**General Certificate of Secondary Education
June 2011**

Engineering (Double Award)   48503

(Specification 4850)

Unit 3 Application of Technology

Report on the Examination

General

This was the first time in which the examination for Unit 3 has been sat. The examination paper allowed candidates to demonstrate their skills in drawing techniques and planning. They were also able to explain their understanding of manufacturing processes, surface finishing and the application of technologies.

It was pleasing to note that the vast majority of candidates attempted all the questions on the paper. The communication skills shown by the candidates were varied and sometimes a little disappointing: as it is a regulatory requirement that Quality of Written Communication is assessed in all GCSE papers, it is recommended that candidates work on this aspect along with the rest of their examination revision.

Candidates demonstrated good drawing skills, with most understanding of the principles of orthographic projection. Planning material requirements and producing process flowcharts saw mixed results.

Candidates' understanding of manufacturing and finishing processes was generally very good, whilst their knowledge of the application of technologies produced a mixed level of response.

Generally candidates seemed to be well prepared for the examination.

Question 1 (a)(i)

This question was generally well answered, although a significant few did not place the correct view in the space provided but drew it elsewhere. Many candidates omitted the centre lines and/or centre lines.

Question 1 (a) (ii) and (iii)

The vast majority of candidates got these two 1 mark questions right.

Question 1 (b) (i)

This was correctly answered by the majority of candidates, but many made simple errors in adding up the sections of the steps. Sketching out the part as a flat section could have helped them in the checking of their answer.

Question 1 (b) (ii)

This question was not well answered. Very few tried a graphical approach to make a rough sketch of the sheet and see how many pieces could fit in both orientations. Some tried to arrive at the answer by calculating the area of the blank and dividing it into the area of the sheet.

Question 1 (b) (iii)

This question was very well answered with a variety of processes being given for the cutting of the sheets. A small number of answers gave 'Milling Machine' which was not acceptable.

Question 2 a) (i) and (ii)

These were a very well answered questions with almost all stating a valid process and giving a satisfactory description of the technique, although a number of respondents omitted the important step of cleaning the component before applying the finishing process.

Question 2 (a) (iii)

Again this was a very well answered question with most giving a valid reason.

Question 2 (b) (i) and (ii)

These questions were very well answered with almost all candidates being able to cite a relevant hazard and a control measure.

Question 2 (c)

Another well answered question, with most candidates able to give one important reason.

Question 3

The vast majority of candidates (over 80%) answered this question correctly; however, 10% of the cohort only gained 1 mark here, suggesting that flow charts are an area on which some candidates could focus more closely in their revision.

Question 4 (a)

The majority of candidates gained more than half of the available marks on this question, but a significant minority struggled to name correctly the components and symbols shown. Candidates should make sure that they understand circuit diagrams when they are revising for this unit.

Question 4 (b)

Generally well answered with most candidates able to give a satisfactory explanation of the integrated circuit being used as a timer for the control of the flashing LEDs

Question 5 (a)

Almost half of the cohort answered this question entirely correctly, with the majority of responses gaining 5 or 6 marks.

Question 5 (b) (i)

This question was reasonably well answered, with the majority of learners being able to explain the important link between CAD (the designing and drawing element) and CAM (the making or machining element). A significant few explained one of these processes but not both. Candidates must make sure that they answer all parts of all questions set.

Question 5 (b) (ii)

This question received a mixed level of response. The answers should have indicated the necessity for a dry run or a computer simulation. This is important to check tool paths, feed rates and identify any possible collisions.

Question 5 (c)

This question was very well answered with many learners indicating the importance of interlock guarding systems. Some learners stated a method but did not explain why it was required or what it protected against.

Question 6 (a)

This question had a mixed response with some giving lots of different industrial applications and demonstrating a good understanding of the subject, whilst others did not clearly state one example. Some stated the advantages of robotic systems, rather than giving examples of their use.

Question 6 (b)

This question was not as well answered as others on the paper, with many unable to explain that CIM integrated **all** the functions of a manufacturing system, whist CAD/CAM is concerned with just the design and make of a component within that system.

Question 7 (a)

This question was fairly well answered with many good examples given; however, many responses confused ICS with CIM.

Question 7 (b)

This question was very well answered with most candidates able to give at least one example of a smart material.

Question 8 (a)

This question was fairly well answered. Most candidates could state sufficient advantages and disadvantages but, in some cases, marks were lost by not giving an adequate explanation.

Question 8 (b)

Again in this question many responses failed to gain marks because they did not give an adequate explanation of the chosen examples. Most candidates did provide satisfactory answers though.

Mark Ranges and Award of Grades

Please see the following link:

http://web.aqa.org.uk/over/stat_grade.php