



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

**Computing**

**COMP2**

**(Specification 2510)**

**Unit 2: Computer Components, The Stored  
Program Concept and The Internet**

***Report on the Examination***

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## General

This is the sixth time that COMP2 has been examined and it was pleasing to read some of the excellent detailed answers this year. Unfortunately a mistake on question 7, Figure 5 was present in the paper. All candidates were awarded full marks for the affected question part, 7(a).

The questions on logic diagrams and Boolean algebra were answered well, demonstrating that the majority of candidates understood this topic. The answers for the TCP/IP stack question demonstrated that, for some candidates, this is not so well known.

Candidates continue to struggle to explain how hardware devices work. This was again evident in this question paper, especially in the question comparing DVD with CD storage capacity. It should be noted that the hardware devices resource list has just been updated in the Teacher Resource Bank.

Candidates need to be precise with the terms that they use and marks are only awarded, for example, for providing the full and correct name of a register or a computer law.

## Question 1

Part (a) was very well answered with the majority of candidates correctly identifying the category to which each software program belonged. Candidates who dropped marks tended to put Flight Control Software down as special purpose rather than the correct answer of bespoke.

Part (b) was generally well answered. Common mistakes were answering, 'operating software,' rather than the correct answer of, 'operating system.' Candidates need to be aware of the correct term. Some candidates failed to understand the question and used the labels from part (a) of 'general purpose', 'special purpose' and 'bespoke'.

## Question 2

In this question candidates were asked to identify parts of a URL; questions of this type have been asked on similar papers in the past. Most candidates secured one mark by identifying that the http part refers to the protocol being used. Candidates who simply answered, 'protocol,' were not awarded the mark as the question did ask them to explain what each part meant.

Understanding that the www part of a URL refers to the name of a machine (virtual or otherwise) that is being accessed was not so well known. Good candidates realized that this machine would be on the World Wide Web and answered accordingly. Candidates who simply stated that www stands for World Wide Web did not secure a mark. Some candidates tried to define the World Wide Web, rather than answering the question itself which referred to a URL. Candidates continue to think that the 'uk' refers to sites being hosted or based in the UK. This isn't necessarily true, a website could be hosted anywhere in the world and still use 'uk'. The 'uk' indicates that the domain has been registered in the UK.

## Question 3

Part (a) asked candidates to complete truth tables for a NAND and a NOR gate. It was pleasing to see that most candidates could secure both marks for this part. A few candidates answered the wrong way around whilst others provided the truth table for a XOR gate rather than a NOR gate.

The majority of candidates scored very well in part (b) securing full marks for the correct drawing of the logic circuit. The most common mistake was to put the AND gate before the NOT. Some candidates did not understand which gates related to each operator in the equation and therefore had the AND and OR gates swapped around.

Part (c) asked candidates to simplify a Boolean expression and a variety of methods were used. Candidates were awarded marks for a method where it was clear that a required skill was being used. When showing stages of working we would encourage candidates to make sure they only perform one step at a time. Good candidates also provided the rules they were using as explanation of their method. Candidates who realized that De Morgan's law could be applied to both sides of the equation and did this correctly quite quickly secured two marks for the method. A few candidates stopped when they reached a certain position not realizing that they could simplify further. The candidates who attempted this question using a truth table method tended to also score well.

#### **Question 4**

Part (a) asked candidates to identify a segment of code as being from a second generation language. It was pleasing to see that most candidates could successfully identify this.

Part (b) asked candidates to identify a label as 'memory address'. A variety of responses were given that did not secure the mark but 'line number' was accepted as the figure could have been showing a print out or part of a programming environment.

Questions relating to the terms opcode and operand have been asked before and the majority of candidates managed to secure full marks for part (c), but a reasonable number did not secure any marks.

Part (d) examined whether candidates realized the relationship between an assembly instruction and a machine code instruction. Candidates who indicated that there was a one to one relationship gained full credit. The majority of candidates compared the whole of the code segment and gained the mark if they could identify the kind of language being used. It was pleasing to see strong candidates go further in their answer and understand that Figure 3 was the assembled version of the assembly code in Figure 2.

#### **Question 5**

We have previously asked about individual layers of the TCP/IP stack and it was a natural progression to ask candidates to describe the roles of each layer.

It was pleasing to see a large number of candidates being able to provide a good amount of detail about the TCP/IP stack. Good candidates could provide relevant points for each of the layers. Candidates also gained a collection of marks describing the transport layer as the mark scheme allowed a good variety of points to be made. It was surprising to see that some candidates had made no attempt to answer this question indicating that the TCP/IP protocol stack is still an area that needs to be looked at further. Some of the roles of the transport layer, such as breaking the data into packets, should be achievable by the weaker candidates. A group of candidates also used the name of each layer to try to describe its role providing answers such as, 'the network layer does the networking whilst the link layer links...'; these often ended up securing no marks. It was clear that some candidates had an idea of what happened in the TCP/IP stack but could not link the roles to the correct layers and they therefore struggled to gain marks. Other groups of candidates clearly knew that addresses were important, but could not identify that the network layer dealt with IP addresses and the link layer dealt with hardware addresses.

## Question 6

Part (a) asked candidates to identify what an intranet is and the most common answer of 'a private network' managed to secure the mark. Good candidates gave a more detailed answer and included aspects such as sharing information. Candidates that wrote about 'a private Internet' were not awarded the mark.

Part (b) asked candidates to write the HTML code for a web page. It was pleasing to see how many candidates secured high marks for this question. Strong candidates clearly recognized the required HTML tags and set out the code in a very readable manner.

It was clear that some candidates still do not understand all of the HTML tags mentioned in the Teacher Resource Bank material. Weaker candidates used <ol> rather than <ul> for the list and some struggled to use any HTML tags at all.

A few candidates introduced CSS style rules correctly into their HTML and were awarded credit for this when appropriate. It is clear that a few candidates are confused about the role of CSS. These candidates attempted to use CSS elements incorrectly by simply placing them straight into the code instead of setting up a style section or using the style attribute option inside a HTML tag.

## Question 7

An error appeared in Question 7, Figure 5. Following a review of a range of responses from candidates to question 7(a) by Senior Examiners and discussions with other AQA staff, the decision was taken that the most appropriate course of action would be to credit all candidates with the maximum 5 marks for question 7(a).

Parts (b) and (c) were answered well by the majority of candidates and they correctly gave the full name of the registers involved. Some candidates gave 'Current Instruction Register' for part (c) forgetting that the instruction would initially be loaded into the Memory Buffer Register.

Part (d) asked candidates to explain what is meant by 'a 64-bit address bus'. Weaker candidates answered with a rewording of the question by saying that a computer could move 64 bits at a time. A few candidates compared a 64-bit bus to a 32-bit bus which was not what the question was after. Strong candidates answered by correctly identifying that it would use 64 wires to transfer addresses of locations around the main components of the computer. Good answers also included that the computer would be able to address  $2^{64}$  memory locations whilst weaker candidates stated that the computer would be able to address only 64 locations.

## Question 8

Part (a) asked candidates to identify the storage media that most closely matched a provided capacity range. Most candidates scored well on this question and the majority correctly identified the magnetic hard drive and CD-ROM. The most common mistake was to provide the answer of Blu-ray for the 4.7-8.5 GB capacity whereas the correct answer was DVD+R. A single layer Blu-ray disc has a capacity of 25GB with dual layer discs having a capacity of 50GB.

A large number of candidates failed to secure any marks for part (b). Good candidates wrote about the fact that a customer might have a slow Internet connection or that to download a large software file would take a long time. Some candidates gave the creditworthy answer that the customer might not even have an Internet connection. A lot of candidates wrote

about the DVD being a backup, but did not fully explain their answer. A DVD would be a backup if the customer deleted the downloaded file or the computer had some sort of failure. Whilst most candidates attempted the question, many only made one point in their answer when the question was worth two marks. Candidates should always look at the allocated marks for each question part and use this to guide their answer. It is to be noted that quite a few candidates gave answers concerning movies, piracy and the illegality of downloading. The question was clearly framed in terms of a customer buying software rather than the context of downloading of movies.

Part (c) looked to examine the workings of a DVD disk compared with a CD. Strong candidates tended to understand the major differences between how data is stored on a DVD compared with a CD. Answers included smaller pit sizes, smaller wavelengths of laser and the narrower spacing of the spiral track. Weaker candidates again struggled to understand the workings of hardware devices and this was seen in their answers to this part. Answers were vague with candidates just stating, for example, that DVDs store videos and therefore need more storage than CDs that store sound. A few candidates tried to describe the CD and DVD as magnetic media rather than as optical. At AS level, examiners do expect candidates to have an understanding of the workings of the major hardware components that are listed in the Teacher Resource Bank.

Part (d) was looking to test candidates' understanding of the major differences of using magnetic tape compared with a hard disk. Strong candidates knew that a magnetic tape stores data serially and therefore accessing specific records would take a long time compared with the direct nature of a hard disk. Weaker candidates did not spot the point of the question and provided answers based around the word 'audio' and how this was not appropriate for storing computer data.

## Question 9

Part (a) asked candidates to identify the post of the Information Commissioner; only a minority of candidates managed to provide the correct answer. Incorrect answers included the Government, the police, the bank and the customer themselves.

Part (b) looked to test a candidate's ability to spot when the Data Protection Act would apply to a set of data. Strong candidates correctly wrote that this point is reached when the data set included personal data and secured both marks to this part. Weaker candidates tended to write about 'personal information' which was not enough to secure marks. The term 'personal data' is appropriate and is clearly defined by the Data Protection Act to be about data which can identify a living individual.

Part (c) asked candidates to identify specific principles of the Data Protection Act. Strong candidates clearly knew the principles and managed to secure both marks to this part. Weaker candidates often wrote about the question context rather than providing an actual principle.

On most previous years' question papers we have asked candidates to identify a particular computer law and a list is provided in the Teacher Resource Bank. This question paper asked candidates about the interception of messages which is illegal under the Regulations of Investigatory Powers Act. It was clear that certain centres had taught this well with candidates responding with the full correct answer. The examiners expect candidates to be able to provide the full correct name for these laws.

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