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INFORMATION TECHNOLOGY

Paper 9626/12
Theory

Key messages

- Overall, candidates appeared to have been well prepared for this assessment.
- Candidates showed a reasonable level of understanding of the syllabus. There were few areas of the syllabus where candidates appeared to lack detailed knowledge.
- On much of the paper some expansion and detail is required. It is not sufficient to give brief answers.
- Once again, it is worth making the point that 'evaluation' requires the candidate to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness and/or weigh up their opinions of a number of options. Candidates did tend to just give 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 to their response to the question. This was particularly relevant to **Question 12**.

Candidates must read questions carefully before answering. Several questions required descriptions such as **Question 7(b)** where candidates often gave a very brief outline of updating without really describing the process or did not use examples. The question clearly required candidates to use the data given in the stem of the question. Another problem still seems to be the use by some candidates of brand names in their answers.

Comments on specific questions

Question 1

Candidates did not do as well as they normally do on this type of question, most gaining only two marks with some getting three. A number of candidates ticked both the database options which were both inaccurate statements. Other candidates who gave incorrect answers chose from a range of the other incorrect options.

Question 2

Candidates did better on this question with the majority gaining at least three marks with many gaining four, marks. The most common inaccurate statement ticked was the statement saying that everybody these days owns a smartphone.

Question 3

This question was generally well answered with the majority of candidates gaining at least two marks with many gaining three or more. Candidates' responses usually identified the characteristics of static and dynamic data, although several were inclined to make the same point over and over again. Candidates often maintained that one or the other of these sources was more reliable but did not expand on this assumption and explain why.

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Question 4

Overall this question was reasonably well answered. Part **(b)** tended to be better answered than part **(a)**.

(a) Most candidates described at least one aspect of the purpose well with the more able often describing two or three. Most candidates knew that it enables an operating system or computer to communicate with a device although some referred to it being an interface between the user and the printer.

(b) Candidates did a little better on this part of the question. Many understood the notion of a translation process and the fact that programs are interpreted line by line. Some understood how interpreters handled errors but other mark scheme points were barely mentioned.

Question 5

This question achieved a spread of marks. Many candidates still seem unaware of the nature of proof reading. Several candidates assumed that this proof reading is a variation of verification, seeming to think that there is a need for comparison with the original source. The question referred to proof reading an assignment, in other words, a student re-reading their assignment. There would be no source document to compare it with. Most mentioned spelling and punctuation errors but few mentioned the need for corrections.

Question 6

This question was reasonably well answered with most candidates gaining at least two marks. Most candidates compared bandwidth but concentrated on this one point, thereby struggling to achieve very high marks. Those candidates who expanded their answers to include the uses of these networks to stream videos, access the world wide web, etc. were the ones who gained most marks.

Question 7

Most candidates seemed to be unfamiliar with this topic. Part **(a)** produced better answers than part **(c)** which in turn was better answered than part **(b)**

(a) The majority of candidates did not do as well on this question as on others with many candidates struggling to gain even one mark. Even those that did gain a mark usually achieved this for sorting, though several of these did not mention which field it was being sorted on or in what order. Very few mentioned validation.

(b) Very few candidates appreciated the need for reading each record of each file before comparing these. Most candidates gained their one mark by describing the calculation process. This is a topic which could bear closer scrutiny by centres in future.

(c) Validation still seems to be a topic that most candidates struggle to get to grips with. Even with the question concentrating on two specific validation checks, candidates seemed not to understand these. Many wrote about using a limit check on one field but went on to describe a range check and vice versa. Some candidates thought you could apply a range check to the length of a text field. Some candidates did not read the question properly. It clearly stated to use fields from the transaction file but these candidates used fields from the master file, gaining no credit.

Question 8

This was well answered with many candidates gaining at least four marks, with all candidates gaining some marks. A number of candidates gave confusing descriptions of the use of these devices such as a microphone to hear the directors. At this level it is expected that candidates appreciate the difference between input and output. Candidates tended to describe cameras, microphones, monitors and speakers quite well but often did not include router or an adequate description of the use of a PC or laptop.

Question 9

This question was also well answered. Again, most candidates gained at least four marks, with all candidates gaining some marks. Candidates did quite well in identifying the health and safety issues though did less well in expanding upon the causes. Very few, however, identified the general definition but this did not prevent a number of candidates gaining full marks. The shortcomings in some answers were usually the lack of

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emphasis that health issues are caused by continuous or repetitive use of the equipment. This, however, did not prevent the achievement of four marks.

Question 10

This question was fairly well answered with the majority of candidates gaining at least half marks. However, many candidates paid little attention to the relative lengths of the fields. Most candidates did not include either navigation or help buttons and sensible titles were also uncommon. The vast majority realised that the Loyalty_customer (Y/N) field would be a radio button but a sizeable number of candidates did not include either a calendar or drop-down options for the Date_hired field.

Question 11

This question was very well answered by candidates, on the whole. The majority of candidates gained at least half marks. However, part **(b)** answers produced better responses than part **(a)**

(a) Most candidates gained at least one mark. The most common omission was the lack of identification of the range. On occasion when one was given it was sometimes the incorrect range. Most candidates gained the third mark scheme point although on occasion some candidates did not to identify the name correctly.

(b) Candidates did well on this part with the vast majority gaining at least four marks. Where there were mistakes it was usually down to one of three things: incorrect return row, omission of false or omission of D7.

Question 12

Most candidates did reasonably well on this question with most gaining marks. A common misunderstanding was the misinterpretation of SSD. A number of candidates referred to pen drives (some even mentioned CD ROM) and elaborated on their portability instead of concentrating on the portability of the laptop. Most candidates appeared to be familiar with data access and transfer times as well as the robustness.

Question 13

The vast majority of candidates achieved marks on this question but very few gave above a level 1 answer. Most candidates were able to describe the encryption process in great detail but did not continue to identify many advantages and disadvantages. For example, many described asymmetric and symmetric encryption without comparing the relative security of each or the implications of sending keys. Very few candidates were able to articulate the disadvantages of using encryption.

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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 to ensure that they submit a single version of each completed file in the specified file format.
- Candidates need more practice in converting video and audio files from one common file type to another.
- Candidates need to apply more precision to the timing of objects within their video clips.
- Candidates need more practice and experience in string manipulation within a spreadsheet.
- Candidates need more practice and experience in converting numeric data from strings to numeric values for use within a spreadsheet.
- Candidates need to be more familiar with applying their theoretical knowledge to practical tasks.
- Candidates need a better understanding of the function and structure of a data dictionary.
- Candidates need a better understanding of good practise in the design and construction of a database table.

General comments

A significant number of candidates did not submit all the required files in the specified file types. A significant number of 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. Similarly a number of 'spreadsheet' files were submitted in .xml (eXtensible Markup Language) format which is a markup language similar to HTML rather than a spreadsheet file. Most candidates performed well on the video and audio editing questions but less so on the spreadsheet questions.

Comments on specific questions

Question 1

Almost all candidates created a new video with the required image ratio. Some candidates did not produce videos of a professional standard as they did not set the video (or background size) to fill the entire window. Most candidates successfully cropped and resized the image Ellmau1.jpg to provide the background for the start of the video, although some did not remove the road or saved the image at such a low resolution that the background was pixelated.

Question 2

There were a small number of data entry errors in the title text. Most candidates successfully added an effect to place this text, although not all were appropriate, readability being more important to the user than lengthy effects. Occasional instances of the effect being applied to the background (with static text) were seen, making the text almost unreadable. The title was not always displayed for the required 7 seconds.

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Question 3

Despite clear instructions to leave the background on display for 2 seconds, a number of candidates added the caption directly after the title text. Most candidates added the caption with an appropriate effect, displaying it for 7 seconds as specified. The content of the caption was not always completed as successfully. Despite the information in the initial rubric, a number of candidates used this to advertise locations from hill stations in the Himalayas, Australia, Switzerland and even locations in America rather than the town of Ellmau.

Question 4

Not all candidates completed this as specified; many did not remove only the first 6 seconds, some did not remove the end of the clip. Most candidates however did leave only 10 seconds of clip remaining, although not by trimming, rather by changing the number of frames per second to speed up the whole (or most) of the original clip. Almost all candidates removed the sound from the original clip.

Question 5

The majority of candidates performed well on this question. Most produced a snapshot, but not all did so from the last frame of their video clip. The area where candidates tended to perform less well was adding appropriate credits for the video with a significant number of candidates ignoring the rubric from the question paper.

Question 6

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

Question 7

Whilst most candidates completed this step as specified, there were a number of errors and omissions, including not adding the second sound file to the first, or not clipping the appended sound clip to only 35 seconds.

Question 8

Whilst most candidates completed this step as specified, there were a significant number of candidates who omitted this step, or the fade out portion of this step.

Question 9

Almost all candidates who attempted this step completed it as specified.

Question 10

Almost all candidates who completed step 9 completed this step as specified.

Question 11

Almost all candidates who attempted this step completed it as specified.

Question 12

Fewer candidates appeared to attempt this step. Some of those who did export the video in .avi format did not include the soundtrack despite having successfully added it when exporting at step 11.

Question 13

Where candidates had opened and examined the data files provided, the resulting formulae in the ‘RoomAvailability’ spreadsheet made reference to cells within the ‘RoomTypes’ and ‘Hotel’ files and were frequently successful in their formulae within row 2 and column B. A small number of candidates used these sheets for reference but did not use the most efficient range, particularly when looking up the hotel name. The formulae entered to calculate the total number of available rooms, both of each type and for each hotel

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were often correct but a significant number of candidates used functions like = c3 + c4 + c5… etc rather than using the SUM function with the correct range. Some candidates even included the SUM function in the same formula, for example =SUM(c3 + c4 + c5… etc). At AS level candidates must be using the most efficient methods to solve each step. A number of candidates omitted the final calculation and did not count the number of hotels with available rooms in each room type. Many candidates added appropriate labels, some were explicit and very detailed, but some candidates used labels like 'Total' or 'Count' which would not assist a user to understand the data presented.

Question 14

This step was completed well by a significant number of candidates using a variety of methods which included the method shown in the mark scheme as well as those including the use of FIND and SEARCH functions to examine the string held in cell A2. Many candidates ignored the instruction 'The resulting **values**' – as the resulting data in cells A6 to F6 was invariably in string format rather than a calculable number. Where candidates found this step more challenging, their responses only catered for one or two data items in the transfer file rather than the four required by the question paper ('*No hotel in Ellmau has more than four different types of room'*). At AS level candidates are expected to use cell referencing (in this case from row 5) to make formulae easily replicable, rather than using references to the room types like 'S' or 'T'. Not all candidates did so on this paper.

Question 15

Where Question 14 had been attempted this was often completed well, although a small number of candidates placed their transfer file string into cell B1 rather than cell A2 (as instructed in step 14).

Question 16

Where Question 14 had been attempted this was often completed well, although where candidates had not set all these cells to values (or set a null string (blank) or 0 for a default value in step 14), they frequently pasted only the two resulting pieces of data into the room availability spreadsheet rather than all the data. This left a residual 1 in the Family column which should have been pasted over with a 0 or null string (blank).

Question 17

The formatting of the splash screen often included errors, either in the merging of cells A1 and B1, the use of text wrap to display the contents of this cell in three lines, the reduced row heights in rows 2 and 5 or the setting of cells B3, B4 and A6 as emboldened text. Although these are underpinning skills often found at IGCSE level, they appeared to cause some problems for a significant number of candidates.

Question 18

The inclusion of appropriate formulae in column A to extract the data from the modelled data in the other spreadsheets were frequently omitted. Where they were attempted candidates were often successful, although some candidates attempted to recalculate the values rather than extracting the correct values from elsewhere.

Question 19

Few candidates performed well on this question. Many candidates identified some of the components of a data dictionary, but few described these components in sufficient detail to indicate their understanding of each. Many answers did not relate to the data dictionary being used to specify the structure of a database. Common answers included 'Validation, for example range check, type check' or 'Validation to stop errors', rather than explaining that validation checks were included to reduce data entry errors.

Question 20

This question gave a full range of candidate responses, with many candidates showing a better understanding of the requirements of an *evaluate* question than seen in previous sessions. Most identified the inconsistent case in the table name and many identified the Customer reference number as being appropriate for a primary key field, having too long a field name and having spaces within the field name. While some candidates simply stated that 'ID is not needed' (which was not enough for AS level) they did not indicate why it was not needed; some went on to evaluate that if the Customer reference number was chosen as the primary key field then the ID field contained redundant data which was a much stronger response.

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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. However, many candidates seemed to lack accurate knowledge of the specific syllabus topics. It is important that all topics in the current syllabus are studied in detail in order to be able to answer the questions.

Centres are once again reminded to ensure that candidates read the questions carefully and apply their knowledge to the question or scenario, as looking for or identifying, 'key words' in the question and then writing answers based on those keywords will score few, if any, marks. While generic, non-specific answers may gain a few marks, candidates will only gain access to the full range of available marks if their answers properly address the actual question.

It is essential that candidates read the short scenarios and the information given very carefully. Candidates can then apply their knowledge in detail when answering the subsequent questions. As stated above, many candidates did not apply their knowledge to the given scenarios or to the context set in the questions. Generic answers do not score the higher marks because knowledge is not appropriately applied or accurate in the context and the responses do not answer the question.

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. Ignoring the command words in the question and creating numbered or bullet pointed lists for questions that require free responses will score very few marks. As has been noted in previous reports, the use of lists rarely produces little more than simple points or short statements with no explanations or descriptions. These answers, while demonstrating some knowledge on the behalf of the candidates, do not 'explain', 'describe', 'discuss' or 'evaluate' a topic and hence limit themselves 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 score more marks.

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

It was good to note that fewer candidates omitted questions. Candidates should always be encouraged to attempt all of the questions.

Comments on specific questions

Question 1

(a) This question required candidates to examine the lines of JavaScript code and locate errors and describe how these errors would prevent the code from running in a browser. Many candidates were able to point out that the error in line 6 (a colon instead of a semi-colon) was a syntax error and would stop the code from executing and not produce any output as the browser would probably not be able to process the code. A few candidates correctly noted that the variable 'tableout' had not been declared and that this would probably prevent the code from being

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executed. However, the point that different browsers might deal with this issue in different ways to produce differences in output was not mentioned. Common mistakes in responses included references to incorrect tags, incorrect references to other variables not being declared and references to HTML code.

(b) Common errors in the responses were to describe how to look for errors when producing the code or describe error trapping in terms that repeated the information in the question. Good answers should have referred to the error trapping statements available in JavaScript such as try {}, catch {}, etc. along with customised error messages and methods of dealing with the errors.

Question 2

(a) Weaker answers described the benefits of using online tutorials whereas the question required candidates to describe the 'characteristics' of online tutorials. A characteristic is a feature that identifies a process, so good answers should have included the facts that online tutorials are self-study activities with a determined, specific learning outcome.

(b) Again, weaker answers described the benefits and/or drawbacks of using online tutorials but did not address the differences between the types of tutorial mentioned in the question. A number of candidates noted that recorded online tutorials are 'recorded' tutorials but interactive tutorials are 'interactive' which is repeating the question so did not gain credit; candidates will not score marks by repeating the question. The question required candidates to describe differences such as the use of, e.g. linear video compared to a user navigable set of pages/videos/animations. Poor answers described the conversations between user and tutor or described the use of video-conferencing, sharing of documents or test responses. Good answers should have pointed out that that the user of a recorded tutorial did not have the option, or requirement, to choose a route through the tutorial.

Question 3

This question required candidates to evaluate the use of quantum cryptography, an emerging technology. Good answers could have included reference to its use in guaranteeing that any interception or eavesdropping would produce a disturbance of the data that would be detected by the users but the uses of photons to carry data in terms of their 'spin' is difficult to generate consistently because filters to determine the spin are difficult to manufacture, conventional cryptographic keys are still needed for the actual encryption of the data, the requirement for a new type or generation of computers to become a viable reality and that quantum techniques can break any encryption in a relatively short time. Poorer answers confused the use of quantum cryptography with the use of fibre optic cable connections and described the advantages/disadvantages of optical media for transmitting data. Candidate responses did not 'evaluate' but 'described' so did not access the higher marks. To access the higher marks, an evaluation was required so candidates should have discussed the importance of, and weighed up, the advantages and disadvantages, and then judged the overall effectiveness of the use of quantum cryptography for transmitting data over public networks; descriptions of cryptography and fibre optics were not sufficient.

Question 4

(a) Most candidates answered this question correctly. However, a number of candidates referred to 'timelines' which is not correct.

(b) Specific details of, e.g. colour changes, etc. were not required from candidates and poorer answers were repetitive in the use of examples. Good answers could have referred to the use of layers to provide transparency to allow other layers to show be seen, overlapping to create composites of images, the use for masking and adjustments to saturation, etc.

(c) The question used the command word 'discuss' to require candidates to give the important arguments about the impact on society of the use of image editing in fashion magazines. Many candidates described how image editing was carried out or how it could be used to alter images without expanding to discuss how this has an impact on society. These descriptions did not answer the question. Some good answers were seen and these described the use of image editing and then explained how this affected or impacted upon society. Good answers could have included, e.g. enhancing the attractiveness of the appearance of fashion goods or models and making poor photos appear presentable to customers to increase sales, removing blemishes and altering body shape of models to create an unattainable appearance with the resulting effect on vulnerable

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viewers whose viewing of only perfection in models can lower the viewers self-esteem and possibly result in eating disorders.

Question 5

(a) Most candidates answered this question well. Common errors were to confuse blood vessels with liquid blood and to describe transfusions. Some poor answers describing 3D printing in factories were seen, so again centres are advised to ensure that candidates read the actual question as set. Good answers could have referred to the reduced risk of rejection, the possible customisation of the vessels to the recipient and the lack of a need to harvest blood vessels from a donor by creating the new blood vessels using 3D printing.

(b) Good answers could have referred to using 3D printing to produce the drugs as and when required, customising the drug closely to the recipient or to an illness. Again, poor answers described the generic use of 3D printing in industry and did not score marks.

(c) Some good answers were produced by many candidates who referred to the use of 3D printing to manufacture illegal drugs or quantities of drugs, the possible results of errors in the production or the difficulties in regulating the drug production.

Question 6

Most candidates produced a test plan but many lacked details of what was being tested, expected and actual results. Good answers should have included appropriate headings and details of what was being tested, some sample test data (referring to normal, extreme and abnormal data) and any actions to be taken as a result of the tests.

Question 7

Candidates were required to evaluate, i.e. discuss the importance of the advantages and disadvantages and to judge the overall effectiveness of ways of combatting spyware. Some good answers were seen but the majority of answers were restricted to describing spyware and what it does and a list of ways to try and combat it. Good answers could have made reference to the installation, configurations and appropriate use of anti-spyware, firewalls, along with the drawbacks and limitations of these ways of combatting spyware and then, possibly, drawing a conclusion as to the best method.

Question 8

The most appropriate method of implementation in this scenario, given the information in the question, would be to use parallel implementation. While some marks could be scored for descriptions of how other methods might be used, access to all the marks was only possible by describing how parallel implementation could be carried out by the bank when replacing the banks current system with a new one. Good answers should have made reference to, e.g. installing and starting the new system alongside the old system, setting up all accounts services on the new system, comparing results from the new system and its performance with the old system over a period of time that is long enough to test it thoroughly and once the new system has proved successful then complete the switch to the new system. The retention of the old system as a backup in case of failure of the new system could also be mentioned.

Question 9

Marks were available for a number of ‘permutations’ of the data dictionary and this question was well answered by most candidates who created a suitable data dictionary with the appropriate level of detail.

Question 10

This question was quite well answered by most candidates who could describe how the three technologies transmitted messages and the differences between the technologies.

Question 11

This question required candidates to explain why chat rooms were the preferred method of gathering information from potential customers. Poor answers described chat rooms in vague terms and how they would be used to ‘chat’ to customers rather than gather information from them. The distinction between an

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actual customer and a potential customer was often not made. While credit was given for some points about alternative social networking methods, these did not answer the question about chat rooms. Good answers explained how potential customers could be invited to participate as chat rooms can be private and restricted, the discussions occur in real-time and the discussion can be saved for future reference.

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INFORMATION TECHNOLOGY

Paper 9626/04
Advanced Practical

General comments

The most important aspect that centres need to stress when preparing candidates for this paper is that they need to take care to satisfy all the requirements specified in the instructions for any task. Most candidates were able to make fair attempts at all tasks, but many candidates lost simple marks because they did not submit solutions that matched all the criteria detailed in the instructions for the task. In particular, some needed to pay a little more attention to the relative proportions of images shown in the question paper and satisfy the requirements to save the images at the correct size. Many could improve results for all tasks by taking more care with the precision of their submissions.

Comments on specific questions

Task 1

(a) In this part of the task, candidates were required to create a template for a seven-segment display and use it to save images of numbers 0 to 9.

Their solutions were required to match the proportions of the examples shown in the question paper very closely and be saved at a size of 60 × 110 pixels in a format that supported transparency.

Good solutions showed that candidates had taken care to maintain:
- horizontal and vertical symmetry for each image
- the proportions as shown in the question paper
- grey outlines for the individual segments
- clean joints for the segments
- the correct size for each of the 10 images
- transparent background for each image.

Most candidates managed to create all the images but there were a few common issues such as:
- the precision of each joint of the segments
- the transparency of areas enclosed by the segments
- the precision of the size of each image.

(b) Candidates were clearly well prepared for animation tasks and nearly all produced an animation that counted down the seven-segment numbers from 10 to 0. Better candidates ensured that the numbers that changed during the sequence remained in exactly the same position and the positions of the blinking colon were consistent throughout. Similarly, the final sequence of alternate images of resized numbers with red/white background was completed by nearly all candidates but it was at this stage that marks were lost by those candidates who had not ensured that all internal areas of the numbers were transparent.

Task 2

In this task candidates were asked to contrast the use and advantages of a seven-segment display character display and a 5 x 7 dot matrix character display. Most seemed to understand the difference between potential applications, but many did not specifically highlight that alphanumeric characters could only be displayed using the dot matrix option. Examples of information displays, or venues was not sufficient for the marks without explanations of the sort of characters that were needed.

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Centres would benefit from reminding candidates that submissions for questions of this sort must include full descriptions of all aspects however obvious they may appear. They may not rely upon issues that they expect to be inferred.

Task 3

This task required candidates to create and format a table within a spreadsheet. In this instance almost all candidates paid close attention to the formatting as shown and described in the instructions for the task. The only common issue was the width of the columns. Although the paper specified that all the columns in the table should be set to 100 pixels, many candidates left the column widths at defaults sizes.

In the first part of the task, candidates had to extract branch sales data for the new table. They were required to calculate the value of the total sales for each branch, the average value of the sales for each branch and the value of the highest individual sales. Most candidates used SUMIF(), AVERAGEIF() and MAX() functions. Very few candidates used the MAXIF() function but since the availability of this function was not universal for all versions of spreadsheet software, marks for efficiency were not lost for the use of the MAX() function with the ranges selected manually. Marks for efficiency were lost however, for the use of SUM(), and AVERAGE() functions with the ranges selected manually.

For the next part of the task, candidates had to extract the names and payroll number or the person who had the highest value of sales in each branch. Many candidates attempted to use VLOOKUP() functions for these values and did obtain the correct data if they re-ordered the columns as necessary. These candidates lost the marks for the efficiency of their method, however, since a combination of the INDEX() and MATCH() functions would yield the correct results without the need to re-order columns.

The final column of the new table had to contain a number for the rank of the highest individual sales. This part of the task was the least well completed by candidates and it was clear that many were not familiar with RANK functions.

Throughout these tasks, candidates had to carefully assign absolute and relative references within formulae in order to enable efficient replication. It is clear that most candidates were well prepared for this aspect of the tasks.

The last part of the task required candidates to print only the new table to a pdf document. Although almost all candidates produced the document, some did not meet all the criteria detailed in the instructions for the task. In particular the font properties in the header were often left in the default format.

Task 4

The purpose of Task 4 was to determine whether candidates understood the relationships between data, information and knowledge. Almost all candidates recognised the importance of context with data but very few seemed to be able to extend the hierarchy to determine knowledge.

In the last part of the question, candidates were required to list the data likely to be available on a jar of chutney and describe the information and knowledge necessary to make a judgement. Most could list some relevant data, many could recognise the context, but very few made the connections that would lead to a judgement about a choice. Coverage of the DIK(W) hierarchy is something most centres should address.

Task 5

The task required candidates to use their images from Task 1 to complete a countdown timer by adding JavaScript code to an HTML page. Most candidates clearly understood the existing code and inserted their additional code in the correct place. There were a number of possible solutions that would achieve a satisfactory sequence and many candidates managed to complete the task. There was a single mark available for the efficiency of the code which candidates were awarded if they did not add any unnecessary elements.

Once again, the only common issue was that candidates often neglected to add relevant programmer's comments as required by the instructions for the task.

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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, position and proportions of images shown in the question paper and pay close attention to any specifications detailed
- candidates need to explain issues and concepts in detail and not rely on inferences
- the need to extend spreadsheet LOOKUP methods to include the use of INDEX() and MATCH() functions
- the need for more extensive coverage of the **D**ata **I**nformation, **K**nowledge, (**W**isdom) hierarchy.

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