COMPUTING

Paper 9691/11

Written Paper

General comments

Although this was a new paper format, the standard of candidate's work was broadly similar to previous years.

Candidates and Centres are reminded that written papers are now scanned in and marked on computer screens by Examiners. Consequently, if a candidate writes the answer to a question on an additional page they must indicate VERY CLEARLY to the Examiner where their revised answer is to be found. If answers are "scrubbed out", the new answers must be very clear so that Examiners can easily read the text and award candidates the appropriate mark.

It was evident that a significant number of candidates are learning certain topics "parrot fashion". Questions which required an application of knowledge were overall less well answered. As this subject moves to a syllabus where more understanding and application of the syllabus topics rather than just simply learning definitions is required, candidates will need to change how they approach computing topics. This is a challenge which many Centres and candidates, of course, will enjoy.

Comments on specific questions

Question 1

(a) This was generally answered well but several candidates were giving very vague answers such as: "parts you can see or touch" which is an unacceptable answer at this level. The definitions of software were slightly better overall. *Hardware is the electronic parts of a computer system while software are the programs that run on the hardware.*

(b) This question caused few problems; however, a surprising number of candidates confused input and output and gave keyboard and barcode readers/scanners as examples of output devices.

(c) Frequently the answers given here referred to output **devices** and NOT **types** of output (e.g. sound/beep, receipt/hard copy) as was required. This was caused by careless reading of the question by a number of candidates.

(d) In part **(i)**, the examples of the use of DTP were generally satisfactory. However, the features of DTP were less well answered with some all too common very vague and general answers, such as: "can edit the data", "can save and print out the leaflet". In part **(ii)** many candidates confused presentation software with multimedia. Whilst good presentations do make use of multimedia, more general features would include: *use of slide transitions, hyperlinks to (for example) videos, use of animation and other multimedia features.*

Question 2

(a) Many candidates gave very general answers that did not really explain the role of the manager or the systems analyst e.g. "the manager and systems analyst must work together to find out what the problem is and to resolve it" – such answers do not really say anything of value. The important point here is that the manager must provide the knowledge and requirements of the business as they are the expert in how the business works whereas the analyst provides the knowledge of what is possible.

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(b) The majority of candidates missed the point here and gave similar vague answers to those in part **(a)** e.g. "ask people/workers to see how well it works", "check with the manager to see if he is happy". A good answer would mention typical evaluation techniques such as black box testing, alpha testing, and so on.

Question 3

(a) This was reasonably well answered with reference to ASCII being by far the most common correct example. However, other acceptable factors such as *characters recognised by the computer, use of 8-bit (1 byte) codes etc.* were covered by many candidates.

(b) This was not as well answered as part **(a)**. Many candidates wrongly referred to it as being another form of ASCII. There were very few who offered examples (which would have been the best way to describe how integers are represented) and very few made any reference to 2's complement to store negative integers. There were many very general answers such as "integers do not contain decimal points or fractions", "an example of an integer is 147" – none of these types of answers gained any marks.

Question 4

(a) Candidates who took the advice given in the question to draw a diagram did considerably better than those who relied on text only.

(b) Many candidates understood the meaning of *hashing*; but seemed to struggle somewhat in part **(ii)** when trying to explain the concept of *clashes* and how the system deals with this. A significant number wrongly suggested that "clashes occur when 2 members have the same name and this clash could be overcome by writing a better hash algorithm". Candidates need to understand that 2 different IDs can hash to the same value. When this happens there are different possible solutions, on of which is to read records sequentially from the hashed address until the correct ID is found.

Question 5

(a) The description of the *control unit* gave mostly 1 mark - usually for referring to the fetching of each instruction. Many answers were too general such as "the control unit fetches and decodes instructions" which omitted several key parts of the overall function of the control unit.

In the *memory unit* section, many candidates just described how RAM works (several also referred to ROM) and missed the key issues such as *stores programs/date **currently in use**, stores parts of the operating system **currently in use***.

The description of the ALU was slightly better but again "throw away" answers were again all too common such as "it does all the calculations and makes all the decisions" which indicated a total lack of understanding of how this unit works. As its name suggests it carries out arithmetic and logical operations.

(b) In general, this was well answered. Many candidates gained 3 or more marks here for answers which explained that a buffer is a temporary storage area and data is transferred from primary memory to hard disk via the buffer. When the buffer is full the processor can carry on with other tasks while the buffer is emptied. When the buffer is empty an interrupt is sent to the processor requesting more data to be sent to the buffer. There were some common errors such as "the hard disk sends an interrupt to the primary memory", "buffers allow the hard disk to get on with other tasks" – all of which indicated some confusion among a number of candidates.

Question 6

This question proved to be very easy to a number of candidates. Several scored the maximum marks (of 6) and very few got fewer than half marks here. The only relatively common error was to see candidates adding up the 1s and giving an output of 0, 1, 1, 2.

Question 7

This question also proved to be fairly straight forward with many gaining 3 or more marks. Common errors where marks were lost included: "need to be careful of colour-blind people" (but gave no reason WHY this was an issue) and "text should follow the normal reading pattern of a human" (but did not indicate anywhere WHAT this normal reading pattern was).

Question 8

(a) It was very common to see "LAN works over short distances and WAN works over long distances" – a little too vague. Better answers explained that LANs are networks covering a single site, while WANs are networks connecting geographically remote nodes. It was also fairly common to see candidates misunderstand the term WAN and described a **wireless network** of computers. Generally, candidates do not seem to understand the concept of networks very well and misuse of a number of hardware terms was clearly evident (e.g. routers, hubs, switches, etc. were all very confused).

(b) Generally well answered but several candidates confused *parallel data transmission* with *parallel implementation*.

(c) This was well answered by many. A common error was "it was odd/not even" (with no reference to WHY).

Question 9

(a) This was reasonably well answered by many candidates. It is important that candidates understand that a single user operating system will only allow one user at a time to use the computer, but different users can use the computer at different times as each approved user will be identified by a user ID.

(b) The term *multi-user* caused considerable confusion here. Many candidates described networks, chat rooms, facebook, etc. Correct answers referred to several users using the same computer at the same time and the operating system will give each user a time slice of processor time in quick rotation.

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