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INFORMATION TECHNOLOGY

Paper 9626/12
Theory

Key messages

Overall, candidates appeared to have been reasonably well prepared for this assessment.
Candidates showed a reasonable level of understanding of the syllabus, although there were areas of the syllabus where candidates appeared to lack detailed knowledge.

On much of the paper some expansion and detail is required. Many candidates provided this and did not give brief answers, which prevents candidates being able to access the higher mark range.

Evaluation requires candidates to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness, and weigh up their opinions, of a number of options. Some candidates only gave features or uses, which prevented them being able to gain full credit.

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

Some candidates placed too much emphasis on past paper mark schemes in their preparation. Questions change from session to session and year to year, and answers which were correct in previous papers may not be relevant when the emphasis or phrasing of a question on the same topic has changed. This was particularly relevant to **Questions 3**, **6** and **12**.

General comments

Many candidates answered evaluation and discussion questions in bullet point form. This does not allow candidates to provide the detail or argument required at this level. Candidates answering in this fashion are not providing a reasoned evaluation or discussion and so cannot justify the award of higher 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 to their response to the question.

Candidates should be reminded that brand names are not allowed within this syllabus and, at times, this limited the opportunities of candidates to gain marks.

Comments on specific questions

Question 1

Candidates found the concept of interactive processing challenging. Candidates performed far better on **parts (a)** and **(b)**, particularly **part (b)**, than the other parts of this question.

(a) Most candidates selected the correct option, but a large minority did not. There was no pattern among the incorrect answers given by candidates, with each possible incorrect option being chosen by an equal number of candidates.

(b) The vast majority of candidates selected the correct answer. The small minority who gave an incorrect answer tended to opt for the fourth option.

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(c) Candidates appeared to be unsure what interactive processing was, with very few managing to gain full credit. Some thought, incorrectly, that it meant dealing directly with staff at the theatre. Many described the process of booking a ticket rather than describing the term interactive processing. Many candidates reworded the question and concentrated on the term 'interaction' rather than describing what is meant by interactive processing.

(d) Candidates found this question challenging, although the strongest candidates did better on this part than **part (c)**. The most frequently awarded mark was for stating that trying to book a ticket using batch processing would lead to double booking. Some candidates described batch processing without really addressing why it would not be suitable for booking tickets. The second most popular answer was to do with customers knowing immediately if they have successfully booked a seat.

Question 2

Candidates did well on this question with many candidates gaining full credit. The majority of candidates did better with **part (a)** than **part (b)**.

(a) Virtually all candidates answered this part correctly, although a tiny minority thought it was more difficult to simulate adverse weather conditions.

(b) Candidates did not do as well on this part of the question and although many candidates answered correctly, options 2 and 3 were commonly selected incorrect answers. The majority of the stronger candidates were awarded the mark.

Question 3

Candidates found this question very challenging, with only the strongest candidates gaining significant credit. Many candidates gave answers relating to a past paper question comparing hard disk drives to solid state drives. Here, the question referred to magnetic tape drives rather than SSDs and as such, the answers were bound to be completely different. Where candidates did attempt the question asked, answers often focussed on the way the drives worked rather than the advantages and disadvantages. Other answers frequently used words like cheaper, faster, or expensive with no expansion, instead of answering, for example, cheaper to buy or cheaper per storage unit. The word "easier" without qualification should not be used by candidates as it is far too subjective.

Question 4

On the whole, this question was well answered, with the majority of candidates gaining at least partial credit. Most candidates knew the definitions of RAM and ROM. There was, however, confusion, with some candidates mixing up the two terms, stating incorrectly that RAM was non-volatile, and ROM was volatile. Although most candidates understood the purpose of RAM, very few candidates seemed to understand the purpose of ROM. A common misconception was that it stored the work of the user when the power went off, confusing its properties with those of secondary backing storage.

Question 5

This question was also quite well answered, with the majority of candidates making two or more good points. Some candidates did, however, confuse the coding of data with encryption. Candidates need to understand that at this level answers must be expanded on to justify the award of marks. A number of candidates gave very brief answers such as that coding data would take up less space, without explaining whether they were referring to storage space or some other type of space. There was some indication that candidates might be writing about data being coarsened but the lack of detail in their answer meant they were unable to gain credit. Examples of what candidates meant would have helped.

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Question 6

Candidates found this question challenging, although some candidates gained at least partial credit. Strong answers often included reference to the safety aspects of a dialogue interface as well as explanations about background noise interference and the unintended consequences of making accidental gestures when using a gesture based interface. Many candidates thought that a gesture based interface involved touching a screen and described the dialogue interface as being more hygienic. Some candidates did not answer the question, which required them to compare the two interfaces with each other, and instead compared them to other types of interface.

Question 7

Most candidates did well on this question though parts **(a)**, **(b)** and **(d)** produced better answers than **part (e)**, which in turn produced better answers than **part (c)**.

(a) The majority of candidates did well on this question, with most candidates gaining at least partial credit. This was usually achieved by describing the process of highlighting the appropriate range. Many candidates had difficulty in articulating the steps required thereafter. Some candidates gave very general answers rather than specifically addressing the question's requirements, writing statements such as 'then name the range' rather than using the name 'jobrate' which should have been deduced from the question. Some candidates tried to describe the formula rather than how to create a named range.

(b) Many candidates were able to gain credit for this question but found it difficult to describe the process clearly and succinctly. There were many candidates who thought that the use of 0 produces an exact value rather than the correct answer of an exact match. A number of candidates tried to describe what the formula was without explaining it step by step.

(c) This was well answered by some candidates. Common correct responses included that typing a named range saves time compared to using cell references and that a named range is easier to remember than a cell range. However, many candidates gave the answer 'Easier to use' without expanding on this. Candidates often appeared to have an inkling of the correct answers but did not explain them clearly.

(d) This was fairly well answered, with many candidates appearing to understand the process. Some candidates were unable to expand on their answers by including the correct ranges or cells in their response. Several candidates stopped halfway through what could have been a good answer, by either only describing how to filter for secretaries and not going on to describe the wage filter or describing how to filter for wages greater than $750 without filtering for secretaries.

(e) This question required quite detailed answers, which a number of candidates did not provide. Many candidates did appear to have an idea of what the formula did but were unable to provide a detailed explanation. Answers were provided such as '2 looks up a value in the second column', missing out the key word 'corresponding', or 'the lookup value is B7', without explaining what this part of the formula actually does.

Question 8

In responses to this question, some candidates made good references to encryption and secure communication in networks. Some candidates were, however, unable to expand on the features of TLS and SSL correctly. There also appeared to be little description of handshaking and/or reference to secure connections between clients and servers.

Question 9

This question was well answered, with candidates doing quite well in describing that data does not change and goes out of date quickly. Examples provided were mainly appropriate although a tiny minority either gave no example or used rewritable magnetic media. There were few references to the limited nature of the information.

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Question 10

This question was fairly well answered with many candidates gaining at least partial credit. Candidates tended to give better descriptions of pharming than they did of phishing.

(a) Although many candidates appeared to know what phishing is, they often did not go into sufficient detail in their descriptions. At this level, mention of legitimate looking emails and legitimate looking websites is not sufficient if the candidate does not write about them being fake. A number of candidates thought that phishing was synonymous with viruses and hacking.

(b) Candidates did better on this part. However, a number of candidates gave similar answers to those they had given in **part (a)**, concentrating on the sending of emails. A few candidates confused pharming with keylogging or other types of attack.

Question 11

This question proved to be one of the most challenging on the paper. Although some candidates provided good answers by referring to the ability to use files in different packages and giving good examples, other candidates were unable to make a valid point in their answer. Overall, there appeared to be little understanding of the meaning of generic file formats. There was a tendency in this particular question for candidates to use brand names in their answers. The syllabus explains that candidates should not use brand names and that no credit will be given for doing so.

Question 12

On this question, candidates struggled to define what is meant by sampling. However, many candidates were able to describe sampling rate, though some candidates referred to the “number of bits per second” rather than the number of samples per second. Many candidates were able to gain marks for writing that the higher the sample rate, the better the audio quality but the larger the file size. Lots of candidates wrote about bit rate and bit depth that were not required in this answer. There was a tendency to restate previous mark scheme answers relating to sound but not relevant to this particular topic.

Question 13

The vast majority of candidates achieved credit on this question but very few gave more than a basic answer. Most were able to define the internet and also the world wide web, though few provided a connection between the two concepts. Many responses lacked a detailed description of the internet, such as its hardware makeup and the services it provides. There was also lack of detail in the description of the world wide web.

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INFORMATION TECHNOLOGY

Paper 9626/02
Practical

Key messages

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

- Candidates need a better understanding of the function and structure of a data dictionary.
- Candidates need a better understanding of good practice in the design and construction of a database table based on the information recorded in their data dictionary.
- Candidates need a better understanding of relational databases.
- Candidates need to ensure that they submit a single version of each completed file, in the specified file format, with the specified filename.
- Candidates need to apply more precision to the timing of objects within their video clips.
- Candidates need to be more familiar with applying their theoretical knowledge to practical tasks.

General comments

A significant number of candidates did not submit all the required files in the specified file types. Often candidates omitted one or more of the required files to be submitted for assessment, or submitted the containers for their working files but not the finished product (for example: files were submitted in .wlmp format, which is a container holding pointers to individual component files stored on a local (or networked) drive). When these files are uploaded the contents cannot be viewed and therefore marks cannot be awarded to the candidates. Most candidates performed well on the video editing questions but less so on the database questions, where conversion from their data dictionary to their database structure was not as strong.

Comments on specific questions

Question 1

Almost all candidates combined the two files together, although fewer candidates saved the resulting file with the specified filename and file format. Many candidates identified that the source data was not all in the same order and rectified this in their saved files. A number of candidates left blank rows in this data. A small number of candidates replaced 10 records from the 'Intem' file with those from the 'AME' file rather than appending the records.

Question 2

Many candidates found this question challenging. There were few detailed and complete data dictionaries for the processors and motherboards data despite the question indicating the information to be recorded including '… tables, records, fields, data types and any other relevant information' which would include field lengths for alphanumeric data, sub-types for numeric data like integer, decimal to 'n' decimal places, currency, etc.

Despite there being two discrete types of data in the source files provided, a significant number of candidates tried to create a single data table in their data dictionary (but subsequently created two separate tables in the database in step 3). Few candidates analysed the data in sufficient detail to identify that the socket fields in each table contained common data which would require a many-to-many relationship between the tables. A many-to-many relationship requires a link table and few candidates recognised this or created a link table in their data dictionary.

Question 3

Most candidates successfully created a database using the two data files from steps 1 and 2, although many relied upon the software to suggest table names, field names and data types and as a result it rarely matched the data dictionary. Those candidates who used their data dictionaries created successful databases that would allow the candidate to extract data together from those (now related) tables in order to successfully create a query and report in step 4. Where candidates relied upon their software to import and create the tables using the wizard, they frequently found that the software had assigned incorrect data types to some fields, for example: one or both socket fields in the main tables.

Question 4

Many candidates who had created at least two data tables with a relationship from the previous step successfully extracted some of the required data. Many successfully performed a wildcard search on 'i7' processors and 'DDR4' memory, although fewer included the processor speed of '>=3.7'. To identify if products were currently in stock the price field had to be checked to see if it contained a numeric value.

Several different methods were used to successfully extract this data although a significant number of candidates did not attempt this part of the query.

Few candidates attempted to create a calculated field (or control in the report) to work out the total price of the motherboard and processor. Where candidates had attempted this, they were usually successful. The production of the report proved challenging for many candidates. It required grouping and some manipulation of controls in the report design in order to fit onto a single A4 portrait page wide (without truncating any of the displayed data). At AS level candidates should be labelling fields appropriately, which was not always seen in all submissions. Few candidates added a title to the report that contained sufficient detail.

Question 5

This step was often completed very successfully where candidates had created a report. Occasionally there were errors in the filename.

Question 6

Almost all candidates set the aspect ratio of the frames to 16:9, although far fewer candidates saved the file with the specified resolution of 1024×576. Most candidates successfully removed the sound from the clip and clipped the first four seconds. A few candidates did not save the video clip as instructed at this step.

Question 7

Almost all candidates completed this task as specified.

Question 8

Although most candidates completed many elements of this with 100 percent accuracy, there were a number of different approaches seen by candidates. Some candidates, having successfully created the background image 'TGC3', did not use this at the start of the clip, preferring to start with the video file 'TGC2'. A significant number of candidates did not set the title text to be larger than the subtitle text, and/or retain the original text and background when adding the subtitle text and other text at 3 and 6 seconds. There were a significant number of typographical errors in the text entry at 0, 3 and 6 seconds. It is important that the work presented by candidates is 'fit for purpose' and data entry errors are not 'of a professional standard'. A significant number of candidates set a transition into the video clip but did not set a smooth transition between 9 and 11 seconds; many appeared to be between 7 and 9 seconds. The audio clip was often added as specified. A significant number of candidates added appropriate credits including the details of the videographer and sound recorder. Most candidates included their candidate details, but fewer included the specified text with 100 per cent accuracy. For a 'professional standard' candidates should be conscious of the line spacing/grouping of the contents of the credits and the speed at which the credits scroll up the screen. Whilst the majority of candidates competed these elements successfully, others had credits that ran quickly over 1 or 2 seconds which were impossible to read.

Question 9

Almost all candidates completed this step as specified, although some did not export their video from their video editing package.

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INFORMATION TECHNOLOGY

Paper 9626/32
Advanced Theory

Key messages

Some candidates appeared to have good subject knowledge and some good technical descriptions were seen. Centres are reminded of the importance of candidates reading the questions very carefully. Candidates should then apply their knowledge to answer the question or scenario as set. Candidates will only gain access to the full range of available marks if their answers properly address the actual question. Answers based on keywords that they have 'spotted' will gain little, if any, credit.

It is essential that candidates read the short scenarios and the information contained therein very carefully. Candidates can then apply their knowledge in detail when answering the subsequent questions. Many candidates did not apply their knowledge to the given scenarios or to the context set in the questions. Generic answers do not gain full credit because knowledge is not appropriately applied or accurate in the context and the responses do not answer the question.

Many candidates seemed to lack in-depth, accurate knowledge of some syllabus topics. It is important that all topics in the current syllabus are studied in detail in order that candidates are able to answer the questions.

General comments

The syllabus shows a list of 'command words' that appear in questions and explains what each word requires from candidates. Candidates must read the rubric and answer the question in the appropriate manner according to the command word used. Creating numbered bullet points or dashed lists for questions that require free responses will gain very little credit. The use of bullet points rarely produces little more than simple points or short statements with no explanations or descriptions. These answers, while demonstrating some knowledge, do not 'explain', 'describe', 'discuss' or 'evaluate' a topic and rarely gain credit. Candidates who provide descriptions of topics as answers to questions that require candidates to 'discuss' or 'evaluate' will limit themselves to only a few marks and will not be able to access the full range of available marks. Candidates who pay attention to the command words in the question and write in sentences and paragraphs produce responses that gain more credit.

At A Level, candidates are expected to be able to formulate answers that properly convey their knowledge and understanding. Candidates should also answer the questions in some depth and detail. Superficial and vague answers do not gain credit.

It was good to note, again, that fewer candidates omitted questions than in previous series. Candidates should always be encouraged to attempt all of the questions.

Comments on specific questions

Question 1

This question was about scheduling tasks in project management software. Good answers should have included that PMS is used to define the project's scope, create lists of tasks and activities within the tasks, dependencies of tasks, carry out critical path analysis to determine time scales, shortest and longest times for the project and to create charts, e.g. Gannt charts, that show a project in visual terms. A few candidates misread or misinterpreted the question and produced answers that referred to types of PMS. Candidates must read questions carefully and should not reproduce answers for questions that have appeared on past papers.

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Question 2

(a) This question was about checks on data entry and proved quite accessible for candidates. Good answers referred to the type of checks and what these would do on the booking screen. Such answers could have included reference to checking that data had been entered in a box and checking data against pre-set values in a lookup table. Candidates were not specifically expected to identify or name a check, e.g. presence check, but were given credit for naming the type of check, e.g. presence, if they also described, as required by the question, what the check did. Naming the type of check without an accurate description was not enough to gain credit. As noted in the General Comments, at A Level, candidates are expected to be able to produce detailed descriptions.

(b) Form controls are used to control the data that is input into a form. They ensure that the data is of the expected type, in the expected format and is reasonable. They do not ensure that the data is correct; it is the responsibility of the person booking the tickets to input the correct names, numbers of tickets and journey times required. Good answers should have referred to e.g. radio buttons to select the gender of the traveller, (dropdown) menus that present a pre-set selection of choices or buttons to select a task such as clearing or submitting the form. Weaker answers repeated the same form control for different tasks e.g. buttons for submit and buttons for clear. While some duplication was given credit, the question asked for *four* form controls so full credit was not available to candidates whose answers included repetition of controls.

(c) Form controls were explicitly excluded from the characteristics that the question asked for. Good answers included simple sentence structure for easier understanding by the user, screens that are not cluttered and are logically laid out, the provision of instructional labels and a consistent format so that they can be easily followed when entering data.

(d) This question was not about details of actual tests or results but about the reason for having a plan for the testing. Expected answers included e.g. that having a test plan focusses attention, attempts to ensure that requirements are met and defines the tests that should be carried out on the booking screen. However, most candidates focussed their answers on the actual tests and test data that might be carried out and used. This topic is clearly stated in the syllabus (Section 16.4, first bullet point, page 34) and candidates are expected to know and understand why a test **plan** is needed. Centres are reminded to ensure that candidates understand the need to read the question carefully.

Question 3

(a) This question asked candidates to describe the characteristics of incremental prototyping. A characteristic can be defined as a feature that helps to identify or describe an object or process so that it can be reliably distinguished from other objects or processes. Good answers could have included the points that incremental prototyping breaks the project into many sub-projects, partially builds models based on previous iterations of the product, and that development on the sub-project stops when its requirement is met. Weaker answers described evolutionary prototyping which is not the same as incremental prototyping. In incremental prototyping a new prototype is built after testing at each stage of development but in evolutionary prototyping the prototype is used as a basis to produce the final product.

(b) In questions that require candidates to discuss the advantages and disadvantages, both are required to access the full range of marks. Also, the full range of marks, as noted in the general comments, are not available for a response that lists points. Good answers should have referred to e.g. each stage being an identifiable milestone enabling progress to be tracked, completion of early working versions is faster than in other methods of development and risks can be managed better since they are identified and handled during each stage in the incremental process but the overall cost of producing many prototypes can be excessive and all of the suggested features may not be included in the final product.

Question 4

This question was about the use of 3D printing technology being used in space exploration. 3D printing can be used to create or manufacture objects with complex geometry for space vehicles (e.g. rocket nozzles, antennae), use simpler designs as there is no requirement to account for the restrictions placed on cutting tools, and objects can be created with less bulk so reducing launch costs. It can also create lattice structures

instead of solid ones and these have reduced weights so reduce launch costs. Candidates were not required to describe how 3D printing works or describe how it can be used to 'print' customise drugs for patients. Candidates must read the question and then apply their knowledge of topics to the scenario given.

Question 5

(a) This question was about the use of vector graphics in computing. Answers could have identified that vector graphics are used as outline fonts to create printable characters or used to produce scalable graphics in in HTML5 on web pages. Simple, one word answers such as 'logos' did not give enough information to be awarded credit.

(b) Good answers explained that vector images use mathematical expressions that describe shapes to create images so can be recalculated when the image is resized. Bitmap images are made up of pixels that are either lost or added when the image is resized.

Question 6

This question required candidates to use their knowledge and understanding to analyse the use of phased implementation when replacing a computer system in a supermarket chain. When asked to 'analyse', candidates are expected, as detailed in the syllabus Glossary of Command words (p. 30), to identify the characteristics and explain in detail the main points of the topic in the question. Good answers that analysed the suitability of using phased implementation could have referred to the changeover taking place in stages by the replacement of one part and then another, with parts of the old system still being used, spreading the costs over a long period of time, carrying out staff training in stages, more and longer disruption to the systems and the whole changeover taking considerably longer than if direct changeover was used. Analysis requires the characteristics to be considered and put into context. Weaker answers that only described phased implementation and did not make attempts at analysis did not score more than a few marks. A Level requires candidates to use their knowledge and understanding.

Question 7

This question was specifically about the BitTorrent protocol (Syllabus section 13.1 p.23) and not just about peer-to-peer file-sharing. Weaker answers did not refer to BitTorrent but described peer-to-peer file sharing out of context. Centres are reminded to ensure that candidates read the entire question. Candidates were expected to provide answers that described how the BitTorrent works well over low bandwidth connections, does not use a central server and requires a BitTorrent client on each device. Good answers included how files are shared by using file descriptors, seedings, the 'breaking' of the file into small fragments and the sourcing of the file fragments from multiple devices with BitTorrent clients, the encryption of the file fragments to try and ensure file integrity, and the reconstruction of the whole file from the randomly delivered fragments.

Question 8

This question required candidates to evaluate the use of wireless communications in the home. Wireless communications include Wi-Fi, Bluetooth and infra-red systems. The advantages and disadvantages of any, and all, of these could have been considered and judged by candidates. The advantages that could have been considered include e.g. the distribution of networked internet traffic such as video and audio around the home, the remote control of devices, the communication between devices, use of network connections without wires, remote sensing such as video at door steps and the disadvantages of e.g. being subject to interference from other devices and the concerns about security. Candidates were expected to be able to evaluate the importance of these advantages and disadvantages regarding using wireless communications in the home.

Question 9

(a) Most candidates were able to give good explanations how the 'else if' and 'if else' code would provide the appropriate statement when an age is entered into the code. Good answers included detailed explanations of the working of the code on each line.

(b) There were some good answers seen to this question but it was apparent from the majority of answers that candidates were not familiar with the switch() function in JavaScript (Syllabus section 19, page 28). Good answers about the drawbacks of this function could have referenced the requirement for the order of the Case options to be correctly logically ordered or the comparisons

may not work as expected, the need for each condition to be exactly and individually stated, and the excessive length of the code.

Question 10

This question required candidates to evaluate the impact of image editing in the making of movies. The processes of image editing that could have been considered and judged by candidate include the altering of colours, hues and shades of images, adding or removing objects from scenes, creating scenes that could not physically exist. Descriptions of the advantages and disadvantages of these, and other, processes and then a consideration of the effects of these on e.g. actors, audiences and critics could have been included in good answers. Candidates were expected to be able to use these advantages and disadvantages to evaluate the impact of image editing in the making of movies. While many candidates could describe image editing and how it could be used, evaluations were often not seen. Centres are reminded to ensure that candidates can use their knowledge and understanding to evaluate and produce informed opinions or conclusions on the topics in the syllabus. Again, centres are referred to the glossary of command words, on page 30, in the current syllabus.

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INFORMATION TECHNOLOGY

Paper 9626/04
Advanced Practical

Key messages

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

- emphasis of the importance of determining and satisfying all requirements detailed or shown in the question paper
- spreadsheet practice exercises that involve precise mixed references
- further experience in determining worksheet ranges that can be used as data sources for mail merge tasks
- further opportunities for the development of problem-solving skills; particularly in the logic of nesting conditional fields in a mail merge
- the development of vector graphics skills such as:
  - aligning objects
  - grouping objects
  - duplicating objects and groups
  - the use of tools to 'skew' objects
  - accuracy in all of the above.

General comments

A key factor to success for this session was attention to detail. Whilst most candidates were able to submit valid solutions to the tasks, many needed to pay more attention to the examples and instructions shown in the question paper. Almost all candidates would benefit from centres stressing this issue in practice exercises.

Comments on specific questions

Task 1 – a spreadsheet and charts task

In **Task 1**, candidates were required to use data provided to create a worksheet to match the layout shown in the question paper. Accuracy with the position and size of the cells, together with the format of the data and labels was necessary for the award of marks for this part of the task.

The creation of the formulae to determine the correct grade for each of the recorded marks was well done by almost all candidates but very few used the IFS() function which would have avoided the need for an extensive formula using nested IF() functions.

As with all spreadsheet tasks at this level, it was important that formulae referred to data held in cells and not values entered in the formula. This ensures that values can be revised and used for modelling purposes such as modifying the grade thresholds and observing the changes to the number of pass or fail grades. Candidates would benefit from reading the instructions for the entire task before starting.

Subsequently candidates had to apply conditional formatting to colour cells that displayed pass grades with a green fill and fail grades with a red fill. This part of the task did not trouble many candidates, but a few did not follow the instructions to format the cell colour and formatted the font colour instead.

The next part of the task required candidates to display a count of each grade awarded. A variety of solutions were submitted and any formula that could be replicated for each grade and that ensured that the numbers were accurate if the grade thresholds were changed was deemed valid.

In preparation for displaying charts comparing the number of pass grades and fail grades, candidates had to include a table displaying the number of each grade awarded for each subject. Once again, for the solution to be valid the formulae had to be capable of being replicated both horizontally and vertically before being modified for the grade. Precise mixed referencing was required. Many candidates were aware of this but more than a few made errors with the referencing and some clearly entered each formula individually. Candidates would benefit from some emphasis on mixed referencing.

Candidates found the charts themselves straightforward. The task required them to create two charts using the two sets of grade threshold marks. The instructions were to choose a chart type that would be best to compare the number of pass and fail grades for each module. A Clustered or Stacked Bar/Column chart was the correct choice. At this level, candidates should be aware that charts need to convey information clearly and in this case of the need for the data to be clarified by the addition of a legend, column labels, axes titles and an explanatory chart title. Very few candidates paid enough attention to this requirement.

Task 2 – a mail merge task

The **MailMerge Template.rtf** file contained a table for candidates to insert mergefields which referenced the data in the spreadsheet. To use the data candidates had to name a range that contained the data specified in the template file. This enabled candidates to use the column labels in the mergefields. Candidates who attempted to use the data without selecting the range resorted to using default fieldnames such as f1, f2 etc. This often led to errors in misplacing or mis-referencing. This was a common problem that centres could include in future coverage.

It was possible to insert the correct conditional text in several ways. Using nested 'IF..Then..Else' rules was the most efficient method but very few candidates attempted to tackle the logic involved. Problem-solving skills are a key feature of this paper and are necessary for the higher grades. Centres should ensure candidates have sufficient experience of problem-solving and the logic for mail merge tasks.

Task 3 – a vector graphics task

An important element of this task was the duplication of groups of objects. Candidates who made good attempts at this task created a socket, labels, lights and the number as a carefully aligned group. They could then duplicate the group, and arrange the spacing and distribution prior to editing the number. Many attempts were marred by inconsistent positioning and spacing.

Centres should impress on candidates the importance of attention to detail in matching any images shown in the question paper. The spacing and positioning of each element of the image was important and very few candidates paid enough attention to this requirement.

The 'Skewing' of the panel and attempts to create a '3D' effect were not completed successfully by many candidates. This image in the question paper was not a perspective view and the panel should not have been distorted. Candidates who had not grouped elements or the entire panel, struggled with distortion and mis-alignment.

Almost all candidates attempted to add the top and side panels, but few succeeded to align the panels with enough accuracy and many submissions showed double seams or gaps.

Candidates would benefit from more practice in using graphics tools such as: alignment, grouping and skewing.

Task 4 – an animation task

Candidates found this task straightforward but there were common errors. The question paper showed the progression of the waves with all three waves visible in the final image. Most candidates were able to animate waves smoothly but only a few achieved the progression as illustrated. Attention to the detail and specifications shown in the question paper was an issue.

Task 5 – a JavaScript task

For this task candidates had to add code to the HTML source file so that when a mark was entered, the page displayed the corresponding grade. The file included a button labelled 'Click to enter the mark' whose

'onClick' parameter was set to 'ConvertMark()'. Candidates had, therefore, to write a function named ConvertMark that displayed the correct grade when a mark was entered.

Almost all candidates made fair attempts at this task and many succeeded in creating a complete solution. Some candidates did not recognise some key marks criteria, however.
These were:

- the name of the function not only had to match the onClick parameter but needed to be named to match the value given in the code provided, i.e. ConvertMark()
- the marks needed to entered in a prompt dialog box which displayed some appropriate prompt text
- the grade had to be displayed at the 'display grade here' bookmark already in the html
- the text displaying the grade had to match the text given in the question paper exactly.