



General Certificate of Secondary Education

Design and Technology: Systems and Control Technology 45651

Unit 1: Written Paper

Report on the Examination

2010 examination – June series

Further copies of this Report are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2010 AQA and its licensors. All rights reserved.

COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334). Registered address: AQA, Devas Street, Manchester M15 6EX

General Comments

The theme for **Section A** of this year's examination was 'School Lift Models' and this allowed these questions to have a known context.

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. This was due to either poor handwriting or not writing in **black** ink. 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.

Question 1

1a

Candidates should be reminded to read the question in full. The question was about a Model Lift so answers referring to full size lifts did not attain full marks.

Some students lost marks through repeating the example answer as one of their own.

Whilst marks were not deducted, students should be reminded to use SI units of measurement. Others units seen included inches, feet, mph and bhp.

1b

This was generally well answered by the majority of students.

Marks were lost for giving sensors rather than components e.g. motion sensors, pressure sensors, optical sensors. Marks were also lost by candidates who did not provide all of the information asked for in the question.

Whilst there were several correct mechanisms that the students could have chosen to describe, hydraulics and rack and pinions with no motor were not suitable.

2

There were many blank responses to this question which suggests that logic had not been taught.

The most common error was to miss out the 'NOT' gate.

There were several candidates who gained the full 10 marks.

3

The first half of this question was generally well answered by the majority of the candidates.

Marks were lost where the Slide switch or DPDT Switch was simply described as a switch

The building block column was poorly answered with many candidates drawing the component symbols (a case of not reading the question carefully).

There was a range of responses to parts 3b and 3c.

The formula question, 3c(iii) was poorly answered by the majority of candidates with few gaining the full 4 marks.

4

A range of responses were given to question 4a and it was felt that the candidates ability to answer this depended upon the student's experience of building circuits as part of their coursework.

The PCB layout tended to split the candidates with many either gaining full marks or no marks.

It was clear that many students did not know the PCB manufacturing process and struggled to describe it.

5

The first part of this question was generally well answered with the majority of candidates gaining marks.

A percentage of candidates failed to give a specific material and lost marks. Wood, metal and plastic are not specific materials. It should also be noted that a pressure pad is not a specific component.

The flowchart was often attempted with many candidates inserting the statements correctly. It was clear that some students struggled with the concept of Sub routines. Most entered the output states correctly but few managed to gain full marks as they struggled to add the four connecting arrows back to the right boxes.

It was encouraging to see that several students did manage to gain full marks for this question.

6

This question was attempted by most candidates and there was a range of responses.

Part 6b, slowing down the speed of the output whilst increasing the torque, was expecting a change in the gear ratio and an improved method of transmitting the drive over a belt.

Suggestions such as buying lighter curtains, braking the motor or closing them by hand did not gain marks.

The forms of, and advantages of, environmentally friendly energy sources were generally well known.

Overall, most questions on the paper were attempted by the candidates, with few blank responses being seen. The majority of missed marks were due to the candidate not reading the question fully and either giving answers to a different question or failing to gain full marks due to missing information.

When designing mechanisms, candidates should draw components and materials that are suitably joined and not just sketch shapes. Labels should give additional information and add clarity to a sketch.