted by few centres. The few that did, answered it well, although they did struggle on correctly connecting all of the airlines in part (a).