

INFORMATION TECHNOLOGY

Paper 9626/11
Theory

Key messages

Overall, candidates did not appear to have been well prepared for this assessment. However a minority of candidates showed a good level of understanding though there were areas of the syllabus of which many candidates appear to lack detailed knowledge.

On much of the paper some expansion and detail is required. It is not sufficient to give brief answers.

Evaluation requires the candidate to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness and weigh up their opinions, of a number of options. It is important that comparisons are made rather than just giving features or uses.

Questions requiring simple and straightforward answers were done fairly well, while the answers to more demanding questions needed to contain more explanation or evaluation.

General comments

Many candidates appeared to lack knowledge of several areas of the syllabus. Most struggled with the concept of a mental model and the digital divide. Candidates also found the topics of spreadsheets, databases and sound editing rather difficult.

Candidates must read questions carefully before answering. A number of questions required some thought but answers to **Question 3(b)**, for example, were brief and simplistic. Candidates often listed their responses or gave a very brief outline without really providing the type of description required at this level.

However, it was refreshing to see good answers being provided for the question on expert systems, but unfortunately, Virtual Private Networks (VPN) as a topic is still proving difficult for many.

Comments on specific questions

Question 1

Candidates did fairly well on this question with the majority of candidates gaining at least three marks. A number of candidates appeared to misunderstand the relationship between data and information. Occasionally candidates ticked fewer than the four answers requested and missed the opportunity to gain marks.

Question 2

Candidates again did fairly well on this question with some candidates finding this question slightly more difficult than **Question 1**. A number of candidates did not realise you do not need to memorise lots of commands if using a GUI. Again, a small minority of candidates ticked fewer than the four answers requested and missed the opportunity to gain marks.

Question 3

This question was quite well answered overall but this was generally down to the fact that candidates found part **(a)** straightforward whereas they had great difficulty with part **(b)**.

- (a)** Most candidates described at least two sets of keys but these were generally to do with using the control or command key in conjunction with another key. Many wrote about the use of the backspace key. Many candidates described the combination, but not write about how it would help the author to edit the book.
- (b)** Many candidates did not fully answer this question. Many had little trouble identifying three types of printer yet seemed unable to give an advantage of any of them compared to another. Most were content to write that the printer was quick or cheap and, particularly with the latter, unable to make a comparison. Candidates often did not write what was cheap; the cost of replacing ink/toner or the cost of buying the machine in the first place. Depending on the type of printer, one type of printer may be cheap to replace ink yet expensive to buy.

Question 4

On the whole, this question was answered well with many candidates making at least two good points. Most candidates defined the global digital divide well. The majority wrote about availability of money to purchase devices and many wrote about the lack of infrastructure. Most candidates did not expand on these points to a sufficient degree.

Question 5

This question exposed the lack of understanding of what constitutes a VPN. The majority of candidates struggled to make one point and that was usually stating what the initials stood for. The most able candidates rarely gained anything higher than two marks. The mark scheme points which were often made by the candidates who gained more than two marks were the use of the internet, encryption and tunnelling.

Question 6

This question was not well answered, with candidates seeming to know the components of an expert system but unable to describe them in the detail required at A level. Many just named the components. It is worrying that candidates are learning topics off by heart without understanding what it is they are remembering. For example, it is not sufficient to know that an inference engine exists; candidates must be able to understand what it does.

Question 7

Most candidates seemed to be unfamiliar with this topic and seemed unable to answer the question well. Very few candidates gained one mark. It was clear that the vast majority of candidates did not understand the concept of a mental model and so were unable, therefore, to write about how a designer of a user interface would use one.

Question 8

This was another question that was not well answered with only the most able gaining more than a few marks. Candidates found parts **(a)** and **(b)** to be of equal difficulty but part **(c)** seemed, for many, to be more difficult.

- (a)** The more able candidates were able to describe the process, but often did not identify the correct cell range. Most candidates were unable to describe the steps needed.
- (b)** Many candidates struggled with this question. A large number of candidates were unable to at least start their answer with B11-. Several candidates chose the inefficient approach of using a nested IF, despite the need for the named range to be included. Some candidates realised a LOOKUP function of some kind needed to be used, many, wrongly, chose to use a VLOOKUP.
- (c)** A substantial number of candidates did not attempt this part. Of those that did, many gained at least one mark. Many of the better performing candidates were able to get most of the formula correct yet seemed unable to describe the steps needed to produce the format of the output.

Question 9

The majority of candidates were able to gain at least two marks. Most found (a) to be a difficult question and (b) even more so. However, most candidates performed well on part (c).

- (a) The more able candidates were able to describe the process but, the majority of candidates did not seem to have met the term. Many of these just tried to reword the question writing that sampling rate was the rate at which samples were played.
- (b) Many candidates struggled with this question. A large number wrote about the fact that it affected the sound quality but did not say in what way.
- (c) This was well answered with the majority of candidates gaining at least one mark and several candidates getting both marks. Most candidates understood the term.

Question 10

This question was fairly well answered by those candidates who attempted all four parts, with many gaining marks. The better performing candidates tended to achieve half marks or more. Candidates found part (a)(ii) the more straightforward. Parts (a)(i) and (b) were found by candidates to be easier than part (c)

- (a) (i) A substantial number of candidates did not attempt this part of the question. The more able candidates were able to explain how to set up a dynamic query in great detail, but those candidates who seemed unable to do this aspect were still able to gain marks by explaining the other steps needed in the setting up of a query. Unfortunately, there are still a large number of candidates who were unable to explain this aspect.
- (ii) Many candidates did well on this question gaining both marks. Where candidates only gained one mark it was usually for omitting the number 14 from their answer.
- (b) Only the more able candidates gained marks on this part. A substantial number of the rest of the candidates did not attempt the question. A number of candidates seemed preoccupied with setting up validation routines.
- (c) Again, a substantial number of candidates did not attempt this question. Of those that did, only a small number of candidates realised the importance of the use of a LOOKUP function.

Question 11

This question was not very well answered by candidates. Many candidates did not seem to understand the term 'control technologies'. Many wrote about technology in general and ignored the requirement for stipulating the advantages and disadvantages. The more able candidates, who did, in fact, seem to understand control just wrote about control in general. Some thought it was a question about robots and did not refer to everybody in everyday life, preferring to concentrate on the advantages and disadvantages to car workers. Many confused control with monitoring and wrote about the use of CCTV on streets.

Question 12

Many candidates did not address the key component of the question namely, communication and its benefits and drawbacks. Many wrote long descriptions of how it is possible to use the internet to communicate, only giving benefits at a very basic level. Statements such as it is cheaper, quicker, invades privacy and more efficient will not attract marks. Candidates need to provide further details regarding such statements.

INFORMATION TECHNOLOGY

<p>Paper 9626/12 Theory</p>

Key messages

Overall, candidates appeared to have been not as well prepared for this assessment as they were last year.

Candidates appeared to show a lower level of understanding and there were areas of the syllabus which many candidates appear to lack detailed knowledge.

On much of the paper some expansion and detail is required. It is not sufficient to give brief answers.

Evaluation requires the candidate to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness and weigh up their opinions, of a number of options. It is important that comparisons are made rather than just giving features or uses.

Questions which required a recall response were handled well by most candidates particularly questions which required one-word answers. Candidates appear to struggle to give accurate and detailed responses to questions in which they are required to apply their knowledge and understanding.

This paper involves a lot of handwriting from the candidates. In order to help the Examiner clearly see and understand what the candidate has written it is very important that the handwriting is not rushed and can be easily read. Rushed scripts and poor handwriting can make it very difficult for an Examiner to understand what the candidate has written down and can lead to the candidate not being awarded a mark as it cannot be understood what they have actually written.

Questions which require higher order thinking skills and the ability to analyse and evaluate resulted in weak responses. Teachers would be well advised to further develop the skills of their learners beyond recalling points of information to enable them to gain better results at this examination level.

General comments

For the tick box questions, some candidates are not putting down the required number of ticks. Candidates need to be encouraged to answer all the questions as fully as they can.

In general, the candidate's use of technical terms in answering the questions is not as good as it should be after studying this subject for a year. Many answers to the questions were too vague or just not detailed enough to gain the marks.

At times, it appeared that candidates rushed into giving their answers whereas they would have been better advised to list their thoughts in rough before choosing, and elaborating on, items from their list that would be appropriate in their response to the question.

A large number of candidates are still using trade names for software. There appeared to be a lack of knowledge of technical terms for candidates taking an examination at this level. Handwriting was often almost illegible, making scripts very difficult to mark.

Comments on specific questions

Question 1

Candidates did fairly well on this question with the majority of candidates gaining at least three marks. The most common incorrect answer appeared to be: 'Dynamic information sources are never checked for accuracy'. Occasionally candidates ticked fewer than the four answers requested and missed the opportunity to gain marks.

Question 2

Candidates again did fairly well on this question with many gaining at least three marks with higher ability candidates gaining all four marks. The most common incorrect answer appeared to be: 'Software is written in machine code before being converted to high-level language'. Again, a small minority of candidates ticked fewer than the four answers requested and missed the opportunity to gain marks.

Question 3

This question was reasonably well answered with many candidates gaining between two and four marks. Validation was confused with verification by a number of candidates. Verification was also confused with proof reading. Many candidates were able to describe either validation and verification or both of these. However, candidates struggled to explain why both would be used within the context of the scenario.

Question 4

Overall, this question was answered well with many candidates gaining at least half marks. However, part (a) was better answered than part (b) with part (c) not particularly well answered. Where candidates did not answer this question well it was usually because they tended to describe the purpose of the software rather than how the software operated.

- (a) Most candidates described at least one aspect well with the more able often describing two. A relatively common answer was scanning the computer looking for viruses. Quite a few gained credit for answers based on asking the user if they want to delete the infected program. Some mentioned quarantine. A reasonable number gave a general description of what anti-virus does but did not describe how it carries out its particular function.
- (b) Candidates did not do as well on this part of the question. Many candidates just repeated the question by describing backup software as creating a backup. Many, however, gained one of the two available marks. Very few candidates mentioned functions of the software such as providing choice of type or time of backup.
- (c) Candidates did not do at all well on this part of the question. Only the more able were able to gain one mark. There were a number of candidates who did not answer the question. A few candidates mixed this up with formatting software. A lot of candidates gave vague answers based on the term contiguous but not applied correctly. This was evidently a topic less well studied than the previous two items – anti-virus and back up.

Question 5

This proved to be a more challenging question for the candidates. Most candidates were able to correctly identify a single sensor but did not describe its use. The main area where they did not gain the mark was being unable to describe how the sensor feeds back to the computer, which then made the decisions. More able candidates correctly identified three devices, but only very few were able to gain any use marks. Only a few candidates gained two marks.

Question 6

This question was not well answered. A number of candidates were not sure whether the internet supported the WWW or the other way around. There was a lot of mention of browsers, hyperlinks, HTTP, etc. but few candidates showed understanding. A large number of candidates spent roughly half of their answer writing about the internet, and also a significant number did not know the difference between the internet and the World Wide Web.

Question 7

Most candidates seemed to be unfamiliar with this topic and seemed unable to answer the question well. This was exemplified by the large number of candidates who did not attempt to answer it. Of those that did, most gave very vague answers and got their database terminology mixed up, confusing tables with records, and folders. Very few candidates managed to gain more than one mark. Candidates often described a hierarchical database in terms of a business management structure based on a chain of command.

Question 8

This was reasonably well answered with many candidates gaining marks usually evenly distributed amongst the three parts, although most did much better on part (c) than the other two parts.

- (a) Many candidates provided reasonable descriptions of absolute and relative cell references. However, the descriptions of what the formula does tended to be vague or mixed up. Few candidates actually attempted to answer the question by using the formula to explain cell referencing. Candidates would be well advised to spend a little time planning the answer first to this type of question.
- (b) Many candidates were able to state that conditional formatting was needed, as well as selecting the correct range. After that, few candidates were able to describe clearly that rules need to be created for each criterion. This is where most candidates were unsuccessful in scoring marks. Most were able to distinguish the conditions and describe them but did not mention the rules or how the colouring would occur. Very few candidates gained more than three marks.
- (c) Candidates did quite well on this part of the question with many gaining at least half marks. Most candidates were able to successfully state that a pie chart was the most suitable graph to use. Fewer candidates were then able to describe how this would be created within a spreadsheet. Some candidates even went to the effort of describing how to copy and paste the data and then use formulae to work out the percentages.

Question 9

Candidates seemed to be better prepared for this topic than in previous years. However, many candidates had not read the question carefully and gave general answers rather than explaining in detail how each component is involved in the solution. Many candidates correctly named the components of an expert system, but the descriptions given were often vague or mixed up. Candidates need to be able to demonstrate their understanding of the subject matter for this type of question in more precise terms. Several candidates mentioned forward and backward chaining but few gave an adequate description of either.

Question 10

This question was not particularly well answered although the majority of candidates did gain some marks. Most candidates seemed unaware of what a switchboard was and consequently had to rely on part (c) for most of their marks.

- (a) Many candidates appeared not to understand the content and layout of a switchboard. Most candidates did not produce a switchboard but created a design of a form. They would have secured reasonable marks for this question if they had shown an appreciation of good design practice when it comes to use of white space and ensuring buttons are consistent, with appropriate labels. A lot of candidates tended to copy the designs shown in the diagram which were not consistent.
- (b) As this followed on from the previous question, very few marks were obtained. Where candidates did refer to appropriate buttons the answers were often too vague. The exit button gained by far the most marks. A significant number of candidates gave descriptions without referring to a particular button. A number of candidates produced forms that had no buttons apart from navigation buttons. These answers were often based on generic items like 'opens reports', 'opens up a query' and were not appropriate. Any answer involving the use of navigation buttons was also not appropriate.
- (c) Candidates did a lot better on this part of the question. Many candidates were able to successfully identify the correct fields from the correct tables and then select the correct criteria for the query. Where candidates did not gain marks, it was in not ensuring that the correct fields were identified

with the correct tables. It seemed that these candidates just copied the field names from the diagram in the question.

Question 11

This question was not very well answered by candidates. Most candidates did not get beyond monitoring using a CCTV. Little attention was paid to whether this monitoring was right or wrong or infringed human rights, etc. Responses were not particularly imaginative. Different branches of the supermarket were scarcely touched upon and yet it would be expected that warehouse staff would be monitored in a different way to checkout operators or office staff. Candidates would be well advised to spend a little time planning the answer first to this type of question. Questions which require an evaluation should include benefits and drawbacks to access the higher marks. However, many candidates were able to gain some marks for this question. Common responses included answers based on monitoring employees' productivity, deterring stealing, and that being constantly monitored made employees feel uncomfortable and resentful of infringement of privacy.

Question 12

This question probably produced the weakest answers of any question on the paper. Many candidates answered this question by describing the characteristics of spreadsheets rather than evaluating the use of spreadsheet models compared to manual methods. In many cases the answers were vague and did not answer the question.

INFORMATION TECHNOLOGY

Paper 9626/13
Theory

Key messages

Overall, candidates appeared to have been well prepared for this assessment.

Candidates showed a reasonably good level of understanding though there were areas of the syllabus which many candidates appear to lack detailed knowledge.

On much of the paper some expansion and detail is required. It is not sufficient to give brief answers.

Evaluation requires the candidate to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness and weigh up their opinions, of a number of options. It is important that comparisons are made rather than just giving features or uses.

Questions requiring simple and straightforward answers were done fairly well, while the answers to more demanding questions needed to contain more explanation or evaluation.

General comments

At times, it appeared that candidates rushed into giving their answers, whereas they would have been better advised to list their thoughts in rough before choosing, and elaborating on, items from their list that would be appropriate in their response to the question.

Candidates must read questions carefully before answering. A number of questions required detailed descriptions, but candidates often listed the basics or gave a very brief outline without really explaining themselves or describing their answers in sufficient detail.

Candidates seemed to have only a superficial knowledge of topics such as verification, the digital divide, validation, data types and the use of functions in spreadsheets. This was also the case for methods of accessing data, data input methods and computer networks. While this may enable candidates to gain some marks for a general understanding it lets them down when more detailed knowledge is required.

Comments on specific questions

Question 1

Candidates did fairly well on this question with the vast majority of candidates gaining at least three marks with many getting all four answers. Where candidates did not get four marks it was usually because they had ticked 'device driver'. Occasionally candidates ticked fewer than the four answers requested and missed the opportunity to gain marks.

Question 2

Candidates again did fairly well on this question with many gaining at least two marks with higher ability candidates gaining three or four marks. Encryption and firewall were the commonly incorrectly answered. Candidates confused the confidentiality of data with the denial of access to that data.

Question 3

Candidates did not do well on this question. Those candidates that correctly identified verification methods then did not compare and contrast, merely listing the characteristics. Several candidates confused validation with verification and gave long answers on various validation checks and were therefore not in a position to gain marks. Proof reading was often incorrectly given as an example of verification.

Question 4

Candidates did quite well on this question with the majority gaining more than half marks. Although many candidates were able to write about the difference between direct and indirect data sources, few were able to give sensible examples from the scenario. Many candidates spent time discussing the advantages and disadvantages, which were not asked for. Some candidates believed that when someone was asked something that became an indirect source.

Question 5

This question was fairly well answered with most candidates gaining at least two of the available marks. Many candidates understood the difference between compilers and interpreters and what each of them does. A few candidates thought that both translated one human language into another, or translated documents, but most contained some technically correct language. Error checking was not often clearly defined, and may just have been learned from books without proper understanding. 'On-the-fly' was often mentioned with no explanation as to what the candidate meant.

Question 6

This question was not as well answered as the preceding questions. Candidates seemed to know about the digital divide but, perhaps, did not understand it and were consequently unable to apply their knowledge to the scenario. Candidates did a little better on **part (a)** than **part (b)**

- (a) Many candidates gained one mark but very few went on to gain any more. This part of the question was often not clearly understood with candidates giving pre-learned answers about the digital divide without linking the answer to the scenario provided.
- (b) Candidates did not do as well on this part of the question. Most responses tended to be linked to their responses in **6(a)** so if they were wrong then these related responses would be wrong too. Some thought that one answer would be to abandon the policy while others thought that the school should supply everybody, thus missing the point of the question.

Question 7

Overall, candidates tended to do well on this question.

- (a) The majority of candidates were able to give an example of a cell, but very few were able to define what one was.
- (b) Candidates did a lot better with this part of the question. Many candidates were able to define what a row is and could give examples. However, some candidates confused vertical with horizontal.
- (c) Candidates did very well with this part of the question. Most were able to define what a column is and were able to give examples. Although, again, a number of candidates confused horizontal with vertical.
- (d) Candidates did not do as well on this part of the question. Most were able to give an example of a worksheet, but few could provide a description.

Question 8

This was reasonably well answered, overall, but there were differences in how well each part was answered.

- (a) Those candidates that gave length check for their answer often incorrectly counted the number of characters allowed or did not count the space. Format checks were often not well described. Many incorrect validation rules were given. Many candidates did not show understanding of test. Several managed to provide an acceptable example of test data but did not give adequate reasons for their choice. In addition, the question stated that candidates were not to use normal data but many ignored this.
- (b) Candidates did quite well on this part with most realising that a validation check for weekly wage should be a range check. However, many did not identify the range correctly. Several identified an appropriate example of test data yet were unable to explain why they had chosen it.
- (c) A number of candidates believed these telephone numbers to be numeric despite the leading zero and space and so were not able to gain any marks for this part. Most commonly the leading zero or space were picked as why the number should be text, but having spotted one reason few went on to give any further explanation and were therefore unable to gain maximum marks.
- (d) Very few candidates were able to give the AVERAGEIFS() formula correctly. Many mistakenly provided a formula that only calculated the overall average of the weekly wage. Various alternative formulae were provided as answers, some of which were able to gain part marks but rarely gained full marks.
- (e) Most candidates were only able to achieve one mark. Many of these managed to get the first ascending sort on Weekly Wage, but few then carried on. Often the range was not indicated or incorrectly identified.
- (f) This part of the question was well answered. Many correctly used the CONCATENATE() function and many also correctly used LEFT(B13,1). Most candidates managed to gain marks.

Question 9

A very large proportion of candidates failed to attempt this question. Those candidates who did showed little understanding of the topic. Most candidates seemed not to have studied indexed sequential access. Very few candidates gained any marks.

Question 10

The uses of MICR and OCR were understood by many candidates. However, the question required candidates to evaluate the uses when entering data which few were able to do. This was a low scoring question with many answers not contrasting the two methods. A great many thought that MICR was used on credit cards (confusing it with magnetic strip) and many confused OCR with OMR and accordingly answered incorrectly.

Question 11

Candidates often ignored the question and concentrated on the advantages and disadvantages of using the internet and so many candidates wrote at length about issues which were not relevant to the question. Some understanding of the problems of using mobile devices away from the home network was evident, but many of the answers given were along the lines of being able to carry on with social networking and games on a mobile phone when out and about. Many answers contained references to uses that did not have relevance to mobile networks but, instead, to the internet or networks in general.

INFORMATION TECHNOLOGY

<p>Paper 9626/02 Practical</p>
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Key messages

For this examination, the main issues to note are as follows:

- Candidates need a better understanding of the application of basic formulae to solve problems.
- Candidates need to be more familiar with applying their theoretical knowledge to practical tasks.
- Candidates need more practice and experience in setting the timing on video creation.
- Candidates need to take greater care with the accuracy of data entry.
- Candidates need to ensure that they submit a single version of each completed file in the specified file format.

General comments

A significant number of candidates omitted one or more of the required files to be submitted for assessment, or submitted the files in the wrong file format, (for example: video files were frequently submitted as .wlm project files rather than exported into .wmv and .mp4 format). This was also true of candidates who saved their 'spreadsheets' in comma separated value formats which therefore lost all formulae and formatting.

Comments on specific questions

Question 1

Many candidates successfully opened and examined the data file, but a significant number did not save this as a spreadsheet, instead retaining the text file format (.csv) of the original source file. This meant that all subsequent formulae and formatting were not retained within their saved data files. A large number of candidates did not insert four new rows at the top of their spreadsheet. Although most candidates placed the contents of the title.csv file into their spreadsheets, some did not place it as specified. Most candidates merged cells B2 to L2 successfully and formatted the title within this cell as specified in the question paper.

Question 2

This question was attempted with varying degrees of success. Each required some string extraction and manipulation from the original data held in the corresponding cell in column A. Several candidates used an inefficient combination of LEFT and RIGHT functions rather than opting to use MID functions for this task. The Bank Sort Code caused problems for some candidates who did not insert the hyphens to separate the pairs of digits. A significant number of candidates did not keep their extracted digits and formulae within the correct rows – placing them one row above the corresponding data in column A.

Question 3

This step was completed using a variety of methods. The most successful candidates used a date function and extracted the year, month and day from column B, although some candidates used TEXT functions with enforced formatting. Most of these solutions initially gave the correct answer but would not continue to do so if the original data was changed. Candidates should consider ensuring that their solutions will work for any data sets, even if data is amended part way through a process, in the case of this paper, should data transmission errors be discovered then data would be retransmitted and hence changed.

Question 4

Not all candidates successfully completed this question. There were a number of methods used with differing degrees of success. It would appear that some candidates did not understand the term checksum and hence were unsuccessful.

Question 5

The majority of candidates who attempted this question did so successfully. There was no requirement to display anything in the cell if the two values were equal, but there was a requirement to indicate an error. Some candidates took this a step further and added conditional formatting to show the errors more clearly.

Question 6

Few candidates successfully evaluated this method, most described the process. Few candidates indicated that the method was flawed, nor gave reasons for this, like transposed digits would not be flagged. This question gave scope for candidates to offer alternative ideas (like including more data within the checksum or alternative algorithms for calculating a check digit).

Question 7

This question was not attempted by many candidates, although those who did so often selected the correct values. Where the values were more than four digits, some candidates did not extract and display more than the first four digits, because they did not realise that the contents of column A were not all identical in length.

Question 8

Of the candidates who attempted this question, the majority successfully replaced the text with the correct dates (using the data from the statement) but fewer candidates applied appropriate formatting to column C, row 3 or the credit and debit columns (which should have been formatted as \$ with two decimal places). A small number of candidates were able to display the spreadsheet as required with the correct columns on view.

Question 9

This question did elicit many good responses from candidates; most indicating that encryption scrambles data so that it is not understandable if obtained by a hacker. Fewer candidates went on to identify the use of asymmetric encryption with private keys to encrypt and decrypt the data. A significant number of candidates identified the use of public keys, but they would not be appropriate for banks to use.

Question 10

This question was attempted by many candidates, although few gained full marks, there were a significant number of typographical errors, failures to merge the correct cells or apply italicised text on a yellow background. Many included the correct borders for the cells.

Question 11

Many candidates successfully added validation to cell B4, restricting the range of acceptable dates, fewer candidates created an appropriate error message that included the range of dates that were acceptable.

Question 12

The majority of candidates who exported their finished video into .wmv and/or .mp4 format performed well on this question. Those who submitted project files that were package specific attained no marks. Most produced a video with the background, clip, captions and credits in the correct order. The area where candidates tended to perform less well was the timing of the elements within the video and the accuracy of text entered within the titles and captions. Few candidates managed to add each new line to the title text, instead replacing the previous text with the same text in a slightly different place in the frame. Sometimes candidates added unnecessary transitions and effects which affected the timings for each element and reduced the times that the title and captions were visible. A number of candidates took a still image from the start of the video clip rather than the end. Not all candidates extracted the last 34 seconds of the sound clip, although many had added the sound clip to their video files.

Question 13

Not all candidates had exported their finished video into mp4 format with the correct filename.

INFORMATION TECHNOLOGY

Paper 9626/31
Advanced Theory

Key messages

Candidates appeared to have good subject knowledge and some good technical descriptions were seen, but most did not properly apply their knowledge to the given scenarios or to the context set in the questions. It is essential that candidates read the short scenarios before a set of questions very carefully and apply their knowledge when answering the subsequent questions. Many answers were generic and did not address the scenario set and consequently they did not score the higher marks. Candidates are expected to be able to provide detailed answers at this level.

General comments

It is very important that, when answering questions, candidates read the rubric and answer the question in the appropriate manner. Candidates should take note of the 'command' words such as, e.g. 'describe', 'explain', 'discuss', 'evaluate' as shown in the current syllabus and structure their responses accordingly.

Comments on specific questions

Question 1

Most candidates could describe mail merge in general terms but answers lacked the necessary detail to score the higher marks. Common mistakes were to omit specific details of how the master document would be set up. The question was about setting up the master document so details of the actual merge were not required.

Question 2

- (a) Most candidates could not fully explain the term 'primitive' in this context. This is technical knowledge that candidates are expected to know. In this context, 'primitive data type' means a data type that is hard-coded and cannot be altered by the user.
- (b) Most candidates could describe one or two of the data types but not all three. Common errors were to describe data types that are not considered to be primitive types.

Question 3

Candidates scored good marks on this question, but answers lacked sufficient detail to score all the marks. Answers should have included details of the declaring and naming of the variables and then expanded upon to explain how this would be done.

Question 4

- (a) This question was not answered well. Most candidates could not describe the contents of a software specification. Answers could have made reference to, e.g. the purpose and intended audience for the software, user interfaces that would be used, the limitations of the software and the security and privacy systems to be used.

- (b) This question was not answered well. Most candidates could not describe the purpose of a user requirements specification. Answers could have made reference to, e.g. the user requirements specification being a description of what the user could expect from the software, providing a mandate for the development process and being used as part of a contract between user and developer.
- (c) This question was answered correctly by the majority of candidates.

Question 5

This question was about the benefits and drawbacks of the use of satellite technology rather than how GPS works. Good answers referred to, e.g. satellite signals being accessible over most of the surface of the earth, including over oceans, where terrestrial transmissions are difficult to receive due to the long distances from land; and to drawbacks such as the requirement of a large number (c. 25 to 35) of satellites which cannot easily be repaired if a malfunction occurs. Weaker answers referred to the workings of GPS and did not focus on the satellite use.

Question 6

Most candidates could extract the information from the illustration and give reasons for their choice of the most suitable CPU to use. A common error was to mis-read the graphical information provided.

Question 7

This question required candidates to describe the validation that would be applied to ensure a given format was adhered to when data is being entered. In this case, a UK post code was used as an example, but the principles would apply to any required format: after the data is collected at input, check the characters and spaces and check the format of the entered data against the required format. Good answers described how this could happen, but weaker answers did not take into account all the information provided in the figure.

Question 8

This question was not well answered by most candidates. Answers lacked sufficient detail to score the higher marks. Good answers could have included, e.g. the elimination of the 'researcher effect'/Hawthorne Effect where the presence of a researcher may affect the observed data, the relatively low cost of the research compared to other methods of gathering data, the research being subjective as it may be based on the views of the researcher and it can be time-consuming compared to other methods of gathering data.

Question 9

Some good answers were seen where candidates used the information in the illustration to describe how the shape could be stored in a vector graphic file. Vector graphic files describe the shape or shapes to be drawn and the co-ordinates, sizes and other attributes of the shapes. Good answers made reference to the details in the figure, but weaker answers were generic descriptions of vector graphics.

Question 10

This question was answered well by most candidates.

Question 11

This question produced a few good answers with the detail needed to score the marks. Good answers included the check at each stage and the actions that would be taken as a result of the check. Weak answers gave only the check.

Question 12 (a), (b) and (c)

This question was not well answered as most candidates did not know the terms given. Candidates are expected to know about network security issues.

Question 13

While most candidates could describe physical methods, most did not 'evaluate' their use. The question required candidates to give the positive and negative aspects of the use of several methods in order to score the high marks. Weaker answers described the method but did not give any further information.



INFORMATION TECHNOLOGY

Paper 9626/32
Advanced Theory

Key messages

As noted in previous reports, there appeared to be a number of candidates who still seem to look for, or 'spot', 'key words' in the question and then proceed to write answers based on those keywords; centres are once again reminded to ensure that candidates read the questions carefully and apply their knowledge to the question or scenario. Answering questions without doing so may score a few marks but will not give access to the full range of available marks.

While many candidates appeared to have good subject knowledge and some good technical descriptions were seen, there were also many that seemed to lack knowledge of the syllabus topics in order to answer the questions. It is essential that candidates read the short scenarios and the information therein very carefully and apply their knowledge when answering the subsequent questions. Many answers were generic and the consequence of this was that, while candidates appeared to know the syllabus content quite well, they did not score the higher marks because their knowledge was not appropriately applied.

General comments

It is very important that, when answering questions, candidates read the rubric and answer the question in the appropriate manner. There were a number of candidates who created numbered bullet points or dashed lists for questions that required free responses. As has been noted in previous reports, this is to be discouraged as, where candidates are asked to 'explain', 'describe', 'discuss' or 'evaluate' a topic, the use of bullet points rarely produces little more than simple points or short statements with no explanations or descriptions. These answers rarely score the marks. Candidates who write in sentences and paragraphs produce responses that score more marks.

Comments on specific questions

Question 1

- (a) Candidates were expected to study Fig. 1 and describe how the accuracy of the entered data could be checked by, e.g. applying validation to the different fields. Good answers described the different validation checks that could be carried out or what could be done to try and ensure the accuracy e.g. presence checks on the fields without dropdown lists, format checks on the email fields and range checks on the chosen DoB entries. Weaker answers repeated the same checks or gave checks that would not be appropriate for the field.
- (b) Most candidates gave a correct answer to this question.

Question 2

This question was not well answered. There were a few answers that explored the use of holography in medicine, e.g. X-ray holography can be used for the imaging of internal organs of the body without the need for invasive surgery or for making measurements inside the natural cavities of internal organs without any contact. A few candidates mentioned uses in dentistry or the study of biological specimens. However, too many weak answers ventured into the realms of science fiction describing holographic doctors performing surgery from across the globe or appearing on demand to diagnose patients' illnesses. Holographic imaging is an emerging technology and its use in modern medicine is well documented and candidates were expected to have knowledge of this.

Question 3

Candidates had good knowledge of the various methods of implementation and some good descriptions were seen. However, the choice of the type implementation to use in this scenario was a difficult decision for many candidates. Sufficient information was given in the scenario to point to pilot implementation as being the only sensible choice, but not all candidates chose this. Good answers described how this would be carried out within the store. Poorer answers muddled the methods of implementation. Some candidates described completely unrelated implementations of, e.g. servers or networks.

Question 4

- (a) This question was quite well answered with many candidates being able to describe how the loop works. Good answers described the loop step by step while weaker answers lacked details. Only a few candidates gave the output, most appearing to ignore this part of the question. Most of those that gave the output showed it correctly but many did not realise that it would be 1, 4, 7 only and never reaching 10.
- (b) Some very good answers were seen; the DO WHILE loop code being almost perfect. However, many candidates did not give the correct syntax so did not score the full marks. A few incorrect 'IF...NEXT' and 'FOR...NEXT' loops were seen showing that these candidates did not know how to answer the question or did not read it properly.
- (c) This question was not answered well at all. Few candidates understood the term 'client-side' so most were unable to answer the question. Many candidates wrote about 'clients' as people and how they could alter the code. A very few candidates understood that the term referred to the 'client' as being the web browser that would run the code and scored a few marks. The term 'client-side' is well documented and candidates using JavaScript are expected to know and understand it.

Question 5

This question was well answered with most candidates able to explain why both devices were required. Weaker answers lacked details of the use of the devices or repeated the features in the answers.

Question 6

Candidates did not answer this question well.

- (a) Good answers referred to the defining of the project, gathering user requirements and planning. Poor answers made vague references to planning and project management tools such as charts and critical paths.
- (b) (i) and (ii) Various stages could have been described to score good marks: data modelling, user designing, construction and implementation phases. There were some good answers that mentioned these stages but many candidates muddled the stages or repeated design, testing or requirements in both parts of the question.

Question 7

Most candidates could give the features of fibre optic cables and many were able to expand their answers and discuss the benefits and drawbacks of them. Good answers referred to the greater bandwidth, longer distance and lack of crosstalk compared to, e.g. copper cabling as well as the drawbacks such as the expense of installation and costly technical skills required for repairs. However, poorer answers did little more than describe how data is transmitted along fibre optic cables without answering the actual question. Candidates must be taught to read the question properly as such facts did not score marks.

Question 8

- (a) Digital currencies are becoming more commonly used and known about but many candidates could not explain what they are. Good answers explained that a digital currency is a virtual currency and is used online. Poorer answers repeated the question, e.g. a 'currency that is digital' and scored no marks. Candidates will not score marks for repeating the question.
- (b) Many candidates focussed on the fluctuations in value and the illegal uses of digital currencies. While these are valid answers when accompanied by descriptions of the impact of these, there are many more 'impacts' that should have been mentioned to score the higher marks: faster exchange of 'money' leads to increased business activities resulting in growth in an economy. Poor answers did not cover more than one aspect, but good answers covered a range of impacts.

Question 9

Many candidates could describe the use of video-conferencing in schools but the better answers describe how this affected the learning. To score the higher marks, candidates were required to, in addition to describing how video-conferencing could be used, describe how this improved, or otherwise, the learning by students. Good answers could have referred to the positive impacts, e.g. students can connect students all around the world, students can collaborate on projects to share resources and ideas which will enhance their subject knowledge and experiences, and students who are home-based through, e.g. illness can be included in classes. Negative impacts could have included the possible reduced contact with teachers and other students that might lead to a lack of motivation by students.

Question 10

Many students did not understand what was meant by 'software-based training'. Common errors were to describe simulators or simulations and refer to their advantages and disadvantages; these answers did not score marks. Good answers could have referred to, e.g. students can learn at their own pace, the use of multimedia, the tracking of their progress and the setting of personal targets along with there being little interaction with other students, a possible lack of motivation when learning alone and the fact that some learning, e.g. riding a bicycle or swimming cannot be taught using only software-based methods.

INFORMATION TECHNOLOGY

Paper 9626/33
Advanced Theory

Key messages

As noted in previous reports, there appeared to be a number of candidates who still seem to look for, or 'spot', 'key words' in the question and then proceed to write answers based on those keywords; centres are once again reminded to ensure that candidates read the questions carefully and apply their knowledge to the question or scenario. Answering questions without doing so may score a few marks but will not give access to the full range of available marks.

While many candidates appeared to have good subject knowledge and some good technical descriptions were seen, there were also many that seemed to lack knowledge of the syllabus topics in order to answer the questions. It is essential that candidates read the short scenarios and the information therein very carefully and apply their knowledge when answering the subsequent questions. Many answers were generic and the consequence of this was that, while candidates appeared to know the syllabus content quite well, they did not score the higher marks, because their knowledge was not appropriately applied and therefore did not answer the question.

General comments

It is very important that, when answering questions, candidates read the rubric and answer the question in the appropriate manner. There were a number of candidates who created numbered bullet points or dashed lists for questions that required free responses. As has been noted in previous reports, this is to be discouraged as, where candidates are asked to 'explain', 'describe', 'discuss' or 'evaluate' a topic, the use of bullet points rarely produces little more than simple points or short statements with no explanations or descriptions. These answers rarely score the marks.

Comments on specific questions

Question 1

Most candidates could describe bandwidth and bit rate in simple terms but the question required candidates to use the data given in the figures to explain how these affected users' viewing experiences. Good answers explained that higher bandwidths and bit rates allowed higher resolution video to be streamed without, e.g. breaks, pauses or waits for buffering and quoted the data given in the question. References to the type of connection and the available bandwidth for streaming video should also have been seen in answers that aimed at the higher marks. Weaker answers did not explore the 'experience' of the user but simply quoted the data, e.g. a 4G connection provides 15 Mbit/s which is restating the question and did not gain credit.

Question 2

This question required candidates to write some JavaScript code to capture a click event and then a function. Good answers captured the element, identified the button, checked for the event and called the function by the correct name. Marks were awarded for these steps and for stating the syntax accurately. Common errors were to omit delimiters such as () or { }, etc., use them incorrectly or use other incorrect syntax. JavaScript is quite specific about syntax so these points are important.

Question 3

- (a) This question asked for an explanation of the 'store and forward' method of sending messages across a network. Poorer answers did not note that the whole message is sent, stored, forwarded and then deleted from each node. A common error was to omit the detail about the deletion of the message once it has been sent and to state that it was kept at each node as a 'backup'. Good answers explained how the method worked using examples from the figure in the question giving a step-by-step explanation from one node to another in order to show how it worked.
- (b) This question was not answered well as many candidates could not provide advantages. Good answers should have referred to the more efficient use of bandwidth due to channel sharing among the devices or the use of broadcast messaging. Weaker answers again referred to 'backups' of the message being kept on the nodes in case of loss.

Question 4

Most candidates could not explain the process of 'tweening' despite being given visual clues in the question. The animation shows a start and end frame with some frames in between that show the illustration changing. Good answers should have explained that the first and last frames and frame 5 if necessary, would have been drawn by the animator, but a computer animation package could use these as key frames and produce the frames in between by tweening. Weaker answers confused this with morphing or described how the animator drew each frame.

Question 5

This question was quite well answered and some good diagrams were seen. Candidates could identify the entities and draw the flow of data with some accuracy. Weaker answers did not include correct entities or showed a flow of data that would not occur in such a situation.

Question 6

- (a) Most candidates could describe the composition of a bit map image in simple terms e.g. made of pixels, but few were able to give the detail, e.g. made up of pixels which are represented by bits, required by the question in order to describe how an image would be stored in a file.
- (b) Most candidates could describe the composition of a vector image, but only a few realised that a digital monitor cannot display such images. Digital monitors cannot display co-ordinate-based graphics because all digital monitors are pixel-based. Some good answers that referred to these facts were seen. Weaker answers described the structure of a vector image but used this to explain why the images do not pixelate and so did not answer the question.

Question 7

Few candidates could describe how holographic optical disk storage technology works. Answers could have described data as being stored as holographic laser interference patterns, e.g. the use of green and red lasers with light from both being sent in a parallel stream so that the green laser reads the data from the top layer of a disc while the red laser reads reference data stored on the aluminium layer near the bottom of disc layers.

A common error was to state that 'lasers are used' with no further information given in the response.

Question 8

Most candidates could answer this question giving benefits of teleworking to workers such as greater flexibility in scheduling work around their other activities, reduced stress due to other workers and more employment opportunities as they have experience of self-motivation and their use of remote technologies.

Question 9

- (a) Good answers referred to the enhancement of shape outlines to make objects more apparent, the enlargement of signs to make the words more readable and the changing of the colours of objects to make them more visible. Common errors were to describe a 'cure' for colour-blindness' or to describe virtual reality.
- (b) Some good answers were seen with candidates describing night vision or heat detection. Common errors bordered on science fiction with descriptions of cures for blindness, colour or otherwise, seeing through walls, and 'X-ray distance vision'.

Question 10

Some good descriptions of the various types of project management software were seen, but few candidates could properly give the advantages and disadvantages of each. Good answers gave both advantages and disadvantages of a range of software while weaker answers just stated what they were.

Question 11

This question required candidates to discuss the use of satellites to broadcast television and radio services. Good answers referred to the increased geographical coverage of the signal, but poorer answers stated that this was 'all around the world' which is not true of the geostationary satellites most commonly used for TV and radio. Good answers could have referred to the increased coverage compared to terrestrial or cable systems, the low maintenance requirements, and to the inability to restrict coverage to political borders and the high cost if a satellite fails.

Question 12

Common errors were to describe the process of e-business or to describe online banking while good answers referred to, e.g. e-business being more convenient for shoppers with no need to travel to shopping malls and the resulting reduction in traffic congestion and pollution, to the loss of jobs around the world due to closure of conventional shops, the increase in fraud due to online transactions not being secure and the loss of personal contact with suppliers.

INFORMATION TECHNOLOGY

Paper 9626/04
Advanced Practical

General comments

Most candidates were able to make fair attempts at all the tasks. Many, however, needed to pay more careful attention to the detail required in the graphics and animation tasks.

Comments on specific tasks

Task 1

- (a) In this part of the task, candidates were required to recreate an image of a balloon. This involved combining shapes and using a gradient fill to create a light bloom.

Their solutions were required to match the example shown in the question paper very closely. The main balloon shape, therefore, should have had vertical symmetry, smooth curves and be wider at the top.

Many candidates merely drew a simple ellipse and did not perform the node editing that the question required.

The part of the final balloon, the neck shape, was shown in the paper as a regular trapezium with the bottom edge edited to form a curve. Many candidates needed to pay more attention to the precision of this shape.

The first part of the task involved combining these two shapes to create the balloon with a single outline. Several candidates were unable to use the application to achieve this result and attempted to create the effect by erasing parts of the outline of each shape. This was rarely undetectable.

The resultant balloon was required to have a pure red gradient fill that created the appearance of a light bloom in the upper right quadrant of the shape. In general, this part of the task was done very poorly.

Many candidates did not attempt to use a gradient fill and few of those that did, managed to achieve the position shown in the question paper. Given that gradient fills commonly feature in graphics tasks, centres would profit from prioritising coverage of this aspect when preparing candidates for this specification.

Many candidates also took too little care when adding the drawing of the string. The question paper required their solution to match the one shown in the question paper very closely. This stricture included the string.

- (b) This part of the task required candidates to create blue and green copies of the red balloon. Clearly this was merely a matter of changing the colour of the fill. Almost all candidates managed this task, but a number seemed to have drawn the strings after the duplication and so did not create identical copies.
- (c) Positioning the three balloons was fairly straightforward, but once again, a fair number of candidates did not take enough care in matching the relative heights and amount of overlap shown in the image in the question paper.

- (d) Almost all candidates added the curved text to the **3Balloons** image successfully, but many seemed to not appreciate the nature of a script font. '*Script typefaces are based upon the varied and often fluid stroke created by handwriting.*' The simple font used for the text in the image in the question paper could have prompted more candidates to choose a suitable font.

The main issue for centres to be aware of in **Task 1** is that candidates should make very careful efforts to match the size, shape and position of images shown in the question paper and adhere closely to any specifications detailed.

Task 2

- (a) In **Task 2** candidates had to create another image and an animation with very specific requirements. The task involved a fairly simple keyframe animation with text appearing at the end.

Almost all candidates managed to create an animation but once again very few satisfied all the requirements.

The most frequent errors were the frame size and the starting position of the balloons.

The images in the question paper show that the balloons should occupy the whole width of the frame and that the frame should be less than the height of two balloons. It is clear that many candidates left the frame at the default size.

The task required the balloons to '*...appear from the bottom of the frame...*' this meant that the balloons should be situated 'offstage' at the start and rise from the bottom of the frame. A number of candidates positioned the balloons in view at the bottom of the frame before they started to rise.

After all three balloons reached the top of the frame, the central red balloon had to be replaced by a new **BalloonBurst** image. This image was not completed well by many candidates. The images in the question paper show that the pieces of the balloon in the **BalloonBurst** image are distinct, and each piece has a clear outline. Very few candidates managed to achieve this. Centres would profit from prioritising coverage of the skills and techniques involved with combining objects in a graphics application.

One further point for centres to note is that a significant number of candidates submitted the animation in the wrong format. The question paper stated that they must '*Export the final animation in a format suitable for any browser (without the need for a plug-in)...*' A great many candidates submitted the animation as a Shockwave Flash file. It is reasonable to expect candidates at this level to appreciate that, at the moment, only .gif files or files prepared for HTML5 will play in all browsers without a plug-in.

Task 3

Candidates were required to analyse the *JSexample.html* page and recognise that they had to create three functions to match the properties of the buttons and display the output at the *id="balloon"* bookmark.

Clearly, a number of candidates were not sufficiently well enough prepared for this task. For those with some JavaScript experience the task was quite straightforward.

The only issue for centres to note is that when candidates 'tidy' their work area for final submission and rename files as specified, it is important that they check that their solutions still work. A number of candidates submitted viable code but lost the marks for the correct display because of invalid file paths or wrong file names.

Task 4

- (a) Candidates were presented with images of three chat dialog boxes and were required to evaluate each box and recommend which one to use.

To achieve full marks for this part of the task, candidates must have commented upon all three chat dialog boxes and have cited at least two examples of poor or irrelevant functionality with respect to two of the boxes.

Almost all candidates commented upon all of the boxes, but many comments were not focused on the purpose of the chat boxes and their effectiveness was not properly evaluated.

The syllabus states that the instruction to 'Evaluate' means: *discuss the importance of, weigh up the advantages and disadvantages, judge the overall effectiveness, and weigh up your opinions.*

Centres would benefit from making candidates more aware of the meaning of command words like 'Evaluate' and the approach and coverage required.

Task 4

(b) This part of the task was completed by almost all candidates and generally well done.

One recurring issue, however, was that candidates confused the logical operator *NOT (!)* with the comparison *Not Equal to (!=)*.

(c) Candidates clearly understood the question about two ways to speed up an animation, but many needed to phrase their responses more carefully. A number referred to reducing the number of frames per second when they meant reducing the number of frames in the animation.

Task 5

It was possible to carry out the first part of the task, the selection of the recipients, in many ways. Most candidates managed the selection successfully but very few used an efficient method. A number created a new data source having extracted the recipients either manually or by applying a filter. Any valid selection was allowed but most candidates needed to improve the efficiency of the method they employed. Centres could benefit by encouraging candidates to consider this aspect of mail merge tasks, especially if the mail merge could be repeatable with different data.

The vast majority of candidates managed to insert the mergefields accurately, but many needed to give more thought to an efficient configuration of the conditional fields. Whilst it was possible to achieve the correct text inclusions with simple linear or nested insertions of 'If...then...else' fields, very few candidates realised that the correct results could be achieved with a single statement.

In conclusion

For this session, the main issues for centres to bear in mind seem to be:

candidates should be careful to match the size, shape and position of images shown in the question paper and pay close attention to any specifications detailed

developing candidate expertise in combining shapes into a single object with a single outline

developing candidate expertise in the use and manipulation of gradient fills

developing candidate expertise in writing JavaScript code

developing candidate expertise in efficient methods for the selection of recipients and the inclusion of text in a mail merge

developing candidate familiarity with the 'Glossary of command words' shown in the syllabus

candidates should verify solutions if they re-organise, delete or rename files in preparation for submission.