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TECH LEVEL

IT

Fundamental Principles of Computing
Report on the Examination

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General information

The teachable content for this unit does not just consist of the elements that are in the bullet-pointed lists in the Unit Content, but also those elements within the Unit Introduction and Guidance on Delivery. From some responses, it appeared that students had not always covered this material.

Question 1
This question was generally answered correctly.

Question 2
Part 2.1 was not generally well answered. A variety of correct answers was given for 2.2. These included BIOS chip, games controllers, USB sticks and Operating Systems on a stick.

Question 3
Most students chose the correct option for 3.1 though many struggled to explain what the cache on the CPU is used for. A number confused it with a browser's web page cache or the cache on a HDD.

Question 4
Many students were unable to answer 4.2 and 4.3 correctly and gave a range of answers that showed no concept of interrupts. A very small number had clearly been taught about non-maskable interrupts and how software interrupts are generated.

Question 5
Whilst this question was not in an 'IT context' it is nevertheless fundamental to many aspects of IT. In an applied context, programs will not work or spreadsheets and databases operate correctly unless the rules of arithmetic are followed. Many students were able to relate the order of operator precedence to previous maths learning, quoting such terms as BIDMAS. Most could rearrange the brackets in the calculation to achieve a different result. Some students clearly did not have calculators with them, as they showed the calculation rearranged but with an incorrect result.

Question 6
Many students simply restated the question in providing an answer. A large number could neither describe what the ALU or the Control Unit of the CPU does.

Question 7
Very few students appeared to understand that the 'ticking' of the clock was used to give a signal to the computer that allowed different parts to synchronise their activities, though some could state that the faster the clock ticked the faster instructions could be carried out.
Many students misinterpreted 7.2, not appearing to realise that the microprocessors would have been operating under similar conditions. Instead they gave answers about the microprocessors being under more or less stress, carrying out different tasks and so on.
Generally 7.3 was well answered.

Question 8
Generally this was well answered. The mark scheme had anticipated the range of answers and it is important for centres to understand that potentially valid but unexpected approaches will be considered by the standardisation committee and, if appropriate, added to the mark scheme:
Question 9
Many students gained maximum marks on this question.

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Question 10
It might have been expected that this topic would have been covered during practical sessions, but many students did not appear to know what thermal paste was or where it is used.

Question 11
A large percentage of students unfortunately chose Magnetic Disk Drive for 11.1. However, for 11.2 many students did talk about the tablet needing a small, cool, robust storage device and these answers were allowed if in the correct context.

Question 12
This is one topic that appears in the Unit Introduction, but also should be covered during practical sessions, so it was disappointing that many students did not understand the method of transfer of static to component parts of a computer, nor why it could damage those components. However, most could list a variety of ways of preventing ESD when working on a computer, so these measures had clearly been used.

Question 13
This question allowed students the opportunity to show their understanding that assembly language can be more efficient than a high-level language in certain circumstances. A few students did this, though the majority did not provide credit worthy answers, instead purely focusing on the characteristics of the languages.

Question 14
The majority of students were able to gain maximum marks on 14.1.
Many gave good answers to 14.2 but few related their answers to the context of the question – using the tablet for business and personal use. This meant that many were unable to be awarded marks in the highest mark band.
A broad range of responses was given to 14.3, with many recognising both the advantages and limitations to employers and employees of the issued raised by 'BYOD'. It was pleasing to see that students were able to draw out many different issues.
Learners should be able to explore the most up-to-date hardware/software available and analyse their strengths and weakness in order to illustrate their choice of hardware/software in a given scenario.

Question 15
Question 15.1 was answered very badly by most students. Many were unable to list things like forms, dropdown boxes and so on as ways of inputting data or the use of queries, report, graphs and so on for manipulating data.
Better responses used the contexts of web pages, SQL and other facilities.
Many students could give a correct answer for 15.2.
Question 15.3 was better answered than 15.1, though many students put their answers in the context of deciding whether the data collected was timely, biased, fit for purpose etc. This was not the intention and did not answer the question of how data can be validated and verified.