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Computing COMP2

(Specification 2510)

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

Report on the Examination

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Question 1

Part (a) was answered correctly by the majority of candidates, but some failed to secure the mark. Most of those who answered incorrectly gave the response 'control bus'. The only unidirectional bus is the address bus.

Part (b) was poorly answered by the majority of candidates. Only a few candidates identified that one extra line would be needed to go from being able to access 4 GB of main memory to being able to access 8 GB. Candidates gave many varied answers with the most common being 32, 33 and 64. Whilst some candidates may have misread the question, it is clear that this topic was very poorly understood.

Part (c) was very well answered with the majority of candidates scoring highly. The most common mistake was to swap around processor and main memory; noting the direction of the address bus would have avoided this.

A few candidates used the answers 'address bus' and 'data bus' and it is clear that the bus system still causes confusion for a minority.

Question 2

This question asked candidates to complete a truth table for a logic circuit with multiple gates. Many candidates gave fully correct answers. A few candidates misidentified the NAND gate as an AND gate.

The majority of candidates secured the mark for G which was an OR gate. The combining of gates for the H and K answers caused problems for weaker candidates.

Question 3

This question focused on simplifying four short Boolean expressions, in contrast to earlier papers which required the simplification of more complex expressions. Candidates scored well on part (a) and it is clear that De Morgan's laws are now well known. Part (c) caused fewer problems than parts (b) and (d). It does appear that candidates need more exposure to simplifying expressions. A few candidates inserted new letters into their answers for no apparent reason. Quite a few candidates gave no response.

Question 4

In part (a) two thirds of candidates were able to identify the opcode and operand parts of the instruction correctly. Despite being given the instruction to split up, some candidates responded with different opcodes and operands.

Some responses used the binary number system; these were awarded credit if the number for the operand was correct and a translation table between opcode mnemonics and binary values was provided by the candidate.

Part (b) was answered correctly by the majority of candidates. Whilst some candidates added in extra instructions, these did not alter the final outcome and they were therefore awarded full marks. These extra instructions were generally to store a partial answer and then to bring it back into the accumulator.

Question 5

This question was poorly answered, with many responses focusing on the relative merits of the two printer types rather than the principles by which they operate.

Candidates who scored well clearly understood the workings of a laser printer, but often still struggled to write about an inkjet printer. Candidates could score only 4 marks for describing one type of printer.

Whilst the principles of operation of a laser printer were better known, quite a few candidates wrote about the laser burning the image onto the paper. A few candidates also seemed to have the impression that a laser printer needs no ink/toner and therefore is more cost effective. The majority of candidates struggled to explain correctly the use of the drum inside a laser printer. It was common for candidates to believe that the toner went straight onto the paper rather than onto the drum first.

Given the widespread use of inkjet printers, it was surprising to see how many candidates could not explain how one worked. Candidates who gained marks generally mentioned the fact that they worked line by line. Good candidates described the squirting or firing of ink but weaker candidates used terms such as 'place and drop' and did not do enough to secure a mark. Most candidates who described the cartridge colours did manage to secure a mark for this, but it was still common to see wrong colours mentioned.

A few candidates did not attempt this question at all, whilst some provided only a few sentences for an 8 mark question.

Question 6

Part (a) asked candidates to identify system software and the majority managed to do this successfully. A few candidates answered with 'device driver' which was also awarded a mark.

It was surprising to see only half of candidates secure the mark for part (b)(i). Marks were lost by candidates giving vague answers or by giving examples of application software, rather than explaining what it is, which the question required. Correct responses identified that general purpose application software can perform many tasks for the user.

The majority of candidates secured the mark for part (b)(ii) by producing a correct example of general purpose application software. A few candidates gave brand names of software packages, for example ‘Word’, even though they are warned against this on the front page of the examination paper.

Question 7

Part (a) about the limitations of assembly language had many candidates scoring at least one mark. A misconception amongst some candidates was that assembly language could not be used to code complex programs when in reality any program could be created in assembly language. Candidates who stated only that it would take a long time to program in assembly language did not secure the mark unless it was clear that it would take longer than using a HLL. Stating that assembly language is hard to read is not enough to secure a mark, but candidates were rewarded if they identified that assembly language is harder to understand.

Even though part (b) has been asked in various forms before, many candidates failed to gain any credit. Too often candidates gave weak and vague answers that did not have enough detail to secure a mark. It is clear that some candidates are not clear over the differences between the terms 'program', 'source code', 'object code' and 'executable'. Candidates also need to be careful when they merely state that something will be 'quicker' or 'faster'. This was not enough for this question; candidates needed to make clear that it was the program that would execute more quickly.

A few candidates stated that, 'it makes it hard to copy,' which is not true as you can copy object code. The point that these candidates were probably trying to make is that it is harder to reverse engineer the object code. In the same way, many candidates wrote about a compiler 'protecting' the source code. It is not really clear what 'protecting' means in this sense.

Question 8

Part (a) on HTML was a question that was well answered. Marks were lost mainly through carelessness and untidiness. Candidates need to ensure that heading text style (h2) is clearly larger than the body text. Candidates who also added labels to identify this made their answers clearer. The majority of candidates realised that <ol> would create an ordered list, but a few candidates still bulleted the list. The majority of candidates correctly drew the hyperlink and identified it with an underscore and often a clear label.

Part (b) on CSS was also answered well. The mark scheme insisted that candidates correctly used colons and semi-colons in the rules, and some candidates lost a mark for failing to do this. We were quite lenient when marking commands that were reasonable, but not quite correct. From January 2012 onwards, we will require candidates to show a more precise knowledge of CSS to be awarded marks. We will publish a resource in the Teacher Resource Bank to identify the CSS statements that we will expect candidates to be able to understand and code.

Question 9

Part (a) was answered poorly by the majority of candidates. The role of the transport layer does not seem to be understood to the depth required with candidates producing vague responses. Many candidates used only the diagram to state that the transport layers pass data to and from the other layers which was not enough to gain credit. Some candidates were also confused about the role of each layer, with many stating that IP addresses or MAC addresses were added by the transport layer, when these are functions of other layers. The majority of candidates who secured marks described data being split into packets and the idea of packet sequencing. Better candidates were also aware of the transport layer assigning port numbers.

Part (b) was well answered by the majority of candidates. Common answers were HTTP, HTTPS, Telnet and SMTP. A few candidates identified applications; for example e-mail, rather than protocols, and therefore did not secure the mark.

Part (c) divided the candidates. Many incorrectly stated that a router operated in the link layer. To actually route a packet the router needs to look at IP addresses and therefore operates in the network layer.

Question 10

Although this question has been asked before, candidates struggled to secure full marks for part (a). Often candidates answered with one or two words, rather then using a full sentence which the question required since it asked for a description. The majority of candidates correctly identified the domain name, but a few still confused this with a Fully Qualified Domain Name (FQDN). Instead of describing the second part it was common to see a candidate state only 'path' and therefore not secure the mark. Candidates should be encouraged to use full sentences when the question asks for a description.

Part (b) was answered well by the majority of candidates. A few candidates stated only 'a rule', but this was not accepted. It is pleasing to see more candidates use a fuller answer including the communication aspect.

The majority of candidates scored 1 mark for part (c) with only a few securing the second mark. The idea that both an intranet and the Internet use the same protocols is well known, but a few candidates did not secure the mark with an answer stating only that "they both use protocols". A number of candidates stated only that they were networks or connected computers, but this was not creditworthy.

The majority of candidates secured the mark for part (d) by stating that a FQDN is easier to remember. A few candidates talked themselves out by describing a FQDN as also containing the IP address. Some candidates responded that using a FQDN was faster when this is not true as the client will need to search for the IP address using DNS. A few candidates also wrote about using a FQDN as being more secure than using an IP address, but this was also not creditworthy.

Question 11

The answer for part (a) has been asked before and candidates should be aware that we are after the full name of the law. Many candidates stated only 'copyright' and did not secure the mark. The actual law is the Copyright, Design and Patents Act.

Digital Rights Management has also been asked about before, but many candidates did not secure any marks for part (b). Many candidates answered by stating that DRM prevents one from copying the

file, rather than preventing playback if a file has been copied. Discussion about limiting the number of times a file could be played or placing a time restriction onto the file did not secure any marks as this would not stop the sharing of downloaded files which was the point of the question. Candidates need to make sure that they answer within the context of the question. Some candidates answered by stating that it was illegal to share copyrighted files or that, terms and conditions would have to be agreed. Both of these points might be true, but it does not stop the sharing of downloaded files. The usual correct answers were the 'file being encrypted' and 'playback being limited to one device'. Candidates sometimes wrote about passwords, codes or PINs to playback the file, rather than the correct answer of a decryption key.

Question 12

Question 12 provided a variety of answers with candidates generally scoring quite well. Many candidates identified machines as being good at precise and accurate actions and being able to repeat these whilst not growing tired or needing breaks. The candidates who mentioned machines being good at calculations only secured the mark if they expanded to talk about complexity or gave a complex example.

Candidates who stated only that machines can perform dangerous tasks did not secure a mark unless it was expanded or made clear that humans would find them too dangerous. Many humans are also involved in dangerous tasks.

Candidates found it harder to describe what machines are bad at, but those who stated that machines cannot think for themselves were awarded a mark. Better candidates wrote about a lack of creativity or inability to respond in unexpected circumstances. Candidates should be aware that machines can sense their environment and make decisions; however it is unexpected circumstances that cause machines problems.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results statistics page of the AQA Website.